M. Vretenar, CERN, Project Coordinator

Paris, 17 April 2024

3rd Annual Meeting and still growing!

Welcome to the 3rd Annual Meeting of the **Innovation Fostering for Accelerator Science and Technology** Innovation Pilot Project of Horizon 2020.

141 registered participants for the three days of I.FAST plenary sessions (0.5 days and 9 participants more than in 2023), 76 registered participants for the Industry Workshop: **largest attendance ever**!

Programme highlights:

❑ Industry Workshop on Cryogenics in Big Science, was on Tuesday 16/04 afternoon and Wednesday 17/04 morning.

❑ Industry Session, Wednesday 17/04 16:00 (8 speakers from industry).

❑ Session on Sustainability challenges for large RIs, Thursday 18/04 at 16:00.

❑ Diversity and Innovation panel discussion, Friday 19/04 at 10:00.

❑ Parallel and future Horizon accelerator projects, Friday 19/04 at 11:40.

+ Governing Board Meeting, Friday 19/04 at 14:30.

I.FAST
3RD ANNUAL MEETING

16-19 April 2024
Cité Internationale Universitaire de Paris

The I.FAST (Innovation Fostering in Accelerator Science and Technology) project is organising its 3rd Annual Meeting in Paris, France, in collaboration with CEA and CNRS. The project as well as the activities and recent results of the different work packages will be presented.

Programme
- **Tuesday 16 April**
  - Parallel Meetings
  - Industry Workshop on Cryogenics in Big Science
- **Wednesday 17 April**
  - Industry Workshop on Cryogenics in Big Science
  - Plenary Sessions
- **Thursday 18 April**
  - Plenary Sessions
- **Friday 19 April**
  - Final Session

Organising Committee
- Maud Baylac (CNRS)
- Valérie Brunner (CERN)
- Antoine Le Gall (CERN)
- Sylvie Leray (CEA)
- Anne-Laure Pelé (CEA)
- Maurizio Vretenar (CERN)

I.FAST has received funding from the European Union's Horizon 2020 Research and Innovation programme (GA No 101004730)
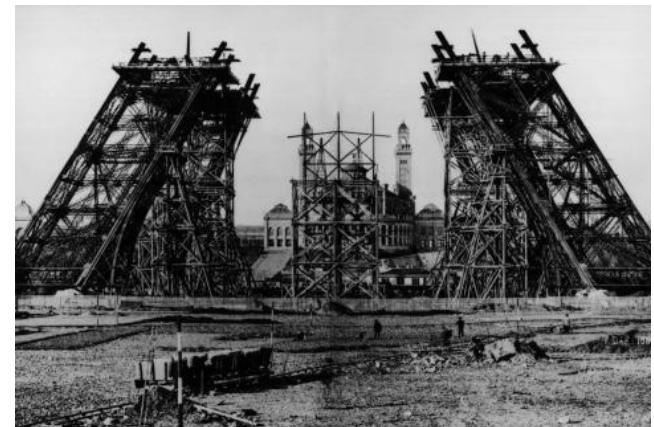
It's nice to be in Paris!

Many thanks to our colleagues who have contributed to the preparation of this meeting:

- **CEA**: Sylvie Leray, Anne-Laure Pelé

- **CNRS**: Maud Baylac, Walid Kaabi

- The team of the Fondation Biermans Lapôtre

- From **CERN**, our PhD student Lazar who is helping with the technical set-up, and of course: **Valérie** !
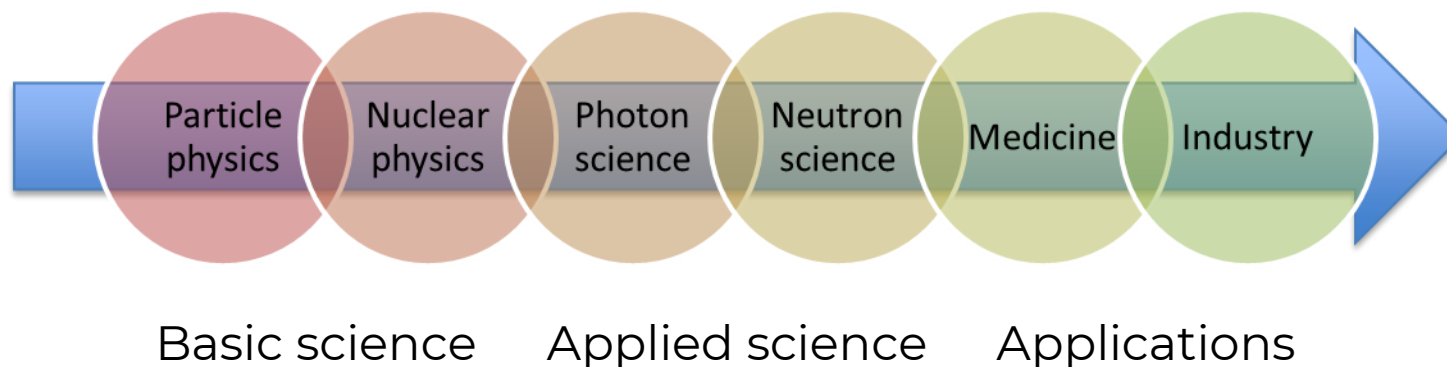
Social events:
- ➤ **Welcome Cocktail** Wednesday 17/04 18:30-20:30 at the Fondation (garden or gallery).
- ➤ **Banquet Dinner** Thursday 18/04, 20:00, at the Pavillon Montsouris, in the Montsouris Parc, 300 m from the Cité Universitaire RER station. *Only those registered can participate (limited capacity to 100). Waiting list with Valérie.*

Images credit: Tour Eiffel Collection, Paris

I.FAST as a transverse project, from science to society

- Particle accelerators are sophisticated instruments used in a wide range of domains, from basic science to applied science to medicine and industry.

- Traditionally, the strongest demands in terms of technologies and performance are coming from particle physics, from which new technologies extend to other applications and finally reach the society.

- The main goal of I.FAST is the translation of accelerator technology across scientific fields and to society.

Particle physics | Nuclear physics | Photon science | Neutron science | Medicine | Industry

Basic science   Applied science   Applications
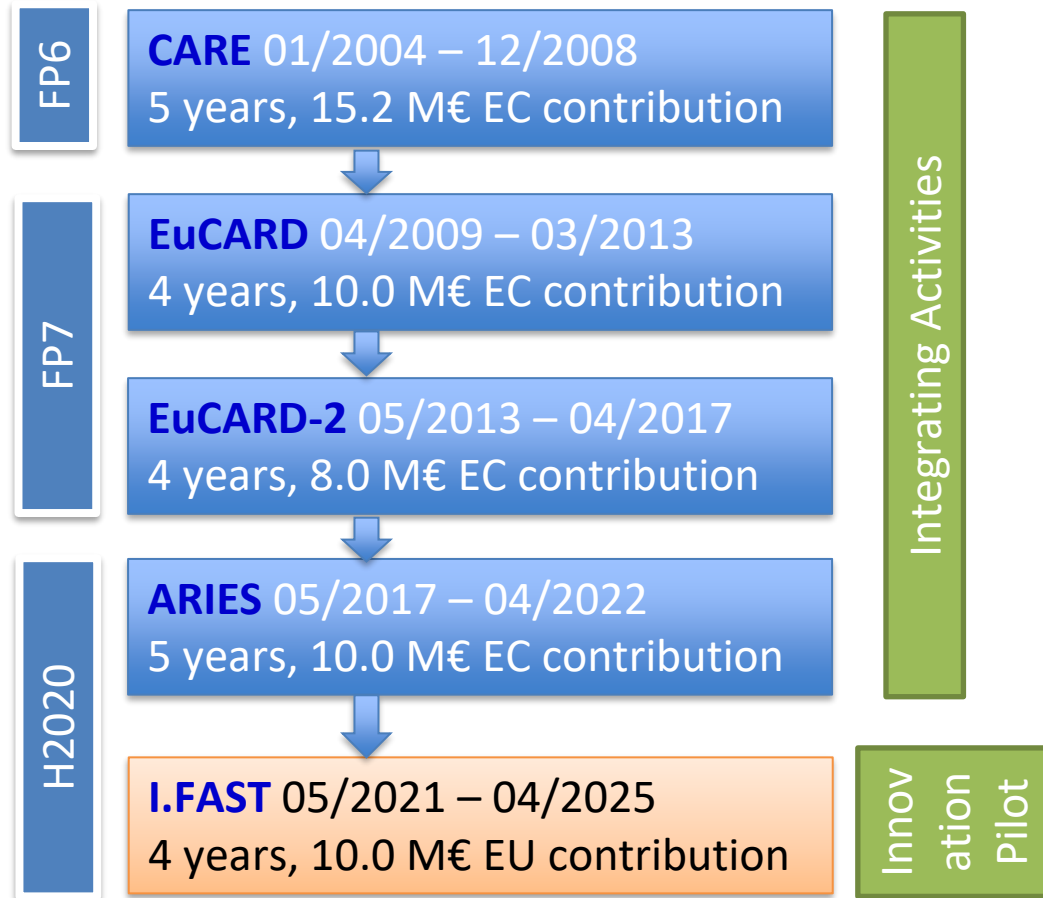
The European accelerator R&D landscape

- [ ] Translation of accelerator technologies is a particular challenge in the **fragmented European accelerator environment**.

- [ ] > 100 entities (research laboratories, universities, industry) active in research development and production of accelerator technologies, across 23 EU countries and UK.

- [ ] Only CERN stands up as a reference for accelerator R&D – but CERN's contribution is institutionally limited to particle physics.

- [ ] Industrial landscape even more fragmented, with many SME's producing accelerator components, but few with critical mass and even fewer capable of delivering a "beam".

- [ ] An impactful R&D can be only achieved via large collaborations, in particular academia-industry.

- [ ] The European Commission Programmes plays a strategic role in setting up and supporting collaborations and co-innovation with industry.

Figure 4.1: Map of participants and countries involved in IFAST

The iFAST EU Project for accelerator R&D includes 48 partners (8 accelerator laboratories, 12 national research centres, 12 universities, 16 industrial partners (11 SMEs) - from 15 European Countries.

20 years of general accelerator R&D in the European Programmes

FP6

CARE 01/2004 – 12/2008
5 years, 15.2 M€ EC contribution

FP7

EuCARD 04/2009 – 03/2013
4 years, 10.0 M€ EC contribution

EuCARD-2 05/2013 – 04/2017
4 years, 8.0 M€ EC contribution

H2020

ARIES 05/2017 – 04/2022
5 years, 10.0 M€ EC contribution

I.FAST 05/2021 – 04/2025
4 years, 10.0 M€ EU contribution

Integrating Activities

Innovation Pilot

EC support to accelerator R&D in two directions:

1. Design of new infrastructures and development of specific technology (higher TRL).

2. Support to multiple R&D topics (lower TRL) within large multi-national collaborations: four Integrating Activities and one innovation pilot have received 53 M€ EC funding in 20 years, with >50 M€ co-funding from partners.

Integrating Activities and Innovation Pilot: Development of cross-boundary technology subjects, not directly followed by large laboratories, with added value coming from collaboration and sharing of resources.

I.FAST is a new step in this progress, including for the first time a large industry representation (1/3 of Consortium)

iFAST

I.FAST = Innovation Fostering in Accelerator Science and Technology

iFAST in a nutshell

Innovation Fostering in Accelerator Science and Technology

Innovation Pilot, A new pilot instrument to demonstrating the role of Research Infrastructures in the translation of Open Science into Open Innovation.

> ***Particle accelerator community entering the age of open innovation:*** Sharing of ideas between scientific institutions and companies, to improve high technology products and to identify new products and markets.
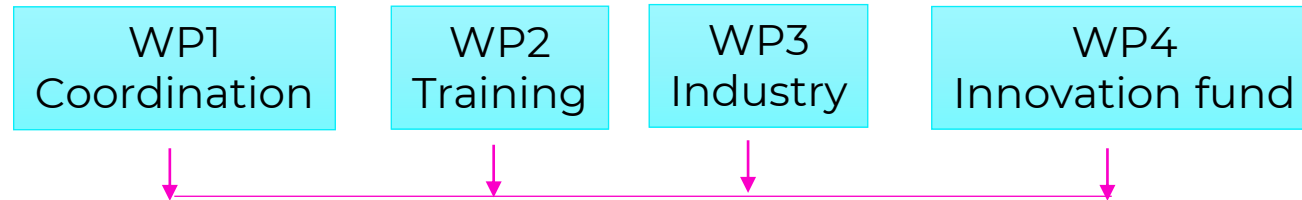>
> ***Creation of an innovation ecosystem*** *(Keywords: community, trust, openness, creativity, connection to industry)*

- Consortium: **48 beneficiaries** – 8 RI operators, 12 national research centres, 12 universities, 16 industrial partners (11 SMEs) - from 15 European Countries, supported by 12 partner organisations and >20 collaborating institutions.

- Timeline: **4 years**, starting 1 May 2021.

- Resources: **10 M€** EC contribution, out of a total project cost of about **19 M€.**

- Wider goal: develop **technologies** at different TRL level for the **next generations** of particle accelerators.

iFAST Topics and structure of Annual Meeting

iFAST activities cover 9 thematic areas, strategic for the future of particle accelerators.

4 support Work Packages and 9 thematic Work Packages

WP1 Coordination	WP2 Training	WP3 Industry	WP4 Innovation fund

WP5 New concepts	WP6 Plasma Accel.	WP7 High brightness	WP8 SC magnets	WP9 SC films	WP10 Advanced technology	WP11 Sustainable concepts	WP12 Societal Applications	WP13 Technology Infrastr.

2 changes of WP Coordinators:
➤ WP6: M. Ferrario (INFN) has replaced R. Assmann
➤ WP4: F. Carra (CERN) has replaced M. Losasso (with L. Garolfi responsible of the Innovation Fund)

The presentations at this meeting will cover the ongoing activities (by Work Package or by Task), with the goal of presenting:
a. recent work and results, to trigger discussion and exchange.
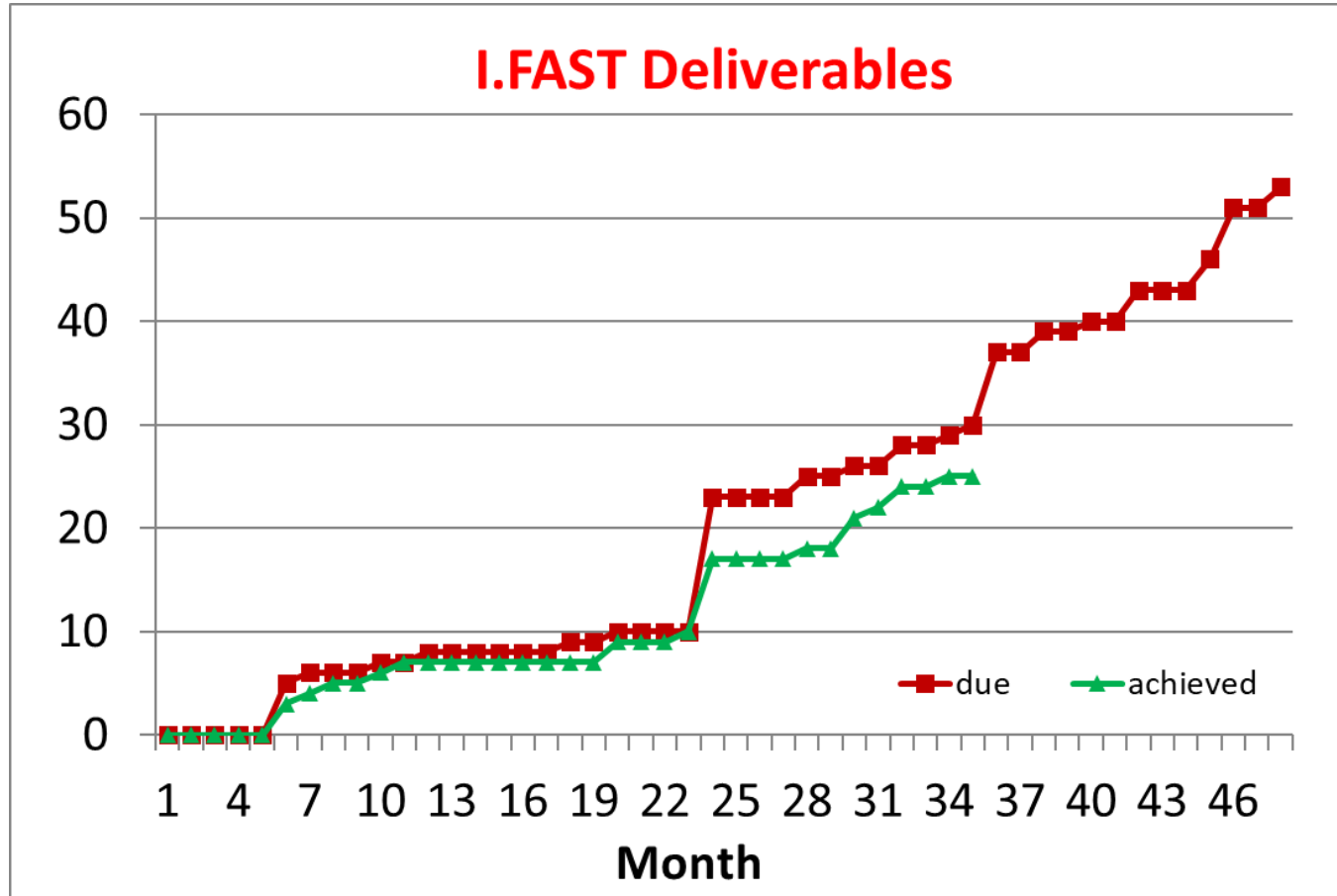b. status of deliverables and potential problems or delays.

An important message

Beware:
we are now
entering the 4th
and last year of
the Project!

No more time to have fun, we
have one year left to prepare
our final Deliverables!

Status of Deliverables

I.FAST Deliverables

STATUS OF DELIVERABLES DUE IN PERIOD 2 (up to M36)

1 Deliverables is very late

D7.5 Construction of XLS pre-prototype **M32** (G. Dauria)

6 Deliverables are due at M36 (end April) and should have been received at end March – no news!

D2.3 Industrial training scheme (L. Garolfi) – delay to M48?

D11.3 Prototype adjustable PM quadrupole (B. Shepherd) – delay M44

D3.2 Business development case (S. Djamschid) – in prep.

D6.4 Improvement of laser intensity stability (F. Mathieu) ok

D10.4 First PSD data from NEG Coating (O. Malyshev) request delay to M44

D11.2 Klystron prototype completed and validated (N. Catalan)

1 Deliverable was delayed with PO agreement

D4.3 Beam windows prototype (to M38)

4 Deliverables announced as late, still to be agreed by PO

D10.5 Machine learning at ESS (M46)
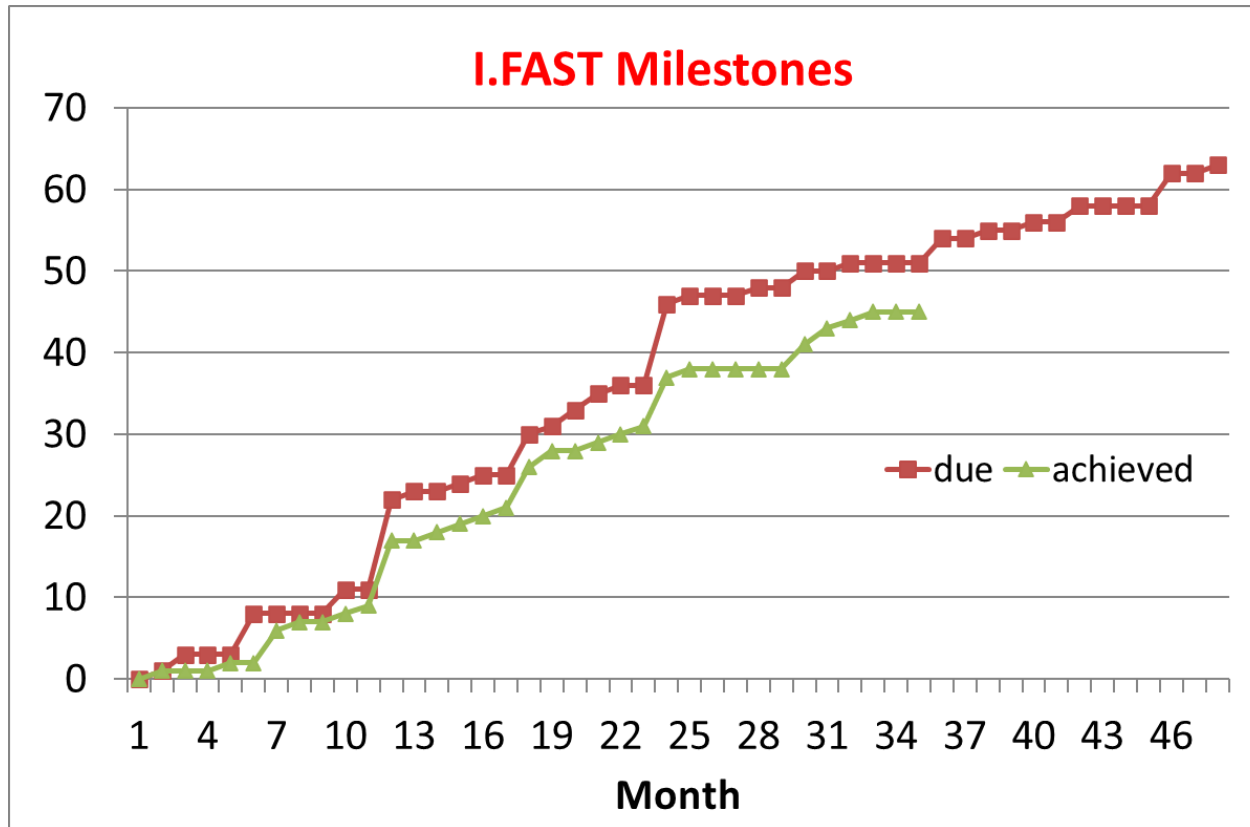
D9.1 Thin-Film SRF roadmap (M45)

D7.6 Construction of XLS full prototype (M48)

D9.3 First 6 GHz cavity coated (M46)

At end of June we have to submit the 2nd periodic report: Deliverables must be completed, or a good justification sent to the Project Officer – delays and lack of explanations may result in blocking of the funding to the entire project.

Status of Milestones

I.FAST Milestones

7 Milestones late

- MS5 (ACO Workshop), for March.
- MS30 (CompactLight) delayed to M48.
- MS52 (Workshop efficient magnets): delayed to M34.
- MS26 (optics for ELETTRA): coming since months…
- MS56 delayed to M38
- MS37 (thin film Workshop), delayed to M42.
- MS34 (curved CCT formers): no news.

+ 1 Milestone in advance (MS54)

A **good** justification for the late Milestones must be written in your contribution to the Periodic report

Periodic Report 2 – technical part

- Covers the second **18-month period** (October 2022 – April 2024)
- Must be submitted 2 months after end of period (**30 June 2024**)

❑**Task Leaders** have received a template to be filled in with a description of activities (October 2022 - April 2024): summary, objectives, description of work, meetings, milestones, deliverables, publications, justifications for delays or late Deliverables and Milestones. **2/3 pages per Task.**

❑**End of April 2024**: deadline for **sending the contributions to Valérie**, who assembles the WP Sections and sends them to WP Coordinators for validation.

❑ 15 May 2024: deadline for WP Coordinators to send WP chapters to Valérie.

❑ End of May: complete document sent to WP Coordinators for approval.

❑ 15 June: Report ready for submission.

Reminder: no complete report, no money !

Project Officer and Review

- Our new **Project Officer** is Sotirios Kakarantzas (from the REA Agency that follows the projects on behalf of the EC).

- The **2nd Periodic Report** will be reviewed by him and by Prof. Mehmet Zeyrek (Ankara University), who has already reviewed the 1st periodic Report.

- The **Review** (online meeting for about 6 hours, with presentations from WP Coordinators and Task Leaders) will take place on **Monday 15 July** – please take note of the date on your agendas!
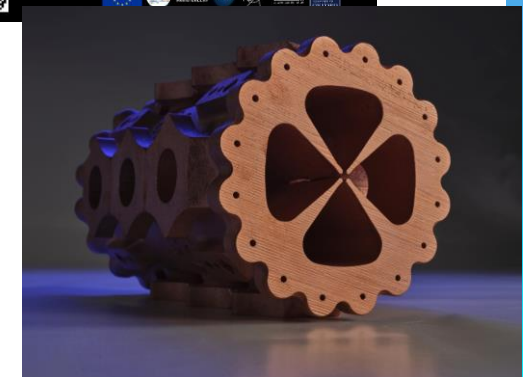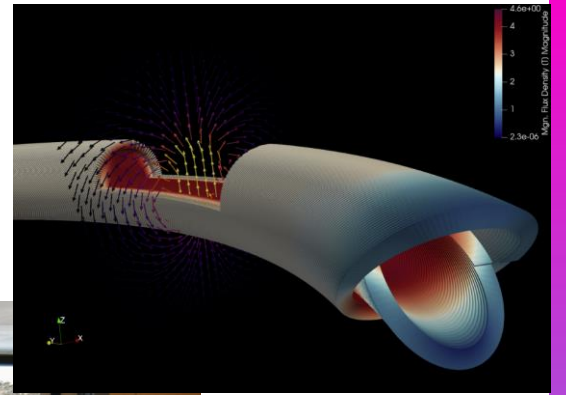
iFAST

I.FAST 3-year highlights

Judging from the articles in Accelerating News: 15 articles on I.FAST activities, featuring

➤ Challenge Based Innovation (4 articles)

➤ Academia-Industry exchange programme (3 articles)

➤ I.FAST Innovation Fund (2 articles)

➤ additively manufactured copper components and RFQ (2 articles)

➤ ion therapy SC magnets

➤ advanced accelerator concepts event

➤ rare earths for permanent magnets: blessing or curse?

➤ accelerators to combat biohazards

Space for more news, from WP6 (Massimo?), WP7 (Yannis?), WP9 (Oleg/Claire)

You have some achievements to report? Contact our editorial team!
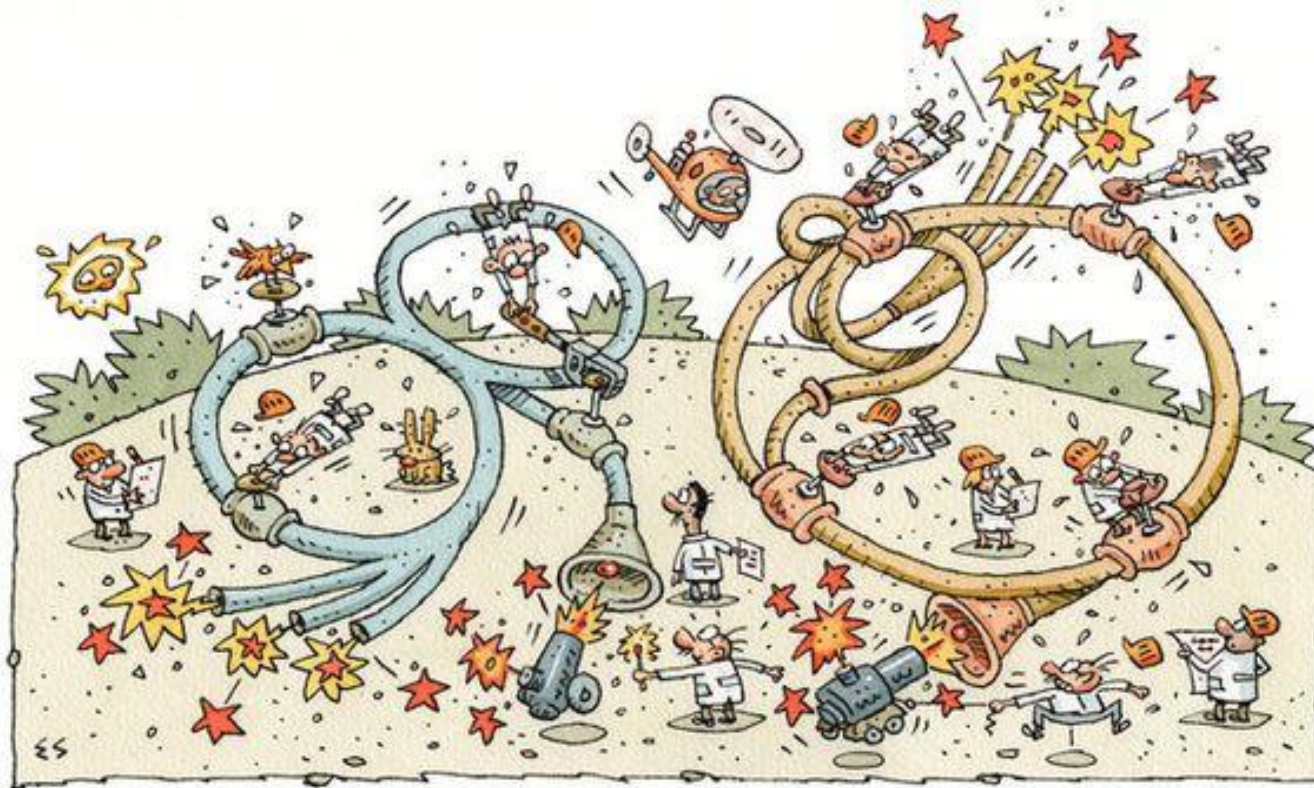
SAC Observations and recommended actions

SAC Message	Proposed Action
I.FAST (application) technologies to be assessed with regards to a realistic pathway to identified markets and time scales required. Get idea of TRL. Note if developments happening because of I.FAST.	Prepare **list of I.FAST technologies**. **Questionnaire** from WP3: TRL, envisaged pathway, time scale, role of I.FAST.
Diversity: improve gender equality (e.g. at Annual Meeting)	**Diversity session** at Annual Meeting, still low number of female speakers (17% academia, 12% industry
Communication: more stories in the web site, I.FAST brand more visible in Workshops	Send **reminder to Task Leaders**
Connection between individual projects/events and wider WP and project not always made clear enough	Introduction to Annual Meeting
CBI: wider promotion and improve diversity	More promotion through universities, approach directly small countries (with sponsors)
Prepare continuation of selected activities after I.FAST	Presentation at Annual Meeting
I.FAST as an information hub for training opportunities	To be implemented (via TIARA?)

Thank you for your attention

Image credit:
Elwood Smith, NYT

And please do not forget to acknowledge the I.FAST Contribution in all your publications!