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Test Infrastructure and Accelerator Research Area

Status Report

Infrastructure Survey Report

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Test Infrastructure and Accelerator Research Area

TIARA WP3
Deliverable 3.1
Infrastructure Survey Report

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1. Introduction

The main objective of TIARA (Test Infrastructure and Accelerator Research Area) is the integration of national and international accelerator R&D infrastructures into a single distributed European accelerator R&D facility.

The project is divided into several work packages (WP), of which one, WP3, is devoted to the integration and optimization of the European accelerator R&D infrastructures. The main objectives of WP3 are to provide a survey of the existing accelerator R&D infrastructures and facilities, to identify synergies between existing infrastructures and to provide a costing model for their operation for comparison, to identify discrepancies between the existing infrastructures and future needs for accelerator R&D and to ensure that the needs of a broad user community of accelerator R&D infrastructures are adequately taken into account in the construction and operation of the TIARA distributed infrastructure.

One of the tasks of WP3 (WP3.1) is to generate a web-based database of existing, currently developed and planned accelerator infrastructures with information on their capacities and exploitation levels. It will further propose a common costing method for the utilization of these infrastructures. Main points to be addressed in this work package include:

- A detailed survey of the infrastructures in the public sector and identification of their user communities. This survey will constitute the groundwork for establishing the TIARA distributed accelerator R&D infrastructure;
- A proposal for common methods for assessing the financial value of the infrastructures and evaluating their capacities, exploitation levels and operation costs;
- Creation of a web-based database of the existing accelerator R&D infrastructures;
- Establishing efficient communication with the relevant industry sectors in order to understand their interest in terms of accelerator R&D infrastructures and programmes.

In WP3.2 the needs of the user community will be evaluated, in close interaction with WP4. The current and future needs for accelerator R&D will be compared with the outcome of WP3.1 and an assessment of the current situation will be done, highlighting all areas of accelerator R&D that are adequately covered, that have overcapacities and that need to be expanded and addressed in more detail in the future (identification of missing or excess infrastructures and resources). The analysis started with the identification of key Accelerator Research Areas (KARAs) by WP4. A list of the KARAs has been provided by WP4 and can be found in Annex 1.

The purpose of this Infrastructure Survey report, which is defined as Deliverable 3.1, is to provide a comprehensive summary of the infrastructure survey carried out as part of the tasks in WP3.

2. Definition of accelerator R&D infrastructure

As defined by WP2 in the Guidelines on General Issues (Deliverable 2.1) dated 21 November 2011, two main types of accelerator R&D infrastructure have been identified:

- Accelerator infrastructures
- Dedicated test infrastructures.

Accelerator infrastructures in the TIARA sense are regarded as accelerator R&D infrastructures, provided that they are not exclusively used to generate a beam for the specific purpose of basic or applied research. To be regarded as TIARA infrastructures, accelerator infrastructures also have to provide a significant fraction of their available capacity to serve as instruments to test or validate new concepts or technical systems of relevance for future installations for the relevant accelerator R&D programme.

Dedicated test infrastructures in the TIARA sense are regarded as accelerator R&D infrastructures if they provide the capability for functional testing of accelerator components or systems which are of significant relevance for the accelerator R&D programme, either for complex individual systems such as superconducting cavities or for a wider system research field like beam cooling or beam diagnostics. The investment cost of such test infrastructures should start at a significant level.

In order to limit the scope of the survey to be performed by WP3, it was agreed to include only those infrastructures whose investment cost exceeds 1 MEUR, unless the infrastructures are “unique” (i.e. less than three existing in the EU).

Such accelerator R&D infrastructures are predominantly located at the institutes of the TIARA members or their scientific research partners. Industrial infrastructures could be considered on a case-by-case basis for TIARA, if an adequate advantage can be identified. In general the use of test infrastructures by scientific and industrial partners collaborating on the specified R&D topics of TIARA is not excluded and should be encouraged. The sharing of costs for such use has to be regulated by the terms of specific contracts.

It would be desirable to integrate not only general but also special test infrastructures that have been realized by the partners or their funding agencies for dedicated projects into the TIARA accelerator R&D infrastructure list. This could be an attractive option for the re-use of special test infrastructures to minimize project-related investment costs, providing that mutual benefit for those involved is achieved.

3. Infrastructure survey

The survey was divided into two different phases. The first phase covered a survey of existing and planned infrastructures at the WP3 partners’ own facilities. In order to ensure a coherent presentation of appropriate information for the survey, a template questionnaire was drawn up with a set of fields to be filled in for each infrastructure surveyed.

The second phase covered the extension of the survey to other facilities, such as institutes, laboratories and universities which are not represented in WP3. The list of such facilities was drawn up on the basis of the WP3 partners' knowledge, completed by the infrastructures identified in other EU funded projects, such as EuCard[1] and AIDA[2]. This phase started after completion of the first phase and took into account the experience gained and feedback from the first phase. The persons responsible for carrying out the survey in those facilities were appointed among the WP3 partners, primarily on the basis of geographical proximity. The results of the survey are included in Annex 2 hereto and can be summarized as follows:

At the time of submitting this report a total of 129 accelerator R&D infrastructures of various types have been found and surveyed. These infrastructures are located in 13 countries (Austria, Denmark, Finland, France, Germany, Italy, Poland, Romania, Slovenia, Spain, Sweden, Switzerland and the United Kingdom). Some detailed information is still missing, but it is envisaged that subsequent revisions will allow an incremental improvement of the data collected, which will thereafter be consolidated in a web-based database.

The infrastructures surveyed cover the full range of infrastructures, from dedicated test infrastructures for accelerator components, to complete accelerators, such as the LHC. Some of the infrastructures listed in Annex 2 will probably never be available for external users such as TIARA (e.g. a condition to be met in order to be included in TIARA is that an accelerator infrastructure is not exclusively used to generate a beam for the specific purpose of basic or applied research), but it was nevertheless considered appropriate to include, at this satge, all surveyed infrastructures for which information has been obtained, in order to provide a reasonably comprehensive list of existing accelerator R&D infrastructures.

During the survey it became clear that a number of issues needed further elaboration before the infrastructures can be made available for use in a database accessible to third parties. These issues include the following:

3.1 Estimation of the operation cost of the existing R&D infrastructures, comparison of their costing models

In order to estimate the operation cost of the existing R&D infrastructures a number of questions have to be answered, such as: What should be included in the operation cost? Should the direct overhead costs be added to the direct costs for manpower, energy and consumables (e.g. liquid He for cryogenic testing)? Should even indirect overheads, such as administration and general overheads, be included? An investigation of the costing models used at CERN and CNRS gives the following:

1 European Coordination for Accelerator Research & Development, EUCard (http://cern.ch/eucard)
2 Advanced European Infrastructures for Detectors at Accelerators, AIDA (http://cern.ch/aida)

CERN

At CERN, budget estimates are broken down into recurrent and non-recurrent costs. All expense estimates are allocated to an activity structure (similar to a work breakdown structure) grouped around the LHC programme and other scientific programmes.

Non-recurrent costs cover all expenses in personnel and materials for the development, construction, integration, upgrade and consolidation of facilities, whereas recurrent costs cover research, commissioning, operation and maintenance. Decommissioning in the sense of de-construction is also a non-recurrent cost.

Whereas maintenance covers the expenses needed to keep a facility running with the same functionality, capacity and reliability, consolidation covers a project aiming at re-establishing the original functionality and reliability. Thus, neglected maintenance will inevitably end up in consolidation needs.

Upgrade covers projects aiming at enhancing the functionality, the capacity and/or reliability.

It is important to note that the CERN budget does not include any amortization. In other words the operation and maintenance costs are only the direct costs linked to operate the infrastructures. Furthermore, indirect costs are not charged against the scientific headings but charged on the programme infrastructure and services.

Operation costs of infrastructures therefore neither include overheads for the depreciation of development and construction costs, nor do they include provision for deconstruction, overhead costs for central services such as HR management, procurement, technical infrastructure maintenance, financial services, site facility management or general management. At CERN even the electricity costs are kept centrally. These indirect costs amount to about 35% of the budget (currently about 12% are allocated to non-recurrent costs for projects, 5% to non-recurrent costs for consolidation, 35% to indirect costs, and 48% to direct operation costs in the CERN budget).

This means that if overheads, amortization over 15 years and other indirect costs would be included in the operation and maintenance costs, the latter would be subject to a global increase of about 1.45 to 1.5 times.

Furthermore, the operation costs of some major infrastructures may vary significantly over the years, e.g. CERN plans to shut down a major part of the accelerator complex for an extended period every four years. During this period, the indirect costs for e.g. the management will remain the same, but would have to be allocated to a very limited number of operational infrastructures. For this reason, it is probably wise not to automatically include the indirect costs in the operation costs of R&D infrastructures.

CNRS

Another and different example is CNRS. Some costs are considered as at CERN, such as recurrent and non-recurrent costs. However, CNRS integrates in some cases depreciation and overheads in a full cost model.

Depreciation is calculated using a depreciation table provided by the CNRS accounting service. This table, in fact a depreciation plan, gives the duration of depreciation for each type of installation based on linear depreciation. The annual cost of depreciation is calculated by dividing the acquisition cost by the duration of the depreciation.

The depreciation time for accelerator R&D infrastructures is ten years at CNRS and other French public research organisations.

In some cases, there is a significant difference between the acquisition cost and the real cost of an infrastructure that has been gradually upgraded. This accounting problem exists also when a facility becomes obsolete, is under-used or sold for any reason. In principle, French accounting rules take into account acquisition cost and major upgrade costs.

For overheads, the accounting office also gives a general rule for overheads that is 80 % of the salaries of the personnel operating the infrastructure or the project during the calculated period.

The overheads comprise general management, maintenance, financial services, and site facility management.

This basic full cost model is used when calculating the cost of using infrastructures by external users. In some cases, however, only a part of the model is used as follows:

- For annual budget calculations, depreciation and overheads are not taken into account but maintenance is included in non-recurrent costs;
- For academic partnerships, the principle is free usage, or payment of only recurrent costs;
- For call for projects, it depends of the criteria of each call, overheads are often included at a rate that is indicated in each call;
- For industrial partnership, the full cost is the basis but payment may be reduced for collaboration agreement; approx. 50 % of the full cost will then be invoiced or services can be provided by CNRS where 100 % of the full cost in invoiced.

Conclusion

The most relevant operation cost model is probably to define two categories of operation cost. One cost model for collaboration with institutes (in particular TIARA partners) and one for usage by industry.

For TIARA partners the cost can be based on direct operation costs only, without indirect overheads, i.e. to include only the direct costs for the personnel operating the infrastructure in question, energy and consumables (whenever relevant).

For industry, the direct operation cost can be increased by a percentage representing various overheads, depreciation etc. This percentage may vary between different institutes, but will probably amount to some 50-80% of the direct operation costs.

3.2 Investment cost of accelerator R&D infrastructures

Infrastructures have often evolved from earlier installations or been built with a combination of new and “recycled” components. In such circumstances it is difficult to estimate a fair book value for the infrastructure. In order to be able to get an idea of the investment costs, it may be more useful and, indeed more relevant, to estimate the investment cost based on the replacement value of the installation. This means an estimation of the costs of building or acquiring a new infrastructure with a performance equivalent to the existing infrastructure. Obviously, the replacement value will often exceed the cost of the initial infrastructure investment. It may also be very difficult to estimate and vary significantly over time, considering fluctuations of raw material prices, exchange rates and technological developments.

3.3 Identification of Key Accelerator Research Areas (KARAs)

In order to be able to identify discrepancies between the existing infrastructures and future needs for accelerator R&D, it is essential that the relevant KARAs are defined for each infrastructure. These are discussed in more detail under section 4, “Identify the critical requirements and their targets”. The list of KARAs can be found in Annex 1.

3.4 Availability for TIARA

Infrastructures that are not open to external users, and are not available for participation in TIARA, are of course not of interest for inclusion in any future database covering TIARA infrastructures. However, for completeness sake, all infrastructures surveyed so far have been included in this report whether or not they are open to external users.

In many cases a fraction of the annual operating time of an infrastructure may in principle be open to external users, including TIARA. However, priority to the infrastructures is always given to the institute where the infrastructure is located. In addition, even if the infrastructure has available capacity but it is used by external users other than TIARA, there may no longer be any capacity available for TIARA. Thus, even if an infrastructure can be made available to TIARA in principle, there is no guarantee that any such capacity will remain available when needed by TIARA.

Furthermore, some institutes (e.g. CERN and CNRS) have a policy of non-competition with industry. Thus, if infrastructures exist on the industrial market that can provide the requested services on a commercial basis to industry, CERN will in general not accept that commercial clients use its infrastructures for commercial purposes. Furthermore, even if no equivalent infrastructures exist on the industrial market, the Organization does not wish to make any commitments for testing series production units on a commercial basis. In general testing is limited to type testing, where the activity is of interest to the Organization from a technical point of view.

4. Identify the critical requirements and their targets

The fourth axis of activities in WP3, WP3.4, has the task of “defining a technology roadmap for the development of future accelerator components in industry. The technology alternatives that can satisfy the targets will be analysed and the cost evaluated. The timeline for each alternative will be taken into consideration.”

The work programme within this task (3.4 TRI, Definition of a technology roadmap for the development of future accelerator components in industry) is split into two additional subtasks, sequentially connected:

- 3.4.1 CR Identify the critical requirements and their targets
- 3.4.2 ITA Identify the technology alternatives and give recommendation what alternative should be pursued

The two tasks will provide the input for Deliverable 3.4 IAR: Infrastructure access report, concerning the industrial fabrication of accelerator components [due in month 24].

The objectives of subtask 3.4.1 ICR have been fulfilled by scrutinizing the list of the KARAs and key Technical Issues (KTI) in the deliverable 4.1 from WP4, with the identification of technologies and components that will require industrial involvement for their development and realization (see Annex 1).

The discussion below follows the convention used in WP4, which aggregates the KARAs in three domains (Accelerator Components, Accelerator Technologies and Accelerator Concepts). Critical requirements are the performance improvements to be achieved in all areas described in the KTI belonging to the domains in Deliverable 4.1, and the targets are the upgraded components and systems.

4.1 ICR in Accelerator Components

Nearly all accelerator components identified in the KARA list, with very few exceptions, can be produced in industry either for R&D purposes or in (small to large) series production for the development of accelerator facilities.

In most cases the component development and specification takes place in research and/or academic institutions, while the engineering and manufacturing aspects are finalized and optimized by industry, with a focus on cost-effectiveness and provisions for achieving reliable performances.

In several areas, (e.g. sources and injectors, RF structures, SC magnets, etc.), there is enough expertise in industry to design, develop and offer accelerator components of "standard" performances, i.e. based on a consolidated risk-free technology not aiming to achieve record performances at the very limit of available technologies. The situation is clearly continuously evolving, as new projects work in tight synergy with the industrial manufacturers for the production of needed series components with improved performances, allowing the proper technology transfer for their realization. Large enterprises, such as the production of the LHC main dipoles, or the XFEL superconducting cavity production to give a couple of examples, strengthen the European industrial capability to manufacture components with increased performances with respect to the past.

The superconducting ILC will profit, through the XFEL project, from the consolidation of the industrial capability to obtain moderate superconducting cavity accelerating gradients but will have to identify, jointly with industry, the correct procedures for the future mass production and treatment of thousands of cavities at high gradients with high production yields. The SRF expertise gained by the industrial production system with the XFEL will also open up the possibility of employing similar production and treatment procedures to the cavities for other applications (ESS, RIBs, ADS, etc.), closing the gap between their performances and those of the electron cavities.

A similar effort will also be needed for the case of a normal-conducting linear collider such as CLIC, where RF structure prototypes are now confirming the prospect of obtaining large gradient acceleration at low RF breakdown rates, but the technology transfer for the industrial mass production of components is in its starting phase. Furthermore, a consolidation of the X-Band and C-Band technology in the productive industrial world (as has already happened successfully for S-Band technology) would open the way to more compact and efficient accelerator applications with enhanced performance.

Proton and ion sources are routinely developed and produced by industry. The efforts devoted to the critical technical issue of beam-current increase will lead to the possibility of transferring this capability to new industrial products, which will have important consequences in several fields of application (radioisotope production, BNCT, industrial and environmental applications, etc.).

Diagnostics and instrumentation is another area where industry plays a critical role in providing cost-effective components, especially concerning the needed electronics modules and components. Activities addressed in the KTI for this area will allow a new class of industrially developed components with increased performances for the needs of future facilities.

4.2 ICR in Accelerator Technologies

The industrial role in the development of the support technologies needed in accelerator facilities is of outmost importance across nearly all the KARAs highlighted in the list.

In the electronics KARA most of the efforts within the development of xTCA standards is driven by the market-driven industrial context. The research/academic work has to support the adoption of these standards and to identify the necessary adaptations required by the physics applications jointly with the industrial partners, to foster the development of the needed components by industry.

A similar effort and contact with the industrial world is needed in the UHV area, where the needed technologies and components (e.g. low secondary yield coating techniques) should be identified and transferred to industrial production.

Most of the R&D activity for the development of RF sources is already driven by the industrial and application context. The broad range of frequencies, power and efficiency levels needed in future facilities should be brought to the attention of RF source developers, in order to foster the appearance of suitable devices on the free market.

Large-scale facilities based on the superconducting (SC) DC or RF technology (such as the LHC or the proposed ILC) drive the development of large-scale cryoplants, developed and realized entirely by industry. Further improvements of cryoplant efficiencies, obtained by energy-recovery practices or improved subcomponents, can be driven by the requirements of future SC-based facilities, as has happened in the past.

4.3 ICR in Accelerator Concepts

The Accelerator Concepts domain is the one where, with a few exceptions, the KARA/KTI topics have less overlap with general industrial developments, due to the long-term R&D still required for some of the issues (e.g. plasma-based accelerators are still in too early a stage of development to be of industrial interest) or due to the very fundamental nature of some KARAs (e.g. beam dynamics topics).

Among the exceptions are the activities aimed at reliability and availability design. Several industrial markets (automotive, aerospace, electronics, nuclear and energy industries to quote a few examples) have decades of consolidated practice of reliability/availability design, whereas these considerations have been introduced only in relatively recent times for the accelerator facilities, mainly driven by the appearance of accelerator-based user facilities (e.g. synchrotron radiation sources) and by the tight requirements of ADS systems for nuclear waste transmutation. Energy efficiency and storage is another KTI for the accelerator design that would lead to mutual benefits between future large infrastructures and energy industries. ESS is committed to exploring energy efficiency and “greening” technology from early stages of the facility design, in collaboration with industrial partners.

All the developments towards the industrial realization of improved components for future accelerator facilities, listed in the previous paragraphs, could open the way to a new generation of medical and industrial accelerators, which could then be fully developed in a purely industrial context.

Research institutions have pioneered the development of synchrotrons for hadron therapy. This technology is ready to be fully handled by specialized industries, which the aim of leveraging the cost and complexity of the facilities. High-intensity accelerators developed for physics applications would provide solutions for compact facilities dedicated to medical and pharmaceutical applications, like BNCT and tracer isotopes. Consolidation of the SRF technology driven by future facilities for users (XFEL, ESS) or R&D for fundamental physics (ILC) could provide, in the long term, viable and effective solutions for ADS drivers for industrial-level nuclear waste transmutation. Improvements in efficiency, size and compactness of accelerator components and systems will result in new market-addressed applications, to be delivered by industry (e.g. ion implanters, cultural heritage spectrometers, cargo scanners, environmental applications, etc.).

5. Definition of the appropriate structure for ensuring sustainability

Sustainability here concerns not only a regular update of the infrastructure database, but also a validity check of the KARAs and a check to establish whether the respective KARAs are covered in a sufficient way by the existing infrastructures or where some new infrastructures are needed and others may have become obsolete.

5.1 Tasks required for sustainability

Four main tasks can therefore be identified to ensure sustainability:

- (Re-) define list of KARAs (are there any changes, new developments etc.)
- Update the list of existing infrastructures (new ones, closures, etc.)
- Check coverage of KARAs by infrastructure (is it sufficient, too much/insufficient….)
- Keep the platform of the database(s) up to date.

Issues to be clarified in the framework of such a regular update and validity check include the following points:

- How often should this updating take place (every 3 to 5 years)? Perhaps it would be better to check the list of infrastructures more often than the KARAs, which may change more slowly.
- Which group of people will do this work, how many should they be, in which way and by whom should they be selected (for example by TIARA member institutes, on the basis of expertise in KARAs)?
- Should it be a permanent body or newly selected for each updating round?
- Should it be one group of people or two (one for the KARAs one for the infrastructures, as the case is now)?

5.2 Organisation and responsibilities

For the following first suggestion of a possible approach it is assumed that a permanent management structure of TIARA will be established and regular meetings of a governing body take place.

An annual survey of the facilities with infrastructures concerning changes could be carried out by a central unit within the management structure of TIARA. The unit should ensure an efficient coordination of the survey activities by liaising with nominated representatives at the TIARA institutes. This ensures that an up-to-date list is available of addresses of contact persons. If there are some major changes for an infrastructure (e.g. closure, opening of a new one), this could then be included in the database as well.

In addition to the annual review of the infrastructures, every five years the management structure or the TIARA governing body should set up a revision committee (one member per participating institute) whose task should be to check the validity of the KARAs (for this external experts can be invited to cover certain KARAs) and to update the list of KARAs. A report has to be written by this committee concerning the future KARAs and their coverage by the then existing infrastructures.

The maintenance of the database should be the responsibility of the unit within the TIARA management structure. Therefore, the unit should document feed-back received from users of the database and, if deemed necessary, adapt and improve not only the information in the database, but also the layout of it.

6. Requirements for the Web-based database

The accelerator infrastructure information which has been collected as part of the WP3 survey of various European countries and accelerator institutes is to be collated into an appropriate information management system which will allow effective and rapid data-entry capability, whilst also providing extensive interrogation provision to enable potential users of such infrastructures to obtain the necessary technical information required. An effective mechanism for retrieving information and also for gaining access to the infrastructures, should it be required, must also be identified. A web-based information management system is envisaged, which will allow any potential user to interface and interrogate the infrastructure database and obtain all required information relating to a specific infrastructure. It is envisaged that the information management platform utilized will incorporate four main attributes:

6.1 Data-entry portal front-end

Once configured, the information management system will become a dynamic application, allowing new infrastructures to be added in the future by following a prescriptive web-based question entry system. This system will request the user to provide the relevant information required for each new infrastructure to be incorporated into the database, under such headings as category, technical details, capacity and anticipated costing for potential use. The data-entry mechanism will fundamentally need to be simple, effective and unambiguous in terms of interpretation of required information.

6.2 Data storage and manipulation

The infrastructure information collected will be stored within an appropriate database management system, effectively providing both web-based entry access and information filtering/examination. A standard SQL database module will be employed, which will be implemented using an appropriate Internet Information Service (IIS) management protocol, providing effective data manipulation from input to output.

6.3 Data post processing

Potential infrastructure users will need to interrogate and filter the database information to converge on a solution which matches the respective accelerator testing requirements. The overall usefulness of such a system will critically depend on how rapidly and efficiently the relevant information can be extracted. Careful consideration therefore needs to be given to how the infrastructure information is categorized and provision made to incorporate the necessary filtering tools, which still have to be defined.

Decisions will also have to be undertaken as to whether such data will need to be exported from the TIARA database management system and how this will be done, and whether other external databases will require automatic access capability. This will be resolved as the architecture and platform implementation is formulated and the associated capabilities become more prominent.

6.4 Data security provision

A variety of access rights to the database for different types of users may have to be defined to ensure that appropriate use of the system can be maintained, since part of the information available in the database should probably not be made public, e.g. the costing of the infrastructures. Associated with this is the fundamental security management of the data being collected and associated mechanisms for ensuring only authorized access and valid data entry. The processes required to ensure effective utilization of the system need to be determined in consultation with other TIARA WP coordinators and TIARA senior management. It is envisaged that the TIARA infrastructure database will be ported to the central TIARA information management website at the end of the TIARA–PP and therefore ongoing maintenance of the system will need to be seamlessly transferred. All issues relating to how this process is effectively performed require clarification, so that the most appropriate platform and management processes can be incorporated.

7. Relations with industry

As a first step, a list of companies that could potentially be interested in participating in TIARA has been drawn up. The list was based on:

- The partner institutes' experience of industry as suppliers and contractors for accelerator-related supplies and services;
- Companies participating in conferences such as EPAC and IPAC;
- Companies proposed by various branch associations in the relevant fields of activity, such as PIGES[3] and EIFAST[4];
- Input from the Industrial Liaison Officers appointed for each Member State at CERN.

In order to raise awareness about TIARA, a letter was sent to the firms in the above-mentioned list with some basic information about TIARA, asking them to confirm whether they would be interested in knowing more about the project. As a result, at the time of writing this report, the firms that have declared an interest in continued discussions about TIARA are indicated in Annex 3.

The next step will be to organize a workshop with the interested firms in which the purpose of TIARA can be further explained and industry's potential interest in involvement in TIARA can be assessed.

8. Analysis of access of industry to existing infrastructures

An important issue of TIARA is socio-economic impact of accelerator R&D. This question is addressed from the point of view of the opening of accelerator research infrastructures to external users including, in particular, industry. The following framework of analysis has been set up: on one hand the analysis of the needs of industry and on the other hand what the infrastructures can provide.

The needs of industry will be based on the analysis of four items:

- Type of needs (industrial domain, type of technical demand)
- For which accelerator research infrastructure?
- Duration of operation (average, minima-maxima)
- Type of contract (provision of services, research collaboration).

The needs of industry will be gathered thanks to the industrial portfolio mentioned in Article 7.

What the infrastructures can provide will be assessed through three main points:

- Data on the infrastructure
- Type of support offered by infrastructure
- Modality of access to the infrastructure

[3] Association des Partenaires Industriels des Grands équipements Scientifiques
[4] European Industry Forum for Accelerators with SCRF Technology (http://www.eifast.eu/)

The information will be obtained via the infrastructure database and interviews with the persons responsible for industry's access at the infrastructures concerned. The following data will be required:

- Data on the infrastructures: number of infrastructures, number of infrastructures that are open to industry, type of infrastructures that are open vs. not open to industry, etc.)
- Type of support offered by the infrastructures: access to use of basic infrastructures, access to infrastructures plus results analysis, etc.)
- Modality of access to the infrastructures: type of procedure, time for access, calculation of fees, type of contract, content of contract (subject, price, property of results, confidentiality, etc.)

By an analysis between the needs of industry and what the infrastructures can provide, an overview of industry's access to infrastructures will be made available on-line with indicators, such as: number of infrastructures open to industry, numbers of companies that have used the infrastructures, average fee per type of infrastructure, average waiting time to access the infrastructures.

For a more detailed analysis of industry's access to existing infrastructures, a satisfaction survey among companies that have already used infrastructures has been set up (the characteristics of the survey are included in annex 4). The goal of this survey is to know who is using the infrastructures at the present time and to measure their satisfaction.

TIARA as a gateway is a good opportunity to help facilities and institutes to propose a varied range of customized services for internal as well as external clients, including industry, to promote and improve the service level through quality assurance plans.

The survey will be carried out on the basis of a list of companies provided by the persons responsible for industry's access at the infrastructures and the results will be available on line.

Annex 1

Key Accelerator Research Areas

ACCELERATOR COMPONENTS	
Key Accelerator Research Area	**Key Technical Issue**
Sources and Injectors	High Brightness Photo Injectors
	High Intensity Heavy Ion Injectors
	High Intensity Proton Injectors
	High-polarization electron/positron sources
	Hollow beams for proton beam collimation
	RFQ development
	Beam funneling
RF structures	High Gradient Acceleration at Low RF Breakdown Rates
	Development and engineering of C-Band and X-Band Structures
	Consolidation of the Nb Technology for Maximum Yield at Highest Gradients
	Improvements of the “Low Beta” Cavity Technology
	CW superconducting radiofrequency
	Coupler for SRF Cavities at High Average Power
	Overcoming the Performance Limits of Bulk Niobium
	Crab cavity Developments
	RF Structures for 6D Muon Beam Cooling
	Variable Frequency Resonators for Synchrotrons or FFAG
RF systems	Optimization of RF Systems for high brilliance damping rings
	X-Band and C-Band RF Systems
	Precision LLRF control
SC magnets	Material and Technologies for the 20 T Range and Beyond
	Fast Cycling SC Magnets
	Engineering Challenges for High Field Magnets
	Cryogen-free magnet systems
	High-Field short period undulators
	High Field Small Magnets using rare-earth pole tips
Conventional NC magnet systems	Compact Magnets
	Radiation Resistant Magnets
	Insertion Devices for X-Ray Production and Damping Rings
	Pulsed Magnets and Kickers
	Transparent Injection in Top-Up Schemes
	Fast pulsed quadrupole magnets for beam lines
Diagnostics and instrumentation	Beam Position Monitor Development
	Beam Size and Emittance Monitor Devices Development
	Synchronization, fs or sub-fs
	Beam Intensity and Loss detectors
Targetry	Challenges for High Power Targets for Secondary Particle Production
	Radiation Damage Phenomena in Target Materials
	Monte Carlo Particle Transport Codes Validation
	Collimation Systems
	Bent Crystal channelling

Radiation issues	Determination of Prompt Radiation Levels
	Component Activation Handling
	Radiation hard electronics and materials
	Compact Shielding

ACCELERATOR TECHNOLOGIES	
Key Accelerator Research Area	**Key Technical Issue**
Electronics and Software	xTCA Standards
	LLRF cost, performance
UHV	Radiation-Induced Outgassing and Secondary Particle Generation
	Low Outgassing Rates to Limit Pumping Times
	Wall Chamber Conductivity and Eddy Currents
RF sources	Energy efficiency
	Solid State Technology RF Sources
Cryogenics	Cryoplant Efficiency Improvements
	Cryogenic Distribution and Cryostat Insulation
Alignment and Stabilization	Laser and Wire Positioning Systems
	Nanometer Level Stabilization

ACCELERATOR CONCEPTS	
Key Accelerator Research Area	**Key Technical Issue**
Accelerator Design	Design for Reliability and Availability
	Beam Losses and Machine Protection at High Beam Power
	Compactness and Simplicity
	Energy Efficiency and Storage
Beam Dynamics	Enhanced Beam Modeling Tools and Experimental Code Validation
	High Luminosity and High Energy Hadron and Lepton Colliders
	Beam Stability and Lifetimes in Circular Accelerators
	Small Emittance Beam Generation and Transport
	Transport of electrons in plasma accelerating structures
	Low Losses in High Intensity Linacs
	High Reliability Operation
	Laser-Beam Interaction for Acceleration and X-Ray Production
	Fast Acceleration for Unstable Particles
FEL processes	Develop New Seeding Techniques for FELs
	Circularly Polarized X-Ray FELs
	Attosecond Pulse Generation
Beam cooling	Electron and Stochastic Cooling for Heavy Ion Beams
	Ionization Cooling

New techniques for high gradient acceleration (laser-plasma etc.)	Self Injection Laser Wake-Field Acceleration
	External Injection in Laser Plasma Waves Below Wave Breaking
	External Injection in Particle Wake-Field Acceleration
	Proton and light Ion Generation with Laser Driven Plasmas
Medical and Industrial Accelerators	Improvement in Dose Delivery for Hadron Therapy
	Image Guided Radiation Therapy
	Cost and Complexity Reduction of Medical Accelerators
	Boron Neutron Capture Therapy
	Production of PET Isotopes and Tracers
	Acceleration Driven Systems for Nuclear Waste Transmutation
	Accelerators for Fusion
	Industrial and Societal Applications
	Environmental Applications
	Accelerators for Detection of Illegal Nuclear Material

Annex 2

Infrastructure survey

AUSTRIA	
Name of the infrastructure	MedAustron
Location of infrastructure (town, country)	Wiener Neustadt, Austria
Web site address	www.medaustron.at
Legal name of organization operating the infrastructure	EBG MedAustron Ges.m.b.H
Location of organization (town, country)	Wiener Neustadt, Austria
Key Accelerator Research Area(s)	Medical application of accelerators
General description of the infrastructure	The EBG MedAustron GmbH is building, and will later operate, the MedAustron centre for ion-therapy and research in Wiener Neustadt in the county of Lower Austria. The centre comprises an accelerator facility based on a synchrotron, for the delivery of protons and light ions to irradiation stations, for cancer treatment and for clinical and non-clinical research. EBG MedAustron is owned and financed by the County of Lower Austria with financial contributions from the Federal Republic of Austria and the City of Wr. Neustadt. The accelerator complex consists of the injector with ion sources and an ion linac that will accelerate particles up to the synchrotron injection energy of 7 MeV/u. This is followed by a synchrotron capable of accelerating particles to the planned extraction energy, ranging from 60 MeV to 250 MeV for protons and 120 MeV/u to 400 MeV/u for carbon ions, suitable for the medical application. For non-clinical research only, a proton energy extended up to 800 MeV is also possible.
Already existing or planned	Construction ongoing, start of beam operation in 2013, start of patient treatment in 2015
Unique features	Various light ion beams for tumour therapy, 50% of yearly beam time dedicated to non-clinical research
Present situation / future changes / expected lifetime	Presently under construction, operation from 2015, lifetime 35 years until 2050
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure, 7 MeV injector followed by ion synchrotron with beam rigidity of 6.7 Tm.
Shared facility/infrastructure	
Main user community	Physicians, medical physicists, radio-biologists, experimental physicists
Number of users	About 200 users per year expected
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Project proposals to scientific board of MedAustron
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	No
Review procedure for requested access	Not yet defined
How to apply	Not yet defined
Number of FTEs operating the infrastructure	100 FTE
Contact details (name, Institute, email)	www.medaustron.at
Annual operating costs (excl. Investment costs) of the infrastructure	20 MEUR
If open to external users: **(how is the annual operating cost calculated)**	NOT AVAILABLE
Estimated investment cost (replacement value)	

DENMARK	
Name of the infrastructure	Institute for Storage Ring Facilities (IFA)
Location of infrastructure (town, country)	Aarhus, Denmark
Web site address	http://www.isa.au.dk/
Legal name of organization operating the infrastructure	Aarhus University
Location of organization (town, country)	Aarhus, Denmark
Key Accelerator Research Area(s)	
General description of the infrastructure	• University facility, but some national support has in between been available • First ion operation of the dual-purpose ASTRID storage ring in 1991. First synchrotron radiation operation in 1994. • The first electrostatic storage ring, ELISA, was “invented” at ISA in 1999, and in operation since. • Ion operation of ASTRID was abandoned around 2001, partly for the above reason. • A new low-emittance UV and soft x-ray synchrotron radiation source, ASTRID2, was approved late 2008. First beam is planned for late 2011 with full operation in 2013. • ISA has been involved in many other accelerator projects, ANKA, Canadian Light Source, Australian Light Source, UV-FEL at DESY, Particle Therapy Facility with Siemens.
Already existing or planned	Existing
Unique features	• Electrostatic storage rings are very few worldwide! • UV and soft x-ray synchrotron radiation sources are very few worldwide. Low-emittance machines even fewer.
Present situation / future changes / expected lifetime	Operational since 1992, new ASTRID2 facility to come online in 2012, expected lifetime beyond 2020 foreseen
Accelerator infrastructure or component test infrastructure	The facilities are not intentionally operated as a test infrastructure for accelerator components, although it has happened and also is planned for the future.
Shared facility/infrastructure	Shared
Main user community	Presently around 50 % from abroad, 25 % from Aarhus University, 25% from elsewhere in DK.
Number of users	
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	In particular due to the several Transnational Access programs from EC.
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	15
Contact details (name, Institute, email)	Søren Pape Møller, Ph.D. Dr. Scient Lab. Director +45 8942 3778 - fyssp@phys.au.dk
Annual operating costs (excl. Investment costs) of the infrastructure	1-5 MEUR/year
If open to external users: **(how is the annual operating cost calculated)**	STFR- Special Transition Flat Rate
Estimated investment cost (replacement value)	> 10 MEUR

FINLAND	
Name of the infrastructure	Accelerator Laboratory (JYFL)
Location of infrastructure (town, country)	Jyväskylä, Finland
Web site address	https://www.jyu.fi/accelerator
Legal name of organization operating the infrastructure	University of Jyväskylä
Location of organization (town, country)	Jyväskylä, Finland
Key Accelerator Research Area(s)	
General description of the infrastructure	• University facility • K = 130 MeV AVF cyclotron with various ion sources, • 1.7 MeV Pelletron and new K = 30 MeV cyclotron • EU-FP7-I3 Access Infrastructure – 250 foreign users • See http://www.ensarfp7.eu/ • Research Centre of Excellent of the Academy of Finland
Already existing or planned	Existing since 1991
Unique features	• Leading stable-ion beam facility for NP and applications in Europe - ~ 1pμA.p, He, B, C, N, O, Ar - ~ 100 pn AF, Ne, Mg, Al, Si, S, Cl, Ca, Fe, Cr, Ni, Cu, Zn, Kr - ~ 10 pnA Ti, Mn, Ge, Sr, Zr, Ru, Xe • Unique instrumentation for studi
Present situation / future changes / expected lifetime	• In operation • The K=30 MeV cyclotron just commissioned and the target hall extended by 1000 m2 • No expectations for any decay in activities
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	shared
Main user community	
Number of users	250 foreign users
Open for external users	yes
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	partially EU supported
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	50
Contact details (name, Institute, email)	Rauno Julin, Prof., Laboratory Director, +358-50 5919526 - rauno.julin@jyu.fi
Annual operating costs (excl. Investment costs) of the infrastructure	1-5 MEUR/year 60 % univ.budg. + 40 % outside funding
If open to external users: (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	Foreign investments in instrumentation over 10 MEUR

FRANCE	
Name of the infrastructure	European Synchrotron Radiation Facility
Location of infrastructure (town, country)	ESRF, 6 rue Jules Horowitz, 38000 Grenoble, France
Web site address	http://www.esrf.eu
Legal name of organization operating the infrastructure	ESRF
Location of organization (town, country)	Grenoble, France
Key Accelerator Research Area(s)	Scientific, Medical and Industrial Accelerators
General description of the infrastructure	The European Synchrotron Radiation Facility is a 6 GeV light source of the third generation type. ESRF is specialized in the production of Hard X- rays in a range of 10 to 100 KeV. The operation with high current, a low emittance electron beam and the use of long undulators allows the 40 beamlines to be run with both high spectral flux and high spectral brilliance.
Already existing or planned	Existing
Unique features	very intense brilliance
Present situation / future changes / expected lifetime	
Accelerator infrastructure or component test infrastructure	accelerator infrastructure
Shared facility/infrastructure	yes
Main user community	physicists, Biologists, chemists, material scientists, medical doctors, meteorologists, geophysicists and archaeologists
Number of users	7000
Open for external users	open
If open to external users: **Modality of access to the infrastructure (access unit)**	academic : formal approval of user committe industrial : under signature of provision of services or partnership agreement
Number of access units available for external users	the 40 Beamlines units are divided in seven disciplins.
If open to external users: Support offered by the organization operating the infrastructure	Full technical and administrative support
Review procedure for requested access	Academic : use the ESRF User Portal (SMIS) to submit proposals and experiment reports, Industrials : contact the Business Development Office
How to apply	Academic : register at ESRF User Portal (SMIS) Industrials : contact the Business Development Office
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	75
Contact details (name, Institute, email)	For academix experiment : User Office Phone : +33 (0)4 76 88 25 52 mail : useroff@esrf.fr For business application :Dr. Edward Mitchell Head of Business Development - Phone : +33 (0)4 76 88 26 64 mail : icu@esrf.fr
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

CEA Saclay	
Name of the infrastructure	IPHI @ IRFU/SACM
Location of infrastructure (town, country)	Saclay, France
Web site address	http://irfu.cea.fr//Sacm
Legal name of organization operating the infrastructure	CEA Saclay, Commissariat à l'Energie Atomique et aux Energies Alternatives
Location of organization (town, country)	Saclay, France
Key Accelerator Research Area(s)	Sources and injectors
General description of the infrastructure	IPHI is a proton injector that will accelerate a continuous 100-mA beam at energies up to 3 MeV. It consists of a proton source (SILHI), its low energy beam transport line (95 keV), a radiofrequency quadrupole (RFQ) accelerating cavity, composed of six sections, with an energy range up to 3 MeV, and a diagnostic line designed to measure all the main characteristics of the beam leaving the RFQ
Already existing or planned	Operation planned in 2012
Unique features	100-mA proton CW beam, reliability
Present situation / future changes / expected lifetime	In construction. Start of operation planned for 2012. Expected lifetime: more than 10 years
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure
Shared facility/infrastructure	Infrastructure mainly dedicated to R&D
Main user community	High intensity proton injector designers
Number of users	TBD, a priori 1 or 2 teams per year
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Periods of beam time will be allocated. External users presence requested
Number of access units available for external users	TBD after commissioning
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by CEA, at a cost: manpower for preparing the tests, running of the installation, fluids and electricity. In any case, a presence of some users will be requested
Review procedure for requested access	Either after discussion with CEA, or in the frame of some contract, european or else
How to apply	By contacting SACM Department leader
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	TBD after commissioning of the installation
Number of FTEs operating the infrastructure	4
Contact details (name, Institute, email)	Antoine Daël, CEA Saclay/DSM/IRFU/SACM, antoine dael@cea.fr
Annual operating costs (excl. Investment costs) of the infrastructure	420 kEUR if operated full year (35 kEURmontly)
If open to external users: **(how is the annual operating cost calculated)**	Real cost
Estimated investment cost (replacement value)	13 MEUR (material) + 26 MEUR (manpower)

Name of the infrastructure	SC magnet test facilities @ IRFU/SACM
Location of infrastructure (town, country)	Saclay, France
Web site address	http://irfu.cea.fr//Sacm
Legal name of organization operating the infrastructure	CEA Saclay, Commissariat à l'Energie Atomique et aux Energies Alternatives
Location of organization (town, country)	Saclay, France
Key Accelerator Research Area(s)	SC magnets; Cryogenics
General description of the infrastructure	This facility is composed of four different test facilities: • a test facility with two large round cryostats cooled with supercritical helium: 5 m useful diameter, 4.1 m useful height, 200 W at 4.2 K dedicated refrigerator, 25 kA electrical power supply • an horizontal cryogenic station for tests of magnets and components between 1.8 and 4.2 K: horizontal cryostat 0.6 m useful diameter and 8 m useful length (can be modulated), 25 W at 1.8 K, 20 kA power supply with a stability of 10-4, 160 measuring channels up to 20 kHz • a vertical test facility fitted in a pit, and supplied with liquid helium: 0.88 m useful diameter, maximum height: 7.9 m, electrical power supply: 20 Ka • the SEHT test station with a 587 mm useful diameter at room temperature, enabling to test prototypes or components under a magnetic field up to 8 T
Already existing or planned	Existing
Unique features	A set of several large cryogenic stations for testing SC magnets of various dimensions, and in various cryogenic and magnetic conditions
Present situation / future changes / expected lifetime	In operation for several years. No large change presently planned. Expected lifetime: more than 10 years
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	Infrastructure dedicated to R&D and projects
Main user community	SC magnets and components users
Number of users	Mainly used for CEA projects and R&D
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Periods for assembly and tests will be allocated. External users presence requested during some phases
Number of access units available for external users	Depending on the availability of the part of the installation needed
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by CEA, at a cost: manpower for preparing the tests, assembly, running of the installation, fluids and electricity. In any case, the presence of some users will be requested at some points.
Review procedure for requested access	Either after discussion with CEA, or in the frame of an international contract, european or else
How to apply	By contracting SACM Department leader
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depending on the internal projects going on, and on the facility needed, a priori around 50 %
Number of FTEs operating the infrastructure	4
Contact details (name, Institute, email)	Antoine Daël, CEA Saclay/DSM/IRFU/SACM, antoine.daël@cea.fr
Annual operating costs (excl. Investment costs) of the infrastructure	Average monthly cost for one station: 35 kEUR (about 1 600 kEURyearly if the four stations are simultaneously used, which is unrealistic)
If open to external users: **(how is the annual operating cost calculated)**	Real cost
Estimated investment cost (replacement value)	12 MEUR (material) + 12 MEUR (manpower)

Name of the infrastructure	SELMA @ IRFU/SACM
Location of infrastructure (town, country)	Saclay, France
Web site address	http://irfu.cea.fr/en/Phocea/Vie_des_labos/Ast/ast_technique.php?id_ast=2095
Legal name of organization operating the infrastructure	CEA Saclay, Commissariat à l'Energie Atomique et aux Energies Alternatives
Location of organization (town, country)	Saclay, France
Key Accelerator Research Area(s)	Tests of positron production and accumulation and of conversion of positrons into positronium for the GBAR experiment, a project to measure the antihydrogen free fall at the CERN antiproton decelerator (AD).
General description of the infrastructure	This setup is composed of a compact 5 MeV electron linear accelerator, a target to produce positrons, an e+/e- separator, a moderator to produce slow positrons, a beam line to tranport the slow positrons outside the concrete shielding is split into two beam lines, one of them to study materials after positron implantation. The Linac is powered trough a 2.3 MW magnetron at 200 Hz with 2-4 µs pulses delivering a peak current of 150 mA.
Already existing or planned	Most of setup exists. Second beam line for extra users being planned for 2013. An ongoing project aims at replacing the present moderator with a solid Neon based one in order to increase efficiency by up to a factor 100.
Unique features	Positron sources are usually made from radionuclides such as 22Na. Other setups are located on linac beam lines or nuclear research reactors. The SELMA installation is based on a very compact industrial linac.
Present situation / future changes / expected lifetime	In operation. Second beam line awaiting funding.
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	Infrastructure dedicated to R&D and projects
Main user community	Antihydrogen experiments and materials science.
Number of users	Mainly used for CEA and IN2P3 R&D
Open for external users	Possible after 2014
If open to external users: **Modality of access to the infrastructure (access unit)**	Periods for assembly and tests will be allocated. External users presence requested
Number of access units available for external users	Depending on the availability of the part needed
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by CEA, at a cost: manpower for preparing the tests, assembly, running of the installation, fluids and electricity. In any case, the presence of users will be requested
Review procedure for requested access	Either after discussion with CEA, or in the frame of an international contract, european or else
How to apply	By contacting SELMA leader
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depending on the internal projects going on, a priori around 30 % after 2014
Number of FTEs operating the infrastructure	1 operator + 1 user
Contact details (name, Institute, email)	Patrice Perez, CEA Saclay/DSM/IRFU/SPP, patrice.perez@cea.fr
Annual operating costs (excl. Investment costs) of the infrastructure	TBD
If open to external users: **(how is the annual operating cost calculated)**	-
Estimated investment cost (replacement value)	2 MEUR (material)

Name of the infrastructure	SUPRATECH test facility @ IRFU/SACM
Location of infrastructure (town, country)	Saclay, France
Web site address	http://irfu.cea.fr//Sacm
Legal name of organization operating the infrastructure	CEA Saclay, Commissariat à l'Energie Atomique et aux Energies Alternatives
Location of organization (town, country)	Saclay, France
Key Accelerator Research Area(s)	Cryogenic tests of superconducting cavities and associated components
General description of the infrastructure	This facility is composed of three different parts: • a laboratory horizontal cryostat, Cryholab (property of IRFU and IN2P3): RF power coupler: 700W continuous, up to 1 MW pulsed; cryogenic power; 80 W at 1.8 K; useful aperture: 1.5 m long, 70 cm in diameter • two power coupler test benches: one 1300 MHz test bench capable of pulsed operation at 1.5 MW peak, using 1 ms pulses at a pulse repetition rate of 10 Hz (15 kW mean power); one 704 MHz test bench, 80 kW continuous • three vertical cryostats of variable useable dimensions (0.35 to 0.7 m useful diameter, 0.6 to 1.2 m useful height at 1.7K, 1 to 1.9 m useful height at 4.2 K), with two RF sources (200 W CW, 700 to 1500 MHz, and 80 W CW, 4200 to 8600 MHz)
Already existing or planned	Existing
Unique features	The horizontal cryostat Cryholab enables test on superconducting cavities under condition identical to those in an accelerator, except for the beam presence
Present situation / future changes / expected lifetime	In operation for several years. No large change presently planned. Expected lifetime: more than 10 years
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	Infrastructure dedicated to R&D and projects
Main user community	SC cavities and components users
Number of users	Mainly used for CEA and IN2P3 projects and R&D
Open for external users	Possible when available
If open to external users: **Modality of access to the infrastructure (access unit)**	Periods for assembly and tests will be allocated. External users presence requested
Number of access units available for external users	Depending on the availability of the part of the installation needed
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by CEA, at a cost: manpower for preparing the tests, assembly, running of the installation, fluids and electricity… In any case, the presence of some users will be requested
Review procedure for requested access	Either after discussion with CEA, or in the frame of an international contract, european or else
How to apply	By contracting SACM Department leader
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depending on the internal projects going on, a priori around 30 %
Number of FTEs operating the infrastructure	4
Contact details (name, Institute, email)	Antoine Daël, CEA Saclay/DSM/IRFU/SACM, antoine.daël@cea.fr
Annual operating costs (excl. Investment costs) of the infrastructure	TBD
If open to external users: **(how is the annual operating cost calculated)**	-
Estimated investment cost (replacement value)	5 MEUR (material)

Name of the infrastructure	SUPRATECH cavity preparation laboratories @ IRFU/SACM
Location of infrastructure (town, country)	Saclay, France
Web site address	http://irfu.cea.fr//Sacm
Legal name of organization operating the infrastructure	CEA Saclay, Commissariat à l'Energie Atomique et aux Energies Alternatives
Location of organization (town, country)	Saclay, France
Key Accelerator Research Area(s)	Preparation of superconducting cavities and associated components (surface treatment, assembly)
General description of the infrastructure	This facility is composed of three different parts: • a chemistry laboratory for surface treatment of SC cavities, with 8 fume hoods, storage area for acids and solvents, effluent treatment plant, two ultrasonic degreasing stations • three clean-rooms, with three ISO class sections: 7,5 and 4, for a total of 170 m2 (112m2 for the ISO class 4 clean room), plus washing system, ultra-pure and ultra filtered water loop, high pressure rinsing, 4m3/h pure and ultra pure water plant, 180 kW refrigeration unit, 370 m2 assembly hall • a surface characterization laboratory, with sample preparation equipment, and inspection equipment (optical microscope with camera, glossmeter and precision balances)
Already existing or planned	Existing
Unique features	Area of the ISO class 4 clean room of 112 m2, complete installation enabling the whole preparation and assembly of superconducting cavities
Present situation / future changes / expected lifetime	In operation since 2010. No large change presently planned. Expected lifetime: more than 15 years
Accelerator infrastructure or component test infrastructure	Component assembly infrastructure
Shared facility/infrastructure	Infrastructure dedicated to R&D and projects
Main user community	SC cavities and components users
Number of users	Mainly used for CEA projects and R&D
Open for external users	Possible when available
If open to external users: **Modality of access to the infrastructure (access unit)**	Periods for assembly and tests will be allocated.
Number of access units available for external users	Depending on the availability of the part of the installation needed
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by CEA, at a cost: manpower for preparing the assembly and tests, running of the installation, fluids and electricity.
Review procedure for requested access	Either after discussion with CEA, or in the frame of an international contract, european or else
How to apply	By contracting SACM Department leader
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depending on the internal projects going on, a priori around 30 %
Number of FTEs operating the infrastructure	4
Contact details (name, Institute, email)	Antoine Daël, CEA Saclay/DSM/IRFU/SACM, antoine.daël@cea.fr
Annual operating costs (excl. Investment costs) of the infrastructure	TBD
If open to external users: **(how is the annual operating cost calculated)**	-
Estimated investment cost (replacement value)	2.3 MEUR (material)

CNRS / IN2P3	
Name of the infrastructure	Accelerator and Ion sources Experimental Hall
Location of infrastructure (town, country)	LPSC Grenoble, France
Web site address	http://lpsc.in2p3.fr/index.html
Legal name of organization operating the infrastructure	CNRS, National Center for Scientific Research
Location of organization (town, country)	Paris, France
Key Accelerator Research Area(s)	Sources and injectors, NC magnets,Diagnostics and instrumentation, RF sources, targetry, Medical and Industrial Accelerators
General description of the infrastructure	This infrastructure is composed of five elements: 1) High magnetic field Research and Development platform: The power available at Laboratoire National des Champs Magnétiques Intenses (4 x 15000 A/400 V) will be brought at LPSC with the necessary cooling demineralized water. The R&D platform will permit high frequency ECR ion sources developments and characterization and split magnets developments using high field techniques (polyhelices and Bitter coils). 2) High intensity beam line: The LPSC high intensity beam line (beam line pipe of 160 mm) will be equiped with a high accetance magnetic spectrometer (350 mm horizontal aperture, 150 mm verical aperture, Θ=90°, ρ=700 mm). The available high voltage to be applied on an ion source will be, in a first stage, 60 kV. 3) Gyrotrons: A pulsed or CW operation 28 GHz / 0 to 10 kW gyrotron. 4) Multi Beam Sputtering Experiment: We investigate a new approach for thin film deposition, we have developed a ring of 20 COMIC ion sources where each extracted beam impacts a central conical target. This device is called MBS-20 (for Multi Beam Sputtering) can make uniform deposition.up to 300 mm in diameter inside a very compact device. Since each ion source is indepentant, individual sputterring spot can be tune for each ion source, making the co-evaporation for alloy with a steocheometry control deposition very easy. Copper, Thorium, Ta2O5 with reactive deposition, have been successfuly tested on various substrates like, glass, silicium, mylar or metal A pulsed 60 GHz gyrotron (pulse duration from 50 µs to 1 ms, pulse repetition rate up to 5 Hz, power 10 - 300 kW). Possibly (if COLOSSECRIS Equipex accepted), a 0-15 kW / 60 GHz cw operation gyrotron 5) 1+/n+ test stand: The beam line is composed of two sections, the first one allows to produce and characterize a monocharged ion beam, this 1+ beam can be injected in a charge state breeder in order to multi ionize it. The charge breeding times and the efficiencies can be measured.
Already existing or planned	1) planned for 2014 - 2) existing - 3) Planned for 2014 if project funded - 4) and 5) existing
Unique features	yes
Present situation/future changes/expected lifetime	
Accelerator infrastructure or component test infrastructure	**component test infrastructure**
Shared facility/infrastructure	yes
Main user community	high intensity ECR ion sources developments and high field magnets developments, Ion source developpers, LPSC MIMAC physicists (WIMPS detectors), any thin film technology user, Future Radioactive Ion beam facilities
Number of users	
Open for external users	open
If open to external users: Modality of access to the infrastructure (access unit)	academic: formal approval of user committe and laboratory director industrial: under signature of provision of services or partnership agreement
Number of access units available for external users	

If open to external users: **Support offered by the organization operating the infrastructure**	LNCMI and LPSC technical support
Review procedure for requested access	• Magnets: Through the EUROMAGNETII selection process (http://www.hfml.ru.nl/EuroMagNET2/proposals.shtml) • Others: Evaluated by ion source service manager, agreed by LPSC Direction
How to apply	Contact LPSC Ion Source Service
Can the infrastructure be made available for TIARA?	Yes
If YES,.fraction of time that could be made available to TIARA (%)	20 % to 30%
Number of FTEs operating the infrastructure	2.5
Contact details (name, Institute, email,)	Thierry Lamy, Laboratoire de Physique Subatomique et de Cosmologie, 53 rue des Martyrs, 38026 GRENOBLE CEDEX FRANCE, sortais@lpsc.in2p3.fr, +33-476284049
Annual operating costs (excl. Investment costs) of the infrastructure	460 kEUR
if available: costing model (how is the annual operating cost calculated)	technical staff, liquid nitrogen, liquid helium and electricity
Estimated investment cost (replacement value)	8.9 MEUR

Name of the infrastructure	ALTO
Location of infrastructure (town, country)	Orsay, France
Web site address	http://ipnweb.in2p3.fr/tandem-alto/
Legal name of organization operating the infrastructure	CNRS, National Center for Scientific Research
Location of organization (town, country)	Paris, France
Key Accelerator Research Area(s)	Sources and injectors, targetry
General description of the infrastructure	The main components of the ALTO facility: • A Tandem accelerator • A dedicated laboratory to produce and analyse UCx targets • SIHL: an off-line isotope separator • ALTO Linac: to produce photofission either for radioactive Ion Beam (RIB) production or for testing target/ion source
Already existing or planned	existing
Unique features	Test facilty for.production and analyse of UCx targets
Present situation / future changes / expected lifetime	Futures changes: new laboratory to produce and analyse heavier UCx targets / expected lifetime: 20 years from 2010
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure and also component test infrastructure
Shared facility/infrastructure	Not shared
Main user community	internal users (IN2P3)
Number of users	
Open for external users	Could be open
If open to external users: **Modality of access to the infrastructure (access unit)**	none at the present moment
Number of access units available for external users	100%
If open to external users: Support offered by the organization operating the infrastructure	Two supports are offered: the.complete process is operated by the facility team or the facility is provided to externals users under supervision of facility manager
Review procedure for requested access	request of external user are handled by the facility manager. It needs.authorisation of quality and security service and formal approval of laboratory director where the ALTO facility is located.
How to apply	contact the users committee (called COPS) or facility manager
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	24 (accelerator and test activity included)
Contact details (name, Institute, email)	Abdelhakim SAÏD – Tel. +33-1 69 62 34 - said@ipno.in2p3.fr
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	30 MEUR (replacement value)

Name of the infrastructure	BUMM GANIL
Location of infrastructure (town, country)	Caen, France
Web site address	
Legal name of organization operating the infrastructure	GANIL national heavy ion accelerator, funded by: • CNRS, National Center for Scientific Research • CEA, National Agency for Nuclear Energy
Location of organization (town, country)	Caen, France
Key Accelerator Research Area(s)	
General description of the infrastructure	Universal Bench of Magnetic Measures (BUMM): mapping of many types of magnets with excellent precision in 3D. Dedicated to low/medium energy accelerator magnets. Dedicated power supply going up to 750A / 150V, with excellent stability. Hall probes with a reference magnet for calibration.
Already existing or planned	existing
Unique features	none
Present situation / future changes / expected lifetime	running
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure and also component test infrastructure
Shared facility/infrastructure	Not shared during SPIRAL construction phase (until at least 2016).
Main user community	Magnet designers
Number of users	Only trained / experimented technician from GANIL (3 reasons: difficulty to perform accurate measurements, electrical risks, and facility situated in a zone under French nuclear authority regulation).
Open for external users	open (after SPIRAL2 construction phase)
If open to external users: **Modality of access to the infrastructure (access unit)**	If opened to external users, they should send their magnets to GANIL/SPIRAL2 for a measurement campaign. The facility is not easily accessible to external users (zone under French nuclear authority regulation).
Number of access units available for external users	N.A.
If open to external users: Support offered by the organization operating the infrastructure	Would require full-time support from GANIL team (cannot be operated without)
Review procedure for requested access	N.A.
How to apply	N.A.
Can the infrastructure be made available for TIARA?	Yes, after SPIRAL2 project construction phase
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Marc-Hervé Stodel, GANIL/SPIRAL2 - mhstodel@ganil.fr, or the Director of GANIL (see website: http://pro.ganil-spiral2.eu/laboratory/directors)
Annual operating costs (excl. Investment costs) of the infrastructure	0.5 to 1 FTE
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	150 to 250 kEUR + high pressure water cooling available (shared with the accelerator) + crane / handling equipment available + building (50 m2) + 1 year training on a similar equipment.

Name of the infrastructure	Photo-Injector Station at LAL (called PHIL)
Location of infrastructure (town, country)	Orsay, France
Web site address	http://phil.lal.in2p3.fr/
Legal name of organization operating the infrastructure	National Center for Scientific Research
Location of organization (town, country)	Paris, France
Key Accelerator Research Area(s)	short pulse electron sources
General description of the infrastructure	PHIl is a photoinjector of 5 MeV using a 3GHz Rf gun, and YLF laser as the light source used for photoemission. It produces electrons bunches of 6 ps, 0,1 to 1 nC with repetition rate of 5 Hz
Already existing or planned	existing
Unique features	electron Beam produced(5 MeV, 300 pC, 7 ps) available for experiment
Present situation / future changes / expected lifetime	PHIL is not fully equipped with all the beam diagnostics (emittance, bunch length)
Accelerator infrastructure or component test infrastructure	component test infrastructure
Shared facility/infrastructure	PHIL is not injecting a larger accelerator
Main user community	Accelerator physicists (photoinjector), community interested in a ps pulse electron beam
Number of users	estimated to 2 per year
Open for external users	open
If open to external users: **Modality of access to the infrastructure (access unit)**	PHIL has no users yet. If some users are interested, a yearly planning will be done end reviewed periodically. 50% of the available time will be dedicated to in house experiments on electrons sources
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	Basic infrastructure for the experiments (electricity, network connectivity, office space, internet connections, control room, limited technical support for last minute corrections or modifications). Installation of the experiments will be done by the users
Review procedure for requested access	The requests from external users will be handled by H. Monard, the physicist responsible for PHIL. H. Monard will send the experiment project to the PHIL scientific committee, which will send back its comments to the LAL direction. The LAL direction will decide to go further or not.
How to apply	H. Monard, monard@lal.in2p3,fr, A. Variola, variola@lal.in2p3,fr
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	25%. (50% of the time is reserved for electron sources development inside LAL and 25% for others users)
Number of FTEs operating the infrastructure	Two. There is no personal dedicated to run the beam 8h/day. The operators are now engineers and technician of LAL
Contact details (name, Institute, email)	H Monard, monard@lal.in2p3,fr, A Variola, variola@lal.in2p3,fr - LAL, Bldg 209, Universite Paris-Sud, 91405 ORSAY Cedex
Annual operating costs (excl. Investment costs) of the infrastructure	100 kEUR
If open to external users: **(how is the annual operating cost calculated)**	no costing model is available
Estimated investment cost (replacement value)	

Name of the infrastructure	Power Couplers Devices
Location of infrastructure (town, country)	LAL Orsay, France
Web site address	
Legal name of organization operating the infrastructure	National Center for Scientific Research
Location of organization (town, country)	Paris, France
Key Accelerator Research Area(s)	Surface treatment and RF condionning
General description of the infrastructure	This infrastructure is composed of two devices: 1) a conditioning of power couplers devices composed of.: - a clean room (type 10 class) for couplers assembly - a.RF station for couplers conditioning.composed of.: - a deposit system TiN by cathodic magnetron pulverisation - a RX diffractometer for thin films analyzing 2) Thin films deposit devices
Already existing or planned	existing
Unique features	nanometric scale TiN thin films deposition
Present situation/future changes/expected lifetime	
Accelerator infrastructure or component test infrastructure	**component test infrastructure**
Shared facility/infrastructure	not shared
Main user community	R&D on power coupler team
Number of users	
Open for external users	yes under conditions (priority to LAL)
If open to external users: **Modality of access to the infrastructure (access unit)**	academic: formal approval of user committe and laboratory director industrial: under signature of provision of services or partnership agreement
Number of access units available for external users	none
If open to external users: **Support offered by the organization operating the infrastructure**	LAL.ensure support for the utilisation of the infrastucture, the basic infrastructure if needed (office space, network connectivity, internet…)
Review procedure for requested access	
How to apply	Contact the main responsible by mail at kaabi@lal.in2p3.fr
Can the infrastructure be made available for TIARA?	yes
If YES,.fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	0.5
Contact details (name, Institute, email,)	kaabi@lal.in2p3.fr
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	

Name of the infrastructure	Power couplers test facility
Location of infrastructure (town, country)	LPSC Grenoble, France
Web site address	http://lpsc.in2p3.fr/index.html
Legal name of organization operating the infrastructure	CNRS, National Center for Scientific Research
Location of organization (town, country)	Paris, France
Key Accelerator Research Area(s)	Diagnostic and instrumentation
General description of the infrastructure	Power couplers facility composed of: - a test bench with an amplifier 40 kW CW at 88 MHz and a circulator 40 kW peak at 88 MHz (proprieté of spiral 2 projet) - a 28 m2 clean room (ISO 7) with laminars flow, ultrasonic ban and ultra pure water device
Already existing or planned	existing
Unique features	specific power and frequency
Present situation / future changes / expected lifetime	Conditionning of the spiral 2 coupleur
Accelerator infrastructure or component test infrastructure	component test infrastructure
Shared facility/infrastructure	Shared infrastructure LPSC - Spiral 2 projet
Main user community	
Number of users	1 user till 2013: Spiral 2 coupleurs at 100 %.
Open for external users	Open after 2013
If open to external users: **Modality of access to the infrastructure (access unit)**	• academic: formal approval of user committe and laboratory director • industrial: under signature of provision of services or partnership agreement
Number of access units available for external users	1
If open to external users: Support offered by the organization operating the infrastructure	LPSC will ensure support for the utilisation of the infrastucture, the basic infrastructure if needed (office space, network connectivity, internet…)
Review procedure for requested access	The request from external users will be handled by the responsible of the accelerateur team of the LPSC
How to apply	Please contact the responsible of the accelerateur team of the LPSC: Maud BAYLAC (baylac@lpsc.in2p3.fr)
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	To be precised after 2013
Number of FTEs operating the infrastructure	Till 2013, 2 FTEs
Contact details (name, Institute, email)	Yolanda Gómez Martínez / LPSC responsible of power coupleur for Spiral2 (gomez@lpsc.in2p3.fr)
Annual operating costs (excl. Investment costs) of the infrastructure	8 kEUR
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	100 kEUR (without amplifier and circulator)

Name of the infrastructure	SUPRATECH
Location of infrastructure (town, country)	Orsay, France
Web site address	http://ipnweb.in2p3.fr/~divac/polesupratech/supratech.html
Legal name of organization operating the infrastructure	CNRS, National Center for Scientific Research
Location of organization (town, country)	Paris, France
Key Accelerator Research Area(s)	RF structures, RF sources
General description of the infrastructure	The main components of the SupraTech platform at IPN Orsay: • a 85 m2 clean room for cavity preparation & assembly • a surface treatment lab for cavity chemical polishing • an helium liquefier and its associated gas recovery and storage system • 2 cryogenics test halls equipped with vertical cryostats of several sizes and cavity horizontal test stands • several RF sources at different power and frequency • a cryogenic thermometer calibration station
Already existing or planned	existing
Unique features	all the components have the same location: a complete process can be operated.
Present situation / future changes / expected lifetime	futures changes: increase of cryogenic power to 2K. Expected lifetime: clean room 10 years, cryogenic facility: 20 years.
Accelerator infrastructure or component test infrastructure	component test infrastructure
Shared facility/infrastructure	Yes, with CEA.
Main user community	accelerator designers
Number of users	3 to 4 users (One user is one project)
Open for external users	Yes , under contract for industrial or academic
If open to external users: **Modality of access to the infrastructure (access unit)**	• academic projects without financial flow: proposal to COPS committee (labs user committee) then formal approval of laboratory director • industrial project or academic projects with financial flow: similar to academic procedure with contractualization (provision of services or partnership agreement)
Number of access units available for external users	All components are open to external access.
If open to external users: Support offered by the organization operating the infrastructure	Two supports are offered: the.complete process is operated by the facility team or the facility is provided to externals users under supervision of facility manager. Administrative and financial support is offered by CNRS and lab specific offices, calculated to 5% of the cost of contract.
Review procedure for requested access	request of external user are handled by the facility manager. It needs.authorisation of quality and security service and formal approval of laboratory director where the SUPRATECH facility is located.
How to apply	Contact with the facility manager
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	X %
Number of FTEs operating the infrastructure	6.3 in 2010
Contact details (name, Institute, email)	Facility Manager: Sebastien Bousson, bousson@ipno.in2p3.fr
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	5 MEUR.(plus 600 kEUR for specific adaptation to technical buildings).

Name of the infrastructure	Test stand for nanometer stabilisation: LAViSta
Location of infrastructure (town, country)	Annecy-le-Vieux, France
Web site address	http://lapp.in2p3.fr
Legal name of organization operating the infrastructure	CNRS, National Center for Scientific Research
Location of organization (town, country)	Paris, France
Key Accelerator Research Area(s)	Accelerator technologies: Alignment and stabilisation
General description of the infrastructure	LAViSta is a test stand for mechanical stabilisation at the nanometer scale. This facility was initially designed for the tight stability requirements of future linear colliders (0,1nm at 4Hz). It also provides on site ground motion measurements. The facility is equipped with vibration sensors (geophones, accelerometers), actuators and real time control electronics. Mechanical simulations of vibrating structures are also possible. LAViSta is part of EuCARD european commission Project and within HoMe (Hosting Mechatronics Projects).
Already existing or planned	existing
Unique features	nanometer stabilisation
Present situation / future changes / expected lifetime	Move to Maison de la Mecatronique / HoMe project (Hosting Mechatronics Projects) until at least 2019
Accelerator infrastructure or component test infrastructure	component test infrastructure
Shared facility/infrastructure	HoMe Accelerator Stabilisation Laboratory
Main user community	Mechatronics and Accelerator technologies
Number of users	14
Open for external users	open
If open to external users: **Modality of access to the infrastructure (access unit)**	• academic: HoMe Hosting partners or new partnership agreement • industrial: provision of services or partnership agreement
Number of access units available for external users	A maximum of 25% of facility access will be available for external users.
If open to external users: Support offered by the organization operating the infrastructure	The equipment is under the responsibility of the Hosting Laboratories, which are in charge of the operation, maintenance and safety issues. They agree to provide the personnel to ensure these functions.
Review procedure for requested access	HoMe scientific and executive board will approve operation plan, examine and approve new projects as they may come. The requests from external users will be examined by this board.
How to apply	The facility contact person or the HoMe coordinator.
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	A maximum of 25% of facility access can be made available for TIARA.
Number of FTEs operating the infrastructure	3
Contact details (name, Institute, email)	LAViSta project leader, Andrea JEREMIE at LAPP - andrea@lapp.in2p3.fr
Annual operating costs (excl. Investment costs) of the infrastructure	4'500 EUR/year
If open to external users: **(how is the annual operating cost calculated)**	The costs are estimated taking into account the depreciation of the investment value, plus annual running and manpower costs.
Estimated investment cost (replacement value)	100 kEUR

Grand Accelerateur National Ions Lourds (GANIL)	
Name of the infrastructure	GANIL
Location of infrastructure (town, country)	GANIL, Boulevard Henri Becquerel, 14000 CAEN
Web site address	http://www.ganil-spiral2.eu/
Legal name of organization operating the infrastructure	GANIL, Boulevard Henri Becquerel, 14000 CAEN
Location of organization (town, country)	CAEN, France
Key Accelerator Research Area(s)	Scientific, Medical and Industrial Accelerators
General description of the infrastructure	GANIL has pioneered the study of exotic nuclei with its exotic beams and the LISE, LISE 2000 and SPIRAL facilities (SPIRAL and SPIRAL 2). The current infrastrcuture is divided in seven parts from the ions sources (from a ranging from Helium to Uranium), accelerators (two cyclotrons), the SPIRAL (System for Producing Online Accelerated Radioactive Ions) system, until a experimental chamber (several detectors ans sprectrometers). There are ten experimental areas.
Already existing or planned	Existing (LISE and SPIRAL)and planned (SPIRAL 2)
Unique features	exotic beams
Present situation/future changes/expected lifetime	
Accelerator infrastructure or component test infrastructure	accelerator infrastructure
Shared facility/infrastructure	yes
Main user community	Physicists, Biologists, chemists, material scientists, medical doctors
Number of users	700
Open for external users	open
If open to external users: **Modality of access to the infrastructure (access unit)**	academic : formal approval of user committe industrial : under signature of provision of services or partnership agreement
Number of access units available for external users	
If open to external users:Support offered by the organization operating the infrastructure	Full technical and administrative support
Review procedure for requested access	Academic : contact the Program Advisory Committee Industrials : contact the Business Development Office
How to apply	Related to users guide (download on website http://pro.ganil-spiral2.eu/users-guide)
Can the infrastructure be made available for TIARA?	no
If YES,.fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	240
Contact details (name, Institute, email,)	For academic experiment : the relevant scientific coordinator (depends on the chosen beam) For business application : Bruno Piquet piquet@ganil.fr
Annual operating costs (excl. Investment costs) of the infrastructure	9,3 M euros
if available: costing model (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	400 M euros

Synchrotron SOLEIL	
Name of the infrastructure	Synchrotron SOLEIL
Location of infrastructure (town, country)	Saint Aubin, France
Web site address	http://www.synchrotron-soleil.fr/
Legal name of organization operating the infrastructure	Synchrotron SOLEIL
Location of organization (town, country)	Saint Aubin, France
Key Accelerator Research Area(s)	
General description of the infrastructure	SOLEIL is a 2.75 GeV third generation light source with 21 out of 24 straight sections dedicated for installing insertion devices (IDs). Up to 24 very diverse IDs are now installed on the Storage Ring and 26 beamlines are currently using the photon beam. The spectral range is equally shared above and below the energy of 1.3 keV, with a distribution of 6 beamlines on bending magnets (BM) and 18 on ID beamlines, plus 2 IR beamlines. 4143 hours have been delivered in 2011 to the Beamlines with an availability of 98.4%. and an MTBF of 46 houres.
Already existing or planned	synchrotron light source under operation since 2007
Unique features	
Present situation/future changes/expected lifetime	Expected lifetime more than 20 years
Accelerator infrastructure or component test infrastructure	linac (100 MeV)+ booster (100MeV - 2.75 GeV) + storage ring (2.75 GeV) under operation
Shared facility/infrastructure	mainly for synchrotron light users. 1200 houres per yer for accelerator experiments
Main user community	Biologists, chemists, physicists
Number of users	>2500
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	PEER committees evaluate all proposals twice a year.
Number of access units available for external users	depends on the project
If open to external users:Support offered by the organization operating the infrastructure	If accepted by the PEER committee. Support is not offered for experiments in accelerator fields.
Review procedure for requested access	
How to apply	for experiments on accelerator write to amor.nadji@synchrotron-soleil.fr
Can the infrastructure be made available for TIARA?	Can be discussed
If YES,.fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email,)	Amor NADJI , SYNCHROTRON SOLEIL, amor.nadji@synchrotron-soleil.fr
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	

Name of the infrastructure	Synchrotron SOLEIL; Magnetic measurement laboratory
Location of infrastructure (town, country)	Saint Aubin, France
Web site address	http://www.synchrotron-soleil.fr/
Legal name of organization operating the infrastructure	Synchrotron SOLEIL
Location of organization (town, country)	Saint Aubin, France
Key Accelerator Research Area(s)	Conventional NC magnet systems
General description of the infrastructure	The harmonic analysis bench is designed to charaterize and to tune magnetic properties of multipole magnets, using rotating coils. Magnetic axis position and angle of the magnetic field can be deduced and corrected. The bench can measure magnets which size can go up to 500 mm long and about 2 tonnes weight. It can measure up to 31rst harmonic of magnetic field, and the accuracy of the magnetic centre can be acheived wither 20 µm.
Already existing or planned	already existing
Unique features	
Present situation/future changes/expected lifetime	ready to be used.
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	Infrastructure
Main user community	Particle accelerators
Number of users	
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	contact to marteau@synchrotron-soleil.fr (tehncical contact) or deblay@synchrotron-soleil.fr (administrative contact)
Number of access units available for external users	slots to use the bench are rather open
If open to external users:Support offered by the organization operating the infrastructure	adaptation to the need (new coil, new power supply…); installation of the magnetic elements, tutorial on the magnetic measurement
Review procedure for requested access	no
How to apply	contact marteau@synchrotron-soleil.fr or deblay@synchrotron-soleil.fr
Can the infrastructure be made available for TIARA?	yes, the faisibility and conditions are discussed case by case
If YES,.fraction of time that could be made available to TIARA (%)	25%
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email,)	marteau@synchrotron-soleil.fr or deblay@synchrotron-soleil.fr (couprie@synchrotron-soleil.fr)
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	

GERMANY	
DESY	
Name of the infrastructure	Accelerator Module R&D & Testing at DESY
Location of infrastructure (town, country)	Deutsches Elektronen-Synchrotron (Hamburg, Germany)
Web site address	www.desy.de
Legal name of organization operating the infrastructure	Deutsches Elektronen-Synchrotron
Location of organization (town, country)	Deutsches Elektronen-Synchrotron (Hamburg, Germany)
Key Accelerator Research Area(s)	superconducting linac, accelerator modules, cryostats
General description of the infrastructure	• Cryomodule Text Bench (CMTB) Facility originating from TESLA R&D and European XFEL Preparation Phase • Accelerator Module Test Facility (AMTF) as dedicated European XFEL infrastructure • Cold test of completed accelerator modules
Already existing or planned	• CMTB commissioned in 2006 • AMTF commissioning scheduled for beginning of 2012
Unique features	• CMTB to be used for complete commissioning of accelerator modules (warm coupler conditioning / cold RF test / cryogenic load measurement); adaptation to different module types possible • AMTF includes three module test benches analogue to CMTB, two vertical test cryostats (4 cavities each), wave guide assembly and test infrastructure • Exploitation level: - CMTB up to 5 accelerator modules per year - AMTF typ. 1 accelerator module per week and 8 to 12 vertical cavity.tests per week
Present situation / future changes / expected lifetime	• In operation; 24 hours / 7 days a week • Module / Cavity installation during daytime; testing 24h / 7 days (if required) • Until 2015 main emphasis on European XFEL; some ILC HiGrade activities • Expected lifetime >2015; will remain in operation also after European XFEL commissioning
Accelerator infrastructure or component test infrastructure	• Component test infrastructure • Limited component tests capabilities outside ongoing obligations defined by European XFEL and FLASH incl. ILC R&D
Shared facility/infrastructure	• CMTB shared within actual DESY obligations (FLASH, European XFEL) - Activities within the TESLA Technology Collaboration - Accelerator modules for FLASH incl. ILC R&D and European XFEL Prototyping - Coordination by DESY • - AMTF as dedicated European XFEL infrastructure coordinated by DESY
Main user community	• DESY, and DESY for the European XFEL • TESLA Technology Collaboration • CMTB access to external users not excluded but at present European XFEL activities have highest priorities
Number of users	several
Open for external users	YES
If open to external users: **Modality of access to the infrastructure (access unit)**	Proposals to be made to DESY Access unit could be 'participation in a module test', i.e. some shifts or days, or a 'complete module test' which requires up to 2-4 weeks
Number of access units available for external users	some few, depending on the proposed program
If open to external users: Support offered by the organization operating the infrastructure	Operation of the infrastructure and participation in the test program.

Review procedure for requested access	DESY experts
How to apply	contact DESY
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	fraction depends on the quality of the proposals since the current objective are the XFEL cavity and module tests
Number of FTEs operating the infrastructure	approx. 25
Contact details (name, Institute, email)	Hans Weise / DESY hans.weise@desy.de
Annual operating costs (excl. Investment costs) of the infrastructure	cost range 1-5 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	> 20 MEUR

Name of the infrastructure	ANKA at KIT
Location of infrastructure (town, country)	Karlsruher Institut für Technologie (Karlsruhe, Germany)
Web site address	http://anka.iss.kit.edu/
Legal name of organization operating the infrastructure	Karlsruhe Institute of Technology (Karlsruhe, Germany)
Location of organization (town, country)	Karlsruhe Institute of Technology (Karlsruhe, Germany)
Key Accelerator Research Area(s)	accelerator components, light source, user beam time, superconducting undulators
General description of the infrastructure	• Light Source in user operation • on a regular basis operation in short bunch mode with a low momentum compaction factor • regular accelerator studies to improve operation • regular dedicated accelerator studies (1 day per month) to further improve the understanding of all issues related to short bunch dynamics, high frequency impedances and instrumentation development
Already existing or planned	facility in user operation since 2003
Unique features	• operation at 2.5 GeV, 1.8, 1.6 and 1.3 GeV • variable filling pattern (single bunch, bunch trains or combination) • regular short bunch operation for time resolved studies and for users of coherent THz radiation • superconducting undulators / wigglers. • Exploitation level? Max capacity? • fully (100%) used for base line research in various scientific fields incl. accelerator R&D • 17 photon beamlines with experimental stations (the 2 IR beamlines are available also for accelerator studies) • 1 beamline for beam diagnostics with visible light • typically 4600h of beamtime per year at 2.5 GeV for photon beam users, availability 95%
Present situation / future changes / expected lifetime	• in operation • upgrade with full energy injector planned for 2015/16 • expected lifetime > 2025
Accelerator infrastructure or component test infrastructure	Laboratory and workshop infrastructure for instrumentation/detector preparation, tests, etc. available
Shared facility/infrastructure	Shared with ANKA photon beam users
Main user community	ANKA photon beam users
Number of users	many
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	open access procedure (ANKA beam time review committee ARC)
Number of access units available for external users	~24 days per year (depending on ANKA operation schedule)
If open to external users: Support offered by the organization operating the infrastructure	operation of infrastructure and participation on accelerator related experiments
Review procedure for requested access	ANKA beam time review committee
How to apply	contact ANKA
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	depending on the quality of the proposal; no fix fraction
Number of FTEs operating the infrastructure	10 FTEs (tbc)
Contact details (name, Institute, email)	Anke-Susanne Müller / KIT, anke-susanne.mueller@kit.edu
Annual operating costs (excl. Investment costs) of the infrastructure	cost range 1-5 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	> 20 MEUR

Name of the infrastructure	BERLinPro at HZB
Location of infrastructure (town, country)	Helmholtz Zentrum Berlin (Berlin, Germany)
Web site address	www.helmholtz-berlin.de
Legal name of organization operating the infrastructure	Helmholtz Zentrum Berlin (Berlin, Germany)
Location of organization (town, country)	Helmholtz Zentrum Berlin (Berlin, Germany)
Key Accelerator Research Area(s)	energy recovery linac, superconducting accelerator R&D
General description of the infrastructure	• BERLinPro ERL Physics and Technology demonstration facility.. • Explore ERL parameter space for various potential applications. • Dedicated to accelerator studies.
Already existing or planned	• Planned facility funded by HGF, State of Berlin and HZB. • Funding approval received Oct. 2010.Project Start Ja. 2011 • Staged commissioning of system with first beam around 2016.
Unique features	• CW, high-current (100 mA) operation. • High current SRF Photoinjector. • 5 MeV high-beam-loading CW SRF booster system. • Emittance preserving merger system. • Approx. 50-MeV CW SRF main linac with energy recovery. • Flexible bunch parameters, nominally 77 pC, 2 ps at 1 mm mrad emittance. • Exploitation level? Max capacity? • fully (100%) used for accelerator and ERL technology R&D • Daytime machine studies
Present situation / future changes / expected lifetime	• Development of technical design report under way. • First SRF photoinjector studies under way. • First beam ca. 2016. • Expected lifetime > 2018 • Feasibility of demonstration experiment for users as part of future upgrades being explored.
Accelerator infrastructure or component test infrastructure	• Accelerator infrastructure • Limited component tests capabilities within acc./SRF R&D
Shared facility/infrastructure	• Shared with - BERLinPro collaboration partners - HZB-Humboldt University Joint Laboratory for Accelerator Physics
Main user community	• Laboratories involved in ERL/Accelerator/SRF related R&D. • Open to external labs on a collaborative basis.
Number of users	several
Open for external users	YES
If open to external users: **Modality of access to the infrastructure (access unit)**	Proposals to be made to HZB. Collaboration based.
Number of access units available for external users	depending on the proposed program
If open to external users: Support offered by the organization operating the infrastructure	Operation of the infrastructure and participation in the test program.
Review procedure for requested access	HZB experts
How to apply	contact HZB
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	fraction depends on the quality of the proposals; convince collaboration
Number of FTEs operating the infrastructure	approx. 30
Contact details (name, Institute, email)	Andreas Jankowiak / HZB, andreas.jankowiak@helmholtz-berlin.de
Annual operating costs (excl. Investment costs) of the infrastructure	cost range 1-5 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	> 25 MEUR

Name of the infrastructure	DELTA at TU Dortmund
Location of infrastructure (town, country)	TU Dortmund (Dortmund, Germany)
Web site address	www.delta.tu-dortmund.de
Legal name of organization operating the infrastructure	TU Dortmund (Dortmund, Germany)
Location of organization (town, country)	TU Dortmund (Dortmund, Germany)
Key Accelerator Research Area(s)	storage ring, synchrotron radiation, undulators
General description of the infrastructure	• synchrotron radiation source • operated by university (TU Dortmund) • 1.5 GeV electron storage ring
Already existing or planned	• existing, first beam 1996
Unique features	• superconducting asymmetric wiggler • storage-ring FEL, optical klystron • laser-induced ultrashort VUV radiation pulses (currently being commissioned) • beamline for laser-induced coherent THz radiation (currently being commissioned) • Exploitation level? Max capacity? • 2000 hours/year synchrotron light for users • 1000 hours/year accelerator studies
Present situation / future changes / expected lifetime	• in operation; 24 hours from Monday to Friday • facility for ultrashort VUV and THz pulses completed and under commissioning • new electron gun in summer 2011 (allowing hybrid fill patterns) • several upgrades underway e.g. fast orbit correction, bunch-by-bunch feedback • lifetime: not decided
Accelerator infrastructure or component test infrastructure	• linac + full-energy synchrotron + storage ring • 12 beamlines (6 hard x-ray, 2 soft x-ray, 1 THz, 3 diagnostic) • separate bunker for tests of rf components
Shared facility/infrastructure	• photon beam users
Main user community	• users from universities (mainly within the Land NRW), from Forschungszentrum Jülich and.ISAS (Berlin, Dortmund) • open for external users applying for beamtime
Number of users	many
Open for external users	YES
If open to external users: **Modality of access to the infrastructure (access unit)**	Proposals to be made to DELTA
Number of access units available for external users	depending on the proposed program
If open to external users: Support offered by the organization operating the infrastructure	Operation of the infrastructure and participation in the test program.
Review procedure for requested access	DELTA experts
How to apply	contact DELTA
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	fraction depends on the quality of the proposals
Number of FTEs operating the infrastructure	approx. 15
Contact details (name, Institute, email)	Shaukat Khan / TU Dortmund, shaukat.khan@tu-dortmund.de
Annual operating costs (excl. Investment costs) of the infrastructure	cost range 1-5 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	approx. 40 MEUR

Name of the infrastructure	ELBE at HZDR
Location of infrastructure (town, country)	Helmholtz Zentrum Dresden-Rossendorf (Dresden, Germany)
Web site address	www.hzdr.de
Legal name of organization operating the infrastructure	Helmholtz Zentrum Dresden-Rossendorf (Dresden, Germany)
Location of organization (town, country)	Helmholtz Zentrum Dresden-Rossendorf (Dresden, Germany)
Key Accelerator Research Area(s)	FEL, superconducting accelerator R&D, multiple beam facility, laser plasma acceleration
General description of the infrastructure	• sc cw accelerator for sec. radiation generation (user beams) • multiple beam facility • oscillator FELs (IR) • 150 TW laser (upgrade to PW level in progress), • laser plasma acceleration studies • Accelerator and FEL studies
Already existing or planned	• existing since 2001 • first FEL operation 2004 • first LP acceleration 2009
Unique features	• 40 MeV , 1mA cw e-beam • cw to single electron experiments • 4-280 µm cw FEL beams • Worldwide first sc photo gun operation. • Exploitation level? Max capacity? • 80 % user operation • 10 % accelerator R&D, accelerator studies • IR FELs, Bremsstrahlung beam, positron beam, neutron beam, detector test facility. • operated ~ 5000 h / year
Present situation / future changes / expected lifetime	• 7 days, 24 hour user operation • present upgrade project to 1,5 mA • broad + narrow band THz user facility upgrade • expected lifetime > 10 years
Accelerator infrastructure or component test infrastructure	• Accelerator infrastructure with user facilities • RF test benches (resonant ring > 100kW, SSA test stand)
Shared facility/infrastructure	• SC gun test stand + diagnostic beamline.used in collaboration with HZB and DESY • HZDR uses Hobicat at HZB • shared infrastructures within TTC
Main user community	• IR user facility for external users
Number of users	several
Open for external users	YES
If open to external users: **Modality of access to the infrastructure (access unit)**	Proposals to be made to HZDR
Number of access units available for external users	depending on the proposed program
If open to external users: Support offered by the organization operating the infrastructure	Operation of the infrastructure and participation in the program.
Review procedure for requested access	HZDR experts
How to apply	contact HZDR
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	fraction depends on the quality of the proposals
Number of FTEs operating the infrastructure	20
Contact details (name, Institute, email)	Peter Michel / HZDR, p.michel@HZDR.de
Annual operating costs (excl. Investment costs) of the infrastructure	4.3 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	> 50 MEUR

Name of the infrastructure	FLASH at DESY
Location of infrastructure (town, country)	Deutsches Elektronen-Synchrotron (Hamburg, Germany)
Web site address	www.desy.de
Legal name of organization operating the infrastructure	Deutsches Elektronen-Synchrotron
Location of organization (town, country)	Deutsches Elektronen-Synchrotron (Hamburg, Germany)
Key Accelerator Research Area(s)	FELs, superconducting linac, high brilliance, short bunches
General description of the infrastructure	• Facility originating from TESLA R&D • Now a SASE FEL User Facility (soft X-ray) • Regular accelerator and FEL studies to improve operation and to explore new ideas • fully (100%) used for base line research in various scientific fields incl. accelerator R&D • 5 photon beamlines with two experiments in parallel • one electron beamline for accelerator R&D (requires dedicated beamtime) • >6000 h. of beamtime per year, availability 97%
Already existing or planned	Existing since 1996 First SASE operation in year 2000 Conversion into FLASH user facility in 2003-2005 Extension (FLASH2) started
Unique features	• 1.25 GeV Superconducting Linac (56 TESLA type acc. structures) • High gradient RF gun based photo injector, producing 800 µs long bunch trains at 10 Hz (several thousand bunches per sec.) • Short bunches with low emittance, high charge bunches (<100 fs, 1.mm mrad, 0.1 to 1.5 nC) • SASE FEL user operation between 4.1 and 47 nm wavelength with femtosecond scale pulse duration
Present situation / future changes / expected lifetime	In operation; 24 hours / 7 days a week Next major upgrade scheduled for 2011/2012 Preparation of major acc. R&D efforts typically 1 year in advance Expected lifetime > 2025 (> 10 years parallel operation with European XFEL)
Accelerator infrastructure or component test infrastructure	• Accelerator infrastructure with user facilities • Limited component tests capabilities within acc./FEL R&D
Shared facility/infrastructure	• Shared with - FLASH Photon Beam Users - Members of the TESLA Technology Collaboration - Some future XFEL Users • Coordination of beam time via a Beamtime Allocation Committee (chaired by DESY)
Main user community	• FLASH Photon Beam users (2/3) • FEL and accelerator studies (1/3)
Number of users	many
Open for external users	YES
If open to external users: Modality of access to the infrastructure (access unit)	Proposals to be made to the FLASH Beam Time Allocation Committee
Number of access units available for external users	approx. 50% of total beam time
If open to external users: Support offered by the organization operating the infrastructure	Operation of the FLASH accelerator and ist associated infrastructure.
Review procedure for requested access	Beam Time allocation Committee
How to apply	contact DESY
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	fraction depends on the quality of the proposals since the infrastructure is regularly overbooked
Number of FTEs operating the infrastructure	approx. 80

Contact details (name, Institute, email)	Siegfried Schreiber / DESY, siegfried.schreiber@desy.de
Annual operating costs (excl. Investment costs) of the infrastructure	cost range 5-10 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	>100 MEUR

Name of the infrastructure	FLUTE at KTI
Location of infrastructure (town, country)	Karlsruher Institut für Technologie (Karlsruhe, Germany)
Web site address	http://ankaweb.fzk.de/
Legal name of organization operating the infrastructure	Karlsruhe Institute of Technology (Karlsruhe, Germany)
Location of organization (town, country)	Karlsruhe Institute of Technology (Karlsruhe, Germany)
Key Accelerator Research Area(s)	accelerator test facility, THz source, user experiments
General description of the infrastructure	• accelerator test facility.for a linac based THz source with beam for user experiments • study of bunch compression and generation of coherent radiation in a wide parameter range and with different radiation sources • tests/development of THz detection techniques
Already existing or planned	• planned, first beam 2013 • status: design study in cooperation with PSI
Unique features	wide parameter range, e.g. current range 0.1 - 3 nC, different compression schemes, different radiation source types
Present situation / future changes / expected lifetime	• in design phase • first beam in 2013 • expected lifetime ≈ 2017
Accelerator infrastructure or component test infrastructure	laboratory and workshop infrastructure for instrumentation/detector preparation, tests etc. available
Shared facility/infrastructure	Shared with ANKA photon beam users
Main user community	• accelerator physics • ANKA photon beam users • access open for external users on cooperation basis
Number of users	Several
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	access open for external users on cooperation basis
Number of access units available for external users	About 50% of operating time
If open to external users: Support offered by the organization operating the infrastructure	operation of infrastructure
Review procedure for requested access	none
How to apply	Contact ANKA
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	depending on the quality of the proposal; no fix fraction
Number of FTEs operating the infrastructure	5
Contact details (name, Institute, email)	Anke-Susanne Müller / KIT - anke-susanne.mueller@kit.edu
Annual operating costs (excl. Investment costs) of the infrastructure	cost range <1 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	

Name of the infrastructure	SRF R&D Infrastructure at HZB
Location of infrastructure (town, country)	Helmholtz Zentrum Berlin (Berlin, Germany)
Web site address	www.helmholtz-berlin.de
Legal name of organization operating the infrastructure	Helmholtz Zentrum Berlin (Berlin, Germany)
Location of organization (town, country)	Helmholtz Zentrum Berlin (Berlin, Germany)
Key Accelerator Research Area(s)	superconducting accelerator R&D
General description of the infrastructure	• Facility originated from BESSY FEL R&D for CW SRF Cavities, partially within EuroFEL FP6 Collaboration • Now used for development of CW SRF Systems for BERLinPro • 1.6 K – 4.2 K tests of fully equipped SRF units • Beam tests with SRF photoinjectors
Already existing or planned	• Facility exists since early 2000's • Expansion of system to enable SRF photoinjector tests in 2010. • Further expansion for vertical cavity acceptance tests planned. • Clean room facility for assembly and high-pressure rinsing planned. • Photocathode laboratory for SRF injectors planned.
Unique features	• Complete horizontal system tests of SRF units (including auxilliaries) in CW operation • Horizontal tests of two cavities simultaneously possible • Vertical cavity tests. • SRF Photoinjector tests with beam and beam diagnostics.. • Photocathode production and online/offline characterization. • Exploitation varies, currently 100% and likely to remain so for the foreseeable future. • Max capacity - Horizontal tests: 2 cavity pairs per month - Vertical tests: 1 cavity.per week - Photoinjector tests: several months for one system
Present situation / future changes / expected lifetime	• Presently: In operation 24 hours/7 days per week • Measurements during daytime • Emphasis is on BERLinPro relevant systems, currently SRF Photoinjector with Pb cathode • Upgrade of cleanroom infrastructure planned, including photocathode prep lab. • Upgrade of L-Band transmitters (300 kW klystron, 16 kW Solid State) planned • Expected lifetime: Beyond 2016, will remain in operation after BERLinPro commissioning.
Accelerator infrastructure or component test infrastructure	Component test infrastructure, limited beam measurements possible.
Shared facility/infrastructure	• Facility used for BERLinPro CW SRF cavity/photoinjector R&D • Shared with • BERLinPro collaboration partners • HZB-Humboldt University Joint Laboratory for Accelerator Physics
Main user community	• HZB • TESLA Technology collaboration • GunCluster (HZB, DESY, HZDR, MBI) • Close cooperation with other laboratories working on SRF cavity R&D. • Infrastructure allows support of outside activities including some work from industry (recently: INFN, Saclay, DESY, RI)
Number of users	several
Open for external users	YES
If open to external users: **Modality of access to the infrastructure (access unit)**	Proposals to be made to HZB. Collaboration based.
Number of access units available for external users	depending on the proposed program
If open to external users: Support offered by the organization operating the infrastructure	Operation of the infrastructure and participation in the test program.

Review procedure for requested access	HZB experts
How to apply	contact HZB
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	fraction depends on the quality of the proposals; convince collaboration
Number of FTEs operating the infrastructure	5 FTE
Contact details (name, Institute, email)	Jens Knobloch/HZB, jens.knobloch@helmholtz-berlin.de
Annual operating costs (excl. Investment costs) of the infrastructure	cost range 500-1000 TEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	>10 MEUR

Name of the infrastructure	SRF Cavity R&D at DESY
Location of infrastructure (town, country)	Deutsches Elektronen-Synchrotron (Hamburg, Germany)
Web site address	www.desy.de
Legal name of organization operating the infrastructure	Deutsches Elektronen-Synchrotron
Location of organization (town, country)	Deutsches Elektronen-Synchrotron (Hamburg, Germany)
Key Accelerator Research Area(s)	superconducting accelerator cavities and associated RF couplers, frequency tuners etc.
General description of the infrastructure	• Facility originating from TESLA R&D • Now mostly used for European XFEL preparation and FLASH inc. ILC R&D • Regular preparation of superconducting cavities followed by cold rf tests
Already existing or planned	• - Existing since early 1990ies • First TESLA type cavities tested in 1994 • Regular renewal of infrastructure • Also made available for European XFEL cavity re-treatment
Unique features	Complete infrastructure for superconducting cavity R&D TESLA type acc.structures were treated / tested • State of the art cavity R&D producing highest accelerating gradientsabove 40 MV/m • Two vertical and one horizontal single cavity test stand • Typically 1 cavity per week (preparation / vertical test) • Typically 1 cavity per month (horizontal test) • Cavity string and accelerator module assembly infrastructure • Module test stands (see also separate questionnaire on infrastructure)
Present situation / future changes / expected lifetime	• In operation; 24 hours / 7 days a week • Cavity treatment during daytime; testing 24h / 7 days (if required) • Recent major upgrade of clean room infrastructure • Until 2014 main emphasis on European XFEL; some ILC HiGrade activities • Expected lifetime > 2015; will remain in operation also after European XFEL commissioning
Accelerator infrastructure or component test infrastructure	• Component test infrastructure • Limited component tests capabilities outside ongoing obligations defined by European XFEL and FLASH inc. ILC R&D
Shared facility/infrastructure	• Shared by several projects • Activities within the TESLA Technology Collaboration • Accelerator structures and modules for FLASH, ILC R&D and European XFEL Preparation • Coordination by DESY • Infrastructure allows support of outside activities including some work from industry
Main user community	• DESY, and DESY for the European XFEL • TESLA Technology Collaboration
Number of users	many
Open for external users	Close cooperation with other laboratories working on superconducting cavity R&D
If open to external users: **Modality of access to the infrastructure (access unit)**	Proposals typically develop from the TTC collaborative effort. Decision on a case by case basis. Coordination is with DESY. Access unit could be defined as one cavity preparation followed by a dedicated test.
Number of access units available for external users	At present typically 5-10 per year.
If open to external users: Support offered by the organization operating the infrastructure	Technical support e.g. during clean room preparation and assembly.
Review procedure for requested access	Proposals develop from TTC activities.
How to apply	contact DESY
Can the infrastructure be made available for TIARA?	yes

If YES, fraction of time that could be made available to TIARA (%)	fraction depends on the quality of the proposals since main objectives (see above) have to be observed
Number of FTEs operating the infrastructure	approx. 25
Contact details (name, Institute, email)	Hans Weise / DESY, hans.weise@desy.de
Annual operating costs (excl. Investment costs) of the infrastructure	cost range 1-5 MEUR
If open to external users: **(how is the annual operating cost calculated)**	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	>20 MEUR

GSI	
Name of the infrastructure	GSI UHV Laboratory
Location of infrastructure (town, country)	Darmstadt, Germany
Web site address	http://www-vacuum.gsi.de/
Legal name of organization operating the infrastructure	GSI Helmholtzzentrum für Schwerionenforschung GmbH
Location of organization (town, country)	Darmstadt, Germany
Key Accelerator Research Area(s)	
General description of the infrastructure	Sputter coating of UHV chambers (NEG, Ti) , 2 Pumping Speed Testing benches (PNEUROP, Fischer Mommsen), UHV diagnostic calibration , UHV test benches (< 10E-11mbar), Outgasing measurements of materials under UHV conditions, Ultrasonic cleaning facilities
Already existing or planned	
Unique features	UHV < 10E-11mbar, NEG coating facilities, Surface analysis, Ultrasonic cleaning of large chambers (up to 4m length, 1m diameter),
Present situation / future changes / expected lifetime	R&D for FAIR and GSI accelerator upgrades
Accelerator infrastructure or component test infrastructure	UHV acceptance testing, R&D on cryogenic UHV systems
Shared facility/infrastructure	
Main user community	GSI, FAIR
Number of users	
Open for external users	Depending on free capacity
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	appr. 20 FTE working on UHV R&D, system design and operation,
Contact details (name, Institute, email)	
Annual operating costs (excl. Investment costs) of the infrastructure	not available
If open to external users: **(how is the annual operating cost calculated)**	not available
Estimated investment cost (replacement value)	not available

Name of the infrastructure	GSI Prototype Magnet test facility
Location of infrastructure (town, country)	Darmstadt, Germany
Web site address	http://www.gsi.de/beschleuniger/groups/MT/index.html
Legal name of organization operating the infrastructure	GSI Helmholtzzentrum für Schwerioneneforschung GmbH
Location of organization (town, country)	Darmstadt, Germany
Key Accelerator Research Area(s)	
General description of the infrastructure	Test facility for testing of superconducting, fast ramped accelerator magnets (up to 4 T/s). Cooling power of 300 W @ 4 K. Two test benches, one equipped with an universal cryostat (3.5 m length). Power supply with 11 kA. Magnetic measurement within an anti cryostat
Already existing or planned	Existing. An upgrade to 17 kA is planned. A series test facility is also planned
Unique features	Two phase cooling stream up to 5 g/s; one phase supercritical cooling stream up to 200 g/s; sub cooling down to 3.8 K. In one bench: 1-2 Helium in lines; 2-3 Helium return lines; 1 shield line (but with 4 K supply). Universal cryostat with different shields and a cooled table (down to 10 K).
Present situation / future changes / expected lifetime	100% booked/ Upgrade of power supply and new HTC-current leads/10-20years
Accelerator infrastructure or component test infrastructure	Component test facility
Shared facility/infrastructure	No
Main user community	Superconducting magnet group of GSI. The universal cryostat is open for external users
Number of users	
Open for external users	The universal cryostat is open for external users
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	4
Contact details (name, Institute, email)	
Annual operating costs (excl. Investment costs) of the infrastructure	200 kEUR/a
If open to external users: (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	3 MEUR

Name of the infrastructure	SC CW Linac Demonstrator
Location of infrastructure (town, country)	Darmstadt, Germany
Web site address	http://www-inj.gsi.de/index.php?section=1
Legal name of organization operating the infrastructure	GSI Helmholtzzentrum für Schwerioneneforschung GmbH
Location of organization (town, country)	Darmstadt, Germany
Key Accelerator Research Area(s)	
General description of the infrastructure	A new superconducting (sc) continuous wave (cw) LINAC at GSI is desired by a broad community of future users. Especially the Super Heavy Elements (SHE) program at GSI and HIM benefits highly from such a dedicated machine. The first section of the proposed cw-LINAC comprising a sc Crossbar-H (CH) cavity embedded by two sc solenoids is financed by HIM mainly as a Demonstrator.
Already existing or planned	A conceptual layout of an sc cw-LINAC was worked out at the Goethe University Frankfurt/Institute of Applied Physics (IAP). Here the key component, a CH cavity, was developed recently. The multi-gap cavity is operated at 217 MHz and provides gradients of 5.1 MV/m at a total length of 0.69 m. An important milestone of the ongoing R&D-project is a full performance test with beam of the Demonstrator in 2013/14 at the GSI High Charge State Injector (HLI).
Unique features	First SRF-project at GSI. Proof of principle of the CH-cavity: first full performance tests with heavy ions of a sc CH-cavity; cw-operation. Challenging magnetic shielding.
Present situation / future changes / expected lifetime	Presently: Ordering and fabrication of components, setup strategy, beam dynamical investigations. Tests with beam in 2013/2014. R&D project for the cw-LINAC, earliest commissioning of the cw-LINAC in 2017+
Accelerator infrastructure or component test infrastructure	full performance tests with beam at GSI-HLI, complete infrastructure of a former experimental area available.
Shared facility/infrastructure	Preferably the HLI will run in a " (pulse to pulse) time sharing mode providing beam for the UNILAC as well as for the demonstrator
Main user community	collaboration project between GSI, HIM and IAP
Number of users	20/year
Open for external users	not planned
If open to external users: **Modality of access to the infrastructure (access unit)**	-
Number of access units available for external users	-
If open to external users: Support offered by the organization operating the infrastructure	-
Review procedure for requested access	-
How to apply	-
Can the infrastructure be made available for TIARA?	probably no
If YES, fraction of time that could be made available to TIARA (%)	-
Number of FTEs operating the infrastructure	3 (no full cost)
Contact details (name, Institute, email)	W. Barth (W.Barth@gsi.de), S. Mickat (S.MIckat@gsi.de), GSI, LINAC-department
Annual operating costs (excl. Investment costs) of the infrastructure	LHe-Supply: 20 kEURper week, 20 kEUR (power consumption for Demonstrator and shared use of the HLI)
If open to external users: **(how is the annual operating cost calculated)**	Direct operation cost, without overheads
Estimated investment cost (replacement value)	1.2 MEUR (provided by HIM), approx. 0.3 MEUR (provided by HGF-ARD)

ITALY	
Name of the infrastructure	Applied Superconductivity Laboratory
Location of infrastructure (town, country)	Genova, Italy
Web site address	http://www.ge.infn.it
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Sezione di Genova
Location of organization (town, country)	Genova, Italy
Key Accelerator Research Area(s)	SC Magnets
General description of the infrastructure	The Genova laboratory is active since 25 years on superconductivity applied to accelerator machines: 1) Techniques for electrical characterization of superconducting cables up to currents of 100 kA. The main tool related to this activity is the facility Ma.Ri.S.A. allowing measurement in the field range 0-8 T and temperature 1 to 300 K in a large bore (400 mm). 2) Characterization of superconducting materials. The characterization of materials (in form of wire, tapes or films) is made via electrical and magnetic measurements: resistivity vs temperature, critical current, ac susceptibility, ac magnetization. Temperature range 1 to 300 K; Magnetic field range 0 to 14 T
Already existing or planned	Existing
Unique features	Critical current measurements of SC cable up to 100kA
Present situation / future changes / expected lifetime	The superconducting facilities are all operative. No upgrades are planned
Accelerator infrastructure or component test infrastructure	Component test infrastructure for SC cables and material
Shared facility/infrastructure	Single user facility
Main user community	Superconducting wire measurements for cable and magnet developers
Number of users	
Open for external users	Yes. Under ad hoc agreement
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	3
Contact details (name, Institute, email)	Pasquale Fabbricatore, INFN Sezione di Genova, via Dodecaneso 33 - 16146 Genova Italy, +39-010 3536340 - pasquale.fabbricatore@ge.infn.it
Annual operating costs (excl. Investment costs) of the infrastructure	at 50% usage minimum cost is 50 kEUR/year
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	1 MEUR cryogenic plants - 1 MEUR SC magnets and ancillaries

Name of the infrastructure	CATANA and LNS-IF Life Science and Materials Science Applications
Location of infrastructure (town, country)	Catania, Italy
Web site address	http://www.lns.infn.it, http://www.policlinico.unict.it/Adroterapia/def.htm
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare Laboratori Nazionali del Sud and Azienda Ospedaliero Universitaria "Policlinico - Vittorio Emanuele" di Catania
Location of organization (town, country)	Catania, Italy
Key Accelerator Research Area(s)	External radiotherapy with proton beams, development and characterisation of detectors for dosimetric applications, radiobiology studies, radiation hardness of electronic components
General description of the infrastructure	A facility dedicated to the applications of Nuclear physics is available at LNS. Particularly the first Italian protontherapy facility is in operation since 2002. It is devoted to ocular tumours treatments. This beam line is used as test equipment for clinical dosimetry, detector tests, radiobiology and materials irradiations. Moreover a facility for materials irradiations, detector tests with light ions (up to Iron) is in operation. It is qualified as an ESA irradiation facility for ions from proton to iron.
Already existing or planned	Operating since 2002.
Unique features	First protontherapy facility in Italy. ESA qualified irradiation facility. External irradiation facility with the capability to deliver a proton dose with an error of 3% or less.
Present situation / future changes / expected lifetime	The facility is well organized and able to support clinical dosimetry, detectors tests, materials irradiation, radiobiology scientific programs
Accelerator infrastructure or component test infrastructure	Clinical infrastructure, ESA approved beam tests for materials and detectors qualification for space applications.
Shared facility/infrastructure	Yes
Main user community	Life Science (60%), ESA Qualification (20%), Detectors test (20%)
Number of users	70
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	1 BTU (Beam Time Unit) = 8 hours
Number of access units available for external users	60
If open to external users: Support offered by the organization operating the infrastructure	Support is offered by the standard User Services of LNS concerning the in-vacuum beam transport part. The in-air beam transport, the in-air beam diagnostics and the absolute and relative dosimetry as well as the sample positioning are supported by the CATANA Group
Review procedure for requested access	Submission of experimental proposals to the INFN-LNS Scientific Committee, possible support from ENSAR Transnational access. Beam time also allocated by the LNS Director (typically for tests).
How to apply	Electronic submission through the LNS website after Call for experimental proposals (once per year). Request to the LNS Director.
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	0.2
Number of FTEs operating the infrastructure	5 FTE
Contact details (name, Institute, email)	G.A.Pablo Cirrone - INFN-LNS, Via S. Sofia 62, 95123 Catania, Italy cirrone@lns.infn.it, Tel +39-095 542294
Annual operating costs (excl. Investment costs) of the infrastructure	40 kEUR/year
If open to external users: **(how is the annual operating cost calculated)**	25 KE/year is devoted to the maintenance necessary for the requested clinical standards; 15 KE /year for standard diagnostic detectors, plastics for the modulators construction and update, maintenance of the devices for the sample positioning under the beam
Estimated investment cost (replacement value)	N/A

Name of the infrastructure	CNAO (Centro Nazionale di Adroterapia Oncologica)
Location of infrastructure (town, country)	Strada Campeggi, 53 27100 Pavia, Italy
Web site address	http://www.cnao.it
Legal name of organization operating the infrastructure	Fondazione Centro Nazionale di Adroterapia Oncologica
Location of organization (town, country)	Pavia, Italy
Key Accelerator Research Area(s)	Conventional NC magnet systems, Diagnostics and instrumentation, Radiation issues, Sources and Injectors, Beam Dynamics, Medical and Industrial Accelerators, Accelerator Design,
General description of the infrastructure	The CNAO is the first Italian center for deep hadrontherapy. The main accelerator is a synchrotron capable to accelerate carbon ions up to 400 MeV/u and protons up to 250 MeV. Four treatment lines, in three treatment rooms, are foreseen in a first stage. All the treatment rooms are equipped with an horizontal beam line and the central room has also a vertical one. The CNAO facility, has been designed for a completely active beam delivery system, in which a pencil beam is scanned transversely and the extracted beam energy can be changed on a spill to spill basis to obtain the best possible 3D dose conformation to the tumor. The CNAO injector is composed of two ECR sources with a combined transfer line that brings the beam to a single RFQ/LINAC system which accelerates the beam to 7 MeV/u for injection into the synchrotron. A fourth room, dedicated only to experimental activities is being designed and will be built in the next future.
Already existing or planned	Existing. The commissioning of the synchrotron started in August 2010 and at the beginning of 2011 the first Spread Out Bragg Peaks with protons was measured in a treatment room. Before starting to treat patients, tests on cells and on mice were performed. Treatments started in September 2011 with protons and in November 2012 with carbon ions. The experimental room and line are in a design phase.
Unique features	CNAO is one of the six existing centers for treatment with carbon ions worldwide. It features a special extraction system, the so called amplitude-momentum selection, based on a betatron core.
Present situation / future changes / expected lifetime	The CNAO is working routinely providing daily treatments in the three treatment rooms and it is expected to have a lifetime of 25-30 years. As mentioned above an additional room for experimental activities is under study and will be put in operation in the next future. Future expansions of the center are possible, e.g. gantries, but are not scheduled yet. Radio biology tests, like RBE measurements and survival curves, are performed in the treatment room where online monitoring studies, beam scanning and tumor tracking developments are also carried out. Additional experimental possibilities will be added with the experimental room including radiation hardness studies, beam monitor development and other possible subjects with beams in the energy and intensity range of hadrontherapy.
Accelerator infrastructure or component test infrastructure	Both
Shared facility/infrastructure	Facility shared between therapy and research.
Main user community	Main community is: Medical doctors, medical physicists, radiobiologists, accelerator physicists, nuclear physicists and scientists interested in beam monitor development.
Number of users	
Open for external users	Open under ad-hoc agrement.
If open to external users: **Modality of access to the infrastructure (access unit)**	Open under ad-hoc agrement.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	Discussion on the beam characteristics available, on the space and infrastructure for planning the experiment. Operation of the accelerator and a basic radiobiology lab.
Review procedure for requested access	

How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Marco Pullia, Fondazione CNAO, Tel +39 0382 078 468, marco.pullia@cnao.it
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	DAFNE
Location of infrastructure (town, country)	Frascati, Italy
Web site address	http://www.lnf.infn.it/acceleratori
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Laboratorio Nazionale di Frascati
Location of organization (town, country)	Frascati, Italy
Key Accelerator Research Area(s)	Accelerator design, Beam Dynamics
General description of the infrastructure	DAFNE is an e+e- collider at 510 MeV beam energy aiming at producing F mesons for CP violation in kaon decays and nuclear physics studies. The peak luminosity L = 4.53 1032 cm-2s-1 is the maximum ever achieved in this energy range. Four different experiments KLOE, DEAR, Finuda and Siddharta, have been operated in different periods in one of the the 2 interaction regions. The crab waist scheme, proposed to achieve ultra high luminosity for the future B-factories, has been successfully tested at DAFNE during the Siddharta run. The accelerator complex consists of a double-ring collider, a 800 MeV linear accelerator and an intermediate damping ring. The beam accelerated by the Linac can also be sent into a laboratory called Beam Test Facility (BTF), for dedicated experiments and calibration of detectors. Three synchrotron radiation lines, two from bending dipoles and the other from the wiggler are routinely operated by the DAFNE-LIGHT group in a parasitic mode, providing photons from the infrared to soft x-rays.
Already existing or planned	In operation since 1998
Unique features	Unique lepton collider operating at this energy. Record luminosity in this energy range. High current collider routinely operated with ~1A positrons and ~ 1.5 A electrons.
Present situation / future changes / expected lifetime	DAFNE has been upgraded to apply the crab-waist scheme in the presence of a strong detector solenoid and is ready for a new run of the KLOE detector. Expected lifetime 6 years.
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure. Component tests are performed at BTF.
Shared facility/infrastructure	Yes
Main user community	Main users of DAFNE are the physicists of the KLOE detector; BTF and DAFNE-LIGHT are operated parassitically.
Number of users	
Open for external users	Yes. Limited time is available for machine studies that are open to external users in the form of collaborations. Both BTF and DAFNE_LIGHT are open to external users.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	TBD
Number of FTEs operating the infrastructure	~60 FTEs
Contact details (name, Institute, email)	Susanna Guiducci, +39-0694032221, susanna.guiducci@lnf.infn.it - INFN LNF CP13, 00044 Frascati (RM) Italy
Annual operating costs (excl. Investment costs) of the infrastructure	Average operation cost: 2.5 MEUR/year for electricity; 1.0 MEUR/year for maintenance
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	construction budget ~100 MEUR

Name of the infrastructure	Elettra
Location of infrastructure (town, country)	Strada Statale 14 - km 163,5 in AREA Science Park 34149 Basovizza, Trieste ITALY
Web site address	http://www.elettra.eu
Legal name of organization operating the infrastructure	SINCROTRONE TRIESTE S.C.p.A.
Location of organization (town, country)	Trieste, Italy
Key Accelerator Research Area(s)	Conventional NC magnet systems, RF Systems, Electronics and Software, UHV, Accelerator Design, FEL processes, Diagnostics and instrumentation, SC magnets, RF sources, Beam Dynamics,
General description of the infrastructure	Elettra is a 2.4 GeV, 259 m circumference, third generation synchrotron light source that came into operation in 1993. It has been optimised to provide the scientific community with photons in the energy range from a few eV to 35 KeV with spectral brightness of up to 1019 photons/s/mm2/mrad2/0.1%bw and is continuously upgraded in order to be competitive with the most recent sources. Since 2010 operates in the top-up mode. The storage ring has 11 straight section with planar and apple II polarising undulators, permanent magnet, electromagnetic and superconducting wigglers, canted undulators and short undulators that serve 18 beam lines while 2 more are in construction. Additionally there are 9 beam lines from 6 bending magnet ports.
Already existing or planned	Existing.
Unique features	Wide range of reliable operating energy. In the past operated also at 0.7 to 1 GeV for the SR-FEL and for THz studies after establishing coherent infrared radiation. The machine currently operates at 2 GeV for the 75% and at 2.4 GeV for the 25% of the user dedicated time. The emittance of the storage ring 6.8 nmrad is the closed to the theoretical minimum for a double bend achromat. Its SR-FEL recently upgraded in energy from 1 to 1.8GeV achieving coherent emission at a wavelegth of 80 nm.
Present situation / future changes / expected lifetime	Maximum electron energy 2.4 GeV. Studies have been initiated for future upgrades, e.g., in energy (up to 2.7 GeV and, in lattice (install skew elements). There are also plans for installing in-vacuum undulators and super-bends to increase the maximum photon energy and flux / brilliance. Expected facility lifetime 20 more years.
Accelerator infrastructure or component test infrastructure	Both
Shared facility/infrastructure	User dedicated facility.
Main user community	Synchrotron radiation community.
Number of users	+50
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	5000 hours/year devided in three 8-hour shifts per day are dedicated to the users on a H24/D7 basis. Additionally there are about 1500 hours dedicated to accelerator improvement and experiments.
Number of access units available for external users	See above
If open to external users: Support offered by the organization operating the infrastructure	Users may benefit from partial or total reimbursement of travel and living expenses during their stay, thanks to specific programs or agreements between institutions. They can also also use the laboratory support infrastructure.
Review procedure for requested access	Dates for external users will be assigned based on international peer-review sessions, which are performed twice a year. One or more contiguous shifts may be assigned to a single experiment. About 800 experimental proposals are received each year from more than 40 countries. Access to Elettra beam lines is provided to scientists on the basis of the scientific merit of their experimental proposals. Proposal selection is performed through a peer-review by an independent Proposal Review Panel of world renowned experts in synchrotron radiation research and applications.
How to apply	Please follow the link: https://www.elettra.eu/userarea/apbt.html

Can the infrastructure be made available for TIARA?	A fraction of the running time dedicated to accelerator studies may be dedicated to TIARA.
If YES, fraction of time that could be made available to TIARA (%)	The fraction varies according to the proposals received, but can be up to 30% of the time devoted to accelerator studies.
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Elettra Synchrotron Light Source Project Director: Emanuel Karantzoulis, Elettra-Sincrotrone Trieste, emanuel.karantzoulis@elettra.eu
Annual operating costs (excl. Investment costs) of the infrastructure	The annual operating costs of the infrastructure is roughly 8 MEUR
If open to external users: **(how is the annual operating cost calculated)**	Direct operating costs, without overheads.
Estimated investment cost (replacement value)	100 MEUR

Name of the infrastructure	EXCYT
Location of infrastructure (town, country)	Catania, Italy
Web site address	http://www.lns.infn.it
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Laboratori Nazionali del Sud
Location of organization (town, country)	Catania, Italy
Key Accelerator Research Area(s)	Targetry, RIB production
General description of the infrastructure	EXCYT has been the first Italian ISOL facility for light radioactive ion beams production. The K800 Superconducting Cyclotron CS (most perfoming in Europe) is used as a primary machine accelerating light ions up to a power of 500 W, and the 15 MV Tandem is used as a post accelerator. A production facility has been realized consisting of an ISOL Target and an isobaric mass separator with a nominal resolution of 1/20000. Low and high energy beam diagnostic devices have been realized and installed.
Already existing or planned	Operating since 2005. Tandem operational since 1983 and CS since 1995.
Unique features	EXCYT is a first generation ISOL Facility, realized with a limited budget. It can be considered a well designed facility operating mainly for nuclear physics and nuclear astrophysics. It can be also used as a test bench for the future radioactive ion beam facilities.
Present situation / future changes / expected lifetime	Presently only the 8Li beam has been developed and delivered to experiments. New beams will be developed taking account of the users demand. Technological efforts are being pursued to have a variety of radioactive beams developed at the facility.
Accelerator infrastructure or component test infrastructure	Test site for future ISOL facilities.
Shared facility/infrastructure	Yes
Main user community	Nuclear Physics
Number of users	150
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	1 BTU (Beam Time Unit) = 8 hours
Number of access units available for external users	260 BTU/year
If open to external users: Support offered by the organization operating the infrastructure	Guesthouse. Technical support on the experimental setup.
Review procedure for requested access	Submission of experimental proposals to the INFN-LNS Scientific Committee, possible support from ENSAR Transnational access. Beam time also allocated by the LNS Director (typically for tests).
How to apply	Electronic submission through the LNS website after Call for experimental proposals (once per year). Request to the LNS Director.
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	20
Number of FTEs operating the infrastructure	38 FTE
Contact details (name, Institute, email)	Danilo Rifuggiato, INFN-LNS, Via S. Sofia 62, 95123 Catania, Italy, rifuggiato@lns.infn.it, +39 095 542257
Annual operating costs (excl. Investment costs) of the infrastructure	300 kEUR/year the ISOL facility, 800 kEUR/year the CS and 100 kEUR/year the Tandem
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	N/A

Name of the infrastructure	Facility for high power proton/ion linac Front Ends
Location of infrastructure (town, country)	Legnaro, Italy
Web site address	http://www.lnl.infn.it
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Laboratorio Nazionale di Legnaro, Sections of Padova, Torino and Bologna
Location of organization (town, country)	Legnaro, Italy
Key Accelerator Research Area(s)	Sources and Injectors
General description of the infrastructure	The infrastructure for the design and realization of front end systems for high power accelerator complexes (IFMIF, TRASCO, ESS, etc.). Infrastructures include (at LNL, Padova and Torino) a low energy beam test area (sources), RF structures test area, high vacuum brazing oven (1200 mm diameter, 2000 high) with associated mounting laboratory, various high precision machines for production and dimensional check of mechanical structures (two EDM machines with 550mm stroke, a high precision 5 axis milling, a CMM)
Already existing or planned	Existing
Unique features	Possibility to design, prototype and test various normal conducting structures, in particular with high power dissipation.
Present situation / future changes / expected lifetime	The structure is presently fully dedicated to the realization of the RFQ for IFMIF EVEDA project. Future involvement foreseen for ESS construction of small intense neutron sources for medical applications...
Accelerator infrastructure or component test infrastructure	Components test infrastructure
Shared facility/infrastructure	
Main user community	Development of particle accelerators for various application communities
Number of users	
Open for external users	Possible in the future
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	10
Contact details (name, Institute, email)	Andrea Pisent INFN LNL, andrea.pisent@lnl.infn.it
Annual operating costs (excl. Investment costs) of the infrastructure	40 kEUR
If open to external users: (how is the annual operating cost calculated)	Personnel not included
Estimated investment cost (replacement value)	5 MEUR

Name of the infrastructure	FERMI@Elettra
Location of infrastructure (town, country)	TRIESTE, ITALY
Web site address	http://www.elettra.trieste.it
Legal name of organization operating the infrastructure	SINCROTRONE TRIESTE S.C.p.A.
Location of organization (town, country)	TRIESTE, ITALY
Key Accelerator Research Area(s)	High brightness Photocathode Guns, Low Level RF control systems, X-band RF systems, Radiofrequency deflection systems, Power Supplies for Magnets, Optical Timing systems, Cavity Beam Position Monitors, Undulators, Laser systems, Electron and Photon Detection systems, FEL schemes with external seeding, Photon Optical systems.
General description of the infrastructure	FERMI@Elettra is a single-pass FEL user-facility covering the wavelength range from 100 nm to 4 nm in the first harmonic. It uses a normal conducting 3 GHz linear accelerator to generate an electron beam at energy of 1.5 GeV that is made to propagate through a series of undulators, at a repetition rate of 50 Hz. A conventional laser superposed to the electron beam in the first undulator (seeding) is utilized to induce coherent emission, which is exponentially amplified when the electrons propagate through the following undulator magnetic field. There are two series of undulators, FEL-1 covering the wavelength range from 100 nm to 20 nm and FEL-2 covering the wavelength range from 20 nm to 4 nm. FERMI was developed to provide ultrashort (10-100 femtosecond) pulses with peak brightness ten billion times higher than that made available by third-generation light sources. A test stand for photocathode RF guns, at 3 GHz, will be available in 2013.
Already existing or planned	Existing.
Unique features	FERMI@Elettra is unique in many respects. The implemented seeded FEL scheme guarantees the generation of high transversely and longitudinally coherent pulses and the use of APPLE II-type undulators allows for variable polarization, from completely linear both horizontally and vertically to circular in both directions. FERMI@Elettra is opening unique opportunities for exploring the structure and transient states of condensed matter, soft matter and low-density matter using a variety of diffraction, scattering and spectroscopy techniques.
Present situation / future changes / expected lifetime	First FEL line (FEL-1, 100 to 20 nm) in commissioning, will be opened for external users end of 2012. Second FEL line (FEL-2, 20 to 4 nm) installed, commissioning starts 2012, will be opened for external users' end of 2013. Expected lifetime: 20+ years.
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure.
Shared facility/infrastructure	FERMI@Elettra is a user dedicated facility.
Main user community	Synchrotron radiation community.
Number of users	Estimated to XX per year.
Open for external users	Yes (starting from second semester 2012).
If open to external users: **Modality of access to the infrastructure (access unit)**	FERMI@Elettra operation is based on several runs per year. During each run the machine is running on a H24/D7 basis. A given time percentage of each run, still to be decided will be allocated for experiments performed by external users. The remaining time fraction will be dedicated to accelerator and FEL upgrades, as well as to optimization and research studies. Dates for external users will be assigned based on the proposal selection process which will be performed twice a year. One experiment (one access unit) may have assigned one or more 8 hours shifts, possibly in several sequences. Preparation of the experiment will depend on the experiment complexity and will require a few days of presence.

Number of access units available for external users	The number of access units available for external users has still to be defined and may vary from experiment (access unit) to experiment.
If open to external users:Support offered by the organization operating the infrastructure	Users may benefit from partial or total reimbursement of travel and living expenses during their stay, thanks to specific programs or agreements between institutions.
Review procedure for requested access	Access to FERMI beam lines is provided to scientists on the basis of the scientific merit of experimental proposals. Proposal selection is done through a peer-review by an independent Proposal Review Panel of world-renowned experts in synchrotron radiation research and applications.
How to apply	Please follow the link below for information about how to apply: http://www.elettra.trieste.it/UserOffice/index.php?n=Main.FermiDeadlineForProposalSubmission.
Can the infrastructure be made available for TIARA?	YES
If YES, fraction of time that could be made available to TIARA (%)	XX % - A fraction of the running time dedicated to accelerator studies may be made available for TIARA.
Number of FTEs operating the infrastructure	XX FTE
Contact details (name, Institute, email)	FERMI@Elettra Project Director: Michele Svandrlik, Sincrotrone Trieste, michele.svandrlik@elettra.trieste.it
Annual operating costs (excl. Investment costs) of the infrastructure	Our present estimate of the annual operating costs of the infrastructure is roughly equal to 15 MEUR.
If open to external users: **(how is the annual operating cost calculated)**	Direct operating costs, without overheads.
Estimated investment cost (replacement value)	165 MEUR

Name of the infrastructure	Ion Beam production laboratory
Location of infrastructure (town, country)	Catania, Italy
Web site address	http://www.lns.infn.it
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare
Location of organization (town, country)	Catania, Italy
Key Accelerator Research Area(s)	Sources and Injectors
General description of the infrastructure	Since 1996 the INFN-LNS has been involved in different projects aimed to the production of high intensity beams of monocharged and multicharged ions. Different setups have been put in operation that produce high density plasmas by means of microwaves or lasers, either for pulsed and for cw beams (e.g. 50 mA of protons with low emittance for high power accelerators, hundreds of µA of highly charged heavy ions). The need of high performances ECR ion sources for the Superconducting Cyclotron has triggered the development of the SERSE and CAESAR source; in particular the former was for many years the most powerful tool for the production of highly charged ions and its design has been a reference for the 3rd generation ECR ion sources.
Already existing or planned	Operating since 1998 (SERSE), 1999 (CAESAR), 2009 (VIS), 2012 (HELIOS-PT)
Unique features	The availability of unique microwave diagnostics for plasma studies has permitted the production of plasmas for ion beam generation with innovative characteristics. The High B mode concept that has driven the construction of SERSE and CAESAR is now adopted for any ECRIS devoted to the production of highly charged ion beams.
Present situation / future changes / expected lifetime	A new plasma trap will be available in fall 2011; there is a large number of activities that will benefit of these equipment, at least for the next five years.
Accelerator infrastructure or component test infrastructure	Test infrastructure
Shared facility/infrastructure	Not yet
Main user community	Accelerator Physicist, Potential applications for Nuclear Astrophysics and Material Science to be developed in future
Number of users	20 in 2009-2011
Open for external users	Yes, FP7-ENSAR/ARES collaboration, ESS collaboration team
If open to external users: **Modality of access to the infrastructure (access unit)**	Letter of intent addressed to the INFN-LNS Director for VIS and HELIOS-PT, Call for experiments (SERSE, CAESAR). 1 BTU (Beam Time Unit) = 8 hours
Number of access units available for external users	100 BTU/yr (potentially)
If open to external users: Support offered by the organization operating the infrastructure	Guesthouse; other support may be given, but the conditions are subject to change
Review procedure for requested access	Beam time allocated by the INFN-LNS Director
How to apply	The requests are to be addressed to the INFN-LNS Director
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	30%
Number of FTEs operating the infrastructure	5 FTE
Contact details (name, Institute, email)	Santo Gammino - INFN-LNS, Via S. Sofia 62, 95123 Catania, Italy gammino@lns.infn.it, Tel +39 095 542270
Annual operating costs (excl. Investment costs) of the infrastructure	20 kEUR/year, cost of SERSE/CAESAR included in CS budget
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	N/A

Name of the infrastructure	Heavy Ion Accelerator Complex
Location of infrastructure (town, country)	Legnaro, Italy
Web site address	http://www.lnl.infn.it/accelerators/accelerators.html
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Laboratorio Nazionale di Legnaro
Location of organization (town, country)	Legnaro, Italy
Key Accelerator Research Area(s)	RF Structures,Cryogenics,Beam Dynamics,
General description of the infrastructure	The Heavy Ion Accelerator Complex, composed by one main linac (ALPI) and two independent injectors (XTU-Tandem and PIAVE) has the capability to accelerate in principle all ion species (^{1}H to ^{100}Mo with Tandem or Tandem-ALPI and ^{12}C to ^{197}Au with PIAVE-ALPI). Typical beam currents range fron 2 to 10 pnA. The facility is mostly dedicated to fundamental investigations on the Nuclear Force and the structure of nuclei, with some exceptions concerning particular applications (e.g. radiobiology, spacecraft electronics irradiation). In the SPES project (a facility aimed at the production and acceleration of exotic species) PIAVE-ALPI will serve as the accelerator of the exotic species, produced in an UCx target impinged by protons from a commercial cyclotron. A number of accelerators R&D activities have been launched on ALPI in this context: on cryogenics refurbishment, superconducting resonators, control electronics, diagnostics, linac front-ends (RFQs), ECR charge boosters, RFQ beam coolers, high precision mass spectrometers. Negative beam source test stand, RF laboratory, Electronics laboratory, small dedicated mechanical workshop, diagnostic equipment laboratory, vacuum lab, cryogenic tests laboratory.
Already existing or planned	The Tandem is operational since 1982, while the superconducting linacs ALPI and PIAVE are operational since 1994 and 2004, respectively.
Unique features	It is the highest energy heavy Ion facility in Europe. It features superconducting resonators in both full Nb and Nb-onto-Cu by the sputtering technique (unique world-wide on heavy ion cavities). PIAVE employs a superconducting RFQ (segmented into two subsequent sections), which is unique in the world.
Present situation / future changes / expected lifetime	The facility is working routinely and offers around 4000 hours of beam-on-target annually. It is planned to execute both an upgrade and a special maintenance programme, in order to make it suitable as a post-accelerator for SPES (see above) and to extend its lifetime by another 15 years around.
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure
Shared facility/infrastructure	Yes
Main user community	Nuclear Physics (90%), Nuclear Physics applications (10%)
Number of users	500
Open for external users	Yes
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	Structures: a Secretariat Office dedicated to external guests, a canteen, an internal guesthouse
Review procedure for requested access	Yes
How to apply	Requiring access permission through the Director Secretariat and applying for EU funds (ENSAR Programme, http://www.lnl.infn.it/~ENSAR/ if eligible.
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	25
Contact details (name, Institute, email)	Giovanni Bisoffi, Accelerator Division Head, INFN-LNL, Viale dell'Università 2 - I-35020 Legnaro (Padova), Tel. +39-0498068672, giovanni.bisoffi@lnl.infn.it
Annual operating costs (excl. Investment costs) of the infrastructure	N.A.
If open to external users: (how is the annual operating cost calculated)	N.A.
Estimated investment cost (replacement value)	N.A.

Name of the infrastructure	LASA - Laboratorio Acceleratori e Superconduttività Applicata
Location of infrastructure (town, country)	Segrate (MI), Italy
Web site address	http://wwwlasa.mi.infn.it
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Sezione di Milano
Location of organization (town, country)	Milano, Italy
Key Accelerator Research Area(s)	Sources and Injectors, SC Magnets, RF Structures, Cryogenics
General description of the infrastructure	LASA is the Laboratory for Accelerators and Applied Superconductivity at the INFN Sezione di Milano. Equipped with 1) He liquefaction plant (45 l/h), 2) SC solenoids with field up to 15 T and large bores, 3) a vertical cryostat for SC magnet tests, 4) a vertical cryostat for SRF cavities testing and clean assembly area, 5) a workshop for mechanical testing (tensile/fatigue) at low temperatures, 6) a facility for R&D and preparation of photocathodes for RF guns.
Already existing or planned	Existing infrastructure. Laboratory estabilished in the mid 80s for the development and testing of the superconducting cyclotron, now in INFN-LNS. Infrastructure for SRF and SC magnets built since the 90s for various INFN research programs. Photocathode laboratory developed for the TESLA Test facility (still currently providing cathodes for FLASH and DESY-HH/PITZ electron guns operation).
Unique features	Vertical test cryostat (> 4 m), with subcooling capabilities down to 1.8 K, with RF available in the various frequency ranges from 500 MHz to 3.9 GHz. Clean room, UPW plant and HPR for assembly operations of the cavities before tests. Several research magnets including: a 15 T / 100 mm cold bore SC solenoid, with controlled temperature between 2 K and 300 K in the measuring zone, and a 8 T / 550 mm room temperature bore SC solenoid. Typically used for SC cable characterization. Vertical test cryostat for SC magnets (diameter=700 mm and lenght = 7 m), 30 kA x 6 V power supplies and diode discharge units for testing of pulsed SC magnets. Several UHV deposition chambers for Cs2Te and multialkaly cathodes. Sub-eV time-of-flight spectrometer for thermal emittance measurements with ns/fs lasers in the UV.
Present situation / future changes / expected lifetime	SRF Infrastructure commissioned for XFEL 3.9 GHz operation in 2011, testing of the XFEL 3.9 GHz series production up to 2013. Guarantee infrastructure for European XFEL commissioning and consolidation for the planned injector duplication (at least up to 2015). SC Magnet Infrastructure for the testing of the curved, fast-ramped, dipole model magnet, for the FAIR SIS300. SC wire and cable tests for the EC projects EuCARD (WP7, HFM) and HL-LHC (WP3, Magnets). Photocathode laboratory: Production load for DESY-HH/PITZ (and XFEL) operation being transferred to DESY, but present setup will remain as parallel/backup system for the facilities for several years.
Accelerator infrastructure or component test infrastructure	Infrastructures for component development and tests (SC cables, full scale SC magnets, multicell elliptical cavities at f> 500 MHz, RF gun photoemissive cathodes)
Shared facility/infrastructure	
Main user community	XFEL for the SRF infrastructure, FAIR and HL-LHC for the SC Magnet infrastructure. Photoinjector community for the photocathode laboratory.
Number of users	
Open for external users	Yes, under ad-hoc agreement
If open to external users: **Modality of access to the infrastructure (access unit)**	Access unit not defined
Number of access units available for external users	N/A
If open to external users: Support offered by the organization operating the infrastructure	

Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	0.2
Number of FTEs operating the infrastructure	15 FTE
Contact details (name, Institute, email)	Paolo Michelato (SRF) / Giovanni Volpini (SC Magnets), +39-0250319560, paolo.michelato@mi.infn.it / giovanni.volpini@mi.infn.it, Laboratorio LASA - Sezione di Milano Via Fratelli Cervi 201, 20090 Segrate (MI) Italy
Annual operating costs (excl. Investment costs) of the infrastructure	Running costs are mainly supported by INFN research program proposals and integrated with funds provided by the ongoing collaborations/projects. Operational cost of all facilities in the 100-200 kEUR yearly range
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	>5 MEUR for cryoplant, Vertical test stations, clean room and infrastructures.

Name of the infrastructure	Material Science Laboratory
Location of infrastructure (town, country)	Frascati, Italy
Web site address	http://www.lnf.infn.it/acceleratori
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Laboratorio Nazionale di Frascati
Location of organization (town, country)	Frascati, Italy
Key Accelerator Research Area(s)	UHV, Sources and Injectors
General description of the infrastructure	The Material science Laboratory at LNF contains state of the art surface science and material science techniques to study material properties of interest for accelerator technology. It mainly consists of two different experimental UHV facilities both used to characterize surface properties like SEY, PEY, Electron distribution curves as induced by photons and by electrons. In both systems we can analyse SEY, perform Auger spectroscopy, deposit different coatings, transfer samples from air to UHV without breaking the vacuum, study chemical changes induced by ion, photon and electron bombardment. In one system it is possible to use an X-ray source to study such surfaces and their chemical modification by XPS techniques. This system is equipped with a angle integrated electron energy analyser. The other system is equipped with an angle-resolving electron energy analyser to study the angular dependence and properties of the emitted electrons from the material under study. This system is also characterized by the possibility to study such properties up to less than 10 K, being equipped with a close cycle LHe-refrigerated UHV manipulator. Off line techniques, like Raman and Micro-Raman analysis are also possible. The systems can then use the Synchrotron radiation light emitted by DAFNE accelerator. This reinforces the output of our laboratory, which is, anyway, fully operational also using Laboratory sources in absence of SR from DAFNE. Main scientific topics of interest to the accelerator community which are routinely addressed are: Material science properties, coating analysis and production of accelerator materials which can be used to mitigate the detrimental effects of a photo, or electron induced e-cloud. Such phenomenon is now known as a potential show stopper for many of the new accelerator complex in construction specially if low emittance, high current are to be expected and produced. The techniques available can also be used to detailed studies of photo-cathodes, Detectors, and other key point accelerator instrumentation.
Already existing or planned	In operation since 2009, in continuous expansion and upgrade
Unique features	The possibility to combine on the same sample photon (from laboratory sources and Synchrotron radiation monochromators), electron and ion beams. Capability to grow new films of technological interest (by CVD, Magneto-sputtering, Thermal evaporation, etc).
Present situation / future changes / expected lifetime	
Accelerator infrastructure or component test infrastructure	Component test infrastructure, aimed at material science analysis.
Shared facility/infrastructure	Yes
Main user community	Main users of the LNF material science laboratory are groups working on e-cloud issues in Dafne, Super-B project, Anka, Desy, RHIC, CERN.
Number of users	
Open for external users	Yes. Collaborations are well received and when SR is required, its use is open to external users. Collaborations to common interest materials are based, at the moment, on personal contact policy. The eventual use of SR is governed by an access policy to external SR users (DAFNE_LIGHT)
If open to external users: **Modality of access to the infrastructure (access unit)**	SR access unit is 8 h.
Number of access units available for external users	DAFNE_LIGHT aims at providing approximately 600 h /year, i.e. 75 access units.
If open to external users: Support offered by the organization operating the infrastructure	Technical, scientific as well as logistic support (canteen and guesthouse) can be provided to external user.

Review procedure for requested access	To be better defined. SR use obtained through designated advisory committee.
How to apply	contact LNF responsible
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	TBD
Number of FTEs operating the infrastructure	~6 FTEs
Contact details (name, Institute, email)	Roberto Cimino +390694032358, roberto.cimino@lnf.infn.it, INFN LNF CP 13, 00044 Frascati (RM) Italy
Annual operating costs (excl. Investment costs) of the infrastructure	Average consumable cost 40 kEUR/year, plus 60 kEUR/year for maintenance.
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	construction budget ~1.6 MEUR

Name of the infrastructure	SPARC - SPARX
Location of infrastructure (town, country)	Frascati, Italy
Web site address	http://www.lnf.infn.it/acceleratori
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare Laboratorio Nazionale di Frascati
Location of organization (town, country)	Frascati, Italy
Key Accelerator Research Area(s)	Sources and Injectors, RF structures, RF systems, Diagnostics and Instrumentation, FEL Processes, New techniques for high gradient acceleration
General description of the infrastructure	SPARC complex is a test facility with a 150 MeV (250 MeV in 2012) high brightness electron linac and 4 separate experimental lines devoted to experiments: • SASE-FEL and harmonic generation; • Beam dynamics studies and THz radiation production; • Monochromatic X-ray source via Thomson scattering; • Plasma acceleration (last two lines called PLASMONX). The Linac provide a 10 Hz electron beam with charge up to 1 nC, emittance <1 mmmrad, pulse length 2ps-200fs. Three Ti:Sa lasers are also installed: - 1 TW laser for photoinjector; - 10 GW laser + chamber to produce harmonic in gas for FEL seeding - 250 TW laser (FLAME) for plasma photoinjector experiment is installed in external lab that is connected with SPARC bunker for plasma acceleration experiments with external injection. Multibunch in single RF bucket has been also demonstrated.
Already existing or planned	SPARC injector is operational since 2007, SASE-FEL and HG with undulator line since 2009, THZ line was commissioned in 2010, Thomson and plasma acceleration lines will be completed in 2012
Unique features	SPARC complex is the unique system that joins a high performance injector with 250TW class laser for multipurpose test and experiments in 4 separate experimental lines.
Present situation / future changes / expected lifetime	150 MeV injector is operational for FEL and THz lines; the installation of other two lines is in progress; energy upgrade up to 250 MeV is foreseen for end 2012 replacing the 1 S-Band section with two C-Band structures. The complex evolution, called SPARX, has been proposed and accepted from collaboration: the doubling of SPARC infrastructure is foreseen in next four years to achieve 750 MeV with C-band linac. > 8 years expected lifetime
Accelerator infrastructure or component test infrastructure	Complete infrastructure for linear accelerator and diagnostics test. Test of high gradient accelerating structures.
Shared facility/infrastructure	Facility shared between the different proposed experiments and SPARC collaboration member
Main user community	Accelerator physics, FEL synchrotron radiation user, plasma acceleration community
Number of users	
Open for external users	yes, with collaboration agreement
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	Operational beam time will be scheduled by a dedicated Committee.
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	10 FTE + strong contribution of the LNF Accelerator Division for infrastructure and operational issues

Contact details (name, Institute, email)	Massimo Ferrario, +39-0694032216, massimo.ferrario@lnf.infn.it Andrea Ghigo, +39-0694032351, andrea.ghigo@lnf.infn.it - INFN LNF, CP 13, 00044 Frascati (RM) Italy
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	30 MEUR (12 MEUR infrastructure, 18 MEUR facility). Bunker, control room, modulator hall, laser hall 8 ME; cooling and electrical plants 4 ME, linac and e-lines 9 ME, Undulators and diagnostics 5.5 ME, Lasers 3.5 ME. Personnel cost is not included

Name of the infrastructure	SRF R&D Facility
Location of infrastructure (town, country)	Legnaro, Italy
Web site address	http://www.lnl.infn.it - http://www.surfacetreatments.org
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Laboratorio Nazionale di Legnaro
Location of organization (town, country)	Legnaro, Italy
Key Accelerator Research Area(s)	RF Structures, Cryogenics
General description of the infrastructure	The infrastructure is specialized in the design and realization of superconducting accelerating cavities, of the sputtered type, including novel materials and novel fabrication techniques for Nb cavities. In particular the infrastructure includes 5 main areas: • the fabrication of QWRs and of elliptical cavities, mainly using seamless technology; • The BCP and the electro polishing of Niobium, copper and many others construction metals and alloys • the biased diode and the magnetron sputtering techniques for the deposition of high purity thin films of Niobium and of Superconductors with critical temperature higher than that of Niobium (A15 and B1 compounds); • the microstructural and morphological characterization of superconducting thin films (Resistive and inductive measurement of TC, X-ray diffractometry, Surface Profilometry); • Low temperature (4,2K and 1,8K) RF test of superconducting cavities, both low beta and elliptical shape.
Already existing or planned	Activity existing from 1987. In 1997 the SRF R&D activity gained a dedicated laboratory of 300 square meters
Unique features	The SRF R&D Facility at the moment has the leadership in a few unique technologies: a) the spinning of seamless resonators; b) the automated electro polishing; c) the sputtering of niobium inside QWRs;
Present situation / future changes / expected lifetime	The infrastructure is routinely working since 1997. In addition to all the existing activities, a strong R&D activity on A15 and B1 superconducting materials is taking place and it is expected to become one of the mainstreams of our research on SC cavities. About the expected lifetime, the laboratory is fully equipped with modern and well-functioning instrumentation, and the R&D activity will continue up to when INFN will finance the SRF R&D.
Accelerator infrastructure or component test infrastructure	Component test infrastructure for R&D on SRF cavities
Shared facility/infrastructure	Single user facility
Main user community	Besides the laboratory researchers, the laboratory host the students of a master of the University of Padua named "surface treatments for industrial applications", where the surface treatments studied for SRF have been applied to different industrial applications.
Number of users	20 in average
Open for external users	Yes. Under ad hoc agreement
If open to external users: **Modality of access to the infrastructure (access unit)**	through the master secretariat
Number of access units available for external users	max 10
If open to external users: Support offered by the organization operating the infrastructure	Fellowships are provided given time to time by University or by industrial sponsors. Support includes Chemical and Electrochemical laboratory, Xray diffractometry, Sputtering and PVD Laboratory, Cryogenic laboratory
Review procedure for requested access	for Students of the master after examination at Padua University
How to apply	http://www.surfacetreatments.org
Can the infrastructure be made available for TIARA?	Yes. Under ad hoc agreement
If YES, fraction of time that could be made available to TIARA (%)	0.2
Number of FTEs operating the infrastructure	9

Contact details (name, Institute, email)	Enzo Palmieri, Istituto Nazionale di Fisica Nucleare, Laboratori Nazionali di Legnaro, via dell' università 2, Legnaro (PD) I-35020, palmieri@lnl.infn.it
Annual operating costs (excl. Investment costs) of the infrastructure	250 kEURaverage
If open to external users: **(how is the annual operating cost calculated)**	Does not include personnel
Estimated investment cost (replacement value)	9 MEUR

Name of the infrastructure	SPES Front End for target Ion-source off line test
Location of infrastructure (town, country)	Legnaro, Italy
Web site address	http://www.lnl.infn.it
Legal name of organization operating the infrastructure	Istituto Nazionale di Fisica Nucleare - Laboratorio Nazionale di Legnaro
Location of organization (town, country)	Legnaro, Italy
Key Accelerator Research Area(s)	Targetry, Sources and Injectors
General description of the infrastructure	The SPES front end is divided into three functional subsystems. The first one is the target- ion source complex, where the ion beam is produced. It consists also of the oven device, loaded with the material to be ionized, the transfer line, the ionizer and the extractor devices. The second one is the beam optics subsystem, where the direction and focusing of the beam are performed with four electrostatic beam steerer plates and one electrostatic quadrupole triplet. The third subsystem is the beam diagnostic used to measure the relevant beam information like the beam shape and intensity. This subsystem consists of a beam profile monitor, a Faraday cup and the emittance meter, which is placed at the end of the apparatus.
Already existing or planned	The SPES test bench is fully operational for target-ion source test with several ion sources type. It is also be able to operate for SPES target chamber handling test. At the end of 2011 is planned to come a new mass separator (Wien Filter)
Unique features	Capability to test with the target power amount up to 10 kW. Possibility to perform photo-ionization in hot cavity test using a dedicated excymer laser
Present situation / future changes / expected lifetime	Completion scheduled is planned for the end for 2012, and will operate in the same location up to 2014. After 2014 potential move into a dedicated location hosed inside the new SPES building.
Accelerator infrastructure or component test infrastructure	Component test infrastructure for: Ion source for RIB, Laser ionization, target handling
Shared facility/infrastructure	
Main user community	ISOL RIB community
Number of users	
Open for external users	Yes, provided collaboration agreement
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	4-5 FTEs
Contact details (name, Institute, email)	Alberto Andrighetto - INFN Laboratori di Legnaro (Italy), andrighetto@lnl.infn.it, Tel. +39-049 8068423,
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	300 kEUR for the mechanical device; 100 kEUR for controls

POLAND	
Name of the infrastructure	An elektrostatic Van de Graaff Accelerator "LECH"
Location of infrastructure (town, country)	Warsaw, Poland
Web site address	www.ncbj.gov.pl
Legal name of organization operating the infrastructure	National Centre for Nuclear Research
Location of organization (town, country)	Warsaw, Hoza 69 str., Poland
Key Accelerator Research Area(s)	
General description of the infrastructure	The Warsaw Van de Graaff accelerator was put in motion for the last 50 years and is still in use. The facility is still open to external acces. The "LECH" accelerates protons and deutrons with energy regions of (0.1 - 2.5) MeV. Beam current is up to 50µA, the 3He and 4He ions with energies (0.2 - 2.2) MeV and beams intensity up to 30µA. For all accelerated ions the beam spot size at the target positions is about 2 x 2 mm2. Energy definition of the accelerated ions is equal 2 - 3 keV.
Already existing or planned	Existing
Unique features	
Present situation / future changes / expected lifetime	In use. Expected lifetime 2-3 years
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	RBS, Channeling, PIXE and Solid State structure investigation groups.
Number of users	About 10 groups of users.
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	The facility is completely supported by the NCBJ.
Review procedure for requested access	The requests for external users are handled by the scientific council members of NCBJ.
How to apply	Please follow the link: www.ncbj.gov.pl
Can the infrastructure be made available for TIARA?	Yes.
If YES, fraction of time that could be made available to TIARA (%)	Up to about 50%.
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	National Centre for Nuclear Research, Andrzej Sołtan 7 str., Otwock, Poland, ncbj@ncbj.gov.pl
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	CCB cyclotron 250 MeV
Location of infrastructure (town, country)	Krakow, Poland
Web site address	www.ifj.edu.pl
Legal name of organization operating the infrastructure	Institute of Nuclear Physics Polish Academy of Sciences
Location of organization (town, country)	Krakow, Poland
Key Accelerator Research Area(s)	Hadron radiotherapy, physics
General description of the infrastructure	New 250 MeV cyclotron, new accelerator hall and labs
Already existing or planned	Under construction
Unique features	Gantry – whole body hadrotherapy
Present situation / future changes / expected lifetime	Construction in progress. 2022
Accelerator infrastructure or component test infrastructure	Accelerator
Shared facility/infrastructure	
Main user community	National Consortium for Hadron Radiotherapy
Number of users	7 groups
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Through application
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	possible
Review procedure for requested access	
How to apply	Application addressed to the Director of INP
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	10%
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Paweł Olko (INP)
Annual operating costs (excl. Investment costs) of the infrastructure	Negligible at present
If open to external users: **(how is the annual operating cost calculated)**	EU + MNiSW (construction)
Estimated investment cost (replacement value)	100 MEUR (check)

Name of the infrastructure	Heavy Ion Laboratory (HIL)
Location of infrastructure (town, country)	Warsaw, Poland
Web site address	www.slcj.uw.edu.pl
Legal name of organization operating the infrastructure	University of Warsaw
Location of organization (town, country)	Warsaw, Poland
Key Accelerator Research Area(s)	
General description of the infrastructure	HIL operates two cyclotrons: a heavy ion cyclotron (isochronous, K = 160) equipped with 9.6 GHz ECR ion source (ions from He up to Ar) and 14.5 GHz Supernanogan ECR source with oven and sputtering units (ions from He up to Xe) that is used for fundamental research in nuclear physics and biology as well as for detector development and isotope production, GE PETtrace cyclotron (K = 16.5) delivering proton (16.5MeV) and deuteron (8.5 MeV) beams used for production and research on radiopharmaceuticals for PET diagnosis.
Already existing or planned	Existing
Unique features	
Present situation / future changes / expected lifetime	in use/installation of new HF generators/20 years
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	Nuclear physicists, medical hospitals
Number of users	80 per year
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Proposals for experiments are collected twice a year.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	Ten guest rooms are available for external users.
Review procedure for requested access	Progamme Advisory Committee meets twice a year in order to review and make a ranking of proposals.
How to apply	Fill out the beam request form available at http://www.slcj.uw.edu.pl
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	10%
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	dr Jaroslaw Choinski, jch@slcj.uw.edu.pl
Annual operating costs (excl. Investment costs) of the infrastructure	3 500 000 PLN
If open to external users: **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	200 000 000 PLN

Name of the infrastructure	Isochronous Cyclotron (AIC-144)
Location of infrastructure (town, country)	Krakow, Poland
Web site address	www.ifj.edu.pl
Legal name of organization operating the infrastructure	Institute of Nuclear Physics Polish Academy of Sciences
Location of organization (town, country)	Krakow, Poland
Key Accelerator Research Area(s)	Hadron Radiotherapy, physics
General description of the infrastructure	The isohronal cyclotron AIC-144 may accelerate light ions (protons, deuterons, alfa particles). Protons are accelerated to max energy 60MeV. Applied in hadron radiotherapy.
Already existing or planned	Existing
Unique features	Equipped with the stand for the eye cancer treatment
Present situation / future changes / expected lifetime	Operational. Cease operation at the end of 2014
Accelerator infrastructure or component test infrastructure	Accelerator
Shared facility/infrastructure	
Main user community	
Number of users	
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	application
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	possible
Review procedure for requested access	
How to apply	Application addressed to the Director of INP
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	20%
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Paweł Olko (INP)
Annual operating costs (excl. Investment costs) of the infrastructure	Order of 1 M PLN
If open to external users: **(how is the annual operating cost calculated)**	Direct from MNiSW
Estimated investment cost (replacement value)	R & D program cost - 0.5 MGBP

Name of the infrastructure	Photonics and Electronics Systems Laboratory for HEP and Space Research, PERG and ELHEP Laboratories
Location of infrastructure (town, country)	Warsaw, Poland
Web site address	http://www.elka.pw.edu.pl
Legal name of organization operating the infrastructure	Warsaw University of Technology (WUT) - Faculty of Electronics and Information Technologies (FE&IT)
Location of organization (town, country)	Warsaw, Poland
Key Accelerator Research Area(s)	LLRF, measurement systems for accelerator instrumentation and the beams: particle and photon, SRF technology, astroparticle and space based accelerators, FELs, JET and ITER,
General description of the infrastructure	The PERG and ELHEP Laboratory facility at WUT uses the TESLA type cavities and SRF liniak models to research, design, test and fabricate new generations of the control and measurement systems for upgrade of existing accelerator infrastructures or for new infrastructures under design and construction. The major design and instrumentation development directions are: ease of the system maintenance, facilitating the operators work, increase the measurement data quality, more accelerator automation, user friendliness, increase of the machine availability and reliability, perform more useful measurements, open new control options for the machine operator, add new functionalities for the machine users, perform more precise measurements, early predictions of system failures, decrease machine studies and maintenance costs, speed the design and implementation time of new generation of control and measurement systems for accelerators and space experiments, proliferate the new generation solutions to existing and not yet upgraded accelerating infrastructures, etc. The used technologies are radiation hardened measurement and control systems, using redundant hardware and mitigation software, based on integrated DSP, logic and CPU processors interconnected with optical multigigabit links The Laboratory is active in such facilities like E-XFEL, CMS, POLFEL, JET, space experiments at PSI, etc.
Already existing or planned	Existing
Unique features	Development of new generation of LLRF systems with embedded reconfiguration and accelerating system recognition ability.
Present situation / future changes / expected lifetime	Commissioning/enhanced instrumentation and analysis provisions under EuCARD2/2017 or later
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	The accelerator infrastructures are shared but the implemented new LLRF solutions are dedicated.
Main user community	Accelerator designers, including SRF, laser - plasma acceleration and space technologies
Number of users	Estimated to a few tens of persons per year. It includes: training of RF and software engineers.
Open for external users	Open with EC support in the framework of EuCARD (until 2013) and hopefully EuCARD2 until 2017. It was open also during the FP6 CARE project during 2007-2010.
If open to external users: **Modality of access to the infrastructure (access unit)**	The facility is open for training purposes of RF and software engineers, as well as students, Ph.D. students, LLRF system designers for SRF accelerating infrastructures and for FEL machines, as well as space applications of control and measurement systems. Usually access unit is a week of training in the Laboratory. Other access solutions are possible, basing on individual agreement and subject of training, as well as availability of the equipment. The meeting is known in the accelerator community as WILGA Conference and School on Electronics and Photonics for HEP experiments. It is organized every year, during the last week of May in WILGA Resort owned by the WUT. The average participation is above 200 persons.
Number of access units available for external users	several person weeks per year during FP7 EuCARD

If open to external users:Support offered by the organization operating the infrastructure	The support offered by external users bases only partly on the EuCARD financing. Mainly it relies on the mutual exchange of personnel and students, Ph.S. students and young researchers between the involved institutions. The PERG ELHEP Laboratories organize annual meeting on the design of advanced photonic and electronic systems for HEP and FELs. An essential part of the multi-level meeting is a conference, tutorials and a school. The event is self - financing, and the proceedings published internationally serve as didactic materials.
Review procedure for requested access	The requests from external users are handled individually. Mainly these are from cooperating institutions participating in the same accelerator experiments. The participation in WILGA is open.
How to apply	Application for participation in the Laboratory work at PERG ELHEP is via photonics@ise.pw.edu.pl. Web site of the Institute of Electronic Systems, a site of the facility is http://www.ise.pw.edu.pl. Application for WILGA School and Conference on Electronics for HEP is via the WILGA web site: http://wilga.ise.pw.edu.pl.
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	20%
Number of FTEs operating the infrastructure	Changing but on the average, equivalent to 10 FTE. University specificity is that Ph.D. students are also involved in facility services and training activities.
Contact details (name, Institute, email)	Prof. Ryszard S.Romaniuk, Research Director, Institute of Electronic Systems, Warsaw University of Technology, nowowiejska 15-19, PL-00-665 Warsaw, Poland, Ryszard.Romaniuk@cern.ch; R.Romaniuk@ise.pw.edu.pl, tel.+48-22-234-7986
Annual operating costs (excl. Investment costs) of the infrastructure	~ 200 kEUR
If open to external users: **(how is the annual operating cost calculated)**	Direct operation cost, without overheads
Estimated investment cost (replacement value)	The investment costs are necessary annually to keep the facility up-to-the-date. These costs are of the order of the facility operating costs. i.e. above 100 kEUR. The replacement costs are of the order of 1 MEUR or slightly above.

Name of the infrastructure	The 14 MeV Pulsed Neutron Generator
Location of infrastructure (town, country)	Krakow, Poland
Web site address	www.ifj.edu.pl
Legal name of organization operating the infrastructure	Institute of Nuclear Physics Polish Academy of Sciences
Location of organization (town, country)	Krakow, Poland
Key Accelerator Research Area(s)	Solid state physics
General description of the infrastructure	The neutron generator is used for research on the neutron transport physics, including determination of the neutron parameters of geological media and investigation of the thermal neutron scattering in hydrogenous media. A dependence of the thermal neutron parameters of materials on temperature is investigated on the set-up with a thermostatic chamber. The d(t,n) α reaction on the tritium target is used to test properties of diamond detectors, particularly for spectrometric measurements of the alpha particles.
Already existing or planned	existing
Unique features	Pulsed or continuous regime
Present situation / future changes / expected lifetime	Operational.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	Basic and applied research
Number of users	2 gropus
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	application
Review procedure for requested access	
How to apply	possible
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	Application addressed to the Director of INP
Number of FTEs operating the infrastructure	Yes
Contact details (name, Institute, email)	20%
Annual operating costs (excl. Investment costs) of the infrastructure	200 kPLN
If open to external users: **(how is the annual operating cost calculated)**	MNiSW
Estimated investment cost (replacement value)	

Name of the infrastructure	Two-beam ion implanter
Location of infrastructure (town, country)	Krakow, Poland
Web site address	www.ifj.edu.pl
Legal name of organization operating the infrastructure	Institute of Nuclear Physics Polish Academy of Sciences
Location of organization (town, country)	Krakow, Poland
Key Accelerator Research Area(s)	Material research
General description of the infrastructure	Creation of bioactive coatings layers. As coating layers the carbon based coatings and HAP are preferred; corrosion resistive coatings wear resistive coating based on carbon (e.g. DLC, SiC).
Already existing or planned	existing
Unique features	Application of modern ion methods for High-Tech industry (complex coatings for special purposes such as high speed cutting tools, anticorrosion coatings) medical purposes (creation of biocompatible complex coating layers (DLC, NCD, HAP, SiC etc) with excellent adhesion and low internal stresses.
Present situation / future changes / expected lifetime	Operational. 2025
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	Basic and applied solid state physics groups
Number of users	20
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	application
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	possible
Review procedure for requested access	
How to apply	Application addressed.o the Director of INP
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	20%
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Marta Wolny_Marszalek (INP)
Annual operating costs (excl. Investment costs) of the infrastructure	200 kPLN
If open to external users: **(how is the annual operating cost calculated)**	MNiSW
Estimated investment cost (replacement value)	

ROMANIA	
Name of the infrastructure	9 MV HVEC Tandem FN Accelerator
Location of infrastructure (town, country)	Măgurele, Romania
Web site address	http://tandem.nipne.ro
Legal name of organization operating the infrastructure	Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH)
Location of organization (town, country)	Măgurele, Romania
Key Accelerator Research Area(s)	Fundamental and applied Nuclear physics
General description of the infrastructure	The 9 MV FN Tandem accelerator, commissioned in 1973, was built by High Voltage Electrostatic Corporation in USA. The machine was constantly upgraded, the last upgrade program beginning six years ago. Some very important upgrades are the Pelletron charging system, two sputtering ion sources, duoplasmatron source and in-house Li charge exchange system, power supply for all ion optic elements, gas transfer system, vacuum system using turbomolecular pumps, in-house built beam stability system. The accelerator has 7 experimental beam-lines, each of them equipped with its own experimental setup. Among the most important experimental setups are the multidetection array consisting of 25 HPGe detectors with anti-Compton shield and 12 $LaBr_3$:Ce fast timing detectors coupled with a plunger reaction chamber for timing measurements, a setup for beta-decay measurements consisting of moving tape collector (MTC) system and CLOVER detectors with anti-Compton shields, dedicated ion source and beam-line for AMS measurements, and various other experimental setups for nuclear reaction experiments and applied physics.
Already existing or planned	Existing
Unique features	Dedicated beam-line and detection system for nuclear structure experiments consisting of 25 HPGe detectors with 50% relative detection efficiency and anti-Compton shields, and a number of 12 $LaBr_3$:Ce scintillating detectors for fast timing experiments using electronic methods, coupled to a Plunger reaction chamber for timing measurements. Dedicated beam-line and detection system for beta decay experiments using CLOVER detectors of 120% relative detection efficiency with BGO anti-Compton shields and moving tape collector system (MTC).
Present situation / future changes / expected lifetime	Installed in 1973, heavily modernized in the last five years, currently running around 5000 hours per year, capable of running at least 10 years from now.
Accelerator infrastructure or component test infrastructure	Both possible.
Shared facility/infrastructure	Opened facility for the R&D community, access regulated by international PAC.
Main user community	Nuclear physics and applied physics community.
Number of users	Around 30 experiments per year (around 5000 hours).
Open for external users	Yes.
If open to external users: **Modality of access to the infrastructure (access unit)**	PAC regulates the access, and the experiment proposals are judged two times per year.
Number of access units available for external users	25 experiments per year (estimate).
If open to external users: **Support offered by the organization operating the infrastructure**	Full technical support for setting up the experiments.
Review procedure for requested access	International Program Advisory Committee that meets twice a year to judge the experiment proposals.
How to apply	Application form available on http://tandem.nipne.ro/index.php?nr=39 when the call for proposals is opened, or by email at pac.bucharest@tandem.nipne.ro.
Can the infrastructure be made available for TIARA?	Yes.
If YES, fraction of time that could be made available to TIARA (%)	No limits.

Number of FTEs operating the infrastructure	15 FTE including the technical support (mechanical and electronics).
Contact details (name, Institute, email)	Dan Gabriel Ghiță, IFIN-HH, dghita@tandem.nipne.ro
Annual operating costs (excl. Investment costs) of the infrastructure	About 200.000 Euro per year (electricity, spare parts and materials for maintenance and personnel salaries).
If open to external users: **(how is the annual operating cost calculated)**	As above.
Estimated investment cost (replacement value)	5 000 000 Euro replacement value

Name of the infrastructure	3 MV HVEE Tandetron Accelerator
Location of infrastructure (town, country)	Măgurele, Romania
Web site address	http://tandem.nipne.ro/~tnd3m/
Legal name of organization operating the infrastructure	Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering
Location of organization (town, country)	Măgurele, Romania
Key Accelerator Research Area(s)	Ion Beam Analysis, Micro-beam experiments, Ion Implantation and Nuclear Astrophysics Experiments
General description of the infrastructure	The 3 MV Tandetron accelerator was commissioned in 2012 and was built by High Voltage Engineering Europa B.V. in The Netherlands. The accelerator has two ion sources, one duoplasmatron ion source with sodium charge exchange dedicated to He beams and a Cs sputter ion source, generating a wide variety of ions. The accelerator has three beam-lines with their own dedicated experimental setups. The IBA end-station is equipped with X and gamma ray detectors, particle detectors and 4-axis multiple target holder. The ion implantation end-station is equipped with multiple target holder and beam sweeping system. The third beam-line is equipped with a multi-purpose target chamber capable of housing detectors for nuclear astrophysics experiments.
Already existing or planned	Existing
Unique features	Dedicated experimental chambers for applied physics (mainly material science, environmental science, etc.), ion implantation end-station and target chamber for nuclear astrophysics.
Present situation / future changes / expected lifetime	Installed in 2012, at least 20 years lifetime.
Accelerator infrastructure or component test infrastructure	Both possible.
Shared facility/infrastructure	Opened facility for the R&D community, access regulated by international PAC.
Main user community	Material science, environmental science, nuclear astrophysics, etc.
Number of users	Around 30 experiments per year (around 3000 hours) (estimation).
Open for external users	Yes.
If open to external users: **Modality of access to the infrastructure (access unit)**	PAC regulates the access, and the experiment proposals are judged two times per year.
Number of access units available for external users	25 experiments per year (estimate).
If open to external users: Support offered by the organization operating the infrastructure	Full technical support for setting up the experiments.
Review procedure for requested access	International Program Advisory Committee that meets twice a year to judge the experiment proposals.
How to apply	Application form available on http://tandem.nipne.ro/index.php?nr=39 when the call for proposals is opened, or by email at pac.bucharest@tandem.nipne.ro.
Can the infrastructure be made available for TIARA?	Yes.
If YES, fraction of time that could be made available to TIARA (%)	No limits.
Number of FTEs operating the infrastructure	5 FTE without the technical support (mechanical and electronics) that is supported by the technical team from the 9 MV Tandem accelerator.
Contact details (name, Institute, email)	Dan Gabriel Ghiță, IFIN-HH, dghita@tandem.nipne.ro
Annual operating costs (excl. Investment costs) of the infrastructure	About 100.000 Euro per year (electricity, spare parts and materials for maintenance and personnel salaries).
If open to external users: **(how is the annual operating cost calculated)**	As above.
Estimated investment cost (replacement value)	2 000 000 Euro replacement value

Name of the infrastructure	1 MV HVEE Tandetron Accelerator
Location of infrastructure (town, country)	Măgurele, Romania
Web site address	http://tandem.nipne.ro/~tnd1m
Legal name of organization operating the infrastructure	Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering
Location of organization (town, country)	Măgurele, Romania
Key Accelerator Research Area(s)	Accelerator Mass Spectrometry, C-14 dating
General description of the infrastructure	The 1 MV Tandetron accelerator was commissioned in 2012 and was built by High Voltage Engineering Europa B.V. in The Netherlands. The accelerator uses two multiple cathode Cs sputter ion source with 50 samples/cathodes. After the ion source an electrostatic deflector allows to use several ion sources. A key component of the system is the 90^{o} analyzing magnet equipped with a bouncer system. The bouncer system consists of an insulated chamber on which one can periodically apply high voltage. The bouncer system allows the alternative acceleration of two beams, with a very high selectable frequency. This allows the user to permanently monitor isotope/element ratio, thus reducing very much the measurement error. The accelerator system is a T-shape tandem accelerator with a Cockroft-Walton charging system. Another 90^{o} analyzing magnet is present after the accelerator. One of the most important systems on the accelerator is after the analyzing magnet and it consists of a chamber which contains two Faraday cups placed off axis, one fixed and one movable. The fixed cup is dedicated for monitoring the ^{12}C and the mobile Faraday cup is designed to integrate the current given by the ^{13}C, ^{9}Be, ^{27}Al, ^{127}I stable isotopes. The microscopic beam is measured with the help of a final particle detector (Bragg type - gas filled ionization chamber), placed after the final selection element, the 120^{o} electrostatic analyzer (ESA).
Already existing or planned	Existing
Unique features	The whole system is dedicated to AMS measurements and was commissioned for C, I, Al and Be isotope ratios with application in various research fields like carbon dating, carbon tagging in medicine and pharmacology, geology, environmental studies, etc. The accelerator is completed by a fully equipped chemistry lab for sample preparation and a graphitization system dedicated to ^{14}C sample preparation.
Present situation / future changes / expected lifetime	Installed in 2012, at least 20 years lifetime.
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure dedicated to AMS measurements.
Shared facility/infrastructure	Opened facility for the R&D community, access regulated by international PAC.
Main user community	AMS community and scientists from all related fields that can apply AMS techniques.
Number of users	Around 30 experiments per year (around 3000 hours) (estimation).
Open for external users	Yes.
If open to external users: Modality of access to the infrastructure (access unit)	PAC regulates the access, and the experiment proposals are judged two times per year.
Number of access units available for external users	25 experiments per year (estimate).
If open to external users: Support offered by the organization operating the infrastructure	Full technical support for setting up the experiments.
Review procedure for requested access	International Program Advisory Committee that meets twice a year to judge the experiment proposals.
How to apply	Application form available on http://tandem.nipne.ro/index.php?nr=39 when the call for proposals is opened, or by email at pac.bucharest@tandem.nipne.ro.
Can the infrastructure be made available for TIARA?	Yes.
If YES, fraction of time that could be made available to TIARA (%)	No limits.
Number of FTEs operating the infrastructure	5 FTE without the technical support (mechanical and electronics) that is supported by the technical team from the 9 MV Tandem accelerator.

Contact details (name, Institute, email)	Dan Gabriel Ghiță, IFIN-HH, dghita@tandem.nipne.ro
Annual operating costs (excl. Investment costs) of the infrastructure	About 100.000 Euro per year (electricity, spare parts and materials for maintenance and personnel salaries).
If open to external users: **(how is the annual operating cost calculated)**	As above.
Estimated investment cost (replacement value)	2 200 000 Euro replacement value

SLOVENIA	
Name of the infrastructure	TRIGA Mark II research reactor
Location of infrastructure (town, country)	Jozef Stefan Institut - Reactor Centre Podgorica, Jamova 39, 1000 Ljubljana; Slovenija
Web site address	www.ijs.si
Legal name of organization operating the infrastructure	Jozef Stefan Institut
Location of organization (town, country)	Jamova 39, 1000 Ljubljana, Slovenija
Key Accelerator Research Area(s)	radiation hardness studies, neutron and gamma irradiation
General description of the infrastructure	The reactor is a typical 250-kW TRIGA Mark II light water reactor with an annular graphite reflector cooled by natural convection. Particle Type: Neutrons, continuous energy spectrum. Energy and Fluxes: Flux of fast neutrons (E > 100 keV) up to 5E12 n/cm²/s, Gamma ray Ratio of fluxes thermal (E < 0.5 eV)/fast(E > 100 keV) approx. 2. Dimension: 2 irradiation tubes: • circular cross section, diameter = 2.2cm • elliptic cross section, axes 7 and 5cm More characteristic on irradiation facilities in the paper: L. Snoj et al., Applied Radiation and Isotopes, 70 (2012) 483–488, http://dx.doi.org/10.1016/j.apradiso.2011.11.042
Already existing or planned	Existing
Unique features	flexibility, very good characterisation and computational support
Present situation / future changes / expected lifetime	In operation, no significant future changes, expected to operate untill 2040
Accelerator infrastructure or component test infrastructure	There are hot-cell laboratories and various neutron irradiation facilities. Reactor power 250 kW maximum. Total flux is 4E12 cm-2s-1 (central channel). Several in-core and ex-core irradiation channels Maximum uninterrupted irradiation time is 16 h. It could be extended in special cases.
Shared facility/infrastructure	Hot cell laboratories
Main user community	Chemists (NAA), reactor physicists (validation and verification of computer codes, testing and development of experimental techniques,…), particle physicists (CERN, AIDA, radiation hardness), education and training
Number of users	20
Open for external users	Open for external users
If open to external users: Modality of access to the infrastructure (access unit)	Directly or via collaborations
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	computational support in planning and optimising the irradiation, radiation protection services, dosimetry, neutron flux monitors on irradiated samples, excellent characterisation of irradiation facilities supported by validated an verified Monte Carlo computer codes
Review procedure for requested access	
How to apply	Contact responsible person: luka.snoj@ijs.si
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	20 % or more (has to be discussed)
Number of FTEs operating the infrastructure	7
Contact details (name, Institute, email)	Luka Snoj, Ph.D. Head of TRIGA reactor Physics Division F, 8 Jozef Stefan Institute, Tel (office): +386 1 588-5362, Mobile +386 -1 331-330 -Fax: +386-1 588-5454, luka.snoj@ijs.si
Annual operating costs (excl. Investment costs) of the infrastructure	~ 800 kEUR
If open to external users: (how is the annual operating cost calculated)	Not available
Estimated investment cost (replacement value)	20 MEUR

SPAIN	
Name of the infrastructure	Accelerator components assembly and testing facility
Location of infrastructure (town, country)	Madrid, Spain
Web site address	http://www.ciemat.es
Legal name of organization operating the infrastructure	CIEMAT, Centro de Investigaciones Energéticas Mediambientales y Tecnológicas
Location of organization (town, country)	Madrid, Spain
Key Accelerator Research Area(s)	Cryogenic tests of superconducting magnets, conventional magnets, RF systems and associated components
General description of the infrastructure	This facility is composed by the following infrastructures: • Superconductivity laboratory for testing magnets up to 2000 A and other superconducting devices. It includes power supplies, 3 helium cryostats, instrumentation, and a dry cryostat cooled with cryocooler. • Assembly hall for the fabrication and mounting of accelerators components. It includes 3 winding tables, mechanical measurements instrumentation, magnetic measurements instrumentation, 2 furnaces and radiofrequency testing instrumentation.
Already existing or planned	Facility in user operation since 2006
Unique features	Ideal facility for testing small superconducting magnets. Many of the LHC small prototypes have been tested here.
Present situation / future changes / expected lifetime	In operation for several years. No large change presently planned. Expected lifetime: more than 10 years
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	Infrastructure dedicated to R&D and projects
Main user community	SC magnets and components users
Number of users	Large accelerator-based facilities like XFEL, LHC, IFMIF projects and R&D
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Testing of components
Number of access units available for external users	Depending on the availability of the part of the installation needed
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by CIEMAT, at a cost: manpower for preparing the tests, assembly, running of the installation, fluids and electricity. In any case, the presence of some users will be requested at some points
Review procedure for requested access	Either after discussion with CIEMAT, or in the frame of an international contract, european or else
How to apply	By contracting the Accelerator Division leader at CIEMAT
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depending on the internal projects going on, and on the facility needed, a priori around 20 %
Number of FTEs operating the infrastructure	3
Contact details (name, Institute, email)	Luis García-Tabarés Head of Accelerator Division luis.garcia@ciemat.es Tel.: +34-91 4962553
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	2 MEUR (material)

Name of the infrastructure	ALBA synchrotron light facility
Location of infrastructure (town, country)	Cerdanyola del Valles, Barcelona, Spain
Web site address	www.cells.es
Legal name of organization operating the infrastructure	CELLS, Consorcio para la construcción, equipamiento y explotación del laboratorio de luz sincrotrón
Location of organization (town, country)	Cerdanyola del Valles, Barcelona, Spain
Key Accelerator Research Area(s)	Synchrotron light facility
General description of the infrastructure	100 MeV electron LINAC, 3 GeV booster, 3 GeV storage ring and seven synchrotron light beamlines for scientific applications
Already existing or planned	Facility at the commissioning stage, planned to be in full operation for external scientific users in 2012
Unique features	Vey low emittance, incorporating latest BL technologies
Present situation / future changes / expected lifetime	In full operation for external users since 2012. Expected lifetime without a major refurbishment is about 25 years. New BLs are planned to be added (up to a maximum of 34) gradually
Accelerator infrastructure or component test infrastructure	User infrastructure (SL user facility)
Shared facility/infrastructure	
Main user community	Synchrotron light
Number of users	
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Beam time is allocated according to scientific proposals
Number of access units available for external users	To be defined in detail, but around 2100 h/year of beamtime for external users are expected at the beginning
If open to external users: Support offered by the organization operating the infrastructure	BL scientist and other technical staff will support the user activities
Review procedure for requested access	External panel
How to apply	Public call announced via web twice per year
Can the infrastructure be made available for TIARA?	No, further clarifications are needed
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	Staff is around 150, including scientists and support personnel
Contact details (name, Institute, email)	Gastón García, direction adjoint, ggarcia@cells.es, tlf. +34-935924365
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	Beam Instrumentation Test Lab
Location of infrastructure (town, country)	Valencia, Spain
Web site address	http://ific.uv.es
Legal name of organization operating the infrastructure	IFIC, Insituto de Fisica Corpuscular, CSIC-UV
Location of organization (town, country)	Valencia, Spain
Key Accelerator Research Area(s)	Electronic, mechanical and vacuum test of beam instrumentation devices and associated read-out and control electronics. RF and microwave components characterization.
General description of the infrastructure	This facility is composed by the following infrastructures: • Accelerator instrumentation dedicated Lab with measurement equipment and several test-benches for testing beam diagnostics devices like BPMs (inductive, stripline, button pick-ups, wall current, etc), profile monitors (OTRs, scintillating fibbers based, etc.). • Mechanical workshop and medium-high vacuum chambers. • General Electronics Lab with multilayer PCB prototyping and short series production capability.
Already existing or planned	Facility in user operation since 2006
Unique features	Capability for testing series of EM based beam diagnostics devices, mainly BPMs, using wire-test method, until 300MHz bandwidth and position accuracy down to 5um (in case of BPMs). CTF3-Test Beam Line BPMs (Inductive Pick-Ups) tested here.
Present situation / future changes / expected lifetime	In operation from 2006. No large changes expected. Expected lifetime: more than 10 years
Accelerator infrastructure or component test infrastructure	Component Test
Shared facility/infrastructure	Infrastructure dedicated to R&D and projects
Main user community	Beam Diagnostics and Instrumentation Community
Number of users	Accelerators facilities like CTF3, ATF2 colaborations and R&D projects
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Testing of beam diagnostic devices
Number of access units available for external users	Depending on the availability of the part of the installation needed
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by IFIC, at a cost: manpower for preparing the tests, assembly and running of the installation.
Review procedure for requested access	Either after discussion with IFIC, or in the frame of an international contract, european or else
How to apply	By contacting the Accelerator Group leader at IFIC
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depending on the internal projects going on, and on the facility needed, a priori around 20 %
Number of FTEs operating the infrastructure	2
Contact details (name, Institute, email)	Angeles Faus-Golfe, Instituto de Fisica Corpuscular (CSIC-UV), http://gap.ific.uv.es, Tlf. +34-963543545 - +34-616868907 Fax +34-963543488 - Angeles.Faus-Golfe@uv.es, Angeles.Faus.Golfe@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	260 kEUR (material)

Name of the infrastructure	Centre for Micro-Analysis of Materials
Location of infrastructure (town, country)	Madrid, Spain
Web site address	http://www.cmam.uam.es
Legal name of organization operating the infrastructure	Universidad Autonoma de Madrid
Location of organization (town, country)	Madrid, Spain
Key Accelerator Research Area(s)	Ion Beam Analysis
General description of the infrastructure	This facility is composed by the following infrastructures: • 5MV Electrostatic tandem accelerator • Beamlines • Fully operative: 2 multipurpose experimental stations, Time of Flight station, Nuclear Physics station, External microbeam • Under commissioning: implantation and irradiation beamline, Surface physics beamline, internal microbeam • Ancillary instrumentation: Dual Magnetron sputtering system, Wollam FLS-300 Elipsometer, Veeco Dektak 150 Perfilometer, Struers Roto-vol 35 polishing machine, ATA Brillant 250 diamond saw, Carbolite 1200 C electric oven, Emitech Sputter Coater, Telstar Cryodos Freeze dryer, Leica CM 1510S cryotome, Nikon SMZ800 Binocular Microscope, Nikon Eclipse ME600 Binocular Micr., Marssen 15 tons press, Natotec Electronica AFM
Already existing or planned	Facility in user operation since 2003
Unique features	High current accelerator with remarkably energy stability using a Cockcroft-Walton system for high voltage generation (5MV)
Present situation / future changes / expected lifetime	Five fully operative beamline experimental stations. Three under commissioning
Accelerator infrastructure or component test infrastructure	Workshop infrastructure for instrumentation/detector preparation, tests etc. Available
Shared facility/infrastructure	Infrastructure dedicated to R&D and service
Main user community	60% in home users; 40% external users form R&D institutions
Number of users	50
Open for external users	Yes
If open to external users: Modality of access to the infrastructure (access unit)	Scientific collaboration with members of CMAM and, besides, 40% of available beamtime is offered by Scientific Park of Madrid under contract
Number of access units available for external users	Depending on the availability of the part of the installation needed
If open to external users: Support offered by the organization operating the infrastructure	Operation of accelerator, Fully equipped experimental stations (detectors, sample holders, vacuum systems, electronics, etc)
Review procedure for requested access	External evaluation committee
How to apply	Web application via http://www.cmam.uam.es/en/beamtime
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Negotiable
Number of FTEs operating the infrastructure	3 FTE +3 technicians for infrastructure support
Contact details (name, Institute, email)	Prof. Alessandro Zucchiatti. Email: cmam@uam.es
Annual operating costs (excl. Investment costs) of the infrastructure	1 MEUR
If open to external users: (how is the annual operating cost calculated)	FTEs (full cost) plus consumables
Estimated investment cost (replacement value)	12 MEUR

Name of the infrastructure	Centro Nacional de Aceleradores (National Center of Accelerators)
Location of infrastructure (town, country)	Sevilla, Spain
Web site address	http://www.cna.us.es
Legal name of organization operating the infrastructure	Centro Nacional de Aceleradores-Universidad de Sevilla
Location of organization (town, country)	Sevilla, Spain
Key Accelerator Research Area(s)	C-14 dating, materials science, cultural heritage, environmental impact, nuclear physics, preclinical research, aerospace technology, irradiation
General description of the infrastructure	This facility is composed by the following infrastructures: • 3 MV TANDEM ACCELERATOR: ion linear accelerator used to Ion Beam Analysis (IBA) for material characterization, modification and irradiation of materials; • 1MV TANDETRON ACCELERATOR: used to mass spectrometry of 129I, 239Pu, 240Pu, 41Ca, 36Cl, 26Al, 10Be and 236U; • CYCLONE (18/9): supplies 18 MeV protons and 9 MeV deuterons used to production of radionuclides (11C, 13N, 15O, 18F) for PET and to study the effects of 18 MeV proton irradiation on the behaviour of electronic devices for space applications
Already existing or planned	Facility in user operation since 1998
Unique features	3 accelerators (3MV tandem, 1MV tandetron and Cyclotron) in the same facility
Present situation / future changes / expected lifetime	3 accelerators / Humans PET-CT, Co-60 Irradiator, MICADAS/
Accelerator infrastructure or component test infrastructure	3MV Tandem Nuclear Physics Beam Line. Preparation of instruments to international Nuclear Physics facilities Microbeam Chamber. To form a spot of few microns on the specimen. Elemental maps for distribution concentration. Maximum scanning area of 2.5 x 2.5 mm2 for 3 MeV protons Multipurpose IBA Chamber. To carry out RBS, PIXE, NRA and PIGE simultaneously Irradiation Chamber. Irradiation of large areas (16 x 20 cm2). It´s movable Channelling Chamber. Devoted to channelling analysis of crystalline samples with a telescopic system, BPM and a Faraday cup External Beam. Used in Art and Archaeometry studies Cyclotron 18/9 Beam transport line: It uses tandem irradiation chamber. It disposes degraders to decrease the beam energy value at will
Shared facility/infrastructure	Property of CNA
Main user community	CNA and external researchers
Number of users	100
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	The use of CNA facilities requires the authorization of the scientific committee, which will evaluate the applications
Number of access units available for external users	3 accelerators. Depending on the needs and the facilities availability
If open to external users: Support offered by the organization operating the infrastructure	Expert technicians for Tandem six lines and Cyclotron external beam line measurements. Expert technicians for AMS measurements. Expert technicians for AMS samples preparation (according to agreement)
Review procedure for requested access	The use of CNA facilities requires the authorization of the scientific committee, which will evaluate the applications.
How to apply	The use of CNA facilities requires the authorization of the scientific committee, which will evaluate the applications. Requests forms should be sent to mailto:cna@us.es These requests can be downloaded in http://intra.sav.us.es:8080/cna/index.php/en/applications-for-use
Can the infrastructure be made available for TIARA?	Yes

If YES, fraction of time that could be made available to TIARA (%)	Negotiable
Number of FTEs operating the infrastructure	20
Contact details (name, Institute, email)	Rafael García-Tenorio García-Balmaseda/ gtenorio@us.es/
Annual operating costs (excl. Investment costs) of the infrastructure	1 MEUR
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	4.5 MEUR (2 MEUR tandem, 1.1 MEUR cyclotron, 1.4 MEUR ams)

Name of the infrastructure	Magnetic measurements laboratory
Location of infrastructure (town, country)	LEIOA - SPAIN
Web site address	http://www.essbilbao.org
Legal name of organization operating the infrastructure	ESS BILBAO CONSORTIUM
Location of organization (town, country)	LEIOA - SPAIN
Key Accelerator Research Area(s)	Magnetic measurements of resistive magnets for accelerators (dipoles, quadrupoles, sextupoles, steering and solenoids)
General description of the infrastructure	This facility is composed by the following infrastructures: • High precision mechanical 3D system with a Hall sensor for the measurement of large magnetic devices (dipoles) • Rotating coil system for the measurement of dipole, quadrupole and sextupole field quality. • Cooling water circuit, several power supplies to feed the magnets, etc.
Already existing or planned	Facility planned for 2013 depending on designed devices
Unique features	High precision map fields using a Hall sensor.
Present situation / future changes / expected lifetime	It is now being designed. Expected lifetime: more that 10 years.
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	No
Main user community	Resistive magnets characterization and cross-check for ESS-Bilbao accelerator
Number of users	Any accelerator facility that uses resistive magnets, R&D projects, etc.
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	A simple email or phone call to the person in charge is enough.
Number of access units available for external users	Depending on availability
If open to external users: Support offered by the organization operating the infrastructure	Support will be provided by ESS-Bilbao, at a cost: manpower for preparing the tests, assembly, running of the installation, fluids and electricity. In any case, the presence of users will be requested
Review procedure for requested access	Either after discussion with ESS-Bilbao, or in the frame of an international contract, european or else
How to apply	By contacting the ESS-Bilbao responsible
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depending on the internal projects going on, a priori around 20 % after 2016
Number of FTEs operating the infrastructure	1
Contact details (name, Institute, email)	Iker Rodriguez, irodriguez@essbilbao.org
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	250 kEUR

Name of the infrastructure	Plasma Laboratory
Location of infrastructure (town, country)	LEIOA - SPAIN
Web site address	http://essbilbao.org:8080/ESSBilbao/en/projects/plasma-lab
Legal name of organization operating the infrastructure	ESS BILBAO CONSORTIUM
Location of organization (town, country)	LEIOA - SPAIN
Key Accelerator Research Area(s)	Ion Sources
General description of the infrastructure	This facility is composed by the following infrastructures: • Plasma Reactor, 2.45 Ghz ECR • Several diagnostics: Langmuir probes, optical spectroscopy and ion spectroscopy.
Already existing or planned	Facility in user operation since Feb 2011
Unique features	High flexibility to conducting studies of plasmas for ECRIS
Present situation / future changes / expected lifetime	Full operability
Accelerator infrastructure or component test infrastructure	N/A
Shared facility/infrastructure	N/A
Main user community	ION SOURCES
Number of users	4
Open for external users	YES
If open to external users: **Modality of access to the infrastructure (access unit)**	Scientific collaboration with other R&D groups
Number of access units available for external users	one
If open to external users: Support offered by the organization operating the infrastructure	yes
Review procedure for requested access	no
How to apply	by email: odcortazar@essbilbao.org
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	0.2
Number of FTEs operating the infrastructure	3
Contact details (name, Institute, email)	Daniel Cortázar. ESS Bilbao. dcortazar@essbilbao.es
Annual operating costs (excl. Investment costs) of the infrastructure	250 kEUR
If open to external users: **(how is the annual operating cost calculated)**	N/A
Estimated investment cost (replacement value)	700 kEUR

SWEDEN	
Name of the infrastructure	FREIA (Facility for Research Instrumentation and Accelerator Development)
Location of infrastructure (town, country)	Uppsala, Sweden
Web site address	
Legal name of organization operating the infrastructure	Uppsala University
Location of organization (town, country)	Uppsala, Sweden
Key Accelerator Research Area(s)	RF systems
General description of the infrastructure	SRF test facility with horizontal cryostat and complete high power RF system
Already existing or planned	planned
Unique features	test facility for RF systems
Present situation / future changes / expected lifetime	expected start-up in 2013
Accelerator infrastructure or component test infrastructure	component test infrastructure
Shared facility/infrastructure	shared
Main user community	ESS, development of RF systems
Number of users	
Open for external users	yes
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	10
Contact details (name, Institute, email)	Roger Ruber, ruber@physics.uu.se, +41-22-767 9449
Annual operating costs (excl. Investment costs) of the infrastructure	1-5 MEUR/year
If open to external users: (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	10 MEUR

Name of the infrastructure	MAX IV Laboratory
Location of infrastructure (town, country)	Lund, Sweden
Web site address	www.maxlab.lu.se
Legal name of organization operating the infrastructure	Lund University
Location of organization (town, country)	Lund, Sweden
Key Accelerator Research Area(s)	Synchrotron radiation, nuclear physics
General description of the infrastructure	3 SR in operation, 1 linac injector. 2 storage rings and one injector linac being constructed
Already existing or planned	See above
Unique features	High brilliance, Short Pulse Facility, high duty factor (60%) electron beam
Present situation / future changes / expected lifetime	
Accelerator infrastructure or component test infrastructure	RF gun test-stand, Soft X-ray FEL
Shared facility/infrastructure	
Main user community	Synchrotron radiation, nuclear physics
Number of users	900
Open for external users	yes
If open to external users: Modality of access to the infrastructure (access unit)	experiment group
Number of access units available for external users	200
If open to external users: Support offered by the organization operating the infrastructure	Between 0-100%
Review procedure for requested access	Program Advisory committee
How to apply	See our home-page
Can the infrastructure be made available for TIARA?	Eventually
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	120
Contact details (name, Institute, email)	Mikael.Eriksson@maxlab.lu.se
Annual operating costs (excl. Investment costs) of the infrastructure	15 MEUR
If open to external users: (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	1’500 MEUR

Name of the infrastructure	The Svedberg Laboratory
Location of infrastructure (town, country)	Uppsala, Sweden
Web site address	http://www.tsl.uu.se
Legal name of organization operating the infrastructure	Uppsala University
Location of organization (town, country)	Uppsala, Sweden
Key Accelerator Research Area(s)	
General description of the infrastructure	• The Gustaf Werner cyclotron can be operated either in isochronous mode or in synchrocyclotron (sc) mode. The beams that can be produced are, - protons 25-180 MeV, typical beams: - 180 MeV 0.3 µA (sc) - 100 MeV 10 µA - 25 MeV, 4 µA - deuterons 38-96 MeV, ~1 µA - ion beams: α, C, N, O, Ne, Ar, Xe • Proton treatment facility, with passively scattered beam in collaboration with Uppsala University Hospital. • Irradiation facilities specialized in beams for testing of electronics for single-event effects including: • Neutron beam facility, ANITA, atmospheric-like spectrum up to ~180 MeV • Neutron beam facility, Quasi-monoenergetic, 20-175 MeV • Proton beam facility, PAULA, 25-180 MeV • Ion beam facility for radiobiology and other experiments. • Radionuclide production facility.
Already existing or planned	existing
Unique features	neutron beams
Present situation / future changes / expected lifetime	in operation, expected lifetime till 2016
Accelerator infrastructure or component test infrastructure	accelerator infrastructure
Shared facility/infrastructure	shared
Main user community	Uppsala University Hospital, external users from industry and other universities
Number of users	
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	17
Contact details (name, Institute, email)	Björn Gålnander, Ph.D. Laboratory Director +46 (0)18 471 3873 bjorn.galnander@tsl.uu.se - beams@tsl.uu.se - http://www.tsl.uu.se
Annual operating costs (excl. Investment costs) of the infrastructure	1-5 MEUR/year
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

SWITZERLAND	
CERN	
Name of the infrastructure	Magnetic Measurement facilities
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://te-dep.web.cern.ch/te-dep/structure/MSC/
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	SC magnets, Conventional NC Magnet Systems
General description of the infrastructure	CERN magnetic measurement facilities include a very large collection of instruments, test benches, hardware and software components and ancillary equipment (power converters, mechanical tools, optical metrology tools). The equipment is geographically distributed in several laboratories across CERN site (bldg. 30, 230, 375, 867, SM18). General capabilities:. • - large choice of complementary instrumentation technologies: rotating and fixed search coils, Hall-effect and NMR teslameters, stretched wires (measurements at room or cryogenic temperatures) • - 1D, 2D or 3D field maps, local and integral field strength, harmonics, axis and direction • - special measurements for: EMC and DC shielding problems, mathematical modelling of magnetic devices, dynamic phenomena over microsecond to hours timescale range
Already existing or planned	Existing
Unique features	Equipment to measure magnets with apertures ranging from 8 mm to 120 Mm capability to test many kinds of magnet with very short lead time owing to the extraordinary variety of instruments and sensors available • radiation-controlled facilities to test activated samples and magnets • design and manufacture of high-precision harmonic search coils (flux loops) in sizes from few millimeters to several meters • design and manufacture of advanced electronic systems and components e.g. general-purpose digital integrators, systems for real-time accelerator field control ("B-trains") • availability of a vast range of power supplies and water cooling circuits for Cu or Al coils; in particular, a unique 200 V, 6500 A (peak) Holec converter for fast-cycled resistive magnets. • metrological calibration facilities: a set of superconducting and resistive reference multipole magnets, covering a wide range of field strengths, gap sizes and lengths • split-coil permeameters and flat-sheet coercimeters for rapid characterization of large industrial series of steel samples; cryogenic characterization of toroidal samples down to 4.2 K
Present situation / future changes / expected lifetime	Magnetic measurement facilities are always operational and will be required throughout the lifetime of CERN accelerators. The equipment is regularly being upgraded to adapt to new demands and ensure maintanability. Currently ongoing developments include: instrumentation for very small (< 20 mm) and very large (> 100 mm) magnet bores, fluxmeter arrays for strongly curved bending magnets, stretched wire systems for multipoles, solenoids and insertion devices, magnetic resonance based field sensors.
Accelerator infrastructure or component test infrastructure	Tests of components
Shared facility/infrastructure	SM18 (magnetic measurements of long cryomagnets and short models down to 1.9 K)
Main user community	Particle Accelerators
Number of users	Permanent end users include the whole of CERN accelerator magnet team (TE-MSC) plus several representatives from each one of CERN accelerators, experiments and projects (50~100 contacts). A few external users have accessed or are accessing the facilities (e.g. CNAO, ITER, MedAustron)

Open for external users	YES
If open to external users: **Modality of access to the infrastructure (access unit)**	Collaboration agreements to: help building measurement equipment and commission it at the user's premisses, or measure accelerator magnets and related magnetic materials at CERN
Number of access units available for external users	To discuss on a case by case basis
If open to external users: Support offered by the organization operating the infrastructure	To discuss on a case by case basis
Review procedure for requested access	CERN-wide Collaboration Agreements for large jobs (typically above > 0.1 FTE) Group level approbation for smaller jobs
How to apply	Please contact responsible
Can the infrastructure be made available for TIARA?	The Magnetic measurement can be made avalaible for TIARA,
If YES, fraction of time that could be made available to TIARA (%)	access is usually granted on the basis of specific Collaboration Agreements
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Stephan Russenschuck , +41-22 767 40 51 , Stephan.Russenschuck@cern.ch. CERN - CH 1211 Geneve 23
Annual operating costs (excl. Investment costs) of the infrastructure	Up to 500 kCHF / year
If open to external users: **(how is the annual operating cost calculated)**	Consumable and operating costs
Estimated investment cost (replacement value)	

Name of the infrastructure	Antiproton Decelerator (AD)
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://be-dep-op-ad.web.cern.ch/be-dep-op-ad/
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Diagnostics and instrumentation, Targetry, Beam cooling, UHV
General description of the infrastructure	The CERN Antiproton Decelerator (AD) facility produces, cools and decelerates antiproton beams to low energies to be used for investigations of matter-antimatter symmetry. The facility consists of: • a target area where protons at 26 GeV/c from the CERN PS impinges on a production target, • a storage ring with a circumference of 182 m where antiprotons are collected at 3.5GeV/c, cooled and decelerated to 100 MeV/c • an experimental area where at present 5 experiments are installed. The main experimental activities are: development of techniques for production and storage of anti-hydrogen to be used in laser-spectroscopy experiments, studies of gravitational interaction of antimatter in the earth's gravitational field and studies of biological effects of antimatter annihilation in cells for possible future tumour treatment.
Already existing or planned	Existing
Unique features	Worlds only low-energy antiproton source
Present situation / future changes / expected lifetime	Operational since 2000. Addition of a small decelerator/cooling ring (ELENA) to improve antiproton trapping efficiency, to be operational in 2016. Expected to continue for at least 10 more years (> 2026).
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure
Shared facility/infrastructure	Dedicated facility that uses protons from the shared LHC injector chain.
Main user community	Particle/atomic physicists
Number of users	~150
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Planned yearly rota during the LHC injector run. Each experiment typically has exclusive use of the facility during evenly distributed 8-hour shifts.
Number of access units available for external users	Additional experiments would need to negotiate beam-time. With the new ELENA ring and transfer lines operational, beam distribution will be more flexible allowing for simultaneous use of the facility by up to 4 experiments.
If open to external users: Support offered by the organization operating the infrastructure	Yearly operation as part of the CERN accelerator complex. Standard CERN support including the basic infrastructure for experiments (electricity, network connectivity, office space, internet connections, control room etc.), installation of the experiments, beam preparation and beam operation.
Review procedure for requested access	The requests containing the scientific goals and technical description of the experiment should be submitted following the instructions at the web page. They will be peer-reviewed by an international dedicated panel. Experiments must comply with the CERN safety rules.
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	10
Contact details (name, Institute, email)	Head of AD operation: Tommy Eriksson, CERN, tommy.eriksson@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	1 MCHF
If open to external users: **(how is the annual operating cost calculated)**	Material for exploitation: 400 kCHF (2007), electricity: 300 kCHF (2007), gas (mainly He): 300 kCHF (2011)
Estimated investment cost (replacement value)	~300 MCHF (construction cost in 1986 = ~ 150 MCHF)

Name of the infrastructure	Coating Facilities (Bldg 181)
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	UHV, RF Structures
General description of the infrastructure	The carbon coating facitiy is facility is devoted to the development of carbon coatings with low emission of secondary electrons for mitigation of electron multipacting in particle accelerators (in particular the SPS). A 9 meter long horizontal bench allows the assembling of electrodes for sputtering deposition of thin films in long (up to 8 meter) beam pipes. The laboratory is a radiation supervised area and radioactive objects can be handled / coated. This NEG Coating Facility allows the high production rate of thin films in long beam pipes (up to 8 meter). The three cylindrical magnetron coatings systems available are equipped with vertical solenoids of 0.6 meter in diameter and 8 meter in length. It.can be used to deposit thin films of other materials (copper, carbon, niobium, aluminium, etc.) The activity of the Thin Film laboratory develops along two main axes. The first is to carry out standard coating on accelerator and detector components. Among these one may underline: Nb coatings for superconducting cavities, titanium coatings for RF windows, BCTs, etc., copper coating for RF components, B4C coating for detectors and many other. For this the lab relies upon nine different sputtering systems, and one evaporation system, which allow several combinations of coating conditions. The second activity is related to all the R&D work which is a necessary prerequisite in order to move from basic functional requirements to a definite set of applicable coating processes, and for the constant improvement of quality. This activity, which relies upon the same infrastructure, is also a necessary step in all the coating projects which involve mass-scale production, such as superconducting cavities, NEG coatings, low-SEY coatings. The surface analysis laboratory of CERN provides support for all CERN operation and development activities, which require control of surface chemical composition as thin films coatings, cleaning for UHV, corrosion investigations and general failure diagnostics. The laboratory is equipped with 2 XPS spectrometers, with monochromatized and non-monochromatized source, respectively. In addition an Auger spectrometer is also available for conducting samples only. One of the XPS systems is connected to a homemade device which enables to measure the secondary electron yield of surfaces at normal incidence in an energy range from 30 eV to 2000 eV.
Already existing or planned	Existing
Unique features	Horizontal coating of long beam pipes, coating chambers of radioactive components. Several UHV coating machines, taylor-made for the needs of accelerator and detector components. coating of long beam pipes, industrial scale production rates. Combination of XPS and secondary electron yield, secondary electron yield at low temperatures
Present situation / future changes / expected lifetime	Quality control of NEG (activation) and low secondary electron yield coatings Operational, part of the CERN baseline infrastructure, and evolving according to the needs of the community
Accelerator infrastructure or component test infrastructure	Component production infrastructure (for the LHC, the experiments, and other accelerators/detectors)
Shared facility/infrastructure	The facility is dedicated, with open access to any CERN or external laboratory
Main user community	Accelerator and detector builders
Number of users	CERN (SPS)
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	A simple contact with the responsible is sufficient. Priority must be usually given to urgent CERN activities
Number of access units available for external users	

If open to external users: Support offered by the organization operating the infrastructure	CERN provides the entire infrastructure and the personnel to run it. In special cases, visitors from external lab may be encouraged to participate in order to guarantee extra manpower.
Review procedure for requested access	No formal review is foreseen
How to apply	No formal review is foreseen
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depends on the work charge for CERN, and the relative planning.
Number of FTEs operating the infrastructure	Up to 3 FTE
Contact details (name, Institute, email)	Pedro Costa Pinto, CERN, pedro.costa.pinto@cern.ch; Sergio Calatroni, CERN, sergio.calatroni@cern.ch Thin Films Laboratory, Sergio Calatroni, CERN, sergio.calatroni@cern.ch Mauro Taborelli, CERN, mauro.taborelli@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	Up to 250 kCHF
If open to external users: **(how is the annual operating cost calculated)**	Direct operation cost, without overheads
Estimated investment cost (replacement value)	Up to 2 MCHF

Name of the infrastructure	Cryogenic Laboratory and Tensile Facility
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Cryogenics
General description of the infrastructure	The CERN central cryogenic laboratory is equipped for cryogenic testing in the temperature range down to 50 mK. The different test stands available can be used to make measurements in this temperature range under vacuum conditions, or being emerged in a cryogenic liquid. All test stands use standard measurement equipment (temperature sensors, level sensors, pressure sensors etc.) read out via a standard data-acquisition system. Depending on the temperature range of interest, the cryostats have a diameter going up to a maximum of 50 cm diameter. In addition the laboratory also has two workshops in which equipment developed for the measurements program can be fabricated. Permanent staff overlooking the measurement campaigns is guaranteeing the correct operation of the different test benches, is also guiding the technical students and fellows working in the laboratory
Already existing or planned	Existing
Unique features	The cryolab is a small scale laboratory with a large diversity of existing measurement set-ups. The fellows and technical students working in the lab on research projects makes that the cryolab, although its almost 50 years, is still developing in new fields
Present situation / future changes / expected lifetime	By the middle of 2011 the infrastructure of the cryolab will be updated: the electrical network and the heating, ventilation and air conditioning installations will be renewed. During the latter half of 2011 or early 2012 it is planned to install a new cryostat allowing tests up to 100 kN of maximum force to be carried out on a wider variety of sample geometries. The system will be maintained operational.
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	
Main user community	Most of the cryolab projects are based on questions or request for collaboration from CERN groups from experiments or from external institutes.
Number of users	
Open for external users	on a case-by-case basis
If open to external users: **Modality of access to the infrastructure (access unit)**	no
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	Contact the contact person indicated hereunder
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	There are 4 CERN staff working in the cryolab and 3 outside FTE. There are on average also 3 fellows and 3 technical students stationed in the laboratory.
Contact details (name, Institute, email)	Johan Bremer mailto:Johan.Bremer@cern.ch – CERN, CH-1211 Geneva 23, Switzerland Tel: + 41 22 767 8752
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	CNGS: CERN Neutrino to Grand Sasso
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://cern.ch/sba
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Targetry; Diagnostics and instrumentation
General description of the infrastructure	CNGS is a neutrino beam facility producing muon neutrinos by sending the SPS proton beam on a target Possibility.it can be used to install accelerator components or equipment for R&D and prototype testing.
Already existing or planned	Existing
Unique features	Unique high-energy neutrino beam of <17GeV> energy
Present situation / future changes / expected lifetime	Used on a yearly basis for the LNGS Neutrino Experiments (OPERA and ICARUS).
Accelerator infrastructure or component test infrastructure	Possibility for both, depending on the proposed setup.
Shared facility/infrastructure	Open facility to all CERN users.
Main user community	HEP community experiments
Number of users	2 experiments.
Open for external users	No
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	Yearly beam time taken for LNGS experiments
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	Beam time requests must go via the CERN scientific committees, reviewed and approved by again by the CERN management.
How to apply	Via the CERN SPSC committee
Can the infrastructure be made available for TIARA?	No
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	Requires support from many CERN groups and specialties, plus CCC operator (2 FTE total) and three specialized staff (3 FTE) - Rough estimate: 5 FTE total
Contact details (name, Institute, email)	Edda Gschwendtner - Edda.Gschwendtner@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	500 CHF/day for electricity, 150 kCHF maintenance costs
If open to external users: **(how is the annual operating cost calculated)**	Estimate from beam power for electricity. Lump sum from past years for maintenance (including only the beams and experimental area, not the accelerators)
Estimated investment cost (replacement value)	70 MCHF total investment cost - project spending

Name of the infrastructure	Chemistry laboratory (Bldg 10)
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	UHV
General description of the infrastructure	This laboratory performs standard analysis and quality control of the baths used in the surface treatment workshops of CERN. In addition it takes care of all necessary chemistry analysis for the various CERN experiments (detector gases, cooling fluids…) and accelerators for diagnostics of corrosion problems, study of polymer aging due to irradiation and identification of contamination of fluids. The laboratory is equipped with Atomic Absorption Spectroscopy, ICP-OES spectroscopy , FT-IR spectroscopy, UV-Vis spectroscopy, Karl-Fischer analysis, Differential Scanning Calorimetry, Gas Chromatography, common titration equipment, Computer controlled Potentiostat able to apply almost all electrochemical technics (Electroanalytical methods, cyclic and linear sweep voltammetry, chrono-methods, electrochemical detection, potentiometric stripping analysis, electrochemical noise, impedance electrochemical spectroscopy)
Already existing or planned	Existing
Unique features	Combination of various analysis techniques
Present situation / future changes / expected lifetime	Developments expected for impedance measurements and accessories for the ICP-OES under evaluation/ lifetime of most of the instrumentation is 10-20 years
Accelerator infrastructure or component test infrastructure	Gas purity is crucial for gases of the experiments (cooling and detectors) and production of impurities due to the irradiation during operation can generate corrosion. Radiation damages on cables are related to very high costs fro cable replacement and should be properly monitored.
Shared facility/infrastructure	Not shared, but its services can be carried out for CERN users and external institutes and industries.
Main user community	Accelerators and detectors physicists, engineers
Number of users	CERN wide
Open for external users	Only as a service. Usually, no direct access to the facility is granted
If open to external users: **Modality of access to the infrastructure (access unit)**	Open to external users as a service. A simple email or phone call to the person in charge is enough. The treatments for external user are planned following the CERN scientific priorities and planning.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	YES
If YES, fraction of time that could be made available to TIARA (%)	Depends on CERN charge of work and planning
Number of FTEs operating the infrastructure	3 FTE
Contact details (name, Institute, email)	Benoit Teissandier, CERN, benoit.teissandier@cern.ch; Sorin Ilie, CERN, Sorin.Ilie@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	0.3 MCHF
If open to external users: **(how is the annual operating cost calculated)**	Direct operating cost, without overheads
Estimated investment cost (replacement value)	1.5 MCHF (New facility)

Name of the infrastructure	CLIC Nano Stabilisation and positioning infrastructure
Location of infrastructure (town, country)	Geneva , Switzerland
Web site address	http://clic-stability.web.cern.ch/clic-stability/
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva , Switzerland
Key Accelerator Research Area(s)	Alignment and Stabilization
General description of the infrastructure	The mechanical stabilization and positioning facility is in the first place a set of mechanical set-ups to study and demonstrate the technical feasibility to keep the absolute position of CLIC quadrupole magnets stable to the nanometre level. The study implies the actuators, the instrumentation and the control systems. The same equipment can be used to position other accelerator components such as Beam Position Monitors. This study is performed in the CERN ISR tunnel, specially selected and qualified for its low background of technical vibrations and very good temperature stability. The combination of different calibrated displacement measurement devices and actuators in the specific low vibration back ground allow for a cross validation with independent methods and the calibration of new measuring devices. The infrastructure is also gathering a team that builds a knowledge base for implementation of mechatronics at the nanometre level to particle accelerator components. The facility is equipped with a water cooling circuit and a overhead crane. The implementation of the facility next to a magnet assembly workshop and high precision benches for magnetic field mapping should create a synergy between the different activities.
Already existing or planned	Already existing
Unique features	Vibrations induced by human activities and technical infrastructures are very low, temperature stability very high. The quality of the facility is close to that of a seismic vault. The test set-ups that reach extremely low vibration levels down to very low frequencies (< 1Hz) can be used as reference benches for nanometrology instrumentation, interferometers and seismic sensors.
Present situation / future changes / expected lifetime	The study itself is on the way of being confirmed up to 2016 in the frame of the technical implementation phase of the CLIC study. The site of the facility is only temporarily made available to us and no end date is given.
Accelerator infrastructure or component test infrastructure	It is a component test infrastructure
Shared facility/infrastructure	Occasionally shared in external collaborations.
Main user community	CLIC stabilisation team
Number of users	N/A
Open for external users	Open for collaborations
If open to external users: Modality of access to the infrastructure (access unit)	N/A
Number of access units available for external users	N/A
If open to external users: Support offered by the organization operating the infrastructure	N/A
Review procedure for requested access	N/A
How to apply	N/A
Can the infrastructure be made available for TIARA?	yes
If YES, fraction of time that could be made available to TIARA (%)	10%
Number of FTEs operating the infrastructure	4.5
Contact details (name, Institute, email)	Kurt Artoos, 0041-227678584, kurt.artoos@cern.ch, CERN European Organization for Nuclear Research, 1211 Geneva 23, Switzerland
Annual operating costs (excl. Investment costs) of the infrastructure	Practically no operation costs
If open to external users: (how is the annual operating cost calculated)	N/A
Estimated investment cost (replacement value)	About 100 kCHF invested/ year on upgrades and new test set-ups

Name of the infrastructure	CTF3
Location of infrastructure (town, country)	Geneva. Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	Geneva. Switzerland
Key Accelerator Research Area(s)	RF systems, Beam dynamics, accelerator design, Instrumentation and diagnostics, UHV, New techniques for high gradient acceleration, alignment and stabilization, RF systems, NC magnets, SC magnets, radiation issues
General description of the infrastructure	The CLIC Test Facility CTF3 is built at CERN by the CLIC/CTF3 Collaboration in order to prove the main feasibility issues of the CLIC two-beam acceleration technology. The two main points which CTF3 should demonstrate are the generation of a very high current drive beam and its use to efficiently produce and transfer RF power to high-gradient accelerating structures, used to bring the main one to high energies. CTF3 consists of a 150 MeV electron linac followed by a 42 m long Delay Loop and a 84 m Combiner Ring. The beam current from the linac is first doubled in the delay loop and then multiplied again by a factor four in the combiner ring by interleaving bunches using transverse deflecting RF cavities. The power generation and transfer and the high gradient acceleration are demonstrated in the CLIC experimental area (CLEX), where the drive beam can be transported to lose its energy and produce RF power in special resonant structures called PETS (Power Extraction and Transfer Structures). In the same area a 200 MeV injector (CALIFES) generates a probe beam for two beam experiments.
Already existing or planned	Existing
Unique features	CTF3 is the only operational two-beam accelerator. It has also the only large-scale full loaded (high efficiency) linac, with quite unique beam parameters (4 A, 1.2 ms long electron beam pulses in the linac – about 30 A for 140 ns after compression). It is also the only high-power RF source (in X-band) based on the deceleration of a relativistic beam. CTF3 R&D program covers several aspects of the CLIC feasibility studies (see above) and it is a test-bed for accelerator diagnostics for linear colliders. Occasionally is used for other R&D unrelated to linear colliders (e.g., high-power testing of RF accelerating structures for medical applications.)
Present situation / future changes / expected lifetime	A consolidation/upgrade program is planned to increase CTF3 availability, reliability and repetition rate (from 1-5 Hz presently to 25 Hz or more). The installation of a few two-beam modules and the realization of a few high-power RF testing slots in CLEX are also planned. Expected lifetime is at least five years. Operation is planned until 2016.
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure
Shared facility/infrastructure	CTF3 is a stand-alone facility, shared by the members of the CLIC/CTF3 Collaboration
Main user community	CLIC/CTF3 Collaboration
Number of users	The facility operates for about 150 days per year. It is in general operated over 8-10 hours during working days. Occasionally is operated for high-power RF testing overnight and during week-ends
Open for external users	CTF3 is open to external users, under condition of approval by the CTF3 Committee (representing the CLIC/CTF3 Collaboration Board). However, it is not a user facility.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	

If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Roberto Corsini, CERN - Tel. +41 22 767 8669 - roberto.corsini@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	Typical operational costs for CTF3, operating at 150 days per year is about 2.5 MCHF
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	Total cost investment not fully available, due to re-use of large amount of infrastructure

Name of the infrastructure	DCCT and Electrical Standards Laboratory
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	
General description of the infrastructure	The CERN Electrical Standards and Current Measurement Laboratory was built by the Electrical Power Converters group at CERN with the aim of providing an adequate facility to test, evaluate and calibrate current measurement devices for the LHC power converters. The laboratory is particularly suited for the evaluation and calibration of magnetic current measuring devices such as DCCTs (Direct Current Current Transducers) and current transformers. The main motivation for the development of a complete current calibration infrastructure at CERN was the requirement for high accuracy (in the order of one part per million - ppm) in the measurement of the LHC magnets current to ensure excellent tracking between LHC sectors. To guarantee the required accuracy, CERN maintains local voltage and resistance standards, as well as derived current standards, traceable to National Standards. These standards provide the basis for the evaluation and calibration of current measuring devices such as DCCTs.
Already existing or planned	Exists
Unique features	With the LHC demanding ppm accuracy in the measurement of currents up to 13 kA, the accurate characterization of these devices is extremely important. In order to tackle this unprecedented requirement, a complete test and calibration infrastructure was built at CERN. The basis of this infrastructure is the CERN Electrical Standards Laboratory, where voltage, resistance and unique current standards are maintained. Resistance standards are composed by 17 artefact standards with nominal values ranging from 1 Ohm to 1K Ohms, a MIL4220 low thermal scanner and a MIL6010B automatic bridge which does automatic measurements daily. Voltage standards are given by 11 solid state zener based artefact standards with nominal values of 1V, 1.018V and 10V and by a Dataproof 160A measurement system which does automatic measurements daily. Current standards are given by a custom developed 10mA reference current source from Metron Designs which can be traced to National standards via resistance and voltage standards. As for the CERN DCCT Measurement laboratory, it is composed of different DCCT testbeds of which the most important is a high performance 20kA DC testbed for ppm level evaluation of high current DCCTs. This testbed includes a low voltage 20 kA power converter, a quasi-coaxial bus-bar structure, a 20kA Kuster's Bridge range extender as well as 20kA reference DCCT and a unique bipolar, ppm programmable, 10A reference current source with resolution and linearity better than 0.5 ppm.
Present situation / future changes / expected lifetime	The DCCT and Standard laboratory is presently being used to maintain accuracy of current measuring devices used in the LHC, by providing a maintenance and calibration service for operation. It is also being used as a test facility for the evaluation of current measuring devices for the future LINAC4. /No changes are foreseen for the next years. Periodic acquisition of new instruments to improve measurement capability or to maintain the facilities is part of the lab routine as well as following the state of the art in the current measurement field. /The facility will be active during the entire lifetime of the LHC.
Accelerator infrastructure or component test infrastructure	The CERN Electrical Standards and Current Measurement Laboratory is a component test and component calibration facility.
Shared facility/infrastructure	The facility is owned and operated exclusively by the electrical power converter group at CERN.
Main user community	Electrical Power and Analogue Engineers in charge of the power converters in the different accelerators at CERN
Number of users	<10
Open for external users	on a case-by-case basis, for high-current and high precision applications
If open to external users:Modality of access to the infrastructure(access unit)	N/A

Number of access units available for external users	N/A
If open to external users: Support offered by the organization operating the infrastructure	N/A
Review procedure for requested access	N/A
How to apply	Contact the contact person indicated hereunder
Can the infrastructure be made available for TIARA?	This is an infrastructure for internal use of the EPC group, with direct impact on machine operation (DCCT repair and calibration). Can be available for TIARA on a case-by-case basis
If YES, fraction of time that could be made available to TIARA (%)	N/A
Number of FTEs operating the infrastructure	The number of people that work in the maintenance of the facilities is the equivalent to 0.5 staff year.
Contact details (name, Institute, email)	Miguel Cerqueira Bastos - HPM section, EPC group, TE department, CERN - Miguel.Cerqueira.Bastos@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	The operational cost of the standards laboratory maintenance including annual calibrations, equipment upgrades and manpower is < 100 kCHF.
If open to external users: **(how is the annual operating cost calculated)**	Annual operation cost is calculated in terms of equivalent staff year and infrastructure maintenance and upgrade costs. There is not specific costing model; cost estimation is based on operational experience from previous years.
Estimated investment cost (replacement value)	Some of the equipment in the DCCT lab is unique in the world, many developed exclusively for CERN and sometimes by CERN. The invested effort and know how combined with accumulated knowledge about the electrical standards greatly increases the real value of the installation. In that sense one could say it is priceless. So it would be very difficultly replaceable. With that in mind, considering which kind of investment one would have to do if the whole installation was lost and needed a best effort replacement one could say a value of 10 MCHF would not be exaggerated.

Name of the infrastructure	Energy Extraction facilities for the LHC 13 kA and 600A powering circuits in total 234 systems.
Location of infrastructure (town, country)	Geneva, Switzerland LHC underground areas: RR13, RR17, UA23, UA27, R34, R37, UJ33, UA43, UA47, RR53, RR57, UA63, UA67, RR73, RR77, UA83, UA87..Around the complete LHC machine.
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	
General description of the infrastructure	System consisting of opening switches, associated powering and control electronics, snubber capacitors, overcurrent protection, energy absorbing resistor units and their associated water cooling systems. Systems capable of absorbing up to 1.3 GJ of magnetic energy and dissipating this as heat to an associated demineralized water circuit.
Already existing or planned	Existing.
Unique features	Arc suppression, opening delays, commutation assistance, modular time constants, indirect water cooling.
Present situation / future changes / expected lifetime	All 234 systems are in operation.
Accelerator infrastructure or component test infrastructure	Tested through Individual System Tests and part of yearly Hardware Commissioning.
Shared facility/infrastructure	No
Main user community	The Circuit Protection Section of the MPE group, TE department.
Number of users	10
Open for external users	No
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	0
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	No
How to apply	Void
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	0.4
Contact details (name, Institute, email)	Knud Dahlerup-Petersen, Tel. +41-22 767 3404, Knud.Dahlerup-Petersen@cern.ch, CERN
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model **(how is the annual operating cost calculated)**	0.4 FTE
Estimated investment cost (replacement value)	

Name of the infrastructure	High precision Coordinate Measuring Machine (micrometers)
Location of infrastructure (town, country)	Geneva. Switzerland
Web site address	ww.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	Geneva. Switzerland
Key Accelerator Research Area(s)	RF structures; alignment and stabilisation; Diagnostics and instrumentation
General description of the infrastructure	The metrology laboratory of the MM (Materials and Metrology) section of the EN-MME (Mechanical & Materials Engineering) group of CERN is equipped with a ultra high accuracy Coordinate Measuring Machine (CMM) specially procured for testing with a volumetric measuring and probing error in the submicrometric range (tenths of micrometers) with a very low probing force (0.020 N). The CMM (Leitz PMM-C Infinity) features a compact, robust closed frame design with a fixed portal and a moving table for maximum stiffness. The main components are all made of granite and cast iron, guaranteeing stability, long time accuracy and insensitivity to temperature variations. A massive, monolithic granite base and a fixed standing portal with cast iron columns and granite traverse assure structural rigidity and consistent accuracy throughout the entire measuring volume. Servo drives with re-circulation ball screws allow high accelerations (even short distances can be travelled at high speed). Extremely high resolution (0.004 µm) glass ceramic scales guarantee the highest repeatability. Collision protection and user safety devices are installed throughout the machine. Friction-less air bearings with electronic gap monitoring ensure that the machine cannot be damaged by overload. The machine is particularly adapted to cross check dimensionally high precision components of a size up to X = 1200 mm, Y = 1000 mm, Z = 700 mm (measuring range) and is equipped with an air bearing rotary table allowing special shapes to be measured in different orientations. The CMM is installed in a specially tailored measuring room compliant with the class 1 of the German standard VDI/VDE 2627 and featuring a thermal stability and homogeneity of 0.1 K/m, 0.2 K/h and 0.4 K/day.
Already existing or planned	The facility is operational.
Unique features	To our knowledge, the combination of a ultra high accuracy CMM, a room guaranteeing a highly homogeneous and stable environment, a very low force continuous scanning probe allowing to measure without damaging high precision components and a team with a long experience and a know-how of high precision 3D dimensional measurements of components for particle accelerators and experiment is quite unique.
Present situation / future changes / expected lifetime	Replacement foreseen within the current year of the actual probe head by a new ultra low probing force head (down to 0.005 N) specially developed in collaboration with the manufacturer. The system will be maintained operational.
Accelerator infrastructure or component test infrastructure	Component test facility.
Shared facility/infrastructure	Non applicable.
Main user community	Engineering
Number of users	N/A
Open for external users	Testing for external projects should be discussed case by case. Measurements can be carried out exclusively by specially trained colleagues belonging to the service.
If open to external users: **Modality of access to the infrastructure (access unit)**	NO
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	

Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	The number of people active overall in the metrology laboratory of the EN-MME-MM service is 5 FTE. 1 FTE is specifically dedicated to coordinate measurements performed on the high precision CMM.
Contact details (name, Institute, email)	Ahmed Chérif – Tel. +41 22 767 3283 -ahmed.cherif@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	Costs for a control depend on the complexity of the component, the number of probing points, the resulting total duration of the test and the required tools or measurement stands.
If open to external users: **(how is the annual operating cost calculated)**	If service is delivered to internal CERN clients, costs are calculated on a basis of an all-in fee package. Special conditions may be applicable for tests performed in the frame of approved official cooperation agreements.
Estimated investment cost (replacement value)	The fixed cost of the equipment, including the environment, is in the order of 1 MCHF.

Name of the infrastructure	HiRadMat Facility at SPS
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://cern.ch/hiradmat
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Radiation issues
General description of the infrastructure	The HiRadMat@SPS facility uses the extracted proton and ion beams from the CERN SPS in a time-sharing mode. The fast extracted high-power short-duration beam from SPS is transported to the test area, where samples of materials can be exposed to beam-induced shock waves for the study of the robustness of accelerator components. The SPS allows accelerating beams with some 10E13 protons to a momentum of 440 GeV/c. For protons, the energy in one pulse can be up to 2.4 MJ with a pulse length of ~7 microseconds. For heavy ions the beam energy is 177.4 GeV/nucleon (36.9 TeV per ion), the pulse energy up to 28 kJ, and the pulse length about 12 microseconds. For both protons and ions, the beam spot size at the target position is variable, around 1 mm-squared. Test beams for equipment performance evaluation. Possibility to install accelerator components or equipment for R&D and prototype testing.
Already existing or planned	Existing
Unique features	High-intensity, high-energy pulsed beams
Present situation / future changes / expected lifetime	Ready for operation as of autumn 2011
Accelerator infrastructure or component test infrastructure	Possibility for both, depending on the proposed setup.
Shared facility/infrastructure	Open facility to all CERN users.
Main user community	HEP and accelerator community experiments
Number of users	10 experiments per year (estimate)
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Beam time allocation. The present estimate is to schedule 10 experiments per year within the available yearly beam time of ~180 days (from April to November).
Number of access units available for external users	10 experiments per year (estimate)
If open to external users: Support offered by the organization operating the infrastructure	CERN provides the beam and general infrastructure in the experimental halls. Installation needs and modifications to existing infrastructure are to the charge of the experimental teams. Limited technical support available in situ.
Review procedure for requested access	Beam time requests must go via the HiRadMad committees, yearly schedule to be approved by the CERN management.
How to apply	Forms in the HiRadMat web page: http://cern.ch/hiradmat
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	no limits
Number of FTEs operating the infrastructure	Requires support from many CERN groups and specialties, plus CCC operator (2 FTE total) and three specialized staff (3 FTE) - Rough estimate: 5 FTE total
Contact details (name, Institute, email)	Ilias Efthymiopoulos – CERN - Ilias.Efthymioopulos@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	200 CHF/day for electricity, 70kCHF maintenance costs
If open to external users: **(how is the annual operating cost calculated)**	Estimate from beam power for electricity. Lump sum from past years for maintenance (including only the beams and experimental area, not the accelerators)
Estimated investment cost (replacement value)	6 MCHF total investment cost - project spending

Name of the infrastructure	Horizontal Vacuum Brazing Furnace – TAV & PVA
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://en-dep.web.cern.ch/en-dep/structure/MME/
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	UHV; RF structures; RF sources
General description of the infrastructure	This Vacuum Brazing Furnace is used for vacuum treatment and vacuum brazing of metal/metal or metal/ceramic components. Main applications are for accelerators or experiments development in the frame of prototypes or pre-series production. The materials commonly involved are copper, stainless steel, niobium, titanium for metals and alumina, sapphire for ceramics. This TAV furnace is a all metal, horizontal configuration with useful dimensions of 650 mm in diameter and 2000 mm length, capacity 750 Kg. The maximum temperature is 1350 °C and the vacuum level at 1000 °C is in the range of 10^{-6} mbar.
Already existing or planned	Existing
Unique features	Dimensions and temperature range
Present situation / future changes / expected lifetime	Operating
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	No
Main user community	CERN EN/MME group
Number of users	
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Possibly accessible for other high energy physic institutes, after group leader agreement and accepted official collaboration with CERN.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	Furnace running and pieces preparation allowed only by CERN staff.
Review procedure for requested access	see above
How to apply	Contact CERN EN/MME group leader
Can the infrastructure be made available for TIARA?	TBD
If YES, fraction of time that could be made available to TIARA (%)	N/A
Number of FTEs operating the infrastructure	2.5 FTE
Contact details (name, Institute, email)	CERN EN MME
Annual operating costs (excl. Investment costs) of the infrastructure	Upto 70 kCHF (materials only)
If open to external users: **(how is the annual operating cost calculated)**	N/A
Estimated investment cost (replacement value)	Up to 1.4 MCHF

Name of the infrastructure	HV lab for cryogenic dielectric insulation
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	
General description of the infrastructure	Laboratory dedicated to test HV dielectrical equipments for normal or cryogenic use.
Already existing or planned	already existing
Unique features	state of the art partial discharge tests in a shielded cage with sensitivity better than 2 pC, DC, AC and impulse/lightning (different standards available) dielectric tests (up to 150 kV peak) in gaseous atmosphere under controlled partial pressure, dielectric tests at cryogenic temperatures
Present situation / future changes / expected lifetime	operational, exptected lifetime > 10 years
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	TE/MSC/MNC facility but tests are done for all CERN
Main user community	besides the magnet group: ITER, the CERN wide service for polymer lab, users from the experiments
Number of users	regular users less than 5
Open for external users	In general no, but they can attend the tests via prior agreement
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	contact roberto.lopez@cern.ch
Can the infrastructure be made available for TIARA?	it can be discussed
If YES, fraction of time that could be made available to TIARA (%)	0.2
Number of FTEs operating the infrastructure	1.2
Contact details (name, Institute, email)	Roberto Lopez, CERN - TE/MSC/MNC – Tel. +41764870904 - roberto.lopez@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	200 kCHF
If open to external users: **(how is the annual operating cost calculated)**	cost of 1 FTE (presently paid by ITER) + 50 kCHF/year running cost
Estimated investment cost (replacement value)	500 kCHF (does not include know-how, the real added value of such an infrastructure)

Name of the infrastructure	Isolde, REX, Rilis
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://isolde.web.cern.ch/ISOLDE/
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Targetry; Radiation issues; Beam dynamics; Dignostics and instrumentation
General description of the infrastructure	On-line mass separation for the production of radioactive ions beams up to 60KeV. The radioactive nuclei are produced in reactions of high-energy protons from the PS-Booster accelerator in thick targets. The typical proton energies are between 1 and 1.4 GeV. More than 25 different target materials are used. The target material is kept at an elevated temperature so that the produced radioactive atoms diffuse out of the target into different dedicated ion sources. Ionisation can take place in a hot plasma, on a hot surface or by laser excitation. By judicious combinations of target-ions sources a chemical selectivity may be obtained and has resulted in selective production of more than 70 of the chemical elements. The ions are swept out of the ion-source by an applied voltage, accelerated to 30-60 kV and directed into an electro-magnet where they are separated according to their mass. In this way ISOLDE has been able to deliver more than 700 isotopically pure beams with intensities ranging from 1 to more than 1010 ions/s.
Already existing or planned	Existing.
Unique features	Variety of available isotopes. Ion beam post acceleration to 3MeV/u
Present situation / future changes / expected lifetime	Planned upgrade for higher p-beam intensity, beam quality and post acceleration with super conducting Linac to 10MeV/u.
Accelerator infrastructure or component test infrastructure	Linac to 3 MeV/u. Irradiation facility, high power targets and materials
Shared facility/infrastructure	Part of the PS complex at CERN but independent infrastructure
Main user community	Nuclear physics, solid state physics, atomic physics
Number of users	~500
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Member of the CERN ISOLDE Collaboration
Number of access units available for external users	TBD
If open to external users: Support offered by the organization operating the infrastructure	Infrastructure support, provision of ion beams, radiation protection, machine operation
Review procedure for requested access	Letters of Intent and physics requests to be submitted to the INTC. Technical developments/tests to be submitted to EN-STI-RBS.
How to apply	INTC scientific secretary. ISOLDE Technical Coordinator
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	~5%
Number of FTEs operating the infrastructure	25 FTE
Contact details (name, Institute, email)	Richard Catherall, CERN - Richard.Catherall@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	900 kCHF
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	50 MCHF

Name of the infrastructure	Large Vacuum Furnace for Vacuum Firing Treatments, Material Characterization for Vacuum Application Workshop
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	UHV; RF structures
General description of the infrastructure	The CERN large vacuum furnace allows the thermal treatment of UHV components up to 1050°C. The useful charge size is 95 cm in diameter and 5.5 m in length. The maximum charge weight is 1000 Kg. The furnace is heated by graphite rods which are shielded by 5 layers of molybdenum and stainless steel. The pumping system consists of two 50000 l s^{-1} diffusion pumps equipped with cooled baffles. The ultimate pressure is of the order of 10^{-8} mbar after a thermal treatment. During a typical treatment at 950°C for 2 hours, pressures in the 10^{-6} mbar range are attained at the end of the heating plateau. the laboratory has a large set of materials for the LHC accelerator and detectors could be characterized mainly in term of outgassing, NEG transmission, and pumping speed. More than 10 apparatus are available for the measurement of outgassing rate and ultime pressure for metallic components. Pumping speed measurements on a three dedicated Fischer-Mommsen domes could be performed. 5 test benches are available for testing NEG vacuum chambers up to 30 meter long by the H2 transmission methods. All the apparatus are flexible and could be easily adapted for particular applications. A test bench for the isotherm measurements form 4.5 K is available. The main objective of the workshop is to keep CERN at the state of the art in the field of ultrahigh and extremely-high vacuum measurement. Four vacuum systems are available for this purpose. Their main applications are: • measurement of pressures in the XHV range down to 10^{-14} mbar aiming at developing new vacuum gauges; • test and comparison of different vacuum gauges in the range 10^{-7} to 10^{-12} mbar; • test and comparison of residual gas analysers; - calibration of ionisation gauges in the range 10^{-7} to 10^{-12} mbar by means of a primary standard validated by European bureaux of standard. The systems are also intended for the training of CERN vacuum operators, in particular newcomers.
Already existing or planned	Existing
Unique features	Excellent vacuum, large dimensions, exclusively reserved for ultra-high vacuum treatments, Characterization of NEG coated vacuum beam pipe of different dimension and length.
Present situation / future changes / expected lifetime	A rejuvenation project is expected in 2012 for the Vacuum Furnace The workshop is operational for residual gas analysers and evolving depending on CERN and external users' needs.
Accelerator infrastructure or component test infrastructure	Vacuum firing is the last treatment of most of the stainless steel vacuum components for accelerator. It is also essential for to improve the efficiency of mu-metal magnetic shielding. Sometime it is used to decrease the hydrogen content in Nb superconducting cavities. The laboratory is mainly involved in the characterization of vacuum components for the LHC machine by following all the steps of production and by analysing the effects of each treatment in the final vacuum properties. The workshop provides CERN accelerators with the proper maintenance and calibration for the UHV-XHV vacuum instrumentation.
Shared facility/infrastructure	Firing treatment can be carried out for CERN users and external institutes and industries.
Main user community	
Number of users	
Open for external users	Yes

If open to external users: **Modality of access to the infrastructure (access unit)**	A simple email or phone call to the person in charge is enough. The treatments for external user are planned following the CERN scientific priorities and planning.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	CERN technicians operate the furnace, lab and workshop. UHV experts are available for the interpretation of the measurements The workshop can be available for external users from the end of 2012
Review procedure for requested access	No specific review is necessary. The components shall be compatible with the furnace and the planning shall respect the CERN objectives.
How to apply	
Can the infrastructure be made available for TIARA?	YES
If YES, fraction of time that could be made available to TIARA (%)	Depends on CERN charge of work and planning
Number of FTEs operating the infrastructure	1 -2FTE
Contact details (name, Institute, email)	Paolo Chiggiato, CERN, paolo.chiggiato@cern.ch Giuseppe Bregliozzi, CERN, giuseppe.bregliozzi@cern.ch Vincent Baglin, CERN, vincent.baglin@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	70 kCHF
If open to external users: **(how is the annual operating cost calculated)**	Direct operation cost, without overheads
Estimated investment cost (replacement value)	Up to 3 MEUR

Name of the infrastructure	Large Magnet and Long Cryostats Assembly Facility
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	SC magnets, conventional NC magnet systems; Cryogenics
General description of the infrastructure	Large Magnet.and Long cryostats assembly facility is installed in the building 180 and 181 at CERN. It allows the fabrication of SC magnets from 4 meters till 16 meters. It is presently equipped with cable insulating machines, winding machines, curing press, collaring press, welding press, alignment systems using laser trackers, pressure and leak test equipment, electrical testing equipment, vertical tower for assembly of magnets using inertia tube till 10 meters of length. Cold masses can be produced straight or bent. The Long Cryostats Assembly Facility is for the.construction of.long accelerator magnets inside their cryostats. Covers ranges in length from 5 m to 15 m.
Already existing or planned	existing
Unique features	unique in the world for spectrum of possibilities and dimensions
Present situation / future changes / expected lifetime	Presently equipped for Nb-Ti technologies it wil lbe soon equipped with tooling to work with Nb3Sn. With upgrades it will be a facility working at least 25 years
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure Construction of upgrade magnets for the LHC and maintenance of all SC magnets in CERN
Shared facility/infrastructure	Long Cryostats Assembly Facility Shared with MSC and VCS Groups
Main user community	CERN
Number of users	
Open for external users	No
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	17 FTE CERN+ 20 technicians of external support
Contact details (name, Institute, email)	Paolo Fessia, CERN, Tel. +41-76 487 4027, paolo.fessia@cern.ch Herve Prin, CERN, Tel. +41-76 487 4949, Herve.Prin@cern.ch Frederic Savary, CERN, frederic.savary@cern.ch Vittorio Parma, Tel. +41227679183, vittorio.parma@cern.ch, CERN, 1211 Geneva 23, Switzerland.
Annual operating costs (excl. Investment costs) of the infrastructure	Up to 12 MEUR
If open to external users: **(how is the annual operating cost calculated)**	cost allocate to project
Estimated investment cost (replacement value)	

Name of the infrastructure	LARIS LAser Resonance Ionization Spectroscopy laboratory
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Sources and injectors
General description of the infrastructure	Laboratory for laser photo-ionization spectroscopy and development of efficient ionization schemes which could be used in laser ion sources at ISOL-facilities worldwide. The laser setup includes broadly tuneable optical parametric oscillators with amplifiers, dye lasers, and frequency conversion modules for UV generation. Atomic and molecular beams for study of laser ionization could be generated in two separated vacuum chambers either by thermal evaporation or by laser ablation. Both chambers are equipped with time-of-flight mass-spectrometers.
Already existing or planned	Existing
Unique features	Set of laser radiation sources tuneable in the wavelength range of 210-1680 nm. Two atomic beam sources with TOF mass-spectrometers for study laser ionization of atoms and molecules.
Present situation / future changes / expected lifetime	Operational. Some old lasers need to be upgraded. Expected lifetime is 10 years or more.
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	n/a
Main user community	heavy ion physicists, spectroscopy, laser physicists
Number of users	n/a
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Two atomic beam units are available. If necessary, users could bring an own laser-matter interaction chamber.
Number of access units available for external users	Two
If open to external users: Support offered by the organization operating the infrastructure	Laser operation and existing atomic beam units are supported by EN-STI
Review procedure for requested access	Not established
How to apply	Contact EN-STI-LP at CERN
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	0.2
Number of FTEs operating the infrastructure	1
Contact details (name, Institute, email)	V. Fedosseev, CERN, Valentin.Fedosseev@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	70 kCHF (materials only)
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	300 kCHF

Name of the infrastructure	LEIR
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Beam Dynamics, diagnostics and instrumentation, RF systems, UHV, Beam cooling
General description of the infrastructure	LEIR is an ion accumulator ring with electron cooling, which transforms long low intensity pulses from Linac3 in bright buches useful for LHC ion operation. Except during the very first stage of commissioning, LEIR has up to been operated with Pb54+ ions. Intensities of more than 2.3E8 Pb54+ every 2.4s are generated regularly. For nominal operation 9E8 Pb54+ ions will be produced every 3.6 s. There are plans to operate LEIR with lighter ions (e.g. O, Xe or Ar) within the next years.
Already existing or planned	Existing
Unique features	Low energy ion beams
Present situation / future changes / expected lifetime	Commissioned in 2005 and 2006, expected for more than 10 years
Accelerator infrastructure or component test infrastructure	Accelerator structure
Shared facility/infrastructure	
Main user community	Ion experiments at the LHC and SPS fixed target
Number of users	LEIR is not open to external users, but provides beams for experiments at the LHC and SPS
Open for external users	Plans to add a facility for radiobiology research, to be defined
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Christian Carli, CERN, Christian.Carli@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	LHC
Location of infrastructure (town, country)	Switzerland – France, near Geneva
Web site address	http://lhc.web.cern.ch/lhc/
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Beam Dynamics, accelerator design,.diagnostics and instrumentation, RF systems, UHV,Cryogenics, Radiation Issues, SC magnets
General description of the infrastructure	High energy hadron collider
Already existing or planned	Existing and in between commissioning and exploitation phase
Unique features	Superconducting magnet and RF systems; 2-in-1 magnet-cryostat design; operating temperature of 1.8 K; unprecedented level of stored beam power (> 350MJ per beam for nominal parameters and > 100MJ during 2011 operation); unprecedented level of stored electro-magnetic energy in the magnet system (> 10 GJ for nominal operation parameters and > 2 GJ for 2011 operation at half the nominal beam energy); unprecedented luminosity level for a hadron collider (10^34 cm^-2 sec^-1 for nominal operation and above 0.3 10^34 cm^-2 sec^-1 for operation in 2011).
Present situation / future changes / expected lifetime	Operation at half the nominal beam energy due to limitations in the inter-magnet connections and 75% of the nominal beam current due to luminosity optimization with 50ns bunch spacing (instead of the nominal spacing of 25ns). The operation with sub-nominal parameters is planned for 2010 until end of 2012. The inter-magnet connections will be consolidated in a long shutdown from 2013 to 2014. The machine is expected to operate at slightly above nominal performance as of 2015. A second long shutdown is planned for 2018 in order to prepare the LHC injector complex and the LHC injector complex for 'ultimate' performance at a luminosity of 2-3 10^34 cm^-2 sec^-1 at close to 7 TeV beam energy. A third long shutdown is planned after 2021 for upgrading the LHC to a performance level of ca. 200 fbarn^-1 integrated luminosity per year and a total integrated luminosity of 2000 fbarn^-1 to 3000 fbarn^-1 over the lifespan of the LHC.
Accelerator infrastructure or component test infrastructure	SM18 at CERN featuring test and measurement infrastructure for superconducting magnet and RF components. HI-RADMAT test facility for testing radiation robustness of components (in the SPS).
Shared facility/infrastructure	
Main user community	CERN, ATLAS, CMS, LHCb, ALICE and TOTEM collaborations
Number of users	>5000
Open for external users	No
If open to external users: **Modality of access to the infrastructure (access unit)**	-
Number of access units available for external users	0
If open to external users: Support offered by the organization operating the infrastructure	-
Review procedure for requested access	LHC Machine Committee under the chairmanship of the CERN Accelerator director; CERN LHC Experiments Committee; CERN Scientific Policy Committee
How to apply	Presentation at the LMC
Can the infrastructure be made available for TIARA?	No
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	I would guess one can approximate this with ca. 50% of the Accelerator and Technology sector.
Contact details (name, Institute, email)	Operation: Paul Collier as BE department head; Mike Lamont as Operation group leader and co-chair of the LHC Machine Committee.
Annual operating costs (excl. Investment costs) of the infrastructure	I would assume ca. half of the CERN budget (the other half being required for the operation of the injector complex).
If open to external users: **(how is the annual operating cost calculated)**	-
Estimated investment cost (replacement value)	3.5 billion CHF for the LHC machine alone and ca. 6 billion CHF for the LHC with experiments.

Name of the infrastructure	Linac2
Location of infrastructure (town, country)	CERN 1211 Geneva 23
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN 1211 Geneva 23
Key Accelerator Research Area(s)	Sources and Injectors, RF systems, diagnostics and Instrumentation
General description of the infrastructure	Linac2 is the main source of primary proton beams for the CERN injector chain. The protons are created in a Duoplasmatron ion source and accelerated to a final energy of 50Mev by an Alavarez linear accelerator.
Already existing or planned	existing
Unique features	• Duoplasmatron with metal oxide cathode • High Intensity pulsed proton beam
Present situation / future changes / expected lifetime	• operational source for the delivery of protons to the CERN accelerator chain • no changes foreseen • should run until Linac4 comes into operation (~6 more years)
Accelerator infrastructure or component test infrastructure	operational linear accelerator
Shared facility/infrastructure	not shared, no user facility
Main user community	CERN injector chain
Number of users	
Open for external users	no
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	~4
Contact details (name, Institute, email)	D. Küchler +41-22 7676691, detlef.kuchler@cern.ch, CERN/BE Dept
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	Linac3
Location of infrastructure (town, country)	CERN 1211 Geneva 23
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Sources and Injectors, RF systems, diagnostics and Instrumentation
General description of the infrastructure	Linac3 is the main source of primary heavy ion beams for the CERN injector chain. The ions are created in an ECR ion source and accelerated by an IH structure linear accelerator to 4.2MeV/u, before stripping to higher charge states.
Already existing or planned	existing
Unique features	• ECRIS operates in afterglow mode • two frequency injection into the ion source (14.5GHz and 18GHz) • ion source with two movable ovens • ramping cavity for longitudinal phase space painting in LEIR • stripper for charge state manipulation
Present situation / future changes / expected lifetime	• operational source for the delivery of heavy ions to the CERN accelerator chain • no major changes foreseen • lifetime at least ten more years
Accelerator infrastructure or component test infrastructure	operational linear accelerator
Shared facility/infrastructure	not shared, no user facility
Main user community	CERN injector chain
Number of users	
Open for external users	no
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	~4
Contact details (name, Institute, email)	D. Küchler +41-227676691, detlef.kuchler@cern.ch, CERN/BE Dept
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	LINAC4
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Sources and Injectors, RF systems, diagnostics and Instrumentation
General description of the infrastructure	Linac4 is a 160 MeV H- linear accelerator being built at CERN to replace the 50 MeV Linac2 as injector to the PS Booster. The higher energy will allow doubling of the beam brightness in the PSB, making possible higher intensities in the LHC injectors for a future upgrade of its luminosity. Higher intensities will be possible for the other PSB users. A possible extension of Linac4 to higher energy and higher duty cycle (the SPL, Superconducting Proton Linac) has been considered in the design, the Linac4 accelerating structures being designed for a maximum of 10% duty. For the PSB, Linac4 will operate at 1.1 Hz repetition frequency with 400 microsec pulses of 40 mA current. The linac is composed of an ion source, a 2-solenoid LEBT, a 3-m long RFQ up to 3 MeV, a chopping line and a sequence of three different accelerating structures, all at 352 MHz frequency. The first structure is a Drift-Tube Linac (DTL), followed by a Cell-Coupled Drift-Tube Linac (CCDTL) made of DTL-like 3-gap tanks coupled by coupling cells. The last structure, called Pi-Mode Structure (PIMS) is made of 12 7-cell tanks operating in pi-mode.
Already existing or planned	In construction
Unique features	Compact H- linear accelerator using accelerator structures of new design
Present situation / future changes / expected lifetime	In construction. Commissioning foreseen for 2013/2014. Expected lifetime of 30 years as injector to the PS Booster
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	PSB only user. No external users.
Number of users	
Open for external users	
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	Maurizio VRETENAR, +41-22 767 2925, Maurizio.Vretenar@cern.ch, CERN, CH-1211 Geneva 23
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	construction budget c.a 60 MCHF (only material cost, including civil engineering and infrastructure)

Name of the infrastructure	Linac4 3 MeV Test Stand
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Sources and Injectors, RF systems, diagnostics and Instrumentation
General description of the infrastructure	The Linac4 3 MeV Test Stand has been built with the purpose of testing the crucial components of the Linac4 front end and to fully characterize the 3 MeV beam before moving the front end to the Linac4 tunnel. The infrastructure has been progressively upgraded following the status of development of the Linac4 hardware. The first area that became operational was the klystron test bench, where the klystron modulator has been developed and tested with a 1.3 MW LEP klystron, later on in 2009 the H- ion source development started with the progressive installation of a Low Energy Beam Transport line (LEBT) and the associated beam instrumentation. The source can now deliver 30 mA H- beam at 35 keV or 35 mA protons at 45 keV. During 2011 the installation of the Linac4 RFQ is foreseen that will upgrade the beam energy to 3 MeV and the start of the beam commissioning time for the Linac4 front end. After the RFQ, a Medium Energy Beam Transport line (MEBT) is equipped with a fast electrostatic chopper that will provide the requested longitudinal beam structure to the different Linac4 users. A 3 to 12 MeV diagnostic line with spectrometer completes the Test Stand. When fully operational, the Test Stand will allow extensive studies on a 100 ms 70 mA H- beam and make it possible to study the chopping mechanism and the beam matching to the DTL structure, which in the Linac4 accelerator will follow the 3 MeV front end. A unique detector, the Halo monitor, capable of resolving the longitudinal population of two adjacent bunches at 2.8 nsec with a dynamic range of 104 will be employed to validate the chopping efficiency.
Already existing or planned	Existing
Unique features	Wide bandwidth fast beam chopper (rise time 2 ns) operating at 3 MeV beam energy.
Present situation / future changes / expected lifetime	The Linac4 Test Stand is meant to remain operational until the start of the Linac4 machine installation, which is foreseen for the beginning of 2013. The Linac4 Test Stand is meant to remain operational until the start of the Linac4 machine installation, which is foreseen for the beginning of 2013.
Accelerator infrastructure or component test infrastructure	1.3 MW, 350 MHz klystron delivering 400 msec pulses at 2 Hz; diagnostic line operating up to 12 MeV.
Shared facility/infrastructure	The facility and the infrastructure are dedicated.
Main user community	The facility is dedicated to the Linac4 beam development and the user community is formed by the main contributors to the Linac4 project (beam dynamics, beam diagnostics, ion source, RF, power supplies, magnets). It is not a user facility. It is nevertheless a unique facility in Europe for the validation of the technique of fast chopping using a meander line.
Number of users	
Open for external users	
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	

Number of FTEs operating the infrastructure	When fully operational the facility will require 4 FTEs
Contact details (name, Institute, email)	Carlo ROSSI +41 76 487 0830 Carlo.Rossi@cern.ch, Alessandra LOMBARDI +41 76 487 0103 Alessandra.Lombardi@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	Magnet Laboratory
Location of infrastructure (town, country)	CERN, Switzerland, Building 927
Web site address	https://te-dep.web.cern.ch/te-dep/structure/MSC/MDT/index.html
Legal name of organization operating the infrastructure	CERN (European Organization for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	SC magnets
General description of the infrastructure	The Magnet laboratory is located in the building 927 on the site of Prevessin of CERN complex. It is dedicated to the construction and assembly of SC magnets till a total length of 3 meters. It is dedicate to fabrication of magnets for the CERN accelerator complex, but its main task is the development of SC technologies via the construction of magnet models and prototypes. It is equipped of winding machine, vertical and horizontal collaring presses and curing press. The Lab works with Nb-Ti and Nb3Sn technologies
Already existing or planned	Existing, but under continue development
Unique features	3 winding machines, 2 collaring presses, 2 curing presses, various type of ovens
Present situation / future changes / expected lifetime	Continuous development, Time life > 10 years
Accelerator infrastructure or component test infrastructure	Component infrastructures
Shared facility/infrastructure	no
Main user community	Accelerator Technology
Number of users	20 persons active on site, working in parallel on at least 8 projects
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	collaboration agreement
Number of access units available for external users	To be defined according to project
If open to external users: Support offered by the organization operating the infrastructure	Following collaboration agreement the Superconducting Magnet Technology Laboratory can offer: 1) support in magnet engineering and design, 2) definition of magnet assembly procedure, 3) support in magnet model construction
Review procedure for requested access	The proposal has to be discussed and approved at level of MSC group management and submitted to TE Department approval. Physical access can take place as visitor or with full registration and Safety training if participation to real activities is foreseen
How to apply	For initial proposal please contact TE-MSC Group Leader (presently L. Bottura) and TE-MSC-MDT Section Leader (presently P. Fessia)
Can the infrastructure be made available for TIARA?	Through collaboration agreement
If YES, fraction of time that could be made available to TIARA (%)	According to the occupations for other projects and collaboration agreement statements
Number of FTEs operating the infrastructure	15
Contact details (name, Institute, email)	Paolo Fessia, CERN, 1211 Geneva 23, Paolo.Fessia@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	1.8 MCHF
If open to external users: **(how is the annual operating cost calculated)**	CERN Staff Cost (about 0.9 MCHF) + External Job costs (about 0.5 MCHF) + Consumable (0.15 MCHF) + Depreciation of tooling and necessary maintenance and updates (0.25 MCHF)
Estimated investment cost (replacement value)	Only for tooling disregarding infrastructure costs 4 MCHF

Name of the infrastructure	n_TOF
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://cern.ch/ntof
Legal name of organization operating the infrastructure	CERN - European Organization for Nuclear Research
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Targetry; Medical and Industrial accelerators; Radiation issues
General description of the infrastructure	The neutron time-of-flight facility, n_TOF, is a neutron source that has been operating at CERN since 2001. It is a unique facility in which neutrons are produced in a wide range of energies and in very intense beams. This allows precise measurements of neutron related processes that are relevant for several fields. One example is nuclear astrophysics where data produced by n_TOF are used to study the ordinary stellar evolution as well as supernovae. Intense neutron beams are also critical in the studies of processes of incineration of radioactive nuclear waste and for a better understanding of the effects of radiation in the treatment of tumors with beams of hadrons (hadrontherapy).
Already existing or planned	Existing
Unique features	High Instantaneous, broad energy (thermal to GeV) neutron flux with high energy resolution
Present situation / future changes / expected lifetime	Operational since 2001. Spallation target refurbished 2008. Experimental Area converted to Work Sector Type A in 2009. Mixed mode of operation with/out borated water. Study underway for second experimental area. Expected lifetime more than 10years.
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	Currently one experimental area, proposal for a second one which can run in parallel
Main user community	Neutron physics community (astrophysics, fundamental, medical and nuclear technology)
Number of users	5-10 experiments per year
Open for external users	Open with EU support (ERINDA project)
If open to external users: **Modality of access to the infrastructure (access unit)**	External users once their proposal has been approved by PAC of ERINDA and CERN INTC committee, they have to contact the nTOF Spokesperson for organizing the running period.
Number of access units available for external users	1month of beam time per year through ERINDA until 2013
If open to external users: Support offered by the organization operating the infrastructure	In the framework of FP7 ERINDA, support is provided both by CERN and by the EC to access the facility. CERN will ensure compliance with CERN regulations for the handling of activated materials: safety inspections before and after tests, special packaging and logistics and handling of wastes. CERN support includes the basic infrastructure for the experiments (electricity, network connectivity, office space, internet connections, control room, limited technical support for last minute corrections or modifications, etc.), installation of the experiments, preparation of the beams, and the beam operation during the experiments. The EC, via the ERINDA project, will support travel and subsistence for eligible candidates for 2 scientists for a period of 2 weeks per year.
Review procedure for requested access	External users proposals have to be submitted and evaluated by the PAC (Physics Advisory Committee) of ERINDA twice per year and later submitted to INTC (ISOLDE and NTOF committee at CERN) for approval on their physics case and beam time allocation.
How to apply	Please follow the link: http://www.erinda.org to know more about the conditions for eligibility under FP7 and to find the application form.
Can the infrastructure be made available for TIARA?	See above
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	1.5FTE
Contact details (name, Institute, email)	n_TOF Spokesperson: Enrico Chiaveri CERN, enrico.chiaveri@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	300 kCHF
If open to external users: **(how is the annual operating cost calculated)**	Direct cost
Estimated investment cost (replacement value)	N/A

Name of the infrastructure	NEG Coating Facility Workshop (Bldg 181)
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN - European Organization for Nuclear Research
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	UHV
General description of the infrastructure	This facility allows the high production rate of thin films in long beam pipes (up to 8 meter). The three cylindrical magnetron coatings systems available are equipped with vertical solenoids of 0.6 meter in diameter and 8 meter in length. It was designed to coat vacuum chambers for the LHC (the beam pipes for the Long Straight Sections (LSS) and for the experiments), with a Non Evaporable Getter (NEG), but can be used to deposit thin films of other materials (copper, carbon, niobium, aluminium, etc.)
Already existing or planned	Existing
Unique features	coating of long beam pipes, industrial scale production rates
Present situation / future changes / expected lifetime	Started in operation in 2002. Evolves according to the needs. Must remain operational for the lifetime of the LHC.
Accelerator infrastructure or component test infrastructure	Component production infrastructure (for the LHC, the experiments, and other accelerators/detectors)
Shared facility/infrastructure	The facility is dedicated, with open access to any CERN or external laboratory
Main user community	Accelerator and detector builders
Number of users	about 5 CERN and 3 externs
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	A simple contact with the responsible is sufficient. Priority must be usually given to urgent CERN activities
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	CERN provides all the infrastructure and the personnel to run it. In special cases, visitors from external lab may be encouraged to participate in order to guarantee extra manpower.
Review procedure for requested access	No formal review is foreseen
How to apply	No formal review is foreseen
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	Depends on the work charge for CERN, and the relative planning.
Number of FTEs operating the infrastructure	3
Contact details (name, Institute, email)	Pedro Costa Pinto, CERN, pedro.costa.pinto@cern.ch; Sergio Calatroni, CERN, sergio.calatroni@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	250 kCHF
If open to external users: **(how is the annual operating cost calculated)**	Direct operation cost, without overheads
Estimated investment cost (replacement value)	1.5 MCHF

Name of the infrastructure	Polymer laboratory
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	
General description of the infrastructure	The polymer laboratory is situated in building 101 on the Meyrin site. It provides CERN wide support to the development of use of polymer, selection of glue, development of insulation systems, rapid 3D prototyping. It is equipped with vacuum furnaces, ovens and air sucking systems for the use of hazardous chemical substances. it has been recently equipped with a 3D prototyping system and this field is in full development
Already existing or planned	operational
Unique features	unique at CERN level
Present situation / future changes / expected lifetime	Continuous upgrade. Lifetime 25 years
Accelerator infrastructure or component test infrastructure	Accelerator components development
Shared facility/infrastructure	Yes, among CERN community as a centre of competence
Main user community	CERN accelerator
Number of users	
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	2 FTE + 1 external technician
Contact details (name, Institute, email)	Paolo Fessia, CERN, Tel. +41-76 487 4027 paolo.fessia@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	1 MEUR
If open to external users: **(how is the annual operating cost calculated)**	cost allocate to project
Estimated investment cost (replacement value)	

Name of the infrastructure	PS
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Beam Dynamics, diagnostics and instrumentation, RF systems
General description of the infrastructure	The PS is CERN's first protons synchrotron that started its operation in 1959, but has undergone many upgrades since then. It accelerates different types of particles and beam characteristics for several experimental areas, like nTOF and the East Area or downstream machines like the Anti-proton decelerator (AD), the CERN-SPS and the LHC.
Already existing or planned	Existing
Unique features	Its main unique features is the versatility and the extreme flexibility in delivering beams with many different characteristics using time sharing with a maximum rate of 1.2 seconds. In case of protons the beams are injected at a beam momentum of 2.12 GeV/c. The beams can be accelerated using different RF harmonics and harmonic changes during the magnetic cycle (bunch splitting and/or recombination). The extracted proton beam momentum lies between 3.5 GeV/c and 26 GeV/c. These beams are extracted using fast extraction, a 5-turn extraction or a ~400 ms lasting resonant slow extraction. The beam intensities range from 2x109 to more approximately 3.5x1013 protons per pulse.
Present situation / future changes / expected lifetime	The PS is fully operational. A further upgrade of the PS is presently under study in the framework of the LHC injector upgrade project. In view of the upgrade and consolidation projects it is planned to exploit the PS for another 25 years.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	The CERN-PS is shared between the different physics experiments, downstream machines and some machine development users
Main user community	The main user community of the PS are the physicists of the associated experiments and the accelerator physicists running machine development studies.
Number of users	
Open for external users	The allocation of beam time in the experimental zones is reviewed by the SPSC (PS and SPS experimental committee) that will give a recommendation to the research board that will take a final decision. The PS is limited available for machine studies that are open to external users in the form of collaborations.
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	The PS is operated by 2 persons on 3 eight hour shift per day. The total team of operators consist of 14 operators and shift leaders. This team is completed by 6 machine supervisors and an important overhead for the maintenance and correct functioning of the different subsystems and the infrastructure.
Contact details (name, Institute, email)	Rende Steerenberg,CERN, Section leader BE-OP-PS (resp. for PS operation) - Tel. +41-764874518 - Rende.steerenberg@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	
If open to external users: (how is the annual operating cost calculated)	
Estimated investment cost (replacement value)	

Name of the infrastructure	PS Booster
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Beam Dynamics, diagnostics and instrumentation
General description of the infrastructure	The CERN PS Booster is a synchrotron consisting of 4 superimposed rings and serves as injector for the subsequent Proton Synchrotron (PS), and hence as proton source for CERN's entire physics program including the LHC. The Booster delivers also beams to CERN's isotope separator ISOLDE.
Already existing or planned	existing
Unique features	only 4-ring synchrotron
Present situation / future changes / expected lifetime	Upgrade to 2.0 GeV has been studied; project still to be approved. Existing life time as life time of the LHC (~20 years from now) in case the 2 GeV upgrade is done. In case this upgrade is not done, and the Booster is to be replaced by a new machine (RCS), the life time is expected to be until about 2018-2020.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	The PS Booster shares beams between all physics users at CERN
Main user community	The complete CERN physics program
Number of users	
Open for external users	The PS Booster is not an R&D facility but dedicated to CERN's physics program
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	7 beam operators full time plus 5 physicists/engineers at about 30%
Contact details (name, Institute, email)	Klaus Hanke, CERN, klaus.Hanke@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model **(how is the annual operating cost calculated)** **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	PS East Area Secondary Beams: T7, T8, T9, T10, T11
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://cern.ch/sba
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Targetry; Beam dynamics
General description of the infrastructure	The Est Area is an experimental hall of ~ 100 x 44 m2 surface, which houses a primary proton beam for the DIRAC experiment, an irradiation facility (protons and mixed field), a dedicated large spot secondary beam for the CLOUD experiment and two secondary test beams of top momenta 12 and 6 GeV/c. Each test beam has its associated experimental area. Test beams for equipment performance evaluation. Possibility to install accelerator components or equipment for R&D and prototype testing.
Already existing or planned	Existing
Unique features	Among the very few test beams in the energy range 1-10 GeV/c. Versatile environment.
Present situation / future changes / expected lifetime	Used on a yearly basis for various test setups and FThigh-energy physics experiments.
Accelerator infrastructure or component test infrastructure	Possibility for both, depending on the proposed setup.
Shared facility/infrastructure	Open facility to all CERN users.
Main user community	HEP community but also external users on AstroParticle experiments
Number of users	20 experiment/tests per year, about 200 physicists in total.
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Beam time allocation. The available yearly beam time (~180 days) is shared among the applicants.
Number of access units available for external users	No CERN proper beam time, all available beam slots are given to external user teams.
If open to external users: Support offered by the organization operating the infrastructure	CERN provides the beam and general infrastructure in the experimental halls. Installation needs and modifications to existing infrastructure are to the charge of the experimental teams. Limited technical support available in situ.
Review procedure for requested access	Beam time requests are collected once per year. Short (<7 days) requests are scheduled by the coordinator and approved by the CERN management, who also resolves scheduling issues if arise. Longer requests must go via the CERN scientific committees, reviewed and approved by again by the CERN management.
How to apply	Beam request form to the SPS physics coordinator: http://sps-schedule.web.cern.ch/sps-schedule/
Can the infrastructure be made available for TIARA?	Possibly
If YES, fraction of time that could be made available to TIARA (%)	TIARA accesses must compete with the other beam time requests.
Number of FTEs operating the infrastructure	Requires support from many CERN groups and specialties, plus CCC operator (1 FTE total) and two specialized staff (2FTE) - Rough estimate: 3 FTE total
Contact details (name, Institute, email)	Lau Gatignon - Lau.Gatignon@cern.ch - CERN EN Department
Annual operating costs (excl. Investment costs) of the infrastructure	100 CHF/day for electricity/beamline, 150 kCHF maintenance costs
if available: costing model **(how is the annual operating cost calculated)**	Estimate from beam power for electricity. Lump sum from past years for maintenance (including only the beams and experimental area, not the accelerators)
Estimated investment cost (replacement value)	65 MCHF total investment cost - estimate.

Name of the infrastructure	SM18 Superconducting Magnet Test Facility and Sc cavities testing area
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	SC Magnets; RF structures
General description of the infrastructure	An horizontal and vertical test station allowing to test at cryogenic temperature (both at 4.2K and 1.9K) magnets and special accelerator magnet components up to 13kA in horizontal and up to 20 kA in vertical position of cryostated or non cryostated magnets. The horizontal benches can accommodate magnets up to 15 m long, while the vertical test station is equipped with cryostats up to 3.8 m depth. A supercritical He test station will soon complete the facility allowing powering up to 20 kA. The cryogenic infrastructure allows 15g/s cooling power with the 6kW cryogenic power plant. The test station allows also test of Sc cavities with dedicated station.
Already existing or planned	existing
Unique features	yes of this size
Present situation / future changes / expected lifetime	working at the maximum rate of its cooling capacity, which is limiting the use of the magnet test benches to 20-30%. Future investments are needed in order to increase the cooling capacity by improving the cryogenic infrastructure, adding a new 8 kW plant. The expected life time is more than 15 years with continues maintenance work.
Accelerator infrastructure or component test infrastructure	TEST infrastructure
Shared facility/infrastructure	Sheared between Sc magnets and Sc cavities: TE-MSC and BE/RF
Main user community	Magnet and cavity builders
Number of users	
Open for external users	Open for external users but operated only by CERN personal
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	magnets: 7 FTE + cavities 5 FTE + 4 FTE for cryogenics +3 FTE services (powering, water cooling, control, daq ect)
Contact details (name, Institute, email)	Magnets: Marta Bajko, +41-76 487 4265, marta.bajko@cern.ch Cavities: Olivier Brunner +41-76 487 0420. olivier.brunner@cern.ch Cryogenics: Klaus Barth +41-76 487 3204, klaus.barth@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	0.7 MCHF for magnet, 0.7 MCHF for cavities, 3.2 MCHF for cryogenics and powering(LN, HeG, electricity)= 4.6 MCHF
if available: costing model **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	Magnets: 8 +10*1.5+12= 35 MCHF

Name of the infrastructure	SPL Plasma Generator test stand, Linac4 ion source test stand
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Accelerator design, beam dynamics, instrumentation and diagnostics
General description of the infrastructure	The 50 Hz SPL plasma generator test stand was produced within the EU-sLHC-pp 7.1 project. The linac4 ion source test stand is dedicated to 2Hz H- source R&D specific for linac4 (volume, surface and magnetron sources)
Already existing or planned	SPL Plasma Generator test stand is operational (50 Hz) Linac4 ion source test stand (2Hz) is planned completion scheduled for end 2012
Unique features	50 Hz, 1.2 ms, 100 kW, 1.9-2.1 MHz pulsed RF generator, plasma diagnostics (optical emission spectrometry, langmuir gauge, mass spectrometry, 3D hall gauge).
Present situation / future changes / expected lifetime	SPL Plasma Generator test stand is operational Linac4 ion source test stand (2Hz): completion scheduled for end 2012, operation for linac4 until end 2015. After 2015 potential move into a dedicated location and extension as an RFQ test stand has been mentioned. upgrade of the ion source test stand to higher repetition rates requires dedicated studies.
Accelerator infrastructure or component test infrastructure	RF and Arc discharge Plasma generator and H- ion sources
Shared facility/infrastructure	single user
Main user community	H- source for accelerators
Number of users	
Open for external users	Yes, provided collaboration agreement.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	3-5 FTE
Contact details (name, Institute, email)	Jacques Lettry, +41-22 767 2658 - jacques.lettry@cern.ch - CERN, Switzerland
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	1 MCHF (plasma Generator), + 3 MCHF ion source test stand

Name of the infrastructure	SPS North Area/Secondary Beam Lines: H2, H4, H6, H8
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://cern.ch/sba
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Targetry; Radiation issues; Beam dynamics
General description of the infrastructure	High-energy, high-resolution beam secondary beams providing hadron and electron beams from 10-400GeV/c. Can also provide high-purity electron beams from photon decays or low energy pion/proton beams from Lamba0 or K0 decays. Alternatively it can be used to transport ions and attenuated primary proton beams. It also houses the H4IRRAD test area for studies of the impact of radiation to electronics.Test beams for equipment performance evaluation. Possibility to install accelerator components or equipment for R&D and prototype testing.
Already existing or planned	Existing
Unique features	Among the very few test beams in this energy range. Versatile environment.
Present situation / future changes / expected lifetime	Used on a yearly basis for various test setups and FThigh-energy physics experiments.
Accelerator infrastructure or component test infrastructure	Possibility for both, depending on the proposed setup.
Shared facility/infrastructure	Open facility to all CERN users.
Main user community	HEP community but also external users on AstroParticle experiments
Number of users	60 experiment/tests per year, about 2000 physicists in total.
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Beam time allocation. The available yearly beam time (~180 days) is shared among the applicants.
Number of access units available for external users	No CERN proper beam time, all available beam slots are given to external user teams.
If open to external users: Support offered by the organization operating the infrastructure	CERN provides the beam and general infrastructure in the experimental halls. Installation needs and modifications to existing infrastructure are to the charge of the experimental teams. Limited technical support available in situ.
Review procedure for requested access	Beam time requests are collected once per year. Short (<7 days) requests are scheduled by the coordinator and approved by the CERN management, who also resolves scheduling issues if arise. Longer requests must go via the CERN scientific committees, reviewed and approved by again by the CERN management.
How to apply	Beam request form to the SPS physics coordinator: http://sps-schedule.web.cern.ch/sps-schedule/
Can the infrastructure be made available for TIARA?	Possibly
If YES, fraction of time that could be made available to TIARA (%)	TIARA accesses must compete with the other beam time requests.
Number of FTEs operating the infrastructure	Requires support from many CERN groups and specialties, plus CCC operators (5 FTE total) and five specialized staff (5FTE) - Rough estimate: 10 FTE total
Contact details (name, Institute, email)	Ilias Efthymiopoulos (Ilias.Efthymiopoulos@cern.ch), Edda Gschwendtner (Edda.Gschwendtner@cern.ch) - CERN EN Department
Annual operating costs (excl. Investment costs) of the infrastructure	250 CHF/day for electricity/beamline, 500 kCHF maintenance costs
if available: costing model **(how is the annual operating cost calculated)**	Estimate from beam power for electricity. Lump sum from past years for maintenance (including only the beams and experimental area, not the accelerators)
Estimated investment cost (replacement value)	1'000 MCHF total investment cost - estimate.

Name of the infrastructure	SPS North Area/Primary Beam Line P0/K12 (NAHIF)
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://cern.ch/sba
Legal name of organization operating the infrastructure	CERN
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Targetry; Beam dynamics
General description of the infrastructure	The P0 beam consists of an 850 m long primary proton line towards a Production target T10, from which secondary beams can be extracted. Alternatively can be used to transport an attenuated primary beam to an experiment or test setup. Test beams for equipment performance evaluation. Possibility to install accelerator components or equipment for R&D and prototype testing.
Already existing or planned	Existing
Unique features	The P0 complex presently provides a hadron beam specifically optimised for kaon rare decay searches.
Present situation / future changes / expected lifetime	Dedicated to the NA62 HEP experiment
Accelerator infrastructure or component test infrastructure	Possibility for both, depending on the proposed setup.
Shared facility/infrastructure	Open facility to all CERN users.
Main user community	HEP community
Number of users	NA62 experiment
Open for external users	No
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	Yearly beam time presently taken by NA62
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	Beam time requests must go via the CERN scientific committees, reviewed and approved by again by the CERN management.
How to apply	Via the CERN SPSC committee
Can the infrastructure be made available for TIARA?	No
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	Requires support from many CERN groups and specialties, plus CCC operator (1 FTE total) and two specialized staff (2FTE) - Rough estimate: 3 FTE total
Contact details (name, Institute, email)	Lau Gatignon (Lau.Gatignon@cern.ch) - CERN EN Department
Annual operating costs (excl. Investment costs) of the infrastructure	1000 kCHF/day electricity, 100 kCHF maintenance
if available: costing model **(how is the annual operating cost calculated)**	Estimate from beam power for electricity. Lump sum from past years for maintenance (including only the beams and experimental area, not the accelerators)
Estimated investment cost (replacement value)	150 MCHF total investment cost - estimate.

Name of the infrastructure	SPS North Area/M2 Beam Line
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	http://cern.ch/sba
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	Targetry; Beam dynamics
General description of the infrastructure	High-intensity high-energy muon beam for the COMPASS experiment, that can also be operated as a secondary hadron beam or as a low-intensity tertiary electron beam. Test beams for equipment performance evaluation. Possibility to install accelerator components or equipment for R&D and prototype testing.
Already existing or planned	Existing
Unique features	Pure muon beam with low halo
Present situation / future changes / expected lifetime	Dedicated to the COMPASS HEP experiment
Accelerator infrastructure or component test infrastructure	Possibility for both, depending on the proposed setup.
Shared facility/infrastructure	Open facility to all CERN users.
Main user community	HEP community
Number of users	COMPASS experiment
Open for external users	No
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	Yearly beam time presently taken by COMPASS
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	Beam time requests must go via the CERN scientific committees, reviewed and approved by again by the CERN management.
How to apply	Via the CERN SPSC committee
Can the infrastructure be made available for TIARA?	No
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	Requires support from many CERN groups and specialties, plus CCC operator (1 FTE total) and two specialized staff (2FTE) - Rough estimate: 3 FTE total
Contact details (name, Institute, email)	Lau Gatignon (Lau.Gatignon@cern.ch) – CERN/EN Department
Annual operating costs (excl. Investment costs) of the infrastructure	1000 kCHF/day electricity, 100 kCHF maintenance
if available: costing model **(how is the annual operating cost calculated)**	Estimate from beam power for electricity. Lump sum from past years for maintenance (including only the beams and experimental area, not the accelerators)
Estimated investment cost (replacement value)	100 MCHF total investment cost - estimate.

Name of the infrastructure	SPS
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Beam Dynamics, diagnostics and instrumentation, RF systems, UHV
General description of the infrastructure	The Super Proton Synchrotron is the second largest machine in CERN's accelerator complex. Measuring nearly 7 km in circumference, it takes particles from the PS and accelerates them to provide beams for the Large Hadron Collider, the COMPASS experiment and the CNGS project. When it switched on in 1976, the SPS became the workhorse of CERN's particle physics programme. Research using SPS beams has probed the inner structure of protons, investigated nature's preference for matter over antimatter, looked for matter as it might have been in the first instants of the Universe and searched for exotic forms of matter. A major highlight came in 1983 with the Nobel-prize-winning discovery of W and Z particles made with the SPS running as a proton-antiproton collider. The SPS has 1317 conventional (room temperature) electromagnets, including 744 dipoles to bend the beams round the ring, and it operates at up to 450 GeV. It has handled many different kinds of particles – sulphur and oxygen nuclei, electrons, positrons, protons and antiprotons.
Already existing or planned	existing since 1976
Unique features	very high beam energy and very intense proton beams; possibility to accelerate heavy ions
Present situation / future changes / expected lifetime	The machine is fully operational and it is used as fixed target accelerator as well as LHC injector. It will be maintained to operate for at least another 20 years.
Accelerator infrastructure or component test infrastructure	accelerator infrastructure
Shared facility/infrastructure	The accelerator is dedicated to the CERN high energy program
Main user community	The main user community of the SPS are the physicists of the associated experiments and the accelerator physicists running machine development studies.
Number of users	
Open for external users	in general not, only as part of CERN collaborations
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	The SPS is operated by 2 persons on 3 eight hour shift per day. The total team of operators consist of 14 operators and shift leaders. This team is completed by 6 machine supervisors and an important overhead for the maintenance and correct functioning of the different subsystems and the infrastructure.
Contact details (name, Institute, email)	Karel Cornelis, CERN - Karel.Cornelis@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	

Name of the infrastructure	Superconductors and Cabling Facility
Location of infrastructure (town, country)	Building 103 & 163 at CERN, Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	SC magnets
General description of the infrastructure	Superconducting cabling machine for the fabrication of Rutherford type cable having a maximum capacity of 40 wires. Maximum spool capacity 30 Kg. Test laboratory for characterization and qualification of superconducting materials, wires and cables.
Already existing or planned	Existing
Unique features	High current testing of superconducting cables (32 kA in 10 T and superfluid helium, only facility worldwide). High current critical current tests
Present situation / future changes / expected lifetime	Machine operational to fabricate superconducting LHC cables, as well as Nb3Sn cable for the HFM program at CERN The laboratory is running and presently used close to 100 % of its capacity. We expect the facility to be maintained at CERN as a part of its core facilities
Accelerator infrastructure or component test infrastructure	-
Shared facility/infrastructure	No
Main user community	HEP community
Number of users	Presently mostly internal (CERN programs and EU collaboration programs), a few external institutions have access to the test facilities through collaboration agreements (ITER, CEA, CNRS, INFN, FNAL)
Open for external users	On a limited basis, if the request is within the present capability
If open to external users: **Modality of access to the infrastructure (access unit)**	Through collaboration agreements (e.g. FP7)
Number of access units available for external users	-
If open to external users: Support offered by the organization operating the infrastructure	Overall infrastructure and maintenance costs(power, manpower for operation, machine consumables)
Review procedure for requested access	-
How to apply	-
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	
Contact details (name, Institute, email)	OBERLI Luc, +41-22 767 5392, luc.oberli@cern.ch, CERN Amalia Ballarino, +41-22 767 3296, Amalia.Ballarino@cern.ch, CERN
Annual operating costs (excl. Investment costs) of the infrastructure	20 kEUR
if available: costing model **(how is the annual operating cost calculated)**	based on running costs (power, cryogenics) and consumables for tests
Estimated investment cost (replacement value)	

Name of the infrastructure	Surface analysis laboratory
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	UHV; RF structures
General description of the infrastructure	The surface analysis laboratory of CERN provides support for all CERN operation and development activities, which require control of surface chemical composition as thin films coatings, cleaning for UHV, corrosion investigations and general failure diagnostics. The laboratory is equipped with 2 XPS spectrometers, with monochromatized and non-monochromatized source, respectively. In addition an Auger spectrometer is also available for conducting samples only. One of the XPS systems is connected to a homemade device which enables to measure the secondary electron yield of surfaces at normal incidence in an energy range from 30 eV to 2000 eV. Another separated system enables the measurement of the secondary electron yield at cryogenic temperatures.
Already existing or planned	Existing
Unique features	Combination of XPS and secondary electron yield, secondary electron yield at low temperatures
Present situation / future changes / expected lifetime	one XPS is new and will be further equipped with more peripheral tools, the second one and the Auger are more than 20 years old. The secondary electron system are recent (<5 years).
Accelerator infrastructure or component test infrastructure	Quality control of NEG (activation) and low secondary electron yield coatings
Shared facility/infrastructure	For CERN users and exceptionally for external institutes and industries.
Main user community	UHV specialists for particle accelerators, experiments
Number of users	about 250 samples/year CERN-wide
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	Discussion of the precise needs with the responsible persons by e-mail or phone. The analysis for external user is planned following the CERN scientific priorities and planning.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	CERN technicians and technical engineer operate the devices
Review procedure for requested access	The sample size and suspected composition shall be compatible with the UHV environment of the instruments.
How to apply	
Can the infrastructure be made available for TIARA?	YES
If YES, fraction of time that could be made available to TIARA (%)	Depends on CERN charge of work and planning
Number of FTEs operating the infrastructure	1.5 FTE
Contact details (name, Institute, email)	Mauro Taborelli, CERN, mauro.taborelli@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	40 kCHF
if available: costing model **(how is the annual operating cost calculated)**	Operation cost (consumables, maintenance)
Estimated investment cost (replacement value)	2 MEUR

Name of the infrastructure	Surface treatment workshop for RF cavities
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	RF Structures
General description of the infrastructure	This workshop can perform chemical and electrochemical polishing on Copper and Niobium substrates. Copper chemical polishing facility can process up to an overall cell volume of 1.3 m^3. The present Nb electropolishing facility can process up to a 0.15 m^3 overall volume in a close circuit. It is also equipped with a High Pressure Water Rising installation for RF cavities, which is able to deliver ultra high pure water up to 1m^3/h at 100 bar under a nitrogen atmosphere; this installation allows also the drying under primary vacuum without moving the cavity.
Already existing or planned	Existing
Unique features	Integration of different services to process RF cavities
Present situation / future changes / expected lifetime	The older facilities are presently being upgraded. Expected lifetime:10 years;
Accelerator infrastructure or component test infrastructure	Superconducting linacs and LHC cavities
Shared facility/infrastructure	Not shared, but its services can be carried out for CERN users and external institutes and industries.
Main user community	Accelerators physicists, engineers
Number of users	CERN RF group plus external users
Open for external users	Only as a service. Usually, no direct access to the facility is granted
If open to external users: **Modality of access to the infrastructure (access unit)**	Open to external users as a service. A simple email or phone call to the person in charge is enough. The treatments for external user are planned following the CERN scientific priorities and planning.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	YES
If YES, fraction of time that could be made available to TIARA (%)	Depends on CERN charge of work and planning
Number of FTEs operating the infrastructure	2 FTE
Contact details (name, Institute, email)	Marina Malabaila, CERN, marina.malabaila@cern.ch - Leonel Ferreira, CERN, leonel.ferreira@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	0.3 MCHF
if available: costing model **(how is the annual operating cost calculated)**	Direct operation cost, without overheads
Estimated investment cost (replacement value)	4 MCHF (New facility)

Name of the infrastructure	Surface treatment workshop (Bldg 102, Bldg 107 from 2014)
Location of infrastructure (town, country)	Geneva, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organization for Nuclear Research)
Location of organization (town, country)	Geneva, Switzerland
Key Accelerator Research Area(s)	UHV; RF structures
General description of the infrastructure	The surface finishing workshop is a manual multi treatment facility, which provides support for all CERN operations and development activities. The workshop is capable of performing degreasing, pickling, etching and polishing of copper, aluminium and iron based metals. Electroplating of Copper, Nickel, Silver, Gold and Rhodium can also be handled. Besides the standard baths, the workshop has a multi task area in order to cope with less frequent demands either by size or type of treatment. Components up to 7 meters in length can be processed.
Already existing or planned	Existing
Unique features	Polyvalence and dedicated baths formulations
Present situation / future changes / expected lifetime	The present installation will be replaced by the end of 2013. Expected lifetime 30 years
Accelerator infrastructure or component test infrastructure	Surface finishing treatments are the last or one of the last operations on components before being assembled (accelerators/detectors) and confer the unique surface properties to ensure the best performance.
Shared facility/infrastructure	Not shared, but its services can be carried out for CERN users and external institutes and industries.
Main user community	Accelerators and detectors physicists, engineers
Number of users	CERN wide plus external users
Open for external users	Only as a service. Usually, no direct access to the facility is granted
If open to external users: **Modality of access to the infrastructure (access unit)**	Open to external users as a service. A simple email or phone call to the person in charge is enough. The treatments for external user are planned following the CERN scientific priorities and planning.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	YES
If YES, fraction of time that could be made available to TIARA (%)	Depends on CERN charge of work and planning
Number of FTEs operating the infrastructure	8 FTE
Contact details (name, Institute, email)	Leonel Ferreira, CERN, leonel.ferreira@cern.ch Marina Malabaila, CERN, marina.malabaila@cern.ch
Annual operating costs (excl. Investment costs) of the infrastructure	1.0 MCHF
if available: costing model **(how is the annual operating cost calculated)**	Direct operation cost, without overheads
Estimated investment cost (replacement value)	20 MCHF (New facility)

Name of the infrastructure	TT1 and TZ32 tunnels
Location of infrastructure (town, country)	CERN, Switzerland
Web site address	www.cern.ch
Legal name of organization operating the infrastructure	CERN (European Organisation for the Nuclear Research)
Location of organization (town, country)	CERN, Switzerland
Key Accelerator Research Area(s)	Radiation issues, alignment and stabilization
General description of the infrastructure	The TT1 tunnel is an old transfer tunnel of ISR on the Meyrin; it is a straight tunnel, with a horizontal part of 140 m, located in one of the quiets place of CERN. It hosts a facility installed to perform the qualification and inter-comparison of alignment systems in the frame of the CLIC studies, on distances up to 140 m. The TZ32 tunnel is an underground straight tunnel located near point 3 of the LHC, with a length of 800m. In this tunnel, a test facility will be installed in order to perform the qualification and inter-comparison of alignment systems (Hydrostatic Levelling Systems, Wire Positioning Systems and laser based systems) in the frame of the CLIC pre-alignment studies, on distances up to 500m
Already existing or planned	TT1 is existing. The TZ32 exists, but PAD/MAD access system must be installed at the entrance of TZ32 during the first long shutdown (LS1). The test facility will be installed during that shutdown
Unique features	An horizontal tunnel with an available length of 140m (TT1) and 500m (TZ32).
Present situation / future changes / expected lifetime	In work.
Accelerator infrastructure or component test infrastructure	Component tests infrastructure
Shared facility/infrastructure	
Main user community	Persons in charge of the alignment of accelerators, developing new alignment systems or techniques
Number of users	
Open for external users	yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	0.5 FTE in 2012 and 2013
Contact details (name, Institute, email)	Hélène Mainaud Durand, Helene.Mainaud.Durand@cern.ch, CERN - Tel. +41-22.767.51.55
Annual operating costs (excl. Investment costs) of the infrastructure	~30 kCHF
if available: costing model **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	Funding comes from CLIC budget

ETH	
Name of the infrastructure	ETHZ Ion Beam Physics Facilities
Location of infrastructure (town, country)	ETH Hönggerberg, Zürich, Switzerland
Web site address	http://www.ams.ethz.ch/about
Legal name of organization operating the infrastructure	Laboratory of Ion Beam Physics, ETH Zürich
Location of organization (town, country)	Zürich, Switzerland
Key Accelerator Research Area(s)	Medical and industrial accelerators
General description of the infrastructure	Accelerator mass spectrometry, including carbon dating (80%), materials analysis and modification, such as irradiation and implantation 6 MV tandem accelerator (AMS and materials science); 0.5 MV tandem accelerator (AMS), 0.2 MV tandem accelerator (AMS)
Already existing or planned	In operation.
Unique features	Excellent detection capability for Cl-36 and other isotopes (6 MV tandem)
Present situation / future changes / expected lifetime	In operation, continuous upgrades.
Accelerator infrastructure or component test infrastructure	Accelerator infrastructure.
Shared facility/infrastructure	
Main user community	AMS, Materials Science
Number of users	?
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	AMS service (C-14, Be-10, Al-26) is per sample
Number of access units available for external users	AMS services unlimited, other uses to be negotiated
If open to external users: Support offered by the organization operating the infrastructure	Full support for AMS, irradiation and implantation services
Review procedure for requested access	No formal review procedure (?)
How to apply	Contact H.-A. Synal
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	?
Contact details (name, Institute, email)	Hans-Arno Synal, +41-44 633 2027, synal@phys.ethz.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model **(how is the annual operating cost calculated)**	?
Estimated investment cost (replacement value)	?

PSI	
Name of the infrastructure	High Intensity Proton Facility (HIPA)
Location of infrastructure (town, country)	Villigen PSI, Switzerland
Web site address	-
Legal name of organization operating the infrastructure	Paul Scherrer Institute (PSI)
Location of organization (town, country)	Villigen PSI, Switzerland
Key Accelerator Research Area(s)	High intensity beams, targrety accelerator designs
General description of the infrastructure	Proton facility delivering 2.2 mA of 590 MeV protons. Secondary muon and pion beamlines.
Already existing or planned	In operation.
Unique features	Highest mean proton intensity worldwide
Present situation / future changes / expected lifetime	In operation. High intensity upgrade is planned.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	User operation has first priority.
Main user community	Basic and applied research with muons, pions, neutrons
Number of users	O(1000)
Open for external users	Restricted; possible on special request.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	No formal review procedure.
How to apply	Contact Mike Seidel
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	No official number available.
Contact details (name, Institute, email)	Mike Seidel, +41-56 310 3378, Mike.Seidel@psi.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model **(how is the annual operating cost calculated)**	?
Estimated investment cost (replacement value)	

Name of the infrastructure	Ion Source Test Stand
Location of infrastructure (town, country)	Villigen PSI, Switzerland
Web site address	-
Legal name of organization operating the infrastructure	Paul Scherrer Institute (PSI)
Location of organization (town, country)	Villigen PSI, Switzerland
Key Accelerator Research Area(s)	Test of ECR ion sources and injectors
General description of the infrastructure	Test stand for ECR ion sources including emittance measurement.
Already existing or planned	In operation.
Unique features	
Present situation / future changes / expected lifetime	In operation.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	PSI accelerator operation division.
Number of users	-
Open for external users	Probably.
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	No formal review procedure.
How to apply	Contact: Dietmar Goetz
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	1(?)
Contact details (name, Institute, email)	Dietmar Goetz, +41-56 310 4376, Dietmar.Goetz@psi.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model (how is the annual operating cost calculated)	?
Estimated investment cost (replacement value)	

Name of the infrastructure	Proton Irradiation Facility (PIF)
Location of infrastructure (town, country)	Villigen PSI, Switzerland
Web site address	pif.web.psi.ch
Legal name of organization operating the infrastructure	Paul Scherrer Institute (PSI)
Location of organization (town, country)	Villigen PSI, Switzerland
Key Accelerator Research Area(s)	Radiation issues.
General description of the infrastructure	70-250 MeV, 1-10 nA proton beam extracted from the PROSCAN medical facility for irradiation studies
Already existing or planned	In operation.
Unique features	
Present situation / future changes / expected lifetime	In operation.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	Proton beam shared with PROSCAN
Main user community	ESA (test of space components)
Number of users	?
Open for external users	Yes.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	Beam time offer issued by PIF team
How to apply	Beam time request form available online.
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	6 (?)
Contact details (name, Institute, email)	Wojtek Hajdas, +41-56 310 4212, Wojtek.Hajdas@psi.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model **(how is the annual operating cost calculated)**	?
Estimated investment cost (replacement value)	

Name of the infrastructure	SINQ Target Irradiation Program (STIP)
Location of infrastructure (town, country)	Villigen PSI, Switzerland
Web site address	-
Legal name of organization operating the infrastructure	Paul Scherrer Institute (PSI)
Location of organization (town, country)	Villigen PSI, Switzerland
Key Accelerator Research Area(s)	Radiation issues.
General description of the infrastructure	Irradiation of materials in SINQ spallation target (between target exchanges and during regular user operation)
Already existing or planned	In operation
Unique features	
Present situation / future changes / expected lifetime	In operation.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	Parasitic irradiation during user operation of SINQ.
Main user community	Nuclear engineering
Number of users	O(1000)
Open for external users	Probably.
If open to external users: **Modality of access to the infrastructure (access unit)**	Join STIP effort.
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	No formal review procedure.
How to apply	Contact: Yong Dai
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	No official number available.
Contact details (name, Institute, email)	Yong Dai, +41-56 310 4171, Yong.Dai@psi.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model **(how is the annual operating cost calculated)**	?
Estimated investment cost (replacement value)	

Name of the infrastructure	Swiss Light Source (SLS)
Location of infrastructure (town, country)	Villigen PSI, Switzerland
Web site address	-
Legal name of organization operating the infrastructure	Paul Scherrer Institute (PSI)
Location of organization (town, country)	Villigen PSI, Switzerland
Key Accelerator Research Area(s)	Low emittance storage rings, test of novel storage ring optics schemes,accelerator design, beam dynamics
General description of the infrastructure	2.4 GeV electron synchrotron with 17 beamlines. Two diagnostic beamlines are dedicated to accelerator physics/machine development (emittance measurement etc.)
Already existing or planned	In operation.
Unique features	Smallest vertical emittance worldwide.
Present situation / future changes / expected lifetime	In operation.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	User operation has first priority.
Main user community	Basic and applied research with photons (mainly X-ray)
Number of users	O(1000)
Open for external users	Restricted; possible on special request.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	No formal review procedure.
How to apply	Contact Andreas Streun
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	No official number available.
Contact details (name, Institute, email)	Andreas Streun, +41-56 310 3688, Andreas.Streun@psi.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model **(how is the annual operating cost calculated)**	?
Estimated investment cost (replacement value)	

Name of the infrastructure	SwissFEL Injector Test Facility
Location of infrastructure (town, country)	Villigen PSI, Switzerland
Web site address	-
Legal name of organization operating the infrastructure	Paul Scherrer Institute (PSI)
Location of organization (town, country)	Villigen PSI, Switzerland
Key Accelerator Research Area(s)	Beam dynamics of photo-injector: emittance compensation, bunch compression etc. Sourses and injectors
General description of the infrastructure	250 MeV electron photoinjector, delivering up to 200 pC pulses at 10 Hz
Already existing or planned	In operation 2010-2014.
Unique features	
Present situation / future changes / expected lifetime	In operation 2010-2014.
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	SwissFEL project.
Number of users	-
Open for external users	Restricted; possible on special request.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	No formal review procedure.
How to apply	Contact: Marco Pedrozzi
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	No official number available.
Contact details (name, Institute, email)	Marco.Pedrozzi, +41-56 310 3242, Marco.Pedrozzi@psi.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model **(how is the annual operating cost calculated)**	?
Estimated investment cost (replacement value)	

Name of the infrastructure	SwissFEL C-band RF test stand
Location of infrastructure (town, country)	Villigen PSI, Switzerland
Web site address	-
Legal name of organization operating the infrastructure	Paul Scherrer Institute (PSI)
Location of organization (town, country)	Villigen PSI, Switzerland
Key Accelerator Research Area(s)	RF structures
General description of the infrastructure	Test of C-band accelerating structure for SwissFEL project.Test stand for C-band (5.7 GHz) accelerating structures.
Already existing or planned	In operation 2011-2015(?)
Unique features	
Present situation / future changes / expected lifetime	In operation 2011-2015(?)
Accelerator infrastructure or component test infrastructure	
Shared facility/infrastructure	
Main user community	SwissFEL project.
Number of users	-
Open for external users	Restricted; possible on special request.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	No formal review procedure.
How to apply	Contact: Juergen Alex
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	No official number available.
Contact details (name, Institute, email)	Juergen Alex, +41-56 310 5049, Juergen.Alex@psi.ch
Annual operating costs (excl. Investment costs) of the infrastructure	?
if available: costing model **(how is the annual operating cost calculated)**	?
Estimated investment cost (replacement value)	

UK	
Name of the infrastructure	ALICE
Location of infrastructure (town, country)	Warrington, England
Web site address	http://www.stfc.ac.uk/ASTeC/Programmes/Alice/35997.aspx
Legal name of organization operating the infrastructure	STFC, Science and Technology Facilities Council
Location of organization (town, country)	Warrington, England
Key Accelerator Research Area(s)	FEL studies, THz studies, Accelerator physics, Laser synchronisation and EMMA injection.
General description of the infrastructure	ALICE, formerly known as ERLP, is a demonstrator accelerator system. The heart of this facility is an ERL accelerator and a powerful multi-terrawatt laser.
Already existing or planned	Existing
Unique features	ERL - first in Europe, IRFEL - first to lase in UK, first ERL driven in Europe.
Present situation / future changes / expected lifetime	Operational / 2011 - New SC Linac module (DICC) / End 2012
Accelerator infrastructure or component test infrastructure	Accelerator
Shared facility/infrastructure	Yes - EMMA injection.
Main user community	
Number of users	
Open for external users	Yes - for novel ideas and proof of principal experiments.
If open to external users: Modality of access to the infrastructure (access unit)	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	17
Contact details (name, Institute, email)	Greg Diakun (STFC), greg.diakun@stfc.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	1.5 MGBP
if available: costing model (how is the annual operating cost calculated)	Direct operating costs
Estimated investment cost (replacement value)	

Name of the infrastructure	Alpha-X
Location of infrastructure (town, country)	Glasgow, Scotland
Web site address	http://phys.strath.ac.uk/alpha-x/
Legal name of organization operating the infrastructure	University of Strathclyde
Location of organization (town, country)	Glasgow, Scotland
Key Accelerator Research Area(s)	A Laser Wakefield Accelerator dedicated to the production and application of ultra-short electron bunches and radiation pulses
General description of the infrastructure	The Advanced Laser-Plasma High-Energy Accelerators towards X-rays (ALPHA-X) programme is developing laser-plasma accelerators for the production of ultra-short electron beams as drivers of incoherent and coherent radiation sources from plasma and magnetic undulators.
Already existing or planned	Existing
Unique features	Implicit in this is the development and application of high resolution diagnostic systems, such as magnetic dipole imaging electron spectrometers and pepper-pot emittance masks. Additional 10 Hz and kHz Ti:sapphire laser systems are also available for off-line accelerator and diagnostic development and characterisation, including femtosecond laser micromachining of capillary waveguides (a technique originally developed at Strathclyde), emittance masks, X-ray filters, etc. A distinguishing characteristic of the electron bunches is their bunch duration, which is less than 1 femtosecond.
Present situation / future changes / expected lifetime	Operational / ALPHA-X will form part of the upcoming Scottish Centre for the Application of Plasma-based Accelerators (SCAPA) that is scheduled to move into purpose-built laboratories in 2014. SCAPA will feature an upgraded laser system (200-300 TW, which will be upgraded to 1 PW) and multiple shielded beam line areas. Focus on the application of electron, ion and radiation sources. / Lifetime is Indefinite.
Accelerator infrastructure or component test infrastructure	ALPHA-X is a test facility in terms of both the laser wakefield accelerator technology radiation generation and the application of the ultrashort pulses.
Shared facility/infrastructure	No
Main user community	
Number of users	
Open for external users	External users are welcome in collaboration with the ALPHA-X team.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	12 staff and ~8 postgraduate students.
Contact details (name, Institute, email)	Dino Jarosinski, Strathclyde University, d.a.jaroszynski@strath.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	1.0 MGBP
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	Approximately 2 MGBP. Recent investment of ≈ 6 MGBP to set up SCAPA.

Name of the infrastructure	Science and Technology Facilities Council
Location of infrastructure (town, country)	Warrington, England
Web site address	
Legal name of organization operating the infrastructure	STFC, Science and Technology Facilities Council
Location of organization (town, country)	Warrington, England
Key Accelerator Research Area(s)	Accelerator vacuum technology R&D
General description of the infrastructure	This is a state of the art vacuum science and instrumentation laboratory. These laboratories are used to run an advanced programme of R&D as well as to provide the necessary vacuum facilities to underpin ASTeC programmes.
Already existing or planned	Existing
Unique features	UHV Gauge Calibration, Advanced NEG film production with best characteristics available anywhere in the world, Cross-discipline collaborations established, Cleaning and Outgassing Test Facility, surface Analysis Facility, Multi-Magnetron Sputtering Facility, Solenoid Magnetron Sputtering Facility, CVD Coating System – Under development, Plasma Assisted (COLD) CVD Coating System – Under development, Pump Speed Measurement Facility, Photocathode Preparation System, NEG Film Evaluation System, Sample Outgassing Characterisation Facility.
Present situation / future changes / expected lifetime	Operational / A number of improvements are planned to keep systems at the cutting edge but nothing major in the short term. / Will operate > 10 years
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	Yes - Some of the facilities are shared with local universities
Main user community	Local universities
Number of users	
Open for external users	NO – But this would be considered if external income was generated.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	Group consists of 6FTEs plus 1 PhD student plus 2 sandwich students.
Contact details (name, Institute, email)	Joe Herbert, STFC, Joe Herbert@stfc.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	Experimental programme for the VS group (without manpower) approx 100 kGBP per year. Basic lab operations approx 35 kGBP per year (without manpower, included above).
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	Approximately 50 kGBP per year in equipment costs invested in each of the last 8 years.

Name of the infrastructure	Diamond 100 MeV linac, 3 GeV booster synchrotron, 3 GeV storage ring
Location of infrastructure (town, country)	Didcot, England
Web site address	www.diamond.ac.uk
Legal name of organization operating the infrastructure	Diamond Light Source Ltd
Location of organization (town, country)	Didcot, England
Key Accelerator Research Area(s)	Non-linear beam dynamics, low-alpha, collective effects, CSR emission and microbunching, ultra-low coupling, diagnostics and feedback systems development, insertion device development
General description of the infrastructure	Diagnostics test section in the 3 GeV booster to storage ring transfer line (single-shot emittance measurement, cavity BPMs etc.) Orbit feedback development using the booster synchrotron Use of storage ring during machine development periods for beam dynamics studies
Already existing or planned	Existing
Unique features	
Present situation / future changes / expected lifetime	Operational / No major developments currently planned / Will operate > 10 years
Accelerator infrastructure or component test infrastructure	Both
Shared facility/infrastructure	No
Main user community	Diamond Light Source + external collaborations
Number of users	<10
Open for external users	N/A
If open to external users: **Modality of access to the infrastructure (access unit)**	N/A
Number of access units available for external users	N/A
If open to external users: Support offered by the organization operating the infrastructure	N/A
Review procedure for requested access	N/A
How to apply	N/A
Can the infrastructure be made available for TIARA?	Yes, this can be considered
If YES, fraction of time that could be made available to TIARA (%)	Needs to be considered on a case by case basis
Number of FTEs operating the infrastructure	Not separately accounted
Contact details (name, Institute, email)	Richard Walker, Richard.Walker@diamond.ac.uk, Diamond Light Source Ltd
Annual operating costs (excl. Investment costs) of the infrastructure	Not separately accounted
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	N/A

Name of the infrastructure	EMMA
Location of infrastructure (town, country)	Warrington, England
Web site address	http://www.stfc.ac.uk/ASTeC/Programmes/17426.aspx
Legal name of organization operating the infrastructure	STFC, Science and Technology Facilities Council
Location of organization (town, country)	Warrington, England
Key Accelerator Research Area(s)	Currently being commissioned.
General description of the infrastructure	EMMA is a project to build a non-scaling 'fixed-field alternating gradient' (FFAG) accelerator at Daresbury Laboratory.
Already existing or planned	Existing
Unique features	First non-scaling FFAG.
Present situation / future changes / expected lifetime	Currently being commissioned / None / Cease operation at the end of 2013
Accelerator infrastructure or component test infrastructure	Accelerator
Shared facility/infrastructure	Yes - Injection from ALICE
Main user community	
Number of users	
Open for external users	Only to the UK consortium CONFORM.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	17
Contact details (name, Institute, email)	Greg Diakun (STFC), greg.diakun@stfc.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	1.5 MGBP
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	

Name of the infrastructure	Front End Test Stand
Location of infrastructure (town, country)	Didcot, England
Web site address	http://fets.isis.rl.ac.uk/
Legal name of organization operating the infrastructure	STFC, Science and Technology Facilities Council
Location of organization (town, country)	Didcot, England
Key Accelerator Research Area(s)	Demonstrate key technologies for the front end of the next generation of high power pulsed proton accelerators. Applications include ISIS upgrades, future Spallation Neutron Sources, UK Neutrino Factory and Waste Transmutation.
General description of the infrastructure	The purpose of FETS is to develop technology for the front end of next generation high power proton accelerators (HPPAs) and to demonstrate a high intensity chopped H-minus beam at 3MeV.
Already existing or planned	Under construction.
Unique features	FETS is unique in the UK as the only significant hardware R&D into HPPAs. The unique features are the high intensity H-minus ion source, the high speed, two-stage beam chopper and the planned laser photo-detachment emittance.
Present situation / future changes / expected lifetime	Under construction / Complete construction of phase 1 up to 3 MeV. Possible extension to higher energies in a later, as yet unfunded, phase 2. / Completion of first phase in 3 years
Accelerator infrastructure or component test infrastructure	Both.
Shared facility/infrastructure	FETS is not a shared facility as such but our hardware and results are shared with our national and international collaborators.
Main user community	
Number of users	
Open for external users	It is not a user facility.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	6
Contact details (name, Institute, email)	Alan Letchford, STFC, Alan.Letchford@stfc.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	
if available: costing model **(how is the annual operating cost calculated)**	
Estimated investment cost (replacement value)	So far ~2 MGBP capital and a similar amount on staff.

Name of the infrastructure	Magnet Test Facility
Location of infrastructure (town, country)	Warrington, England
Web site address	
Legal name of organization operating the infrastructure	STFC, Science and Technology Facilities Council
Location of organization (town, country)	Warrington, England
Key Accelerator Research Area(s)	Measurement of undulators, wigglers and other accelerator magnets.
General description of the infrastructure	The magnet test facility is a laboratory whose original purpose was the measurement of undulators and wigglers but has since been expanded to test any magnet.
Already existing or planned	Existing
Unique features	1um hall probe position resolution. Flipping coil bench. Pulsed wire bench.
Present situation / future changes / expected lifetime	Operational / Installation of a rotating coil bench / Indefinite
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	No
Main user community	
Number of users	
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	1
Contact details (name, Institute, email)	Jim Clarke, STFC, Jim.Clarke@stfc.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	50 kGBP
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	

Name of the infrastructure	SRF Cavity Preparation
Location of infrastructure (town, country)	Warrington, England
Web site address	http://www.stfc.ac.uk/
Legal name of organization operating the infrastructure	STFC, Science and Technology Facilities Council
Location of organization (town, country)	Polaris House, North Star Avenue, Swindon, SN2 1SZ
Key Accelerator Research Area(s)	
General description of the infrastructure	The VTF (Vertical Test Facility) is a recently established facility for the testing of SRF cavities; its aim is to give verification of operational parameters before the cavity is installed into a cryostat or to prove, in practice, novel design ideas. The cleanroom facilities provide the particulate-free environment required to process and assemble superconducting cavities. The BCP facility provides the environment to perform acid etching of cavities in a safe and appropriate manner for the process.
Already existing or planned	Existing
Unique features	This is the only SCRF vertical test facility in the UK. Can test up to a 9-cell 1.3GHz cavity string. In order to achieve the best performance out of the cavities, we require very high cleanliness (ISO 4 or better) levels. The cleanroom is also equipped with a high purity water system and a high pressure water pump. The BCP facility is a gloved fume cupboard modified to allow the processing of SRF cavities using a BCP mixture. Appropriate materials and filtration is used to ensure that the operation can be carried out safely.
Present situation / future changes / expected lifetime	Operational / Yes, automated shielding enclosure to be implemented / 10 - 15 years
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	No
Main user community	The Cleanroom infrastructure is shared within ASTeC. So far there has not been a demand for it from external users.
Number of users	
Open for external users	Yes
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	0.5
Contact details (name, Institute, email)	Peter McIntosh, STFC, Peter.McIntosh@stfc.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	£70K
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	£1.5M

Name of the infrastructure	SRF Test bunker
Location of infrastructure (town, country)	Didcot, England
Web site address	www.diamond.ac.uk
Legal name of organization operating the infrastructure	Diamond Light Source Ltd
Location of organization (town, country)	Didcot, England
Key Accelerator Research Area(s)	Testing of Superconducting RF infrastructure
General description of the infrastructure	Shielded test bunker to allow cryogenic and power tests of superconducting RF cavities, powered by a 250 kW cw 500MHz amplifier
Already existing or planned	Existing
Unique features	
Present situation / future changes / expected lifetime	Operational / none foreseen at present / Will operate > 10 years
Accelerator infrastructure or component test infrastructure	Component test infrastructure
Shared facility/infrastructure	No
Main user community	
Number of users	
Open for external users	Currently no, but it could be considered, subject to not interfering with Diamond requirements
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	Not separately accounted
Contact details (name, Institute, email)	Richard Walker, Richard.Walker@diamond.ac.uk, Diamond Light Source Ltd
Annual operating costs (excl. Investment costs) of the infrastructure	Not separately accounted
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	~ 1 MGBP

Name of the infrastructure	The Ionization Cooling Test Facility
Location of infrastructure (town, country)	Didcot, England
Web site address	
Legal name of organization operating the infrastructure	STFC, Science and Technology Facilities Council
Location of organization (town, country)	Didcot, England
Key Accelerator Research Area(s)	The ICTF serves the MICE collaboration.
General description of the infrastructure	MICE will provide an engineering demonstration of the ionization-cooling technique and will allow the factors affecting the performance of ionization-cooling channels to be investigated in detail.
Already existing or planned	Under construction.
Unique features	The ICTF is required to provide the muon beam, refrigeration for the superconducting magnets, 8MW of RF power at 201MHz, and the infrastructure required by the PID instrumentation and the charged particle trackers.
Present situation / future changes / expected lifetime	Data taking for “Step I” of MICE in which the muon beam was characterized using the time-of-flight system, the Cherenkov counters, and the KL was completed in running in 2010. Running in 2011 will be used to test a section of the EMR. / MICE data taking will continue into 2015 after which the implementation of a 6D cooling experiment could begin. / Will operate until 2020/21.
Accelerator infrastructure or component test infrastructure	Both
Shared facility/infrastructure	Yes. At a particular time the ICTF is likely to have a principal user community (presently the MICE collaboration). In principle the facility can serve a small number of additional small activities in parallel.
Main user community	
Number of users	
Open for external users	Yes. At a particular time the ICTF is likely to have a principal user community (presently the MICE collaboration). In principle the facility can serve a small number of additional small activities in parallel.
If open to external users: **Modality of access to the infrastructure (access unit)**	
Number of access units available for external users	
If open to external users: Support offered by the organization operating the infrastructure	
Review procedure for requested access	
How to apply	
Can the infrastructure be made available for TIARA?	Yes
If YES, fraction of time that could be made available to TIARA (%)	
Number of FTEs operating the infrastructure	15
Contact details (name, Institute, email)	Ken Long, Imperial college, Ken.Long@stfc.ac.uk
Annual operating costs (excl. Investment costs) of the infrastructure	600 kGBP
if available: costing model **(how is the annual operating cost calculated)**	Direct operating costs
Estimated investment cost (replacement value)	21.4 MGBP

Annex 3

List of interested firms

Company	Country
Danfysik A/S	Denmark
Danish Technological Institute	Denmark
Japrotek	Finland
Luvata	Finland
VTT	Finland
Air Liquide Advanced Technologies	France
BERGOZ Instrumentation	France
Eletta Instrumentation	France
MECACHROME	France
SEF SOCIETE ETUDES FABRICATION	France
Sigmaphi	France
Ste INFINITESIMAG	France
TDK-Lambda France	France
Thales Electron Devices	France
Babcock Noell	Germany
Bruker Advanced Supercon GmbH	Germany
Cryotherm	Germany
FUG Elektronik	Germany
Heinzinger Electronic GmbH	Germany
M+W Group	Germany
Menlo Systems	Germany
Pfeiffer Vacuum	Germany
Research Instruments	Germany
Struck Innovative Systeme	Germany
ASG Superconductors	Italy
BOFFETTI GROUP	Italy
CAEN SpA	Italy
CECOM Snc	Italy
Cinel Strumenti Scientifici	Italy
CLP	Italy
Co.Me.B. SrL	Italy
Columbus Superconductors SpA	Italy
CSC Spa	Italy
DEMONT SRL	Italy
Ettore Zanon S.p.A.	Italy
Frantini Sud	Italy
LT CALCOLI	Italy
MAPRad	Italy

MORELLI GIORGIO	Italy
OCEM	Italy
p3italy	Italy
Renco	Italy
RIAL VACUUM S.p.A	Italy
ROGANTE ENGINEERING OFFICE	Italy
SAMI	Italy
SIMIC SPA	Italy
Sincrotrone Trieste S.C.p.A. ELETTRA	Italy
SkyTech	Italy
TESI Srl	Italy
Instrumentation Technologies	Slovenia
Antec	Spain
Arraela	Spain
ASTURFEITO, S.A.	Spain
AVS, ADDED VALUE SOLUTIONS	Spain
Cadinox	Spain
Fractal	Spain
Ineustar	Spain
INTEGRASYS, S.A.	Spain
LIDAX INGENIERIA, S.L.	Spain
NORTEMECANICA, S.A.	Spain
PROCON SYSTEMS, S.A.	Spain
SCIENTIFICA INTERNACIONAL, S.L.	Spain
SEVEN SOLUTIONS, S.L.	Spain
Tekniker	Spain
TRINOS, S.L.	Spain
Metrolab	Switzerland
Mewasa	Switzerland
Rohde & Schwarz	Switzerland
SIEMENS	Switzerland
Thomson Broadcast & Multimedia AG	Switzerland
Weka	Switzerland
Amsterdam Scientific Instruments BV	The Netherlands
Bayards Aluminium Contructies BV	The Netherlands
Delta Elektronika BV	The Netherlands
Demaco	The Netherlands
Dutch Space B.V.	The Netherlands
ECM Technologies	The Netherlands
Imtech Industry International B.V.	The Netherlands
INCAA Computers	The Netherlands
Irmco	The Netherlands
Janssen Precision Engineering BV	The Netherlands

Machinefabriek Boessenkool B.V.	The Netherlands
MI-Partners	The Netherlands
Mogema	The Netherlands
S&T	The Netherlands
Stip BV	The Netherlands
TNO Science & Industry	The Netherlands
VDL	The Netherlands
Veenstra-Glazenborg	The Netherlands
Velmon Lastechniek BV	The Netherlands
A S SCIENTIFIC PRODUCTS LTD	United Kingdom
COBHAM	United Kingdom
Diamond Detectors Ltd	United Kingdom
Edwards Ltd	United Kingdom
FMB Oxford Ltd	United Kingdom
Hivac Engineering Ltd	United Kingdom
NTE Vacuum Technology Ltd	United Kingdom
Oxford Instruments	United Kingdom
SENAR ENGINEERING	United Kingdom
Shakespeare Engineering	United Kingdom
Synergy Health plc	United Kingdom
UHV Design Ltd.	United Kingdom

Annex 4

Access of Industry to Existing Infrastructures

WP3 3.3.1.1 Analysis of Access of Industry to Existing Infrastructure in Europe and other Regions

Prepared on the basis of the work done by Loïc Bordais
Industrial liaison manager
IN2P3 - CNRS

Industry satisfaction survey

1. Goal of the survey
2. Content of survey
3. Industry participants
4. Analysis and use of results
5. Example of a questionnaire

Anders Unnervik 4

1. Objective of the survey

Why a survey ?

- To know the industrial users of Accelerator Research Infrastructures (ARI), which type of industry (size, field of activity, etc..)
- To measure their satisfaction and get feedback

What do we hope to accomplish with it ?

- To find out what type of ARI and services the industry is interested in and the type of contractual arrangement that can be implemented
- To optimize and promote a level of service in ARI, to extend the range of customized services, always subject to availability of resources and the ARI schedules,
- To make of TIARA a useful gateway for industry (availability of ARI, assurance of a high level of service, agree on conditions of use), simplify contractual arrangements, etc.

Anders Unnervik 5

2. Content of survey

Principles : short survey, mix of close ended and open ended questions, focused on key points to study
Short survey to get maximum reply : eight major questions, ten minutes work.
Measure : global satisfaction and specific satisfaction
Specific satisfaction : five key points studied :

- Quality of hosting
- Time to access to the ARI
- Quality of results
- Contract
- Price

4-point satisfaction scale :
4 very satisfied
3 somewhat satisfied
2 somewhat dissatisfied
1 very dissatisfied

Open ended questions : same question to obtain precisions "Please tell us why you feel that way »
Conditions of survey ; anonymous or not ?

Anders Unnervik 6

3. Industry participants

Target : companies that we know having used ARIs at least once during the three last years (limited number)

How : by mailing or e-mailing or online on our website - online preferred.

Anders Unnervik 7

4. Analysis and use of results

Analysis of results : trends in satisfaction score (chart bar), analysis by typology of industry type

Presentation of results : synthetic report with annex, and recommendation plan ?

To whom : UE, TIARA Board, ARI manager, Institutes ?

Anders Unnervik 8