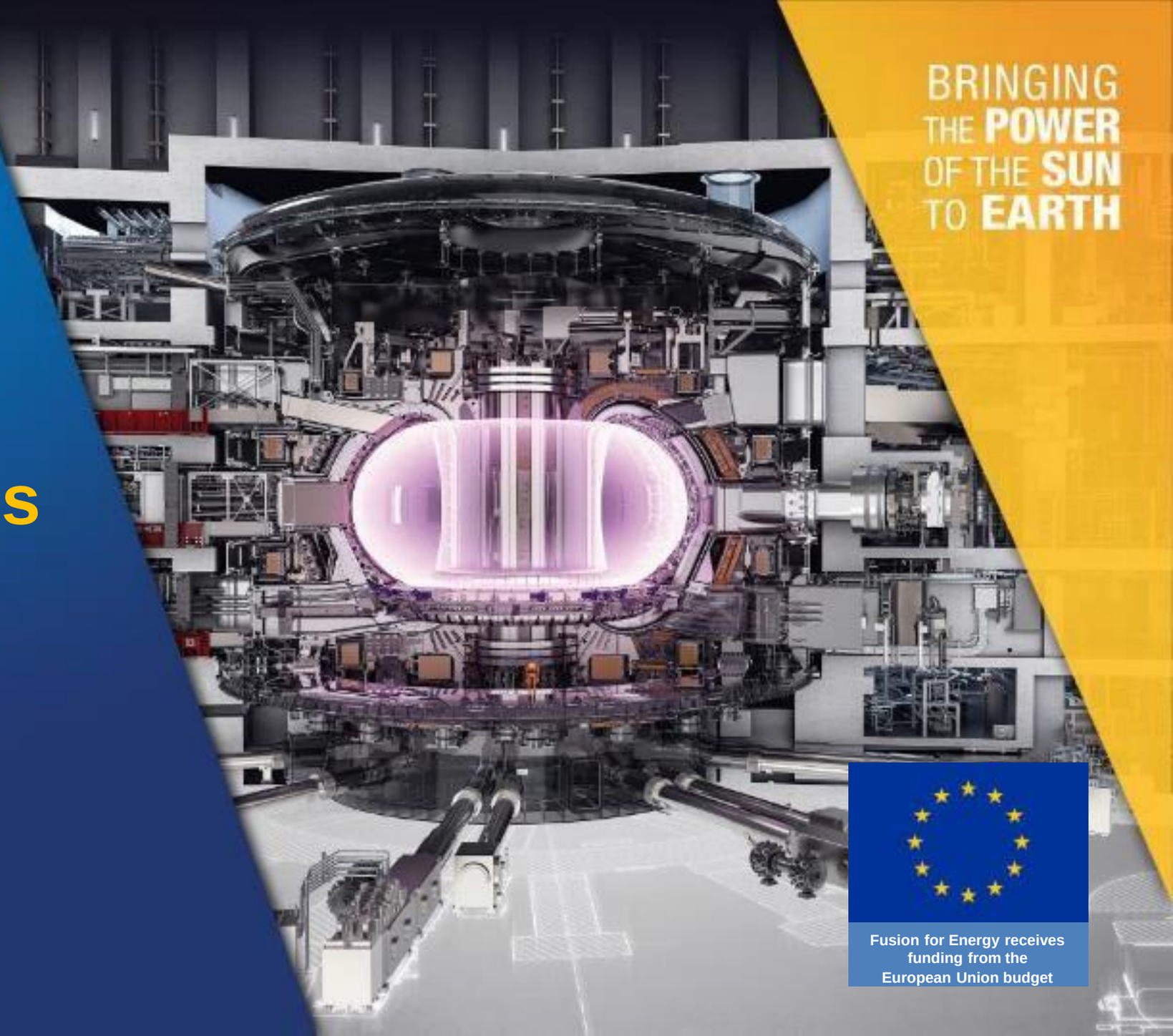
FUSION FOR ENERGY



EU-ITER: Status and Opportunities

Gebhard Leidenfrost,
Leonardo Biagioni

Forum Fusion Deutschland (FFD)
Berlin, 5.June 2023

Fusion for Energy receives funding from the European Union budget

Outline

- New F4E Director
- The context for EU fusion industry involvement
- German participation to date
- How to access F4E opportunities
- How to be competitive
- Upcoming opportunities

The new F4E Director started at 16. Mai 2023

Marc Lachaise

Double degree in Engineering from Ecole Centrale de Lyon in partnership with the Catalan ETSEIB and an MBA from ESADE

27 years of his career working in the EDF Group (Électricité de France) as:

- Project Manager
- Executive Assistant to the Senior Vice-President in the Corporate Finance
- Group Proc. Coordinator and Global Sourcing
- Head of Procurement at Hinkley Point C
- Deputy Head of Dept. for Nuclear Proc.
- Contract Manager Director of the EDF Group
- Supply Chain Control Director of EDF New Build nuclear projects

Outline

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F4E - The European Domestic Agency for ITER

- **EU public organisation set up in 2007 for 35 years**
- **Headquarter: Barcelona, Spain**
  Offices: Cadarache, France
  Garching, Germany
  Rokkasho, Japan
- **Staff: 435 (mostly engineers)**
- **Budget: B€ 12+ in 2007-2027 for ITER construction (2008 values)**

Fusion in Europe: Two Main Pillars (+1)

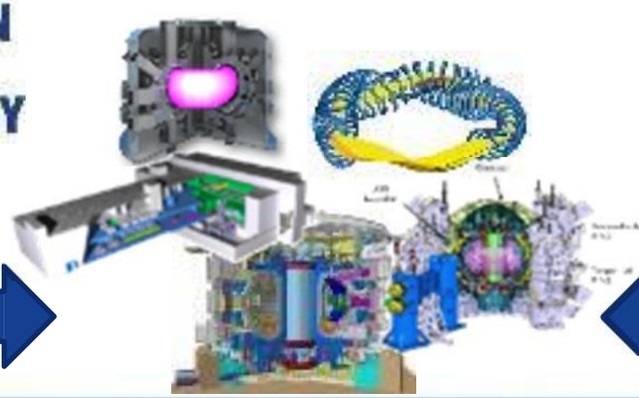
European Commission — **Energy**

European Commission — **Research & Innovation**

FUSION FOR ENERGY

EUROfusion

iter



Fusion in Europe: Industrial Involvement

~3.5 billion EUR
(2022-2027)

Fusion in Europe: Industrial Involvement

5+ Billion EUR
(2020 – 2027)

F4E's Contribution to Fusion Development

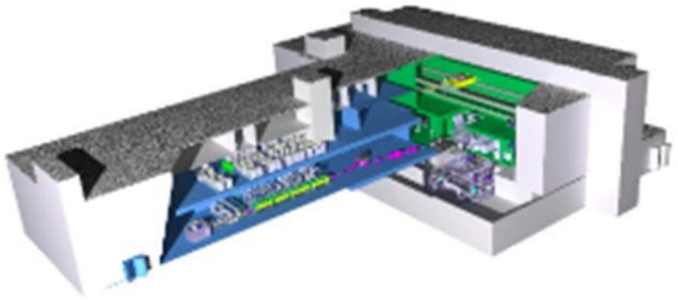
ITER: Burning Plasma

Responsible for Europe's contribution to **ITER**

BROADER APPROACH

Working with Japan on satellite fusion projects

DONES: Materials Testing

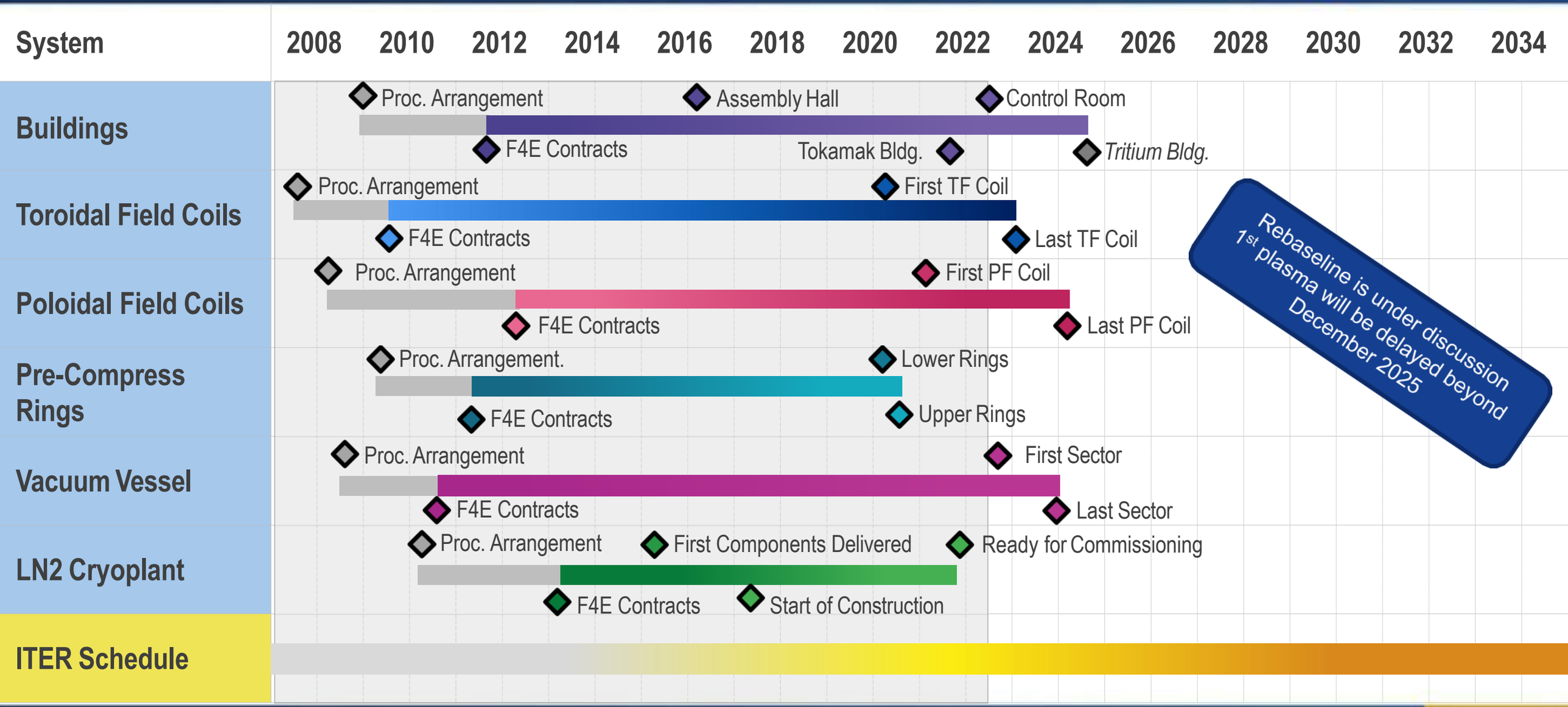


Contributing to design & construction **Demo Orientated NEutron Source**

DEMO: Continuous Power

Preparing to build power-generating **Demonstration Fusion Reactor**

EU First Plasma Systems Status



Outline

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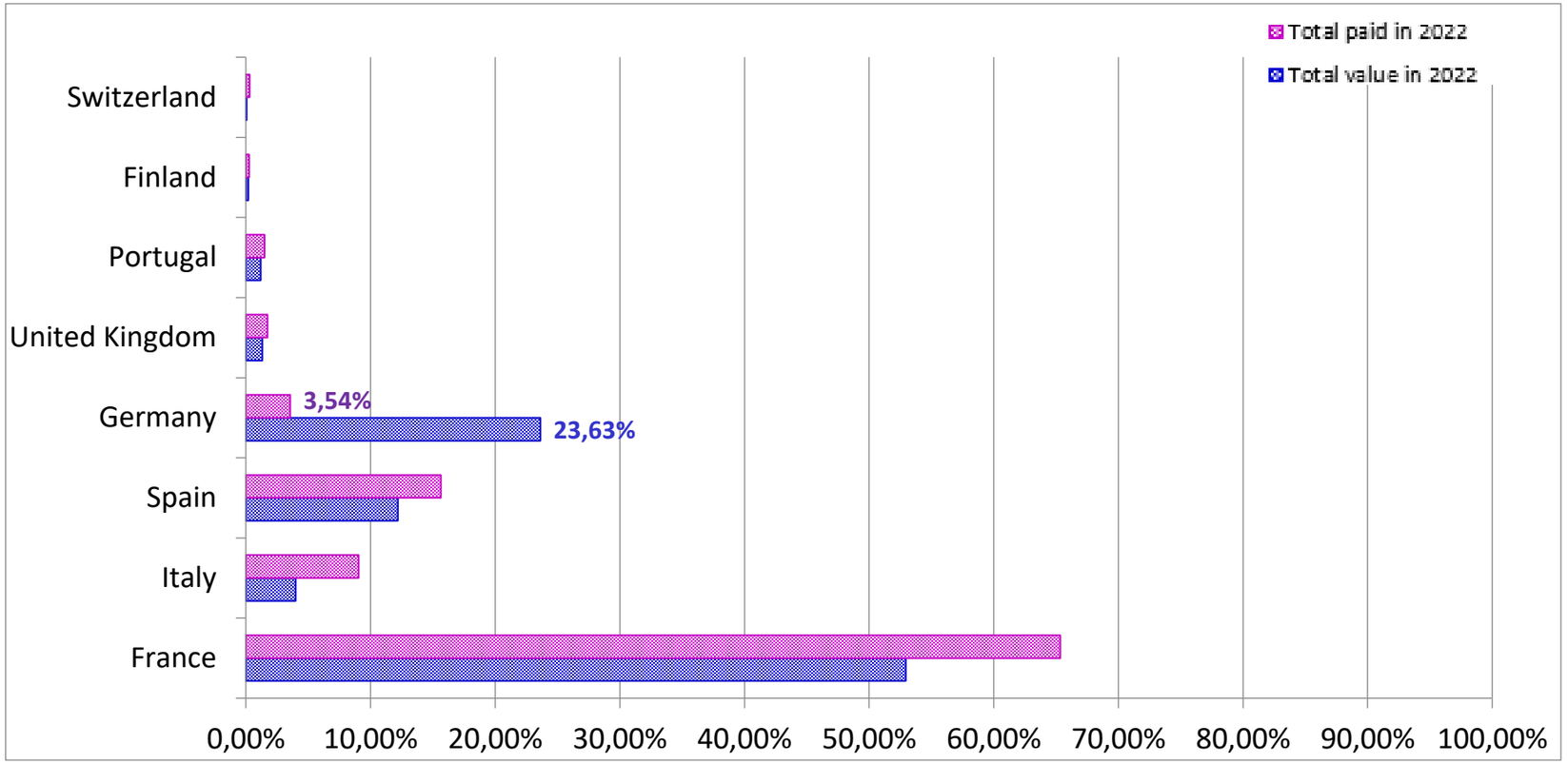
2022 Awards and Payments



Deutschlands Beitrag

Cryotherm GmbH & Co KG:
Cryogenics

Rolf Kind GmbH:
Steel.

Research Instruments GmbH:
Divertor vertical inner target

ATLAS COPCO ENERGAS, :
Compressor stations for cryogenic materials

Wilhelm Schulz GmbH, Krefeld:
Pipes and fittings for tokamak cooling water system

Forschungszentrum Jülich:
R&D on laser-induced desorption of beryllium co-deposits

Karlsruhe Institute for Technology:
Design of electron cyclotron upper Launcher
Material characterization at cryogenic temperatures

Saarschmiede GmbH, Völklingen:
EUROFER-97 plates for test blanket modules

Diamond Material, Freiburg:
Diamond disks for electron cyclotron heating system

M+W:
Civil engineering, nuclear buildings

Bruker:
Superconductivy and superconductor magnets

Dockweiler AG, Neustadt-Glewe:
Prototype of blanket cooling manifold

Witzenmann GmbH, Pforzheim:
Contibutes to tokamak cooling water system

NKM Noell Special Cranes, Veitshöchheim
(together with REEL S.A.S., France):
Overhead cranes to assemble tokamak

Himmelwerk GmbH, Tübingen:
Four radio frequency generators

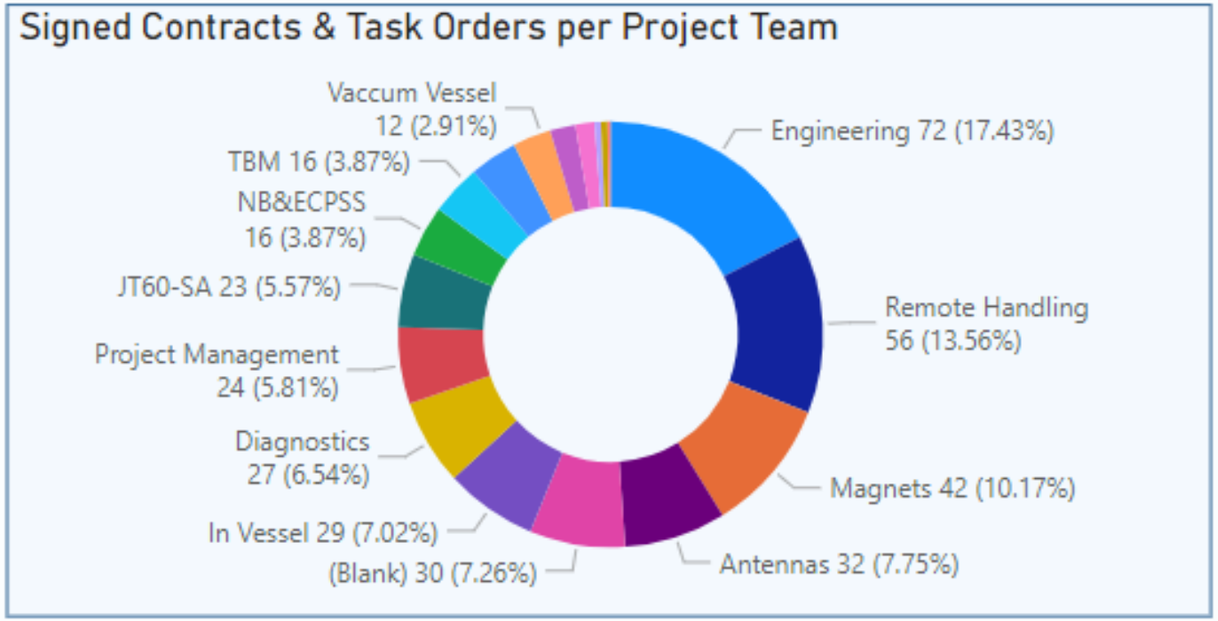
Max-Planck-Institute for Plasma Physics, Garching:
Final design of plasma control systems for First Plasma operations
Experiment for the development of the neutral beam heating systems (ELISE)

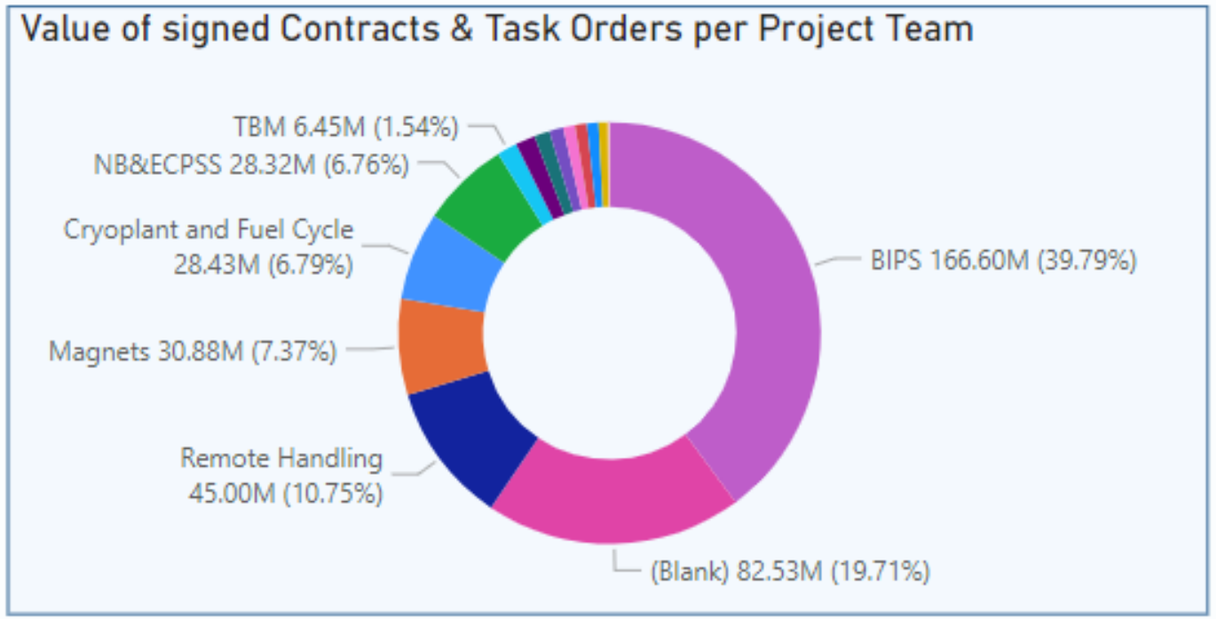
Acentrix GmbH, München:
Customization of 3D engineering and design software

Siemens AG, München:
High voltage power supply units for neutral beam injector

Kraftanlangen Heidelberg GmbH
Engineering, nuclear buildings

Deutsche Beauftragungen nach Programmen





Outline

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F4E Rules to Engage Industry

- EU General Financial Regulations

  - Key principles:

    - Transparency

    - Equal treatment

    - Widest Competition for best quality and price

    - Proportionality

    - Sound financial management: economy, efficiency and effectiveness

Our Industrial Policy

Objective 1: Deliver the European contributions to ITER and BA within budget and schedule, making best use of potential and capabilities of all members

Objective 2: Broaden European industrial base for fusion technology for long-term development of fusion as energy source, to ensure strong and competitive European participation in the future fusion market

Objective 3: Foster European innovation and competitiveness in key emerging technologies to further the development of the Innovation Union and its impact at the international level

F4E Industry Portal - https://industryportal.f4e.europa.eu

FUSION FOR ENERGY

INDUSTRY AND FUSION LABORATORIES PORTAL

Sign In

ABOUT | CALLS | PARTNERS DATABASE | ANNOUNCEMENTS | CONTACT | HELP

F4E CALLS WORKSPACE

Search & register for calls

ITER Calls for nomination

Administrative procurement

Key Reference Documents

LATEST CALLS

22 January 2020 - 28 February 2020

> F4E-OMF-1048

Service Framework Contract for a Logistic Provider for Broader Approach

Welcome to the F4E Industry and Fusion Laboratories Portal

Important!

As of 1 November 2018, all tenders to F4E must be submitted via the E-submission tool.

Having your Company registered in the Partners Database is not sufficient to submit a tender. For doing so your Company must be registered in the E-submission tool at least 48 hours before the submission deadline of the tender.

For further information, please consult the following tutorials Supplier registration and How to submit a tender?

PARTNERS DATABASE

Get an account

ILO National Initiatives

ILO Access SIGN IN HERE

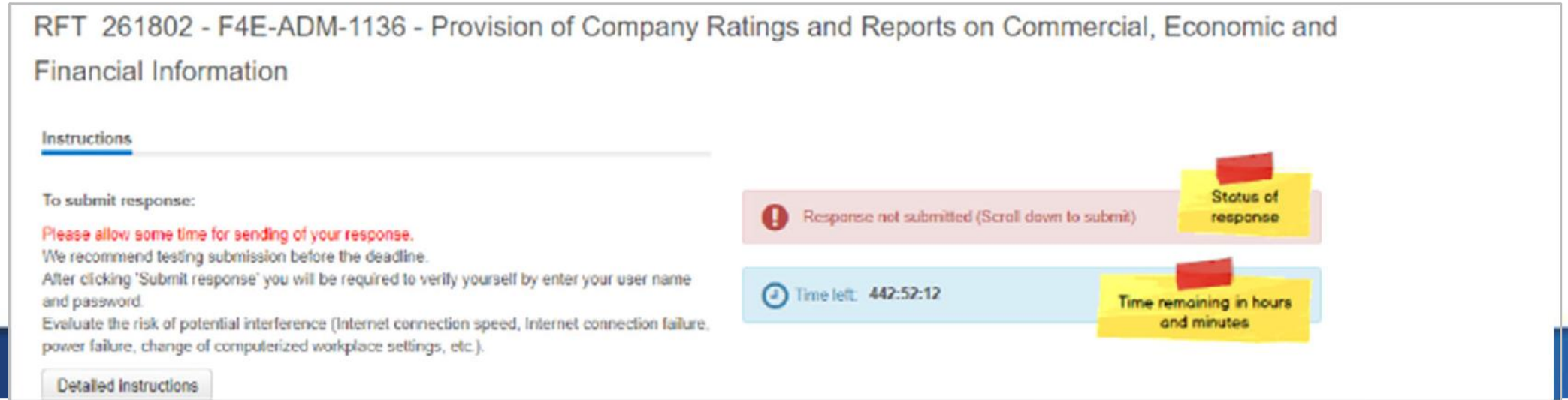
Intellectual Property

New portal version coming soon

e-Submission and e-Procurement

- Electronic submission of tenders:
  - **EU-Supply**: safe, confidential, user friendly, efficient

- Electronic implementation of the tender procedure:
  - Procurement documentation
  - All communication pre and post-submission



Industrial Liaison Officers (ILO)

INDUSTRIAL POLICY | CALLS | PARTNERS DATABASE | ANNOUNCEMENTS | CONTACT | HELP

ILO NATIONAL INITIATIVES

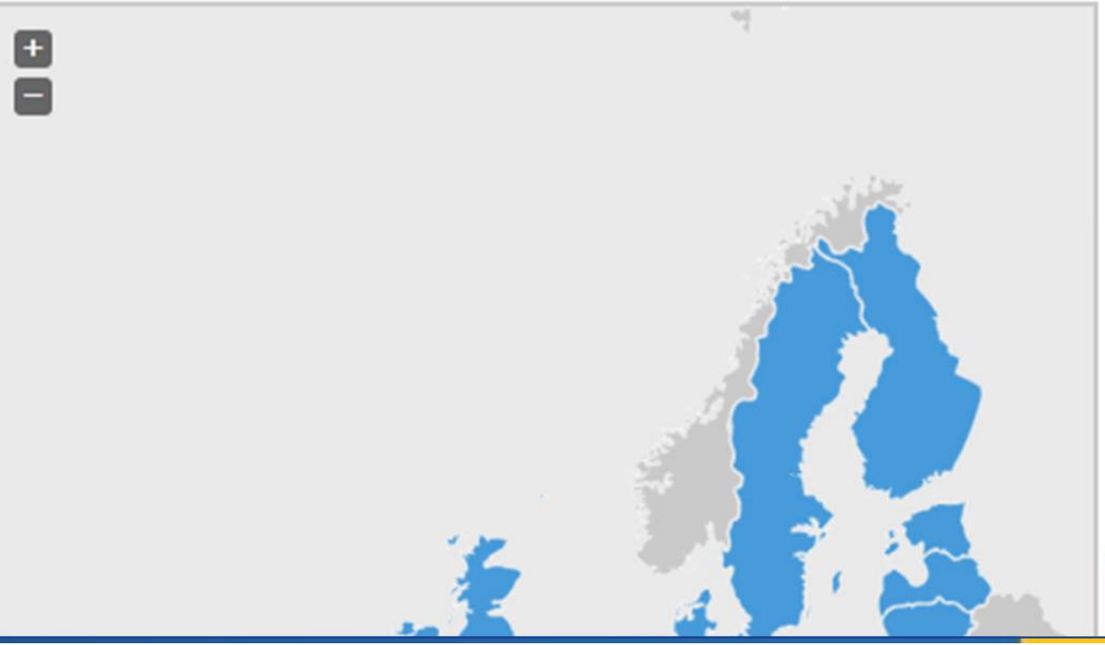
A network of Industrial Liaison Officers (ILOs) from different European countries works together with F4E to raise awareness regarding funding schemes and ways to get involved in the ITER project. A series of information days and seminars are planned throughout the year to report on the roadmap of the different procurement packages and facilitate partnerships between companies.

This page is dedicated to the ILOs National Initiatives; it is meant to highlight the upcoming events throughout the year and thus increase the bond between F4E, the ILO Network and all economic operators from different European countries.

Key reference document: List of ILO contacts List of Contacts - F4E ILOs

Germany - ILO Contact

Germany
Ulli Kraft
Fusion Industrial Liaison Office (FILO)
Funded by the Federal Ministry of Education and Research
Friedrichstraße 59 RG
90408 Nürnberg
Mobile: +49 1 51 42 54 08 65
E-mail: heinz-ullrich.kraft@web.de
Website:



Upcoming Events

Outline

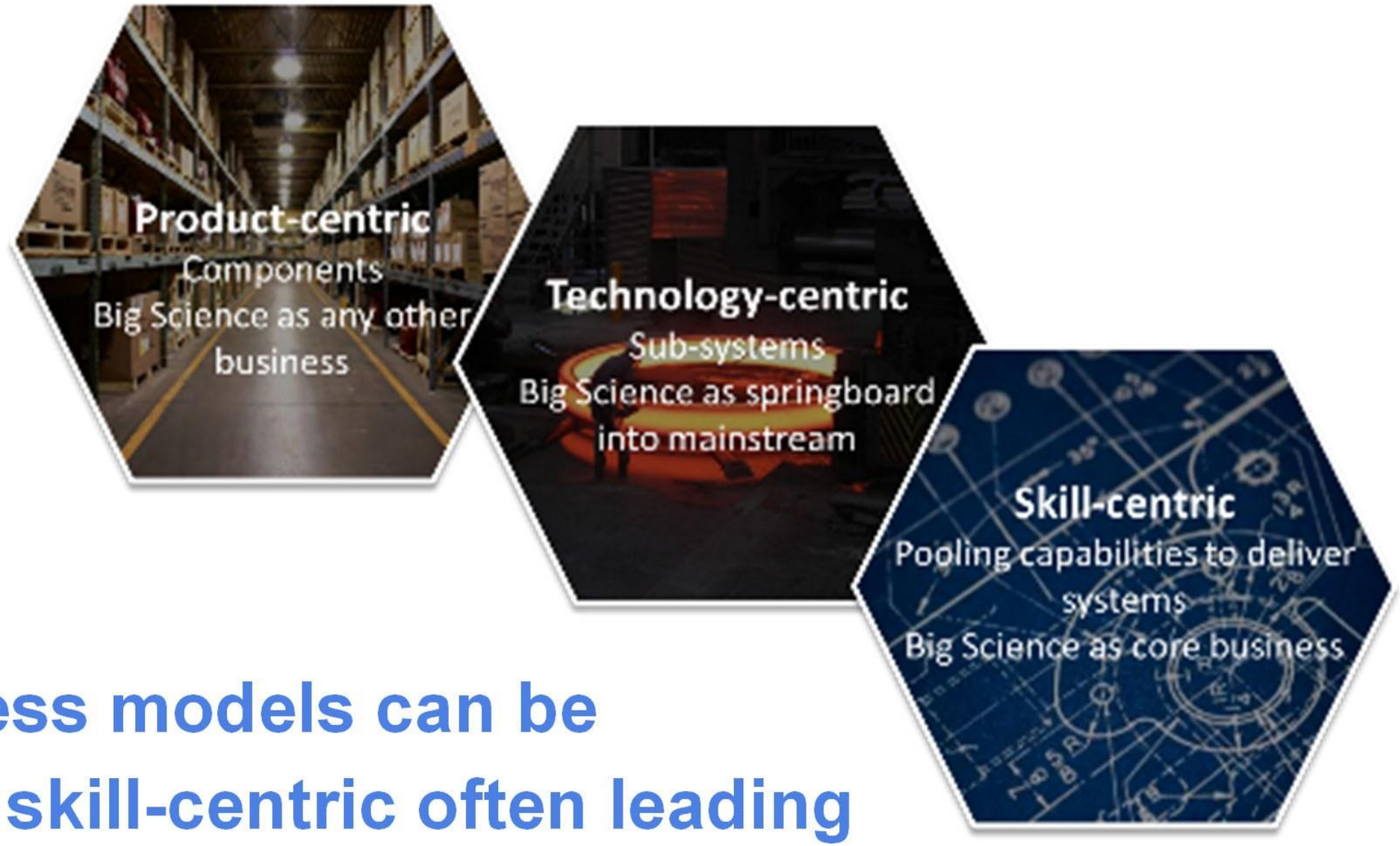
- The context for EU fusion industry involvement
- German participation to date
- How to access F4E opportunities
- **How to be competitive**
- Upcoming opportunities

Key Competitiveness Aspects

- Majority of calls only **accessible to F4E Members** (EU for the moment)
- No “lowest bid wins” – vast majority of calls awarded by **best-value-for-money** (usual price weight 50-60%)
- **Consortia** can be as competitive as single tenders ... but need extra attention
- **Subcontractors** can (and should) be key enablers

More Considerations

- 14 years with fusion supply chain
- 750+ contracts
- 4.9 BEUR value
- 450+ contractors
- 182 consortia
- 1000+ subcontractors



- **Different business models can be successful, but skill-centric often leading**

More Considerations

Be agile

- Project boundaries can and will change
- Your role, scope may change

Think lateral

- First-of-a-kind means not all risks can be identified
- Consider B-plans, make them possible

Show a clear value proposition

- Best value for money
- Ensure you address award criteria
- Highlight added value wherever it is

Outline

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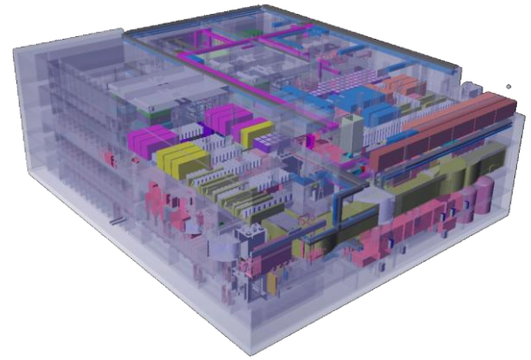
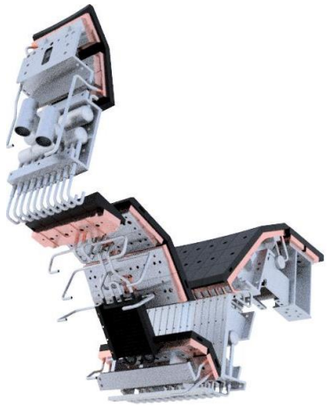
Upcoming opportunities (Q3-Q4 2023)

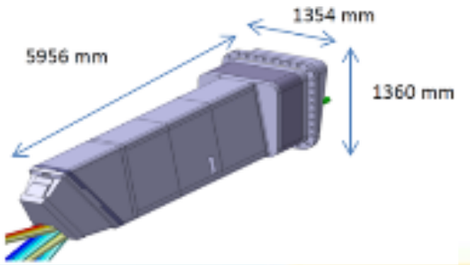
- Buildings
  - Architect Engineer 2 (July 2023)
  - Diesel generators (Q3 2023)
  - Hot Cell Complex, engineering activities (TBD)



- In-Vessel components
  - Integration of JT60 actively cooled divertor



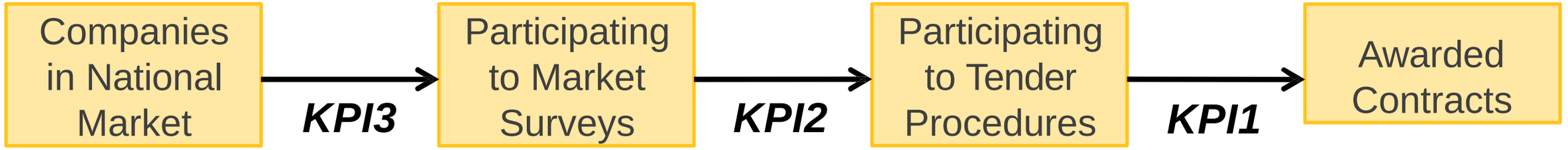
- Diagnostics
  - Manufacturing, Assembly, Testing and Delivery of Diagnostics Ports for ITER (Q4 2023)



- Additional info available end-June through ILO

Thank You

Participation and Competitiveness Indicators



$$KPI1 = \frac{\text{relative success in F4E tender procedures}}{\text{relative participation to F4E tender procedures}}$$

$$KPI2 = \frac{\text{relative participation to F4E tender procedures}}{\text{relative participation to F4E market outreach}}$$

$$KPI3 = \frac{\text{relative participation to F4E market outreach}}{\text{relative capacity of the national industry}}$$

Member State	KPI1 2018-2020	KPI1 2021	Variation KPI1	KPI2 2018-2020	KPI2 2021	Variation KPI2	KPI3 2018-2020	KPI3 2021	Variation KPI3	KPI 2018-2020
Germany	1.34	1.21	-0.13	0.75	0.96	+0.22	0.30	0.17	-0.12	0.30