



Promoting innovation with industry in WP14

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W14: Promoting Innovation - Objectives

The objectives of the WP14 are:

to ensure that technology developments in ARIES are *properly identified, evaluated and assessed* with the final aim to provide society with commercial applications of the supported research potential.

Foster collaboration with industry. Key is coordination and joint research activities, capturing industries needs and increasing synergies between laboratories, universities, specialized institutions and applied research institutes in the consortium.

Provide examples of innovative actions by **implementing research projects (i.e. developing HTS cable with cost-performance impact, materials for extreme thermal management, and AM of MgB₂)**

Promoting Innovation - WP14 structure

- Task 14.1. Coordination and Communication
- Task 14.2. Proof-of-Concept (PoC) innovation fund
- Task 14.3. Collaboration with industry
- Task 14.4. Industrial production of materials for extreme thermal management
- Task 14.5. HTS innovative process for accelerator magnet conductor
- Task 14.6. Industrialisation of REDNet Accelerator Timing System for Industrial and Medical Application.

W14: Promoting Innovation - Deliverables

D14.1	Set-up of the Proof-of-Concept innovation-funding scheme	WP14	1 - CERN	Report	Public	12
D14.2	Academia meets industry event 1	WP14	1 - CERN	Report	Public	24
D14.3	Production of material samples of carbon-based composites and metal-diamond composites	WP14	1 - CERN	Demonstration	Public	24
D14.4	First long length industrial High Temperature Superconductor	WP14	1 - CERN	Demonstration	Public	30
D14.5	Real-time Event Distribution Network brought to openly accessible "product grade level"	WP14	32 - COSYLAB	Other	Public	46

W14: Promoting Innovation - JRA

Task 14.1. Coordination and Communication → usual management task

Task 14.2. Proof-of-Concept innovation fund → PoC fund will be used to demonstrate commercial viability of *selected* technologies investigated in the frame of ARIES, and supported by market assessments, evaluations and business plans.

- *Set-up the innovation criteria for eligibility, selection and award of PoC fund*
- *Monitor the funded project developments.*
- *Support the prior market assessment and the commercial viability of the technologies.*
- *Support perspective studies on industrial application of ARIES technology.*

Task 14.3. Collaboration with industry → will be the task linking the activity of the industrial partners and ARIES beneficiaries and also the task providing support actions for PoC management.

- *Set-up an Industrial Advisory Board, defining its mandate and scope.*
- *Organize and manage the ARIES meets industry event*
- *Manage the possible IP in ARIES project(s), the licensees and the partnership with industries.*
- *Implement Market pull actions.*
- *Disseminate the output of R&D developed in the project.*

PoC: in-project innovation-funding scheme

- PoC fund will finance R&D projects in ARIES with robust market potential.
- Funding will be allocated according principle of transparency and equality, through an “advertised” call for PoC, where within a fixed deadline, projects are presented for selection and evaluated by a Evaluation Committee appointed by IAB. EvCo can be supported by appointed ad-hoc selected experts, if necessary.

Selection criteria of projects eligible for PoC funding, must account for:

- **Impact** → the capability to drive a shift in a scientific paradigm.
Impact is the market value of an idea.
- **Novelty** → the capability to drive an incremental, disruptive, or process –product innovation (added value).
- **Application** → the capability to demonstrate (*via business plans*) that the market is ready, or willing, to take up the innovation (market pull) and the transfer to industry is feasible (partnership with industry).

PoC: in-project innovation-funding scheme

A procedure for identification, selection and award of projects to be funded by Proof-of-Concept fund is being finalized and agreed as scope of work in T14.2

Main features of the **Evaluation Methodology for Evaluation of PoC** are:

- Evaluation Committee (EvCo) is appointed by IAB, acting for the sake of innovation and technology transfer, with no Conflicting Interests, not sponsoring specific projects,
- The EvCo submits to Governing Board a report with proposals for GB award decision.
- Projects shall be selected (according to selection criteria) and funds distributed according to ranking of award criteria.
- Clearly the impact on society, the innovation potential, the transfer to industry, should be the key parameters for eligibility

PoC: in-project innovation-funding scheme

Procedure in preparation → *A draft proposal is in discussion, articulated in the sections of impact, novelty and application, and complemented by a mandatory business & implementation plan*

- Definition of criteria for grant eligibility
- Number of projects to fund and total budget (now is #4 and 300 KE).
- Business plan preparation and market assessment to measure potential market impact
- Demonstration of the technological viability for exploitation
- Implementation plan to monitor projects in terms of performance, time to deliver, results.

The expertise of the **technology transfer offices** of CERN, STFC, CNI, WIGNER RCP will facilitate and help.

Contribution from the **technical experts** of the beneficiaries, and the business perspectives of our **industrial partners** will be crucial.

R&D projects in-project

- *Task 14.4. Industrial production of materials for extreme thermal management, in collaboration with WP17. MgB₂ AD.*

CERN, **RHP** [*→ see A.Bertarelli presentation, session 3*]

- *Task 14.5. HTS innovative process for accelerator magnet conductor*

BHTS, CEA, CERN, UNIGE , UT

- *Task 14.6. Industrialisation of REDNet Accelerator Timing System for Industrial and Medical Applic.*

CERN, **COSYLAB**

R&D projects in-project

Task 14.4. Industries for resistant materials → collaboration with industries active in the development and production of carbide-graphite and carbon-based composites with resistance to very high energy deposition densities, and to AM of metallic and/or ceramic powders. Produce samples of MgB_2 AM on Cu substrate for characterization of the process.

- *Contribute in material development in collaboration with WP17 (Material for extreme thermal management).*
- *Produce samples for the R&D (both for extreme T, than for AM)*
- *Demonstrate feasibility of production for industrialisation (with large dimensions, small tolerances)*

Task 14.5. HTS cable development for accelerators magnets → will develop the activity to result into a novel low-cost/high performance HTS cable for accelerator magnet.

- *Define the requirements of the new generation higher performance-lower cost HTS tape*
- *Define the new process for halving the production cost and doubling the J_c eng.*
- *Production of pilot production (5 to 15 m long) and verification of higher performance (J_c eng > 600 A/mm² - vs. 400 for Eucard2 - at 4.2 K and 20 T).*
- *Production of at least two long lengths (80-100 m) and verification of the electrical, mechanical and magnetic properties (see above).*
- *Test of the two long lengths in a dipole magnet capable of 5-8 T*

Relation with industry

Vital to the success of the Innovation in ARIES is the setting-up of a **Industry Advisory Board**, (IAB), whose composition is proposed to GB, with the mandate:

1. To link with EC and with industries, to develop additional funding possibilities and steering proposals.
2. To include industry experts and/or professional association to provide a link of the Research sector to the market applications.
3. To identify projects for PoC Fund eligibility
4. To appoint an Evaluation Committee that shall select, rank and propose to GB for award the projects to be funded, according to a defining procedure
5. To monitor innovations in the relative WPs, not necessarily linked to accelerator physics, that could eventually be transferred to industries to maximize commercialization opportunities of the technologies
6. To support/advice the IP management (identification of background and foreground) thus fostering commercialization of research results

The IAB shall have a large diverse specialized participation, to increase the possibility of effective “market pull” actions.

Relation with industry - IAB

- **Industry Advisory Board** (IAB) proposed composition is :

CERN (WP14 leader)	M.Losasso (chair)
Elekta	J.Allen
Elytt	J.Lucas
GE	T.Eriksson
SigmaPhi/PIGES	L.Lancelot

Fraunhofer, Thales, Siemens could in alternative get in if necessary

Relation with industry

Academia-meets-Industry events are organized and managed as part of WP14 scope

Objectives are:

- Fostering collaboration among partners and industries
- disseminate the output of R&D and business opportunities.

The events will be organized as thematic workshops, in the format of “ARIES meets industry”

Example of topics : RAMI (Reliability, Availability, Maintainability, Inspectability), advanced materials for thermal management, ADS.

One event hosted/organized by Wigner institute? Another by STCF?

W14: Promoting Innovation - JRA

WP14 will participate to a workshop in autumn, organized by TIARA (Test Infrastructures and Accelerator Research Area), in Brussels with participation of EC and industry sectors in Accelerator –

Scope is:

- to promote/ facilitate realization of Academic-Industry R&D initiatives
- to scout joint projects industry-academy that could be supported
- to investigate funding possibilities in H2020 and access to finance for innovation
- to investigate implementation of EC involvement [i.e. EEN (European Enterprise Network), SME instrument] in ARIES project.

preparing the setting and the context of the meeting (#invited, venue, tentative date, agenda, EC involvement)



W14: Next Steps and road-map proposal

Ambition is to develop a full-cycle innovation management program.

The services we want to provide to accelerator community shall specifically support potentially innovative businesses.

We will advance the time plan that was presented at the proposal.

Road map includes as next steps:

- Setting-up of governance bodies [*this Kom?*]
- Approval of procedure for PoC management [*in 1 months?*]
- Finalization of innovation strategy [*Autumn workshop?*]
- Call for Project [*beginning 2018?*]

Conclusion

- We are implementing a strategy that tries to align the needs of sector industries for R&D with available funding scheme
- We aim to competitively select product concept & commercial potential
- We will work out technology development, validation and testing
- It will be prepared for each potential valid innovation a market strategy and launch, indicating paths for further development