

AMICI 'Accelerator and Magnet Infrastructure for Cooperation and Innovation'

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EUROPEAN COMMISSION
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Research infrastructure





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AMICI, for 'Accelerator and Magnet Infrastructure for Cooperation and Innovation', is an H2020 European '**Coordination and Support Action**' project.

It aims at coordinating and supporting the Technological Infrastructure dedicated to the design, construction and validation of **accelerators and large superconducting magnets**, in European laboratories and industries.

Its general goal is to **propose a model** for the long term **profitability** and **sustainability** of the Accelerator and Magnet Technological Infrastructure in Europe, based on the engagement of the European Commission, the National Agencies and the Industry, and serving **innovation** and **scientific research**.



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Coordination and support action

NUMBER — 731086 — AMICI

Project title ³	Accelerator and Magnet Infrastructure for Cooperation and Innovation
Starting date ⁴	01/01/2017
Duration in months ⁵	30
Call (part) identifier ⁶	H2020-INFRAINNOV-2016-1
Topic	INFRAINNOV-02-2016 Support to Technological Infrastructures
Fixed EC Keywords	Knowledge transfer
Free keywords	Accelerator technologies, superconducting magnet technologies, innovation, technological infrastructure, large-scale platforms

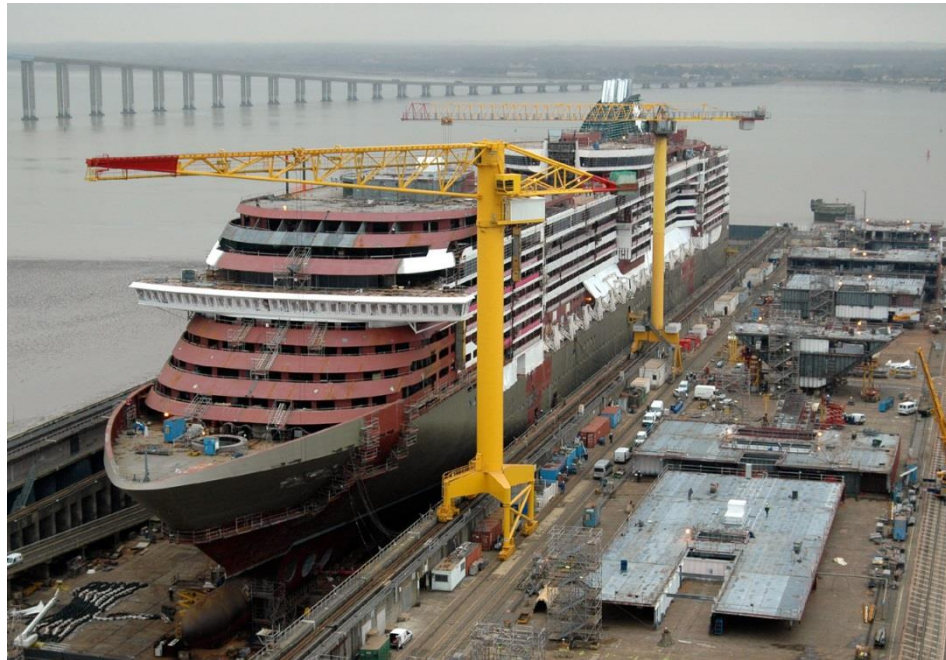
The ‘**maximum grant amount**’ is **EUR 2,279,750.00**

The grant reimburses **100% of the action's eligible costs**

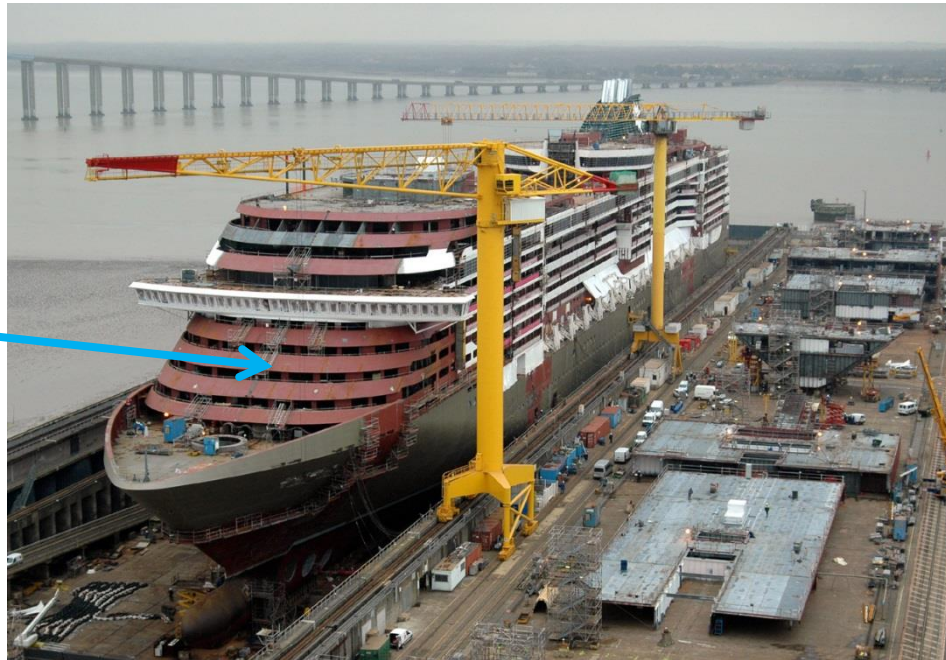
- a Joint Research Activity, or a Network Activity, or a Trans-National Access Activity, or a Design Study,
- overseeing R&D activities in the field of accelerators and superconducting magnets,
- distributing EC funds to support the European technological platforms within the next 3 years,
(but AMICI seeks to make the case for such funding at a later phase)
- building the next Research Infrastructure in Europe, or overseas
(but AMICI plans to sustain and improve the existing T-Infrastructure for this purpose).

- **Research Infrastructure (RI)**, in the ESFRI sense: research facility aimed at conducting top-level research activities in a given scientific field (e.g. Large Hadron Collider/LHC, European X-ray Free Electron Laser/XFEL, Facility for Antiproton and Ion Research/FAIR, etc....)
- **Technological Infrastructure (TI)**: large-scale technological platform, usually hosted by Research Laboratories or by Industries, with significant capacities of assembly, integration and verification (e.g. SM18 at CERN, AMTF at DESY, Synergium at CEA, cavity factories at RI and EZ, RF factories at Thales, etc...).

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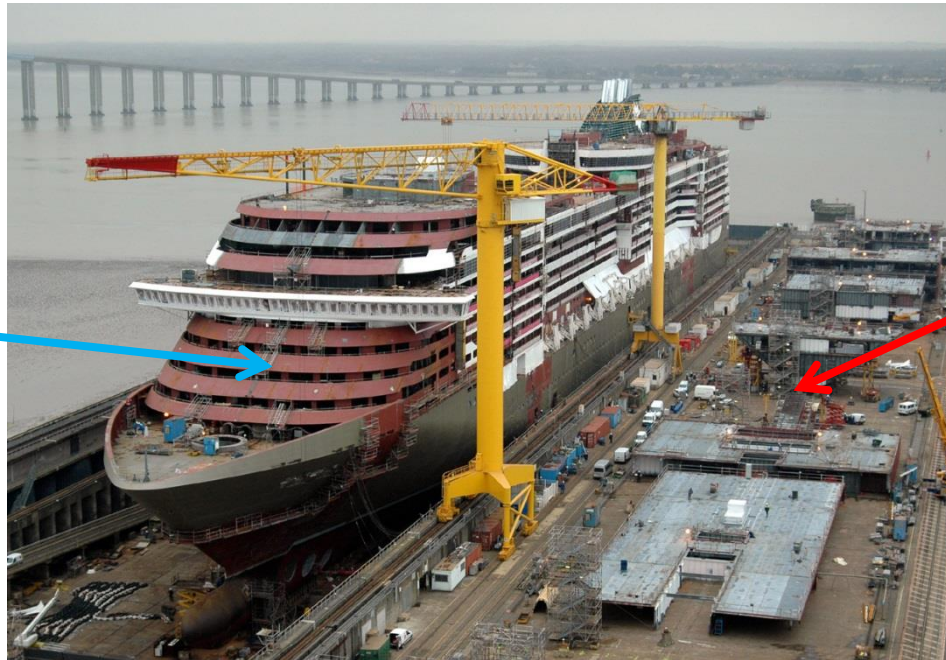
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'RI' with its own funding plan for construction and operation: a bright future !

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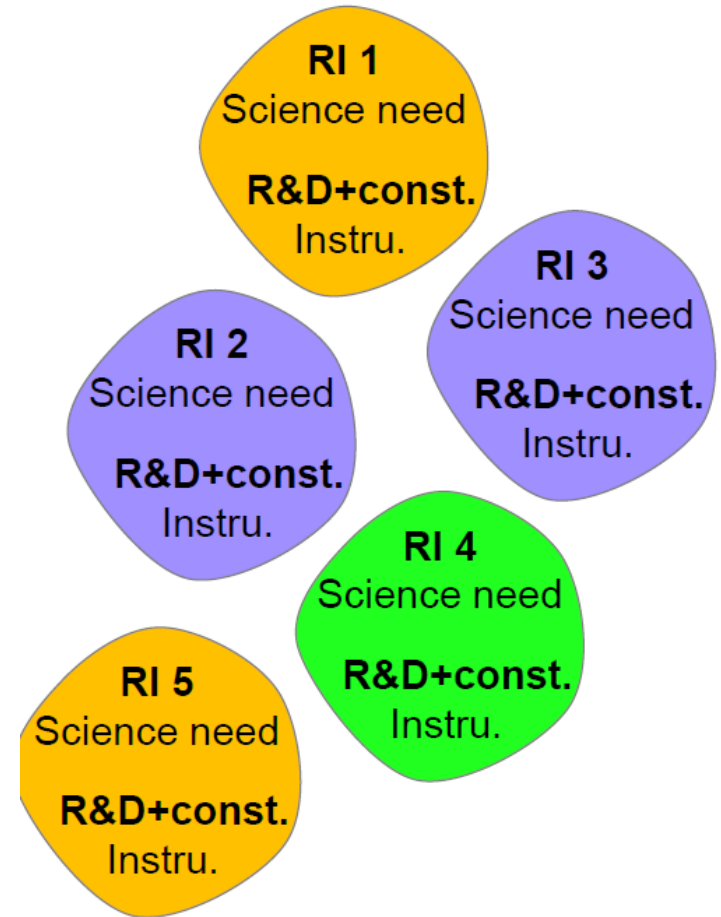
'RI' with its own funding plan for construction and operation: a bright future !



'TI' with intermittent funding plan: a bright future thanks to AMICI !

Development and construction of accelerator based scientific Research Infrastructures (RI) are going through a **deep paradigm change** because of the need for **large scale Technological Infrastructures**, distributed over several sites, at the forefront of technology to master the key **accelerator and magnet science and technology** needed for several fields and requiring:

- sophisticated R&D platforms on key accelerator and magnet technologies,
- large-scale facilities for their assembly, integration and verification,
- large concentrations of dedicated skilled personnel, and
- long term relationships between laboratories and industry.

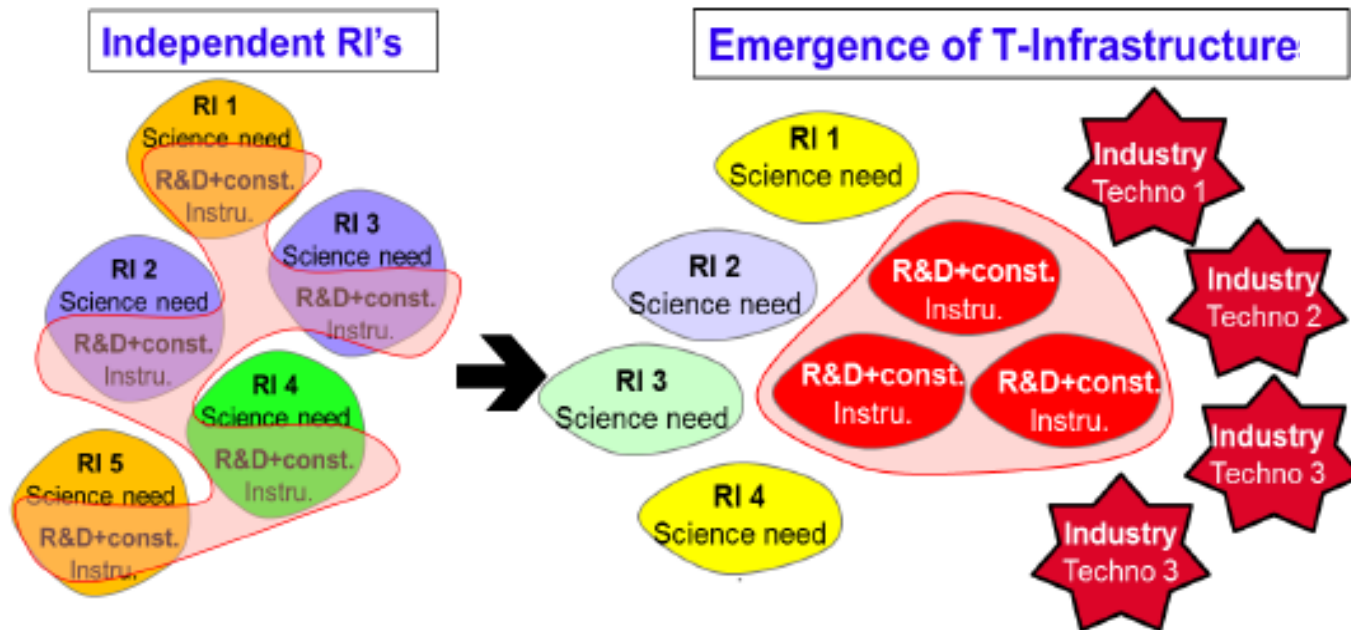


In response to those challenges, several large platforms specialized in interdisciplinary technologies have emerged.

'T-Infrastructure', a new paradigm

Our vision is that a **Technological Infrastructure** will emerge from the few large platforms creating an efficient integrated ecosystem comprising:

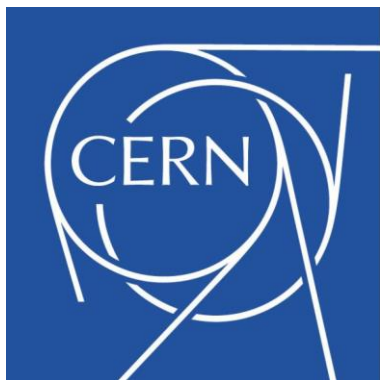
- **laboratories** focussed on R&D, with a long term vision for the technological needs of future RI's, and
- **industry**, including SME, motivated by the innovative environment and the market created by the realisation of the technological needs of several RI's.



With its 'equidistant' position between RI's and Industries, the T-Infrastructure should be more capable to create new applications of direct benefit to society.

The AMICI project will ensure that:

- A) a stronger and optimised integration commitment model between the large existing technological infrastructures is developed and agreed upon,
- B) that this integrated ecosystem is attracting industries and is fostering innovation based on accelerator and SC magnets cutting-edge developments,
- C) that strategy and roadmaps are clearly defined and understood to strongly position European industries and SMEs on the market of the construction of new Research Infrastructures worldwide, and
- D) that potential societal applications are identified and disseminated to the relevant partners of this ecosystem.



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In addition to taking up the construction and ensuring the success of future Research Infrastructures worldwide, Accelerator and Magnet T-Infrastructure could host the following actions:

- Research and Development of key technology prototypes
- Development of innovative products for society
- Test and verification of industrial products
- Professional training and apprenticeship
- Certification studies and training (e.g. vacuum, cleanliness, welding,...)
- Harmonisation and standardization studies (e.g. cryogenics, material, ...)

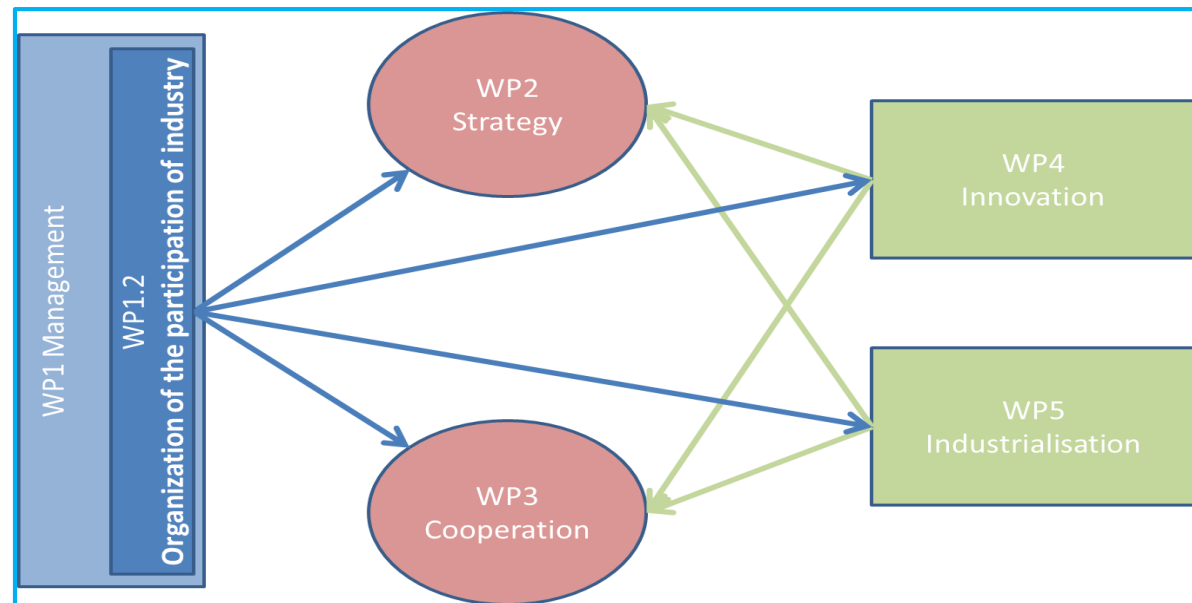
Together with other possible actions, the **assessment** of these actions fit in two AMICI Work Packages:

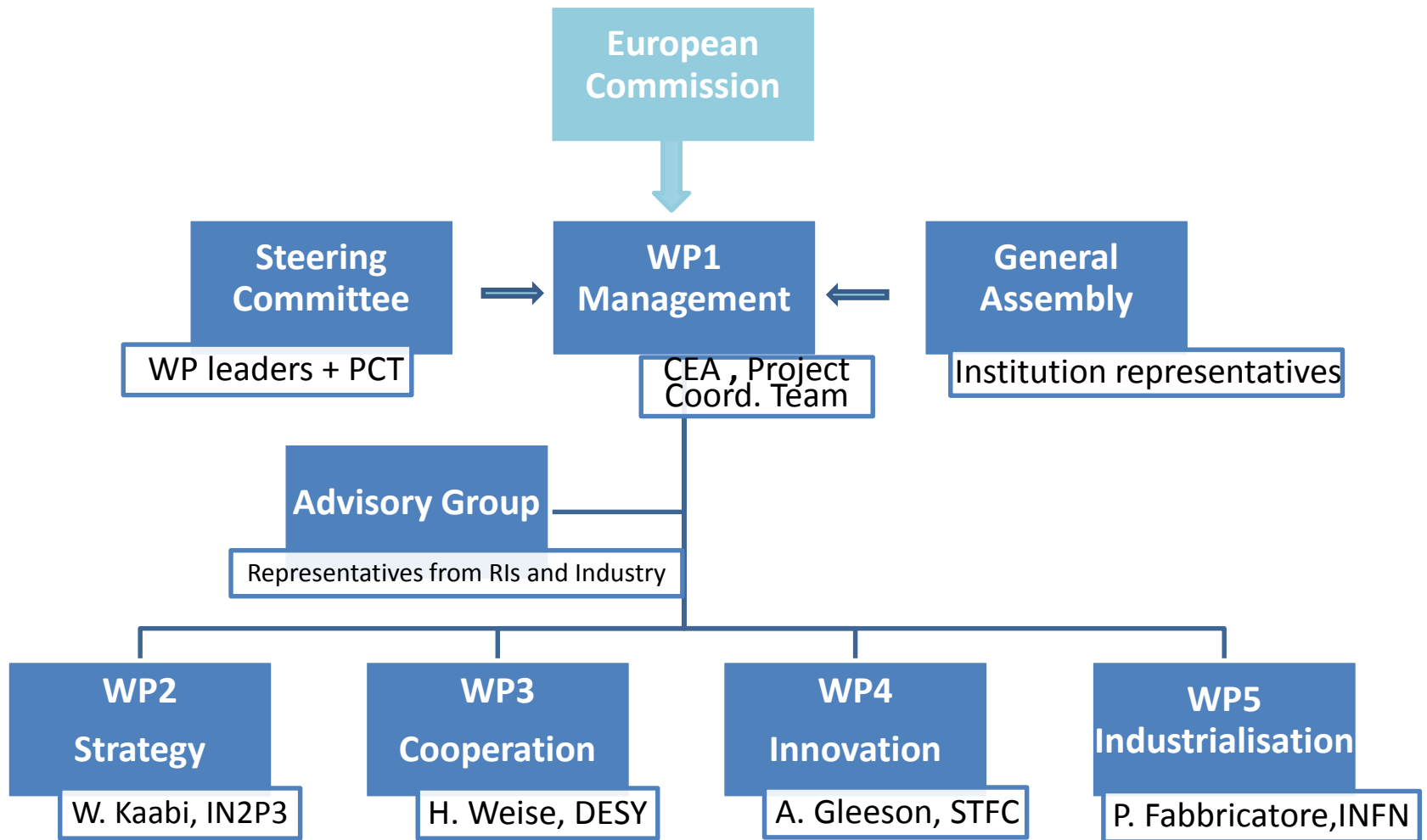
- WP4 : 'Innovation', for Industry's benefit
- WP5 : 'Industrialization', for Science's benefit

To optimize the future impact of these actions, i.e. their adequation to the needs of Society and Science applications, and their collaborative implementation, AMICI will assess their prevailing **strategic** elements will explore new and hopefully more efficient modes of **cooperation**, in the two Work Packages:

- WP2 : 'Strategy'
- WP3 : 'Cooperation'

WP1 'Management' will ensure the overall coordination of the project, including the capital question the **Industry participation**.





Work Packages Timeline

	YEAR 1											YEAR 2											YEAR 3								
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	
Work Package 1: Management, coordination and dissemination (CEA)																															
WP1.1 Project management (CEA)	M1.1	D1.1									M1.5	D1.4										M1.5	D1.4						M1.5	D1.4	
WP1.2 Organization of the participation of industry (INFN)			M1.3	D1.2																				D1.6							
WP1.3 Administrative and financial project management (CEA)												D1.5											D1.5							D1.5	
WP1.4 Communication and outreach activities (IFJ-PAN)		M1.2			M1.4							D1.3																		D1.7	
Work Package 2: Strategy (CNRS)																															
WP2.1 Key technological areas (CNRS)									M2.1															D2.1							
WP2.2 Global landscape (CEA)												M2.2												D2.2							
WP2.3 Accelerator and SC magnet TI sustainability (UU)																		M2.3												D2.3	
Work Package 3: Cooperation (DESY)																															
WP3.1 Definition of eligibility criteria (CEA)									M3.1										D3.1												
WP3.2 Networking and coordination model (IFJ-PAN)												M3.2																		D3.2	
WP3.3 From cooperation to collaboration (DESY)																		M3.3												D3.3	
Work Package 4: Innovation (STFC)																															
WP4.1 Industry survey - accelerator technologies (STFC)															M4.1											M4.4				D4.1	
WP4.2 Industry survey - magnet technologies (CEA)															M4.2															D4.2	
WP4.3 Good practices and barriers to engagement between industry and TIs (INFN)																									M4.3					D4.3	
Work Package 5: Industrialization (INFN)																															
WP5.1 Professional training and apprenticeship (CEA)																M5.2	M5.3												D5.2	D5.4	
WP5.2 Harmonisation - Material and components reference (CNRS)																											D5.1				
WP5.3 Harmonisation - Cryogenic safety procedures (KIT)												M5.1																	D5.3		
WP5.4 Developing prototyping in industry (INFN)																								M5.4						D5.5	

Figure 3: Gant chart of the project

The role of the Advisory Group is to assist the AMICI Steering Committee, including the coordinator and the work package leaders, to produce their promised deliverables, and particularly those involving a strong industrial participation.

The 30-month term includes the attendance to the Kick-off Meeting, the Annual Meetings at M12, M24 and the Final Meeting at M30, and the participation to the Advisory Group Review following these meetings.

Thank you for accepting to be members of the AMICI Advisory Group.

Andrew Hutton accepted to chair the installation meeting.

We seek to hire a second representative from a European Research Infrastructure.

Name	First name	
Bethuys	Stéphane	Thales
Corniani	Giorgio	E. Zanon
Dziwoki	Adam	Prevac
Gehring	Michael	Babcock Noell GmbH
Howland	Patricia	e2v
Hutton	Andrew	Jefferson National Laboratory
Lancelot	Jean-Luc	SigmaPhi
Lindholm	Mikael	Scandinova
McGinnis	David	ESS
Melhem	Ziad	Oxford Instruments
Peiniger	Michael	Research Instruments GmbH
Pellecchia	Antonio	AS-G
Troxler	Josef	Ampegon
Yamamoto	Akira	KEK

The goal of the AMICI project, which I will have the privilege to coordinate, is to explore and assess the means to fructify this European Technological Infrastructure, to make it profitable and sustainable, by the means of Cooperation and Innovation.

It is also to consolidate our existing Tool to be in position to contribute to future facilities with the same success as for the past ones, success in terms of schedule, budget, performance and discovery.

On our horizon we have ambitious projects like the DONES accelerator and the DEMO tokamak for nuclear fusion, the ILC in Japan, and the FCC at CERN for particle physics. But we also have to preserve and consolidate our capacity to maintain and upgrade the facilities built in this decade like the LHC, the European XFEL, the FAIR nuclear physics facility, the European Spallation Source, the ITER tokamak, the Extreme Light Infrastructures in central Europe.

AMICI will succeed if we don't lose the momentum which I hope this Kick-off Meeting will generate, thanks to all our collaborators.

Our path forward is not crystal-clear, we may discover some show-stoppers but we must continue moving and exploring all alleys and all paths of re-inforced cooperation and of smart innovation.

Our first overarching objective is to rally European Industry and get it on board of AMICI. This is the absolute priority of the next four months with first, the organization of the 'Partner and Industry Days for Scientific Technological Infrastructures' in Padova in April 2017, and then in May 2017 the delivery of the report *'Definition of the participation of industry'* under the coordination of INFN. Concrete actions will only start after this.

**Thank you for your attention
and for your participation**

« Que diable allait-il faire dans cette galère ? »

Molière

Les Fourberies de Scapin, Acte II Scène 7