



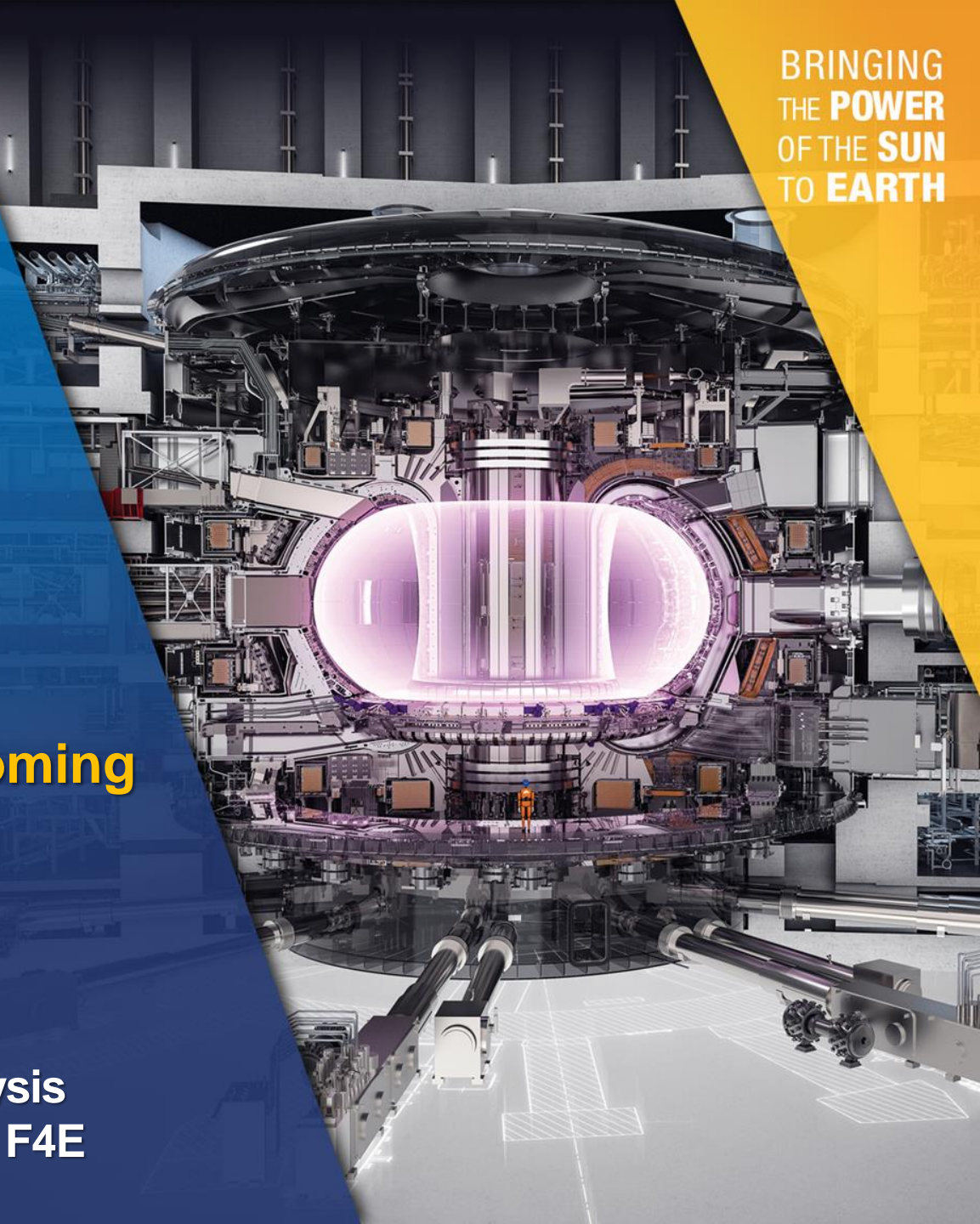
**FUSION
FOR
ENERGY**

BRINGING
THE **POWER**
OF THE **SUN**
TO **EARTH**

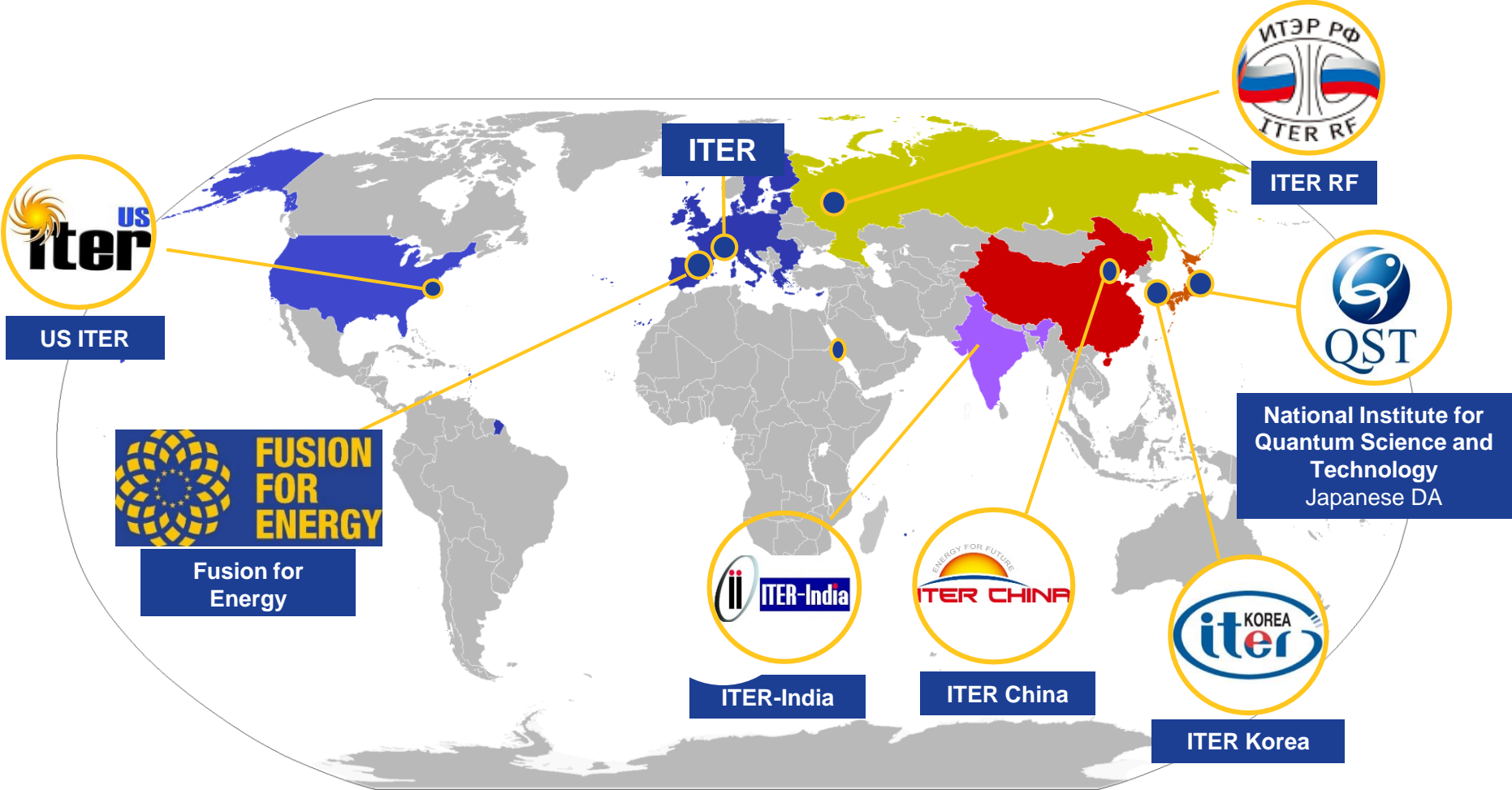
POLISH NUCLEAR WEBINAR- 2021 November- ONLINE

F4E Ongoing & Forthcoming Calls For Tender

**Mehdi Daval-Market Analysis
Group, Commercial Dept. F4E**

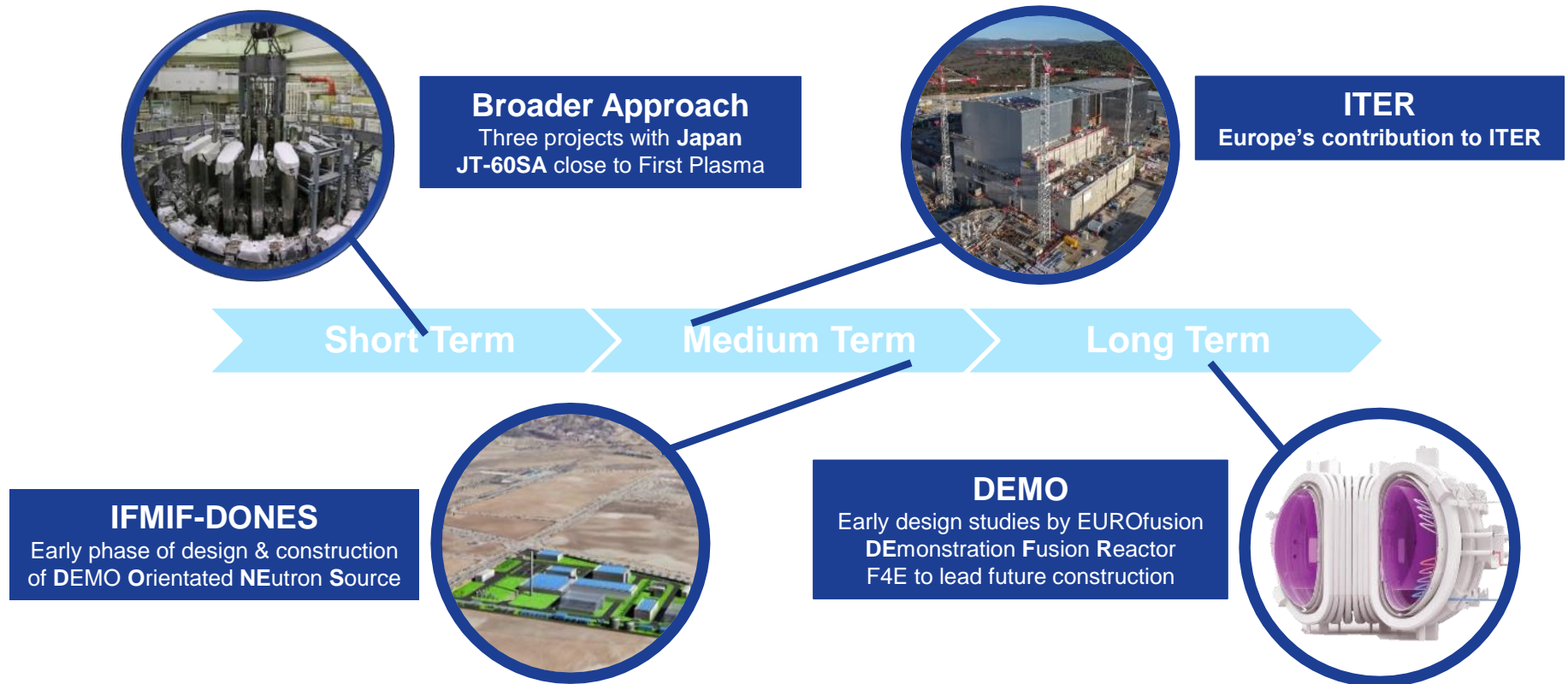


F4E: the European ITER Domestic Agency



- ▶ **F4E is a EU public organisation set up in 2007 for 35 years**
- ▶ **Headquarters: Barcelona, Spain**
- ▶ **Offices:**
 - Cadarache, France**
 - Garching, Germany**
 - Naka & Rokkasho, Japan**
- ▶ **Staff: 460+ (mostly engineers)**
- ▶ **Budget**
 - ▶ **2007-2020 ~€6.8bn (2008 values)**
 - ▶ **2021-2027 ~€5bn (2018 values)**

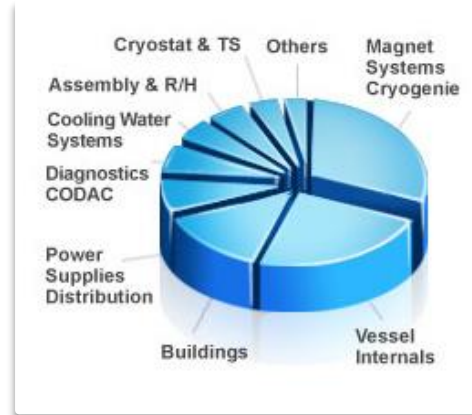




F4E contribution to ITER: mainly in-kind.



Each party develops and manufactures components for ITER



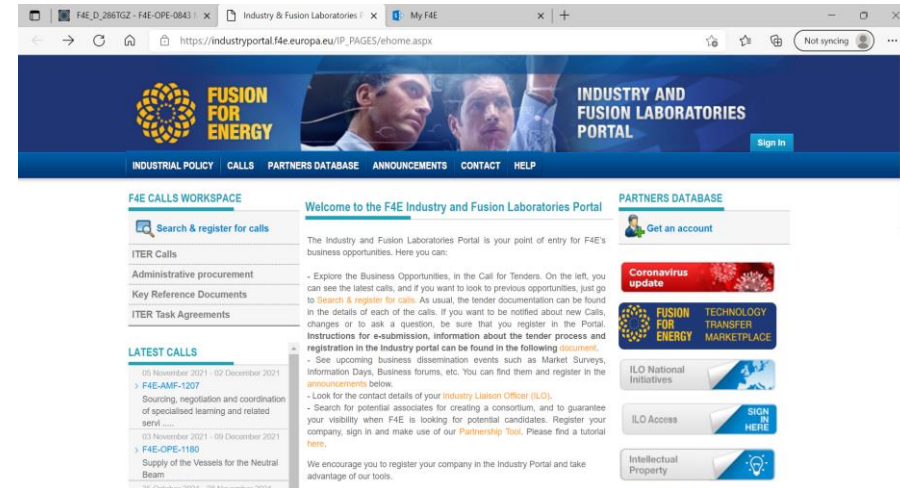
Europe is providing around half of ITER's components



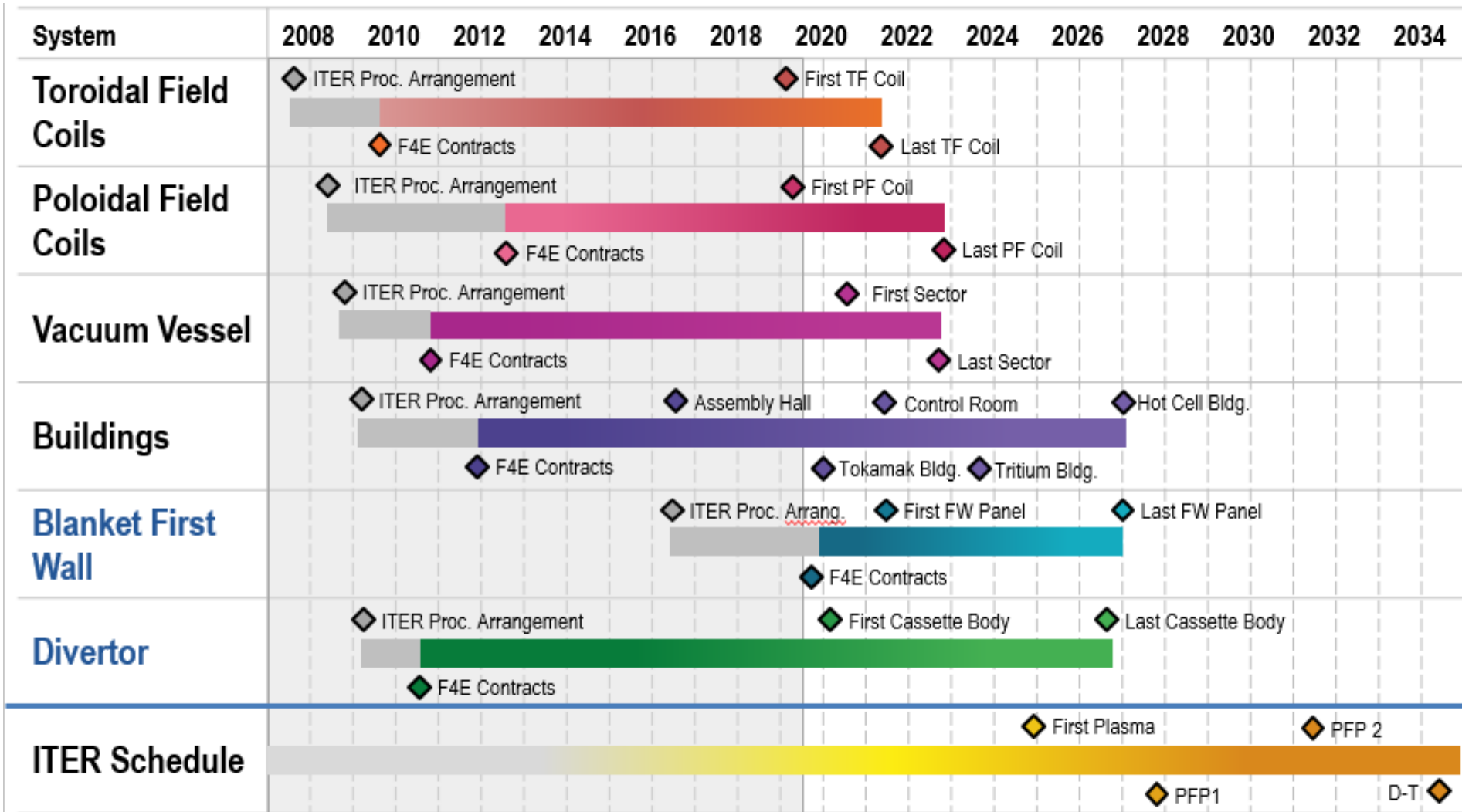
F4E partners with:

- EU industry
- Fusion Labs

- Visit regularly F4E Industry Portal.
<https://industryportal.f4e.europa.eu>
- Register and receive automatic notifications.
- Contact your Industry Liaison Officer (ILO): Sylwia Wójtowicz.
- CFTs also published on the EU Official Journal
- We use *EU Supply* tool to receive the electronic tenders.

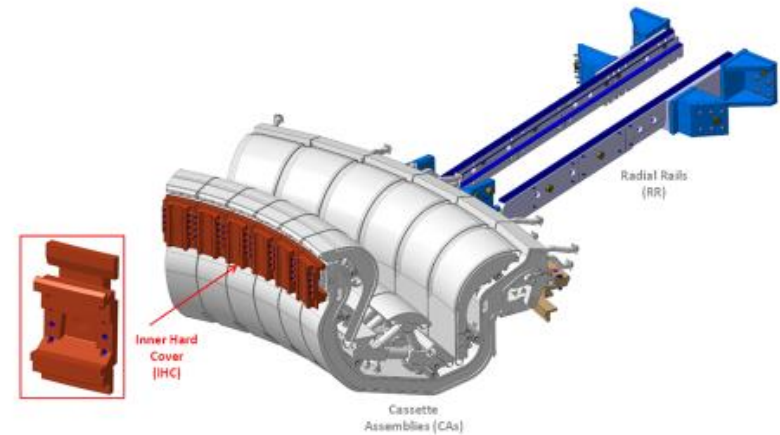


EU-ITER master schedule



Under preparation

- Divertor Toroidal and Radial Rails
- Multi material (SS 316LN IG, SS XM-19, SS 660.
- A total of about 100 tons of material.
- Market Survey January 2022.
- Main skill needed: mainly Machining and a bit of Assembly.



Inner Hard Covers and Radial Rails

Under preparation

- **REMS-** Radiological and Environmental Monitoring System (Procurement and Installation). Target CFT: Quarter 1-Quarter 2 2023.
- See the presentation updates on F4E Industry Portal.
- Highly probably several contracts of few million euros each.

Individual Monitoring Sub-system (IMS)



Dosimetry



Passive dosimeter



Electronic dosimeter with dosimeter reader

Contamination checking



Market Survey

17

Individual Monitoring Sub-system (IMS)



Portables



- X, beta gamma dose and dose rate,

- Neutron dose and dose rate,



- Alpha, beta gamma surface contamination,

- Tritium in air concentration,

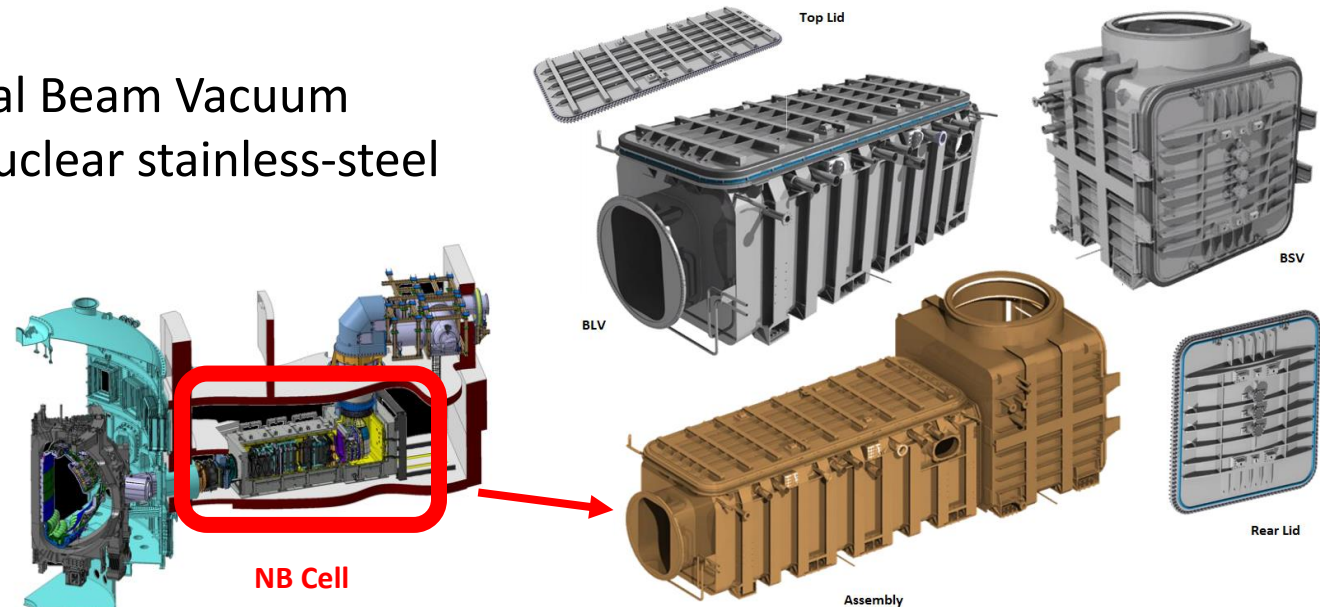


Market Survey

19

Ongoing

- **OPE-1180:** Neutral Beam Vacuum Vessels welded nuclear stainless-steel structures.

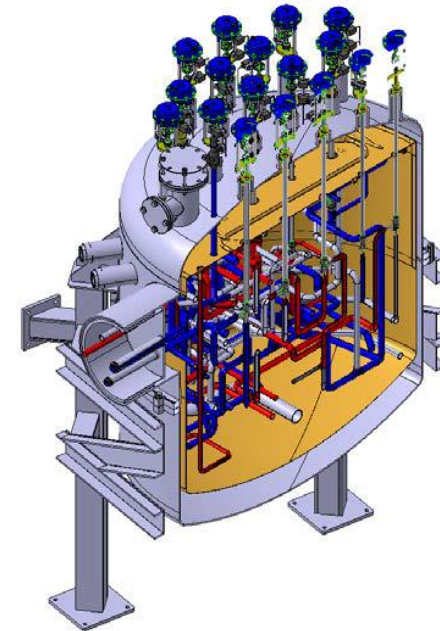


Main welded assemblies of the Neutral Beam Vacuum Vessel.

- About 260 tons in total.
- Deadline CFT: 9th December 2021.
- Competitive procedure with Negotiation (in 2 steps)

Under preparation

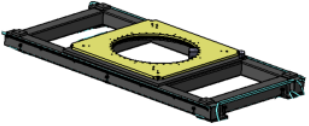
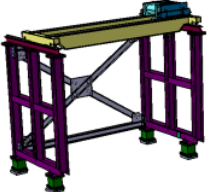
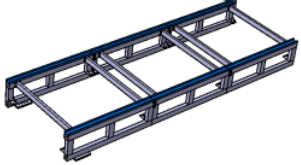
- **OPE-1249:** Neutral Beam Cold Valve Boxes and Warm regeneration Lines.
 - Value < 5 M€.
 - CFT: January 2022.
 - Market Survey: November 2021.
-
- **OPE-1273:** Cryostat and Tore Instrumentation & Control: 14 standing and 30 wall cubicles.
 - Main skill: procurement and assembly.
 - Value < 5 M€
 - Market Survey in November-December 2021.

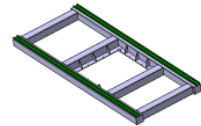
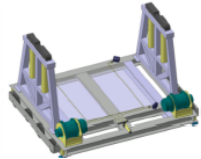
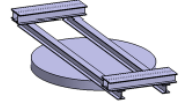
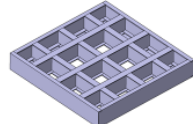


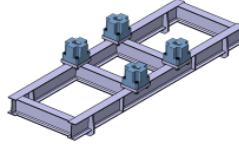
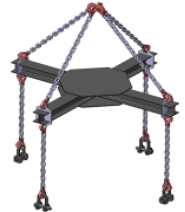
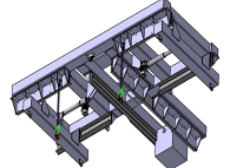
Section cut of a Cold Valve Box

Under preparation

- **OPE-1203:** Neutral Beam Tooling (set of around 45 different tools). CFT Q1 2022
- CFT November 2021.
- See Technical Note on F4E Industry Portal.

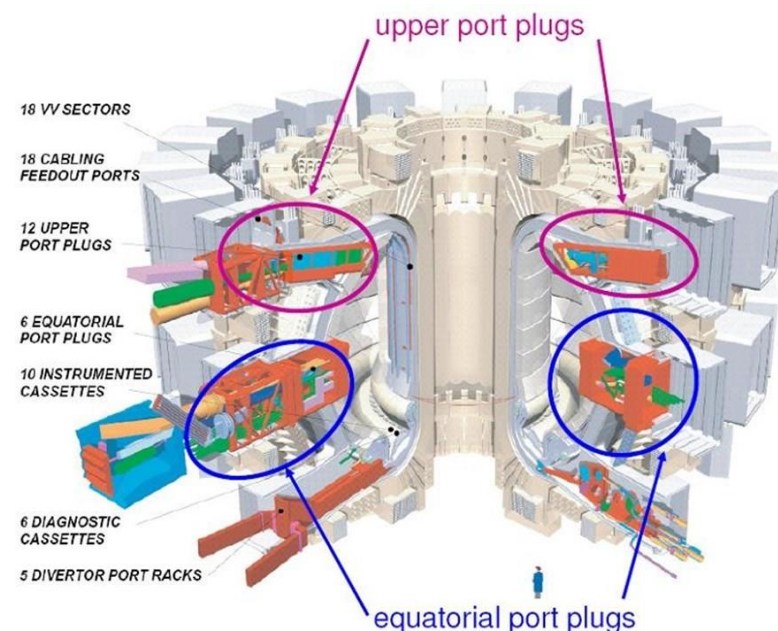
20 different guides and actuation systems to allow transportation on the ground, specific assemblies and guiding of components on site during the first assembly.		8,5 m x 4m x 0.6 m 39000 kg
		8,3m x 4,8m x 7,5 m 9000 kg
		11m x 4m x 0.6 m 6000 kg

Tools types	Examples (illustrations)	Main characteristic
15 different stillages and structures to support/maintain HNB components during temporary storage and transportation within the ITER site and the NB Cell.		8,5m x 4m x 0.6 m 8000 kg
		6m x 5m x 2,5m 13200 kg
		5m x 2,5m x 0,6m 7000 kg
		4m x 4m x 0.5 m 6000 kg

10 different lifting adaptors to move/install the HNB components while using the on-site monorail crane or other temporary lifting devices used during the first assembly.		3.8m x 1m x 0.6 m 1200 kg
		4,5m x 4,5m x H = (0.55 + slings) 2300 kg
		7,5m x 4,5m x 1 m 10000 kg

Under preparation

- **OPE-1205:** 2 lots Stainless Steel material, and Rhodium target (1 unit). Target CFT November 2021.
- **OFC-1183:** 6 Diag PORTS Manufacturing and Assembly (+Testing) (4 Upper and 2 Equat.). Market Survey (MS) soon. Target CFT: **Q3** 2022.
- **OMF-1244:** 2nd Plasma Components Manufacturing (very similar to OMF-1126). MS soon. Target CFT Q1-2 2022.



Under preparation

- **OPE-1051:** Solid State Power Amplifiers IFMIF. Target CFT Q1-22.
- **OPE-1165:** JT60SA Divertor Normal Heat Flux Elements (MS closed). Target CFT Q4-21 or Q1-22. See next slide.
- **OPE-1166:** JT60SA Divertor Cassette frames (MS closed). Target CFT Q4-21 or Q1-22. See 2nd next slide.
- **OPE-1XXX:** JT60SA Waveguides. Target CFT Q1-22
- **OPE-1XXX:** Diamond Windows for Transmission Line. Target CFT Q1-22.

OPE-1165: DIVERTOR NORMAL HEAT FLUX ELEMENTS JT60SA

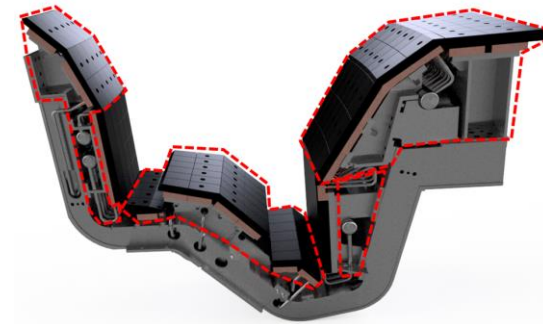
Scope: 36 Divertor modules, including

- ✓ 4500 machined graphite tiles (including spares)
- ✓ 432 CuCrZr or Cu/SS machined heat sinks with integral cooling channel(s)
- ✓ 36 sets of pipes and manifolds, 36 chevrons, 36 sets of SS support structures

Key skills

- ✓ Manuf./sourcing of high purity nuclear-grade isotropic graphite
- ✓ Manuf./sourcing of CuCrZr and/or Cu/SS explosion bonded plates
- ✓ Fabrication/welding of CuCrZr heatsinks (e.g. EBW)
- ✓ Welding of CuCrZr with stainless steel pipes, Welding of stainless steel (e.g. TIG)
- ✓ Non-destructive examination of welded joints (e.g. UT, RX)
- ✓ Precision machining of semi-finished products (e.g. graphite tiles, heatsinks, supports, etc.)
- ✓ Possibility of implementing parallel production lines; Well-developed quality control

Market Survey
Closed soon



OPE-1166: DIVERTOR CASSETTE FRAMES JT60SA

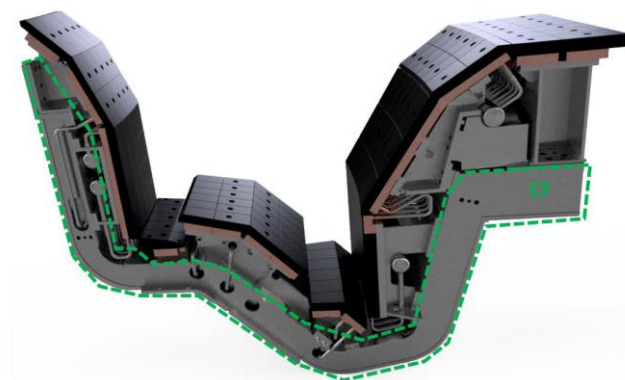
Scope: 36 Divertor modules, including

- ✓ 36 stainless steel cassette frames
- ✓ 36 sets of stainless steel pipes and manifolds (including bellows)

Key skills

- ✓ Sourcing of 316L SS plates, pipes and forged parts
- ✓ Fabrication of stainless steel structures
- ✓ Precision machining of fabricated parts of relevant size
- ✓ Welding of stainless steel (e.g. TIG, MIG)
- ✓ Non-destructive examination of welded joints (e.g. UT, RX)
- ✓ Pressure and helium leak testing of pipes.
- ✓ Stress relieving of stainless steel fabricated components

Market Survey
Closed soon



Under preparation

- **OMF-1XXX** WCLL TBM Set Preliminary Design & Final Design. Estimated value 2.8 M€, Target CFT:Q1-2022
- **OMF-1YYY** Safety Studies in support of TBSs PD &FD - 2.5 M€. Target CFT: Q2-2022

Ongoing

- **OMF-1156:** DOORS MIR Platform support. Deadline: 28th November.

Under preparation

- **OMF-1220:** Project Management In-sourced Support Services
(Planning, Risk, Cost, On-field support). Market Survey imminent.

Ongoing

- **AMF-1207 - Sourcing, negotiation and coordination of specialized learning and related services to Fusion for Energy. Deadline: 2nd December.**

Under preparation

- **AMF-1178 - Provision of Legal Services on the Interpretation of French Regulatory Law. Target award date April-May 2022.**

END