

# THEMATIC WORKSHOP

## Buildings & site management program

ITER achievements, challenge & business opportunities



### Yves **BELPOMO**

ITER Construction Management Office Deputy Head

With over 25 years of experience in nuclear engineering and construction management, Yves Belpomo has led site planning, work coordination, and equipment management.

He also oversees key transversal contracts such as scaffolding, lifting, and general site services.



### Romaric **DARBOUR**

F4E Head of the Building and site Equipment Unit

Since 2024, Romaric Darbour is leading the delivery of ITER Site Infrastructures, Buildings Civil Works, Services and Power Supplies Distribution.

He joined F4E in 2009, where he was initially in charge of the management of the Architect Engineer contract and later the main Civil Works contract covering the Tokamak Complex construction.



**Chairperson:**

### Sergio **Orlandi**

ITER Head of Construction Project



# **BUILDINGS & SITE MANAGEMENT PROGRAM SESSION**

**Sergio ORLANDI (IO)**

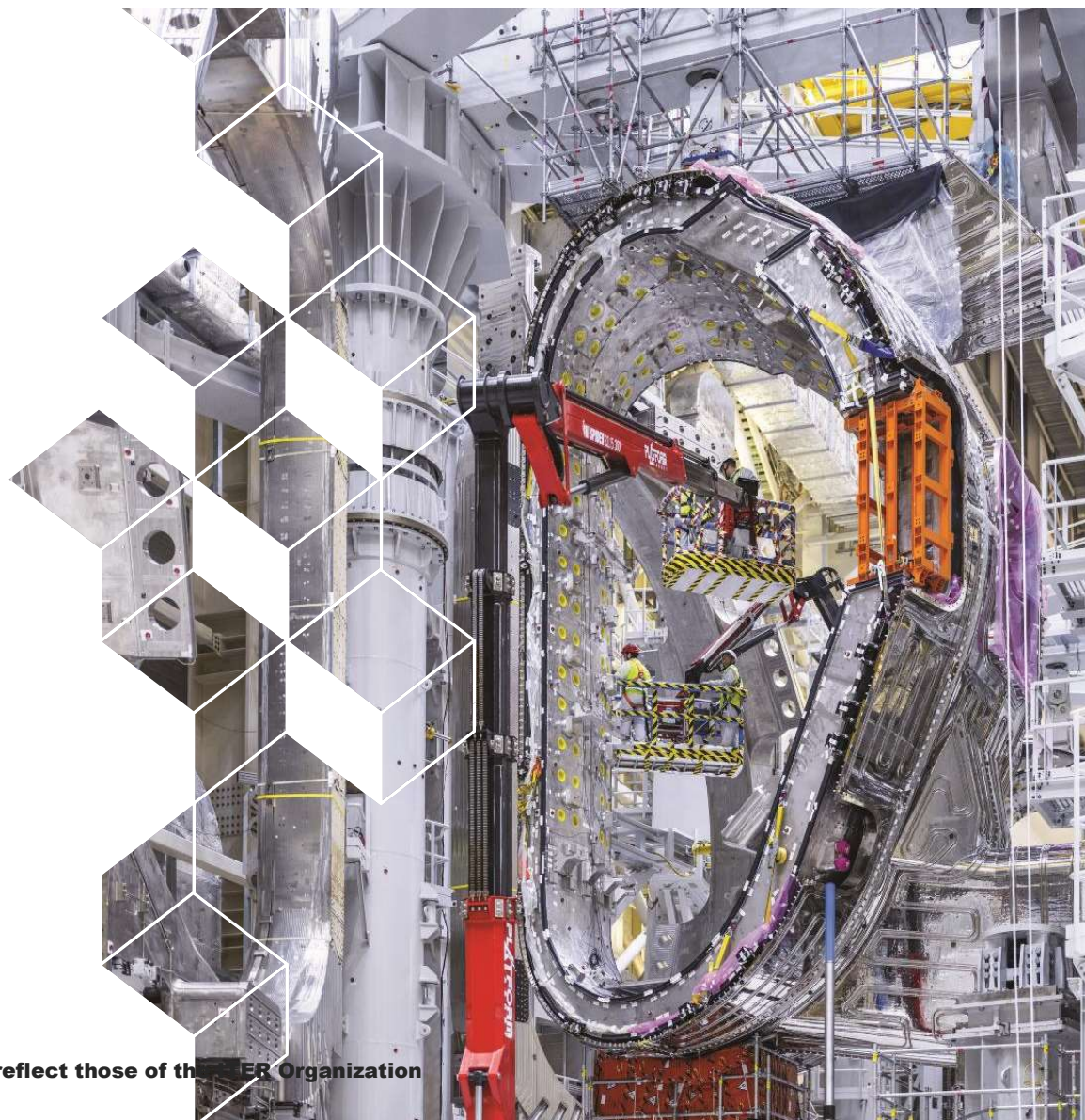
**Yves BELPOMO (IO) – Romaric DARBOUR (F4E)**

**Fabrice LEMAIRE (Vinci Construction Grands Projets)**

**Pierre-Jean GONNET – Thomas BACHELLERIE -  
(Capgemini)**

**THURSDAY APRIL 24th**

**Disclaimer: the views and opinions expressed herein do not necessarily reflect those of the ITER Organization**



# **BUILDINGS & SITE MANAGEMENT PROGRAM**

- 1. Overview of Buildings Site Program**
- 2. Forecast – future opportunities**
- 3. Feedback and lessons learned from industry (Vinci Construction Grands Projets – Capgemini)**



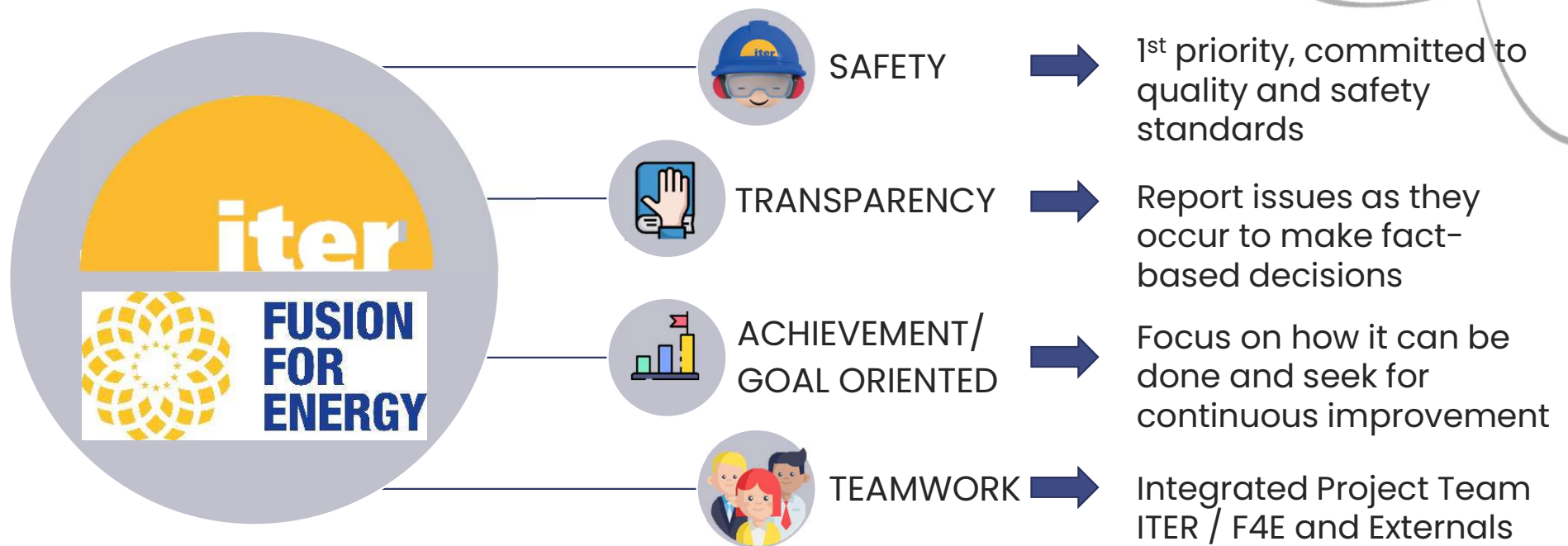


# **1. Overview of Buildings & Site Management Program**

An IO and F4E integrated team for the erection of all ITER Buildings and Buildings systems, the operational support to the assembly and construction activities, and the operation of the site



# BSM VALUES



# Achievement / Goal Oriented

In 2010, our vision



2009 ITER platform ready for construction

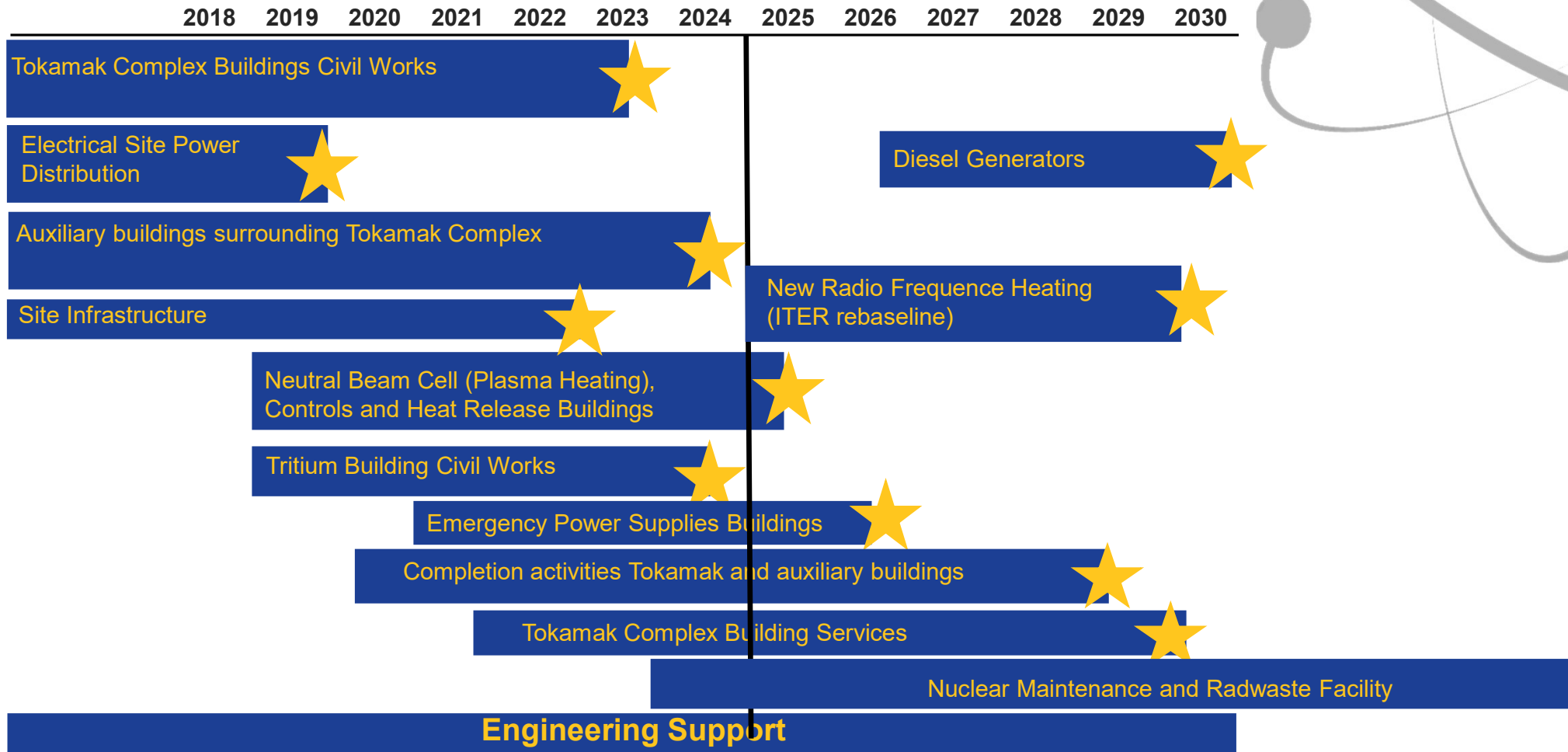


# Achievement / Goal Oriented

Progressively, this vision became reality

November 2024 ITER worksite

# BSM CONSTRUCTION TIMELINE





# The Buildings Portfolio Scope and History

ITER : 180 ha with 39 buildings on the 40 ha platform

Buildings scope overall 71% completed – 25,000,000h work



## Reinforced Concrete Buildings

250.000m<sup>3</sup>

concrete

(including 190.000m<sup>3</sup> for Nuclear buildings)

(150.000m<sup>3</sup> already poured)

21.000m<sup>2</sup>

footprint

800.000m<sup>3</sup>

building volume

## Steel Frame Buildings

29.000m<sup>2</sup>

Footprint

(10.000t steel structure installed)

4/04/2025

9



# The Buildings Portfolio Scope and History

ITER : 180 ha with 39 buildings on the 40 ha platform

Site Infrastructures 90% delivered

## Site infrastructures

5km

Galleries

20km

Precipitation  
Drainage

1km

Shallow  
trenches

3.4km

Industrial  
Water  
drainage

3.4km

Sanitary Water  
drainage

160.000m<sup>2</sup>

Roads &  
Parking

1.200m

Non Nuclear  
Fence



# The Buildings Portfolio Scope and History

HVAC / piping / electrical / Instrumentation & Control now the main remaining delivery to come

## HVAC / Piping

Building volumes / flows to be treated (chilled water generation out of the scope)

250.000m <sup>3</sup>	600.000 m <sup>3</sup> /h	550.000m <sup>3</sup>	1.000.000m <sup>3</sup> /h	25km	5000
Overall Nuclear Buildings Volume	Overall Nuclear Buildings Air-Flow	Overall Conventional Buildings Volume	Overall Conventional Air-Flow	Piping	Valves



# The Buildings Portfolio Scope and History

HVAC / piping / electrical / Instrumentation & Control now the main remaining delivery to come



## Power supplies (HV, MV, and LV distribution) / Instrumentation and control

Detailed design,  
installation and  
commissioning

Procurement of the  
emergency generators,  
the cables, and 25% of  
the SSEN equipment

Remainder of the  
equipment are procured  
by other Domestic  
agencies (CN and US)

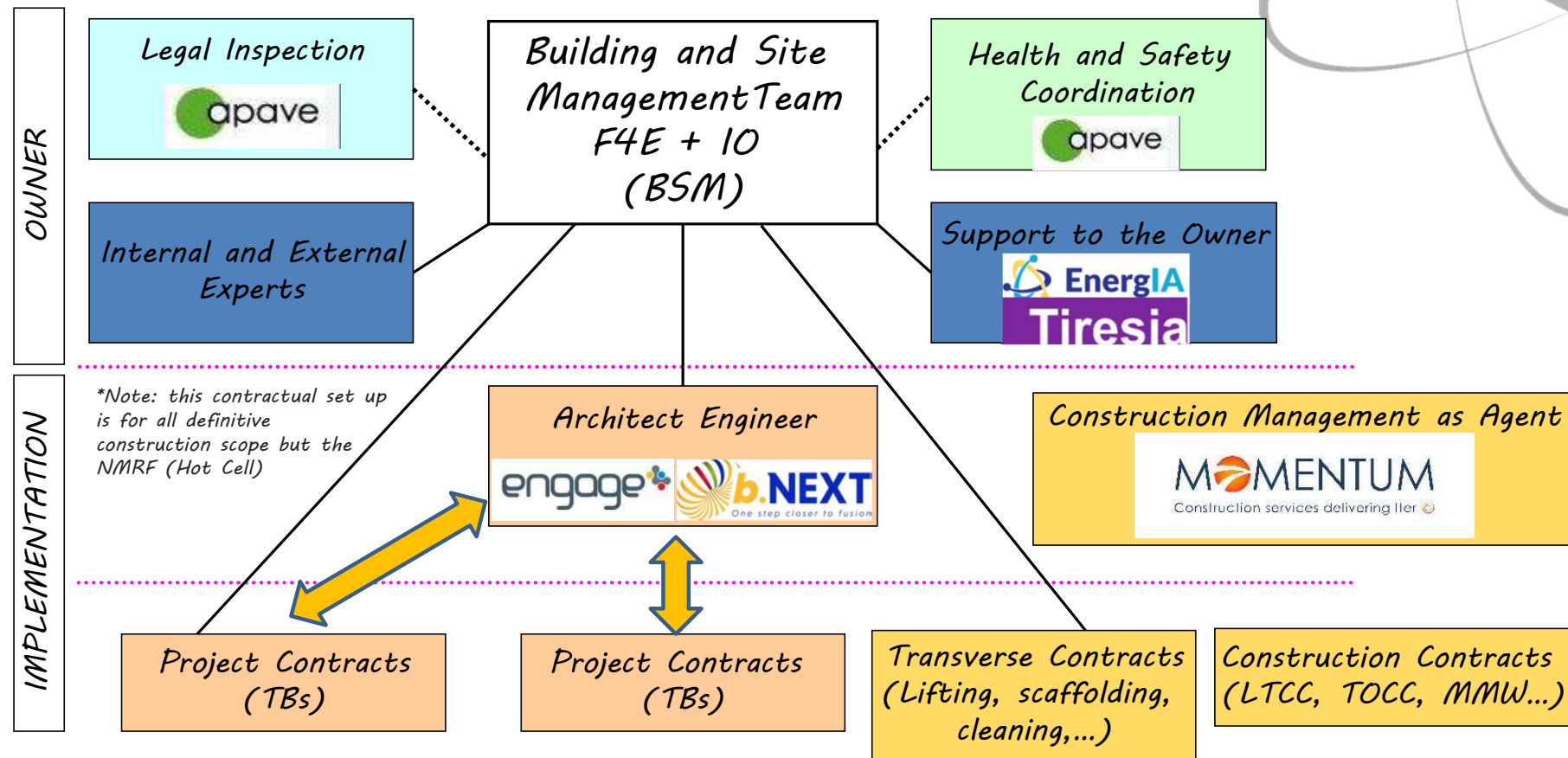
Instrumentation &  
Control

Sensors, switches,  
actuators, fire detection,  
building monitoring system



# The Buildings Construction Organization

IO/F4E joint integrated team with strong support environment for successful delivery\*



# Construction of a Basic Nuclear Facility

**ITER Organization (IO) was formally authorized by ASNR in 2012 to create the Basic Nuclear Facility ITER – INB-174**

**ASNR carries out regular inspections** on the ITER Site where BSM is recurrently strongly involved, with the support of the AE, the CMA and Contractors as required.

In close link with the IO Safety team, inspections follow a dedicated preparation, attendance and actions follow-up.







## 2007: Site Clearing begins

About 90 hectares were cleared for the project, this first phase of work took over one year to complete.





2008: Start of itinerary works



## 2009: ITER platform ready for construction

To create a level platform at 315 m, workers removed 2.5 million cubic meters of earth and rubble—an amount equivalent in volume to the Cheops Pyramid in Egypt.





## 2010: Excavation of the Tokamak complex



Is a joint venture  
of



**SNC • LAVALIN**



**EMPRESARIOS AGRUPADOS**



## 2010: Engineering support contract signed

The Architect Engineering Support Contract was awarded to Engage. This is one of the biggest Engineering Contracts in Europe. It represents a total of around 4,000,000 hours of work, spread over the 15 years foreseen for the design and the construction of ITER buildings with Engage





## 2012: Drainage networks installed

50,000 cubic meters of earth are displaced to create a network of concrete piping 8-11 meters under the surface of the platform that will evacuate rainwater





## 2012: Reinforcement and concreting on B2 slab



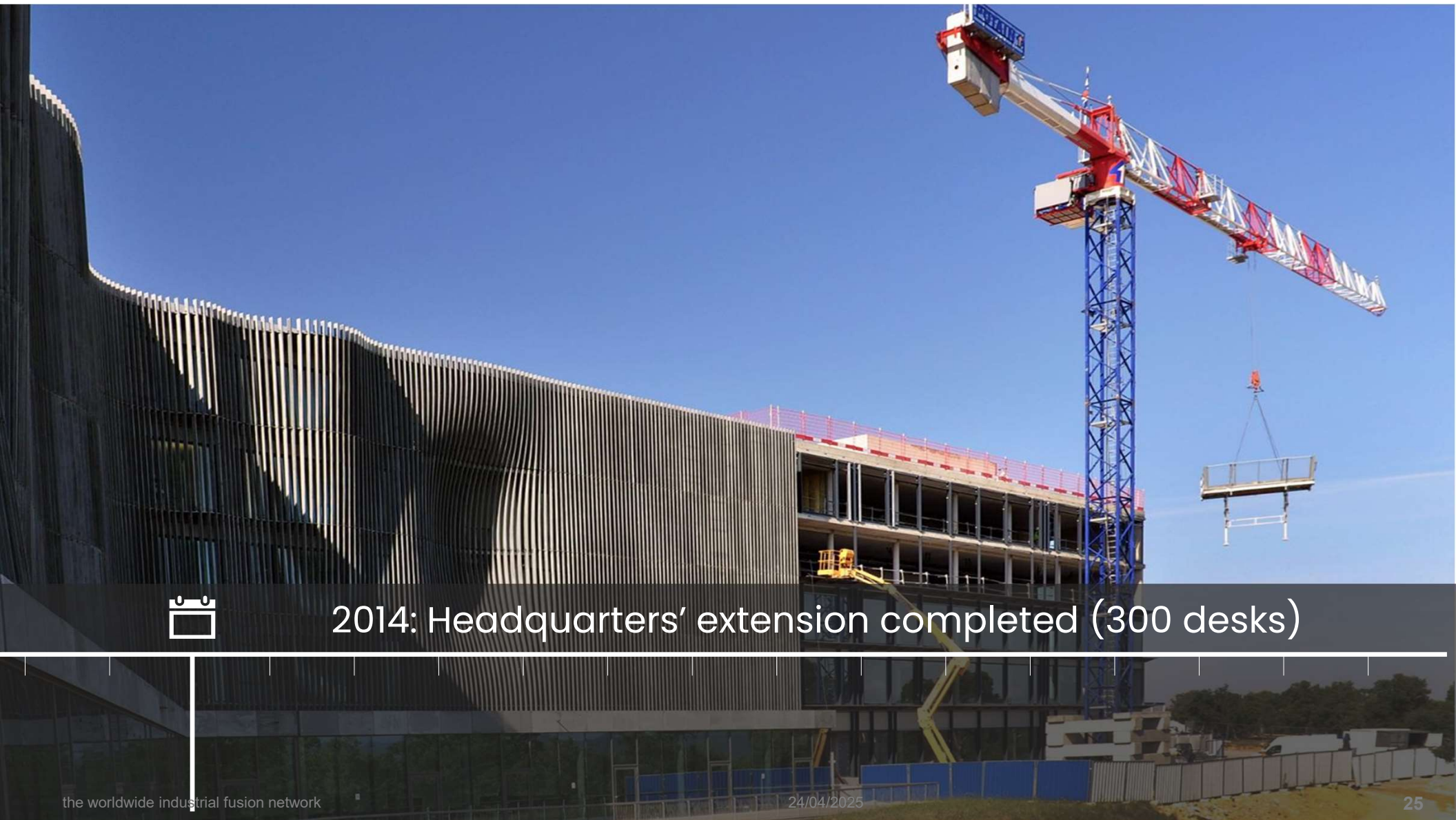
2012: First test convoy on itinerary





## 2014: Tokamak Complex Foundation: First concrete poured

The slab covers an area of 9.600 m<sup>2</sup> and comprises 14.000 m<sup>3</sup> of concrete, 3.600 tonnes of rebar and 2.500 embedded plates.



2014: Headquarters' extension completed (300 desks)



# STORAGE FACILITIES

The ITER Logistics Platform built on  $\sim 1 \text{ Mm}^3$  of stored excavated materials







## 2015: The ITER Assembly Hall rises from the ground

An impressive 100 m long workshop will welcome the bulky components to be put together so as to be installed in the machine.



gathering



amentum



2016: Signature by IO of the Construction Management As Agent Contract

**MOMENTUM is a consortium**, created in 2016, to provide supporting services to the Programs in charge of ITER Construction supervision





## 2018: The crown is completed

A solid base ring inside the Tokamak building, and its 18 radial walls – are completed. The cylindrical concrete structure is able to support the load of the ITER machine (23.000 t).

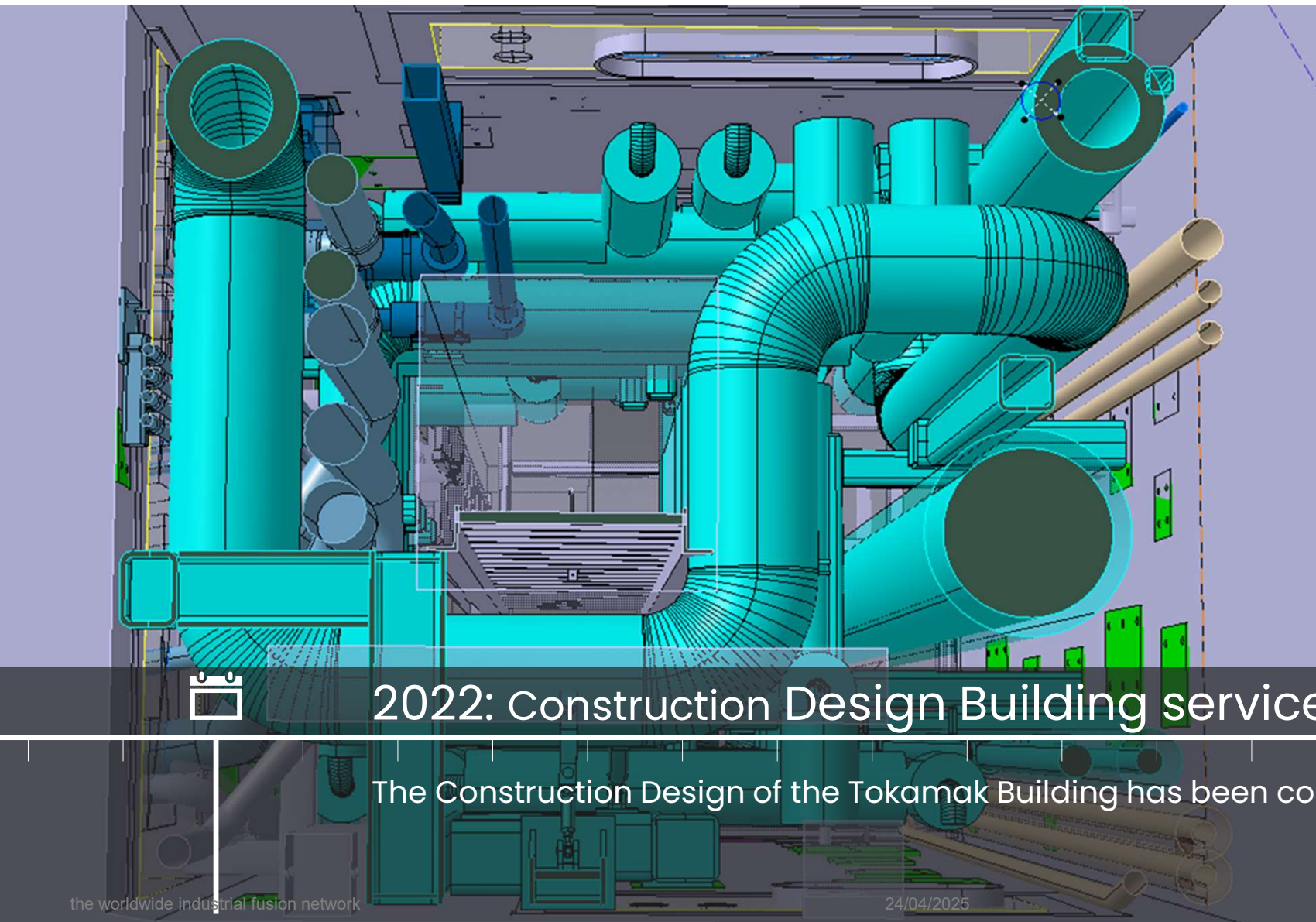




## 2020: The Tokamak and Assembly Buildings completed

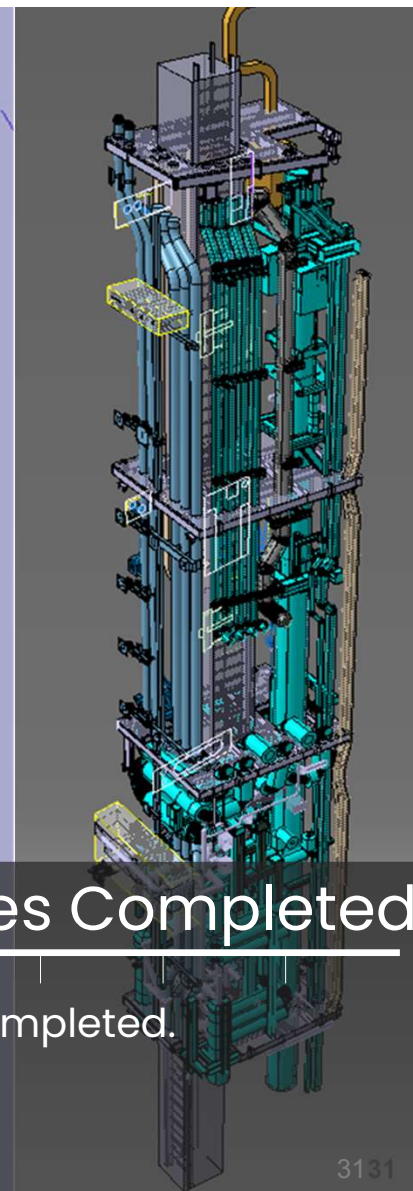
Tokamak Building: ~ 1.000 men and women took part in the construction (effort led by the Vinci Ferroviail Razel-Bec)  
 Assembly Building: HVAC system is ready to maintain the specific temperature and humidity levels required during machine assembly





2022: Construction Design Building services Completed

The Construction Design of the Tokamak Building has been completed.







## 2023: Tokamak Complex Civil Engineering completed

Full scope of civil engineering in tokamak complex building with the Tritium Building B14 construction works completion





## 2024: Tokamak Complex Painting Completed

200.000 m2 of walls covered without disturbing other activities on site  
Result of five years of relentless handwork by a team of up to 40 specialists



## 2024: – Architect Engineer Contract II signed

b.NEXT consortium (Assystem, Egis and Empresarios Agrupados) awarded AEII contract

Scope: Consulting and Engineering expertise on Design and Construction Management activities until 2030 (+5 years options)





## 2024: – Cryopant Buildings ready to cool ITER

Cryopant Compressor, Coldbox Buildings and Infrastructure Taking Over with IO completed.





## 2025: Components deliveries

~190 HELs have now been delivered, ~50 remaining

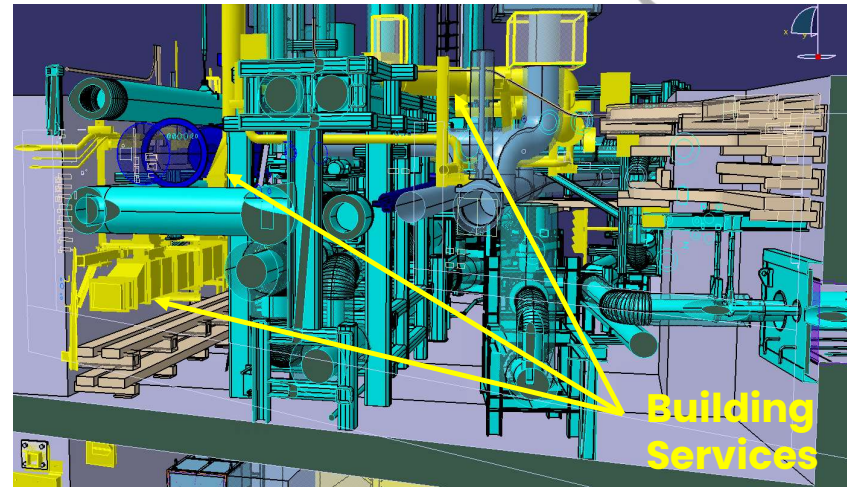


# Ongoing activities: Design Building Services



## ENGAGE:

Execution Design Building Services  
Tokamak building

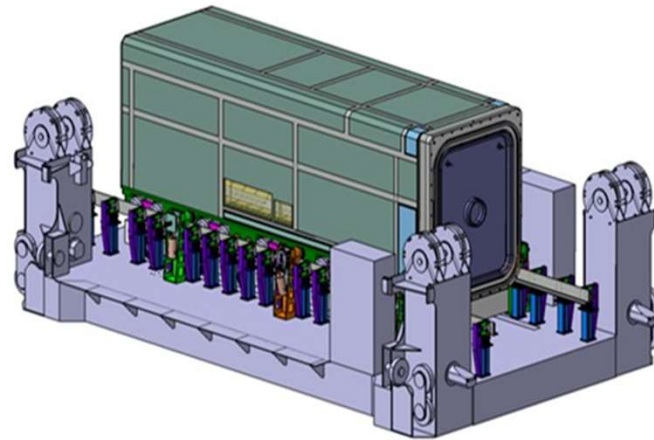
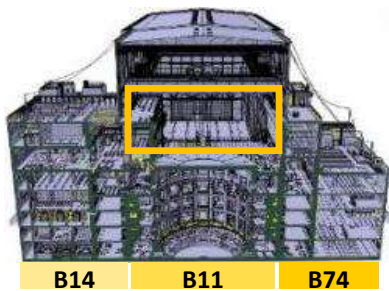


## b.NEXT:

Construction Design Building Services  
Tritium Building DT phase

# Ongoing activities – Tokamak Complex

TB02 – REEL – Cargo Lift Machinery Room



Cargo Lift 3D model

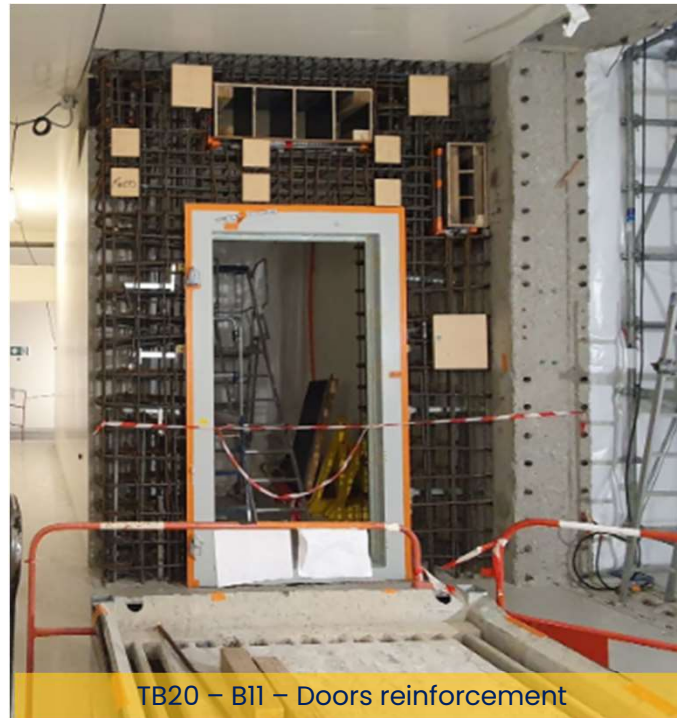
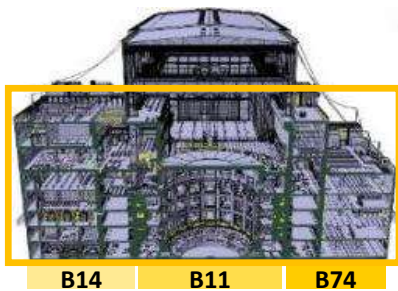


Cargo lift machinery room: 4 upper pulley blocks completely installed



# Ongoing activities – Tokamak Complex

TB20 – Ferrovia Sommer / TB22 – Chapus – Cerni



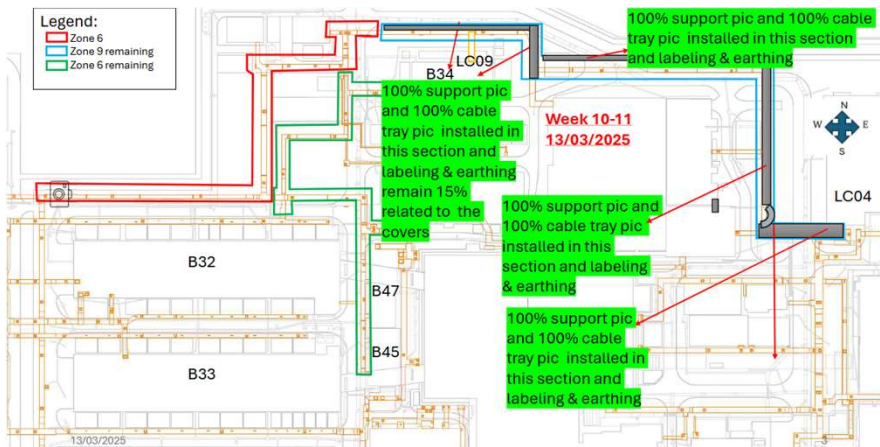
TB20 – B11 – Doors reinforcement



TB22 – B74 – Roof Plinths

## Ongoing activities – Galleries

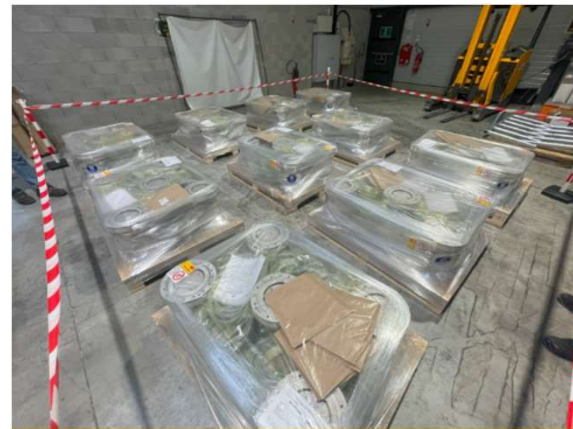
TB21 – TO110– SNEF Power Services SAS and Ferrovial Construcción S.A – PBS44: Cable trays and supports installation



### Installation of one of heaviest support vertically

the worldwide industrial fusion network

TB21 – TO 208A Dalkia / TO 201 Fincantieri



TO 208A - 50 FIDs DN200



## T0 201 – Supports

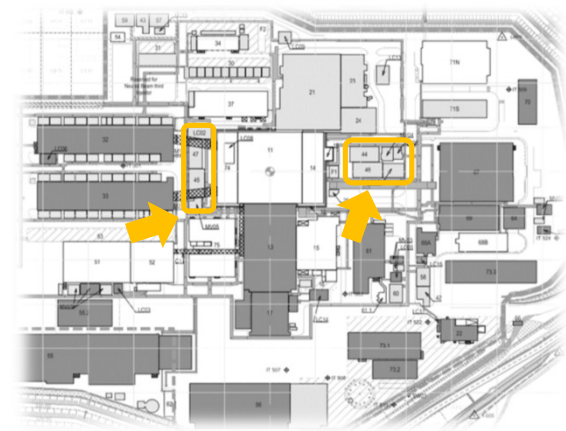


## TO 201 - Ducts delivery



# Ongoing activities – Power distribution buildings

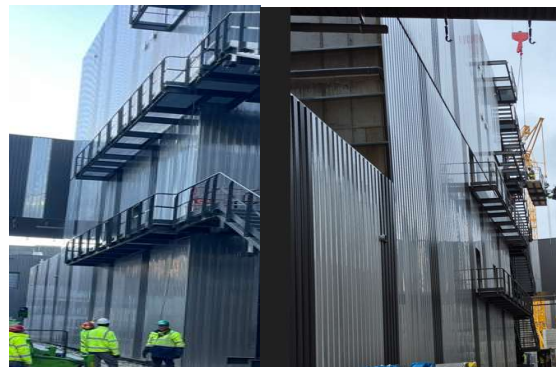
TB13 Ansaldo – Monsud – B44, B46, B45, B47 – Slabs and walls erection progressing



B46 – supports installation



B44 – Cladding installation



B45 – Walkways completed and cladding advanced in west side

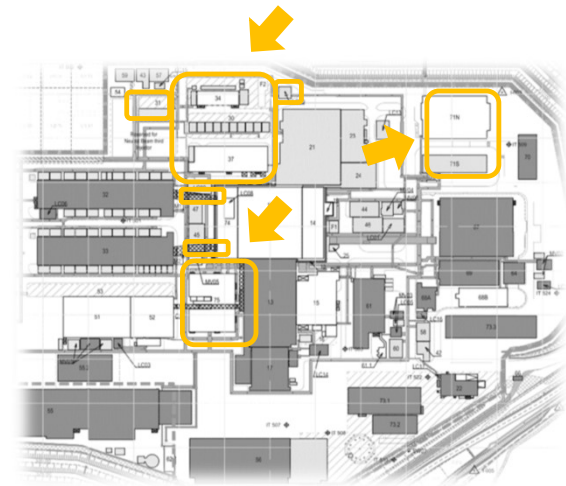


B47 – stairs and cladding completed

24/04/2025

# Ongoing activities – Other buildings

TB12 Demathieu Bard – B37, B34, Bridges, B75, B71 – Construction works





# Ongoing activities – Material delivery and management

DAHER : Global Transport & Onsite and offsite logistics contracts



Preservation : radial beams packaging

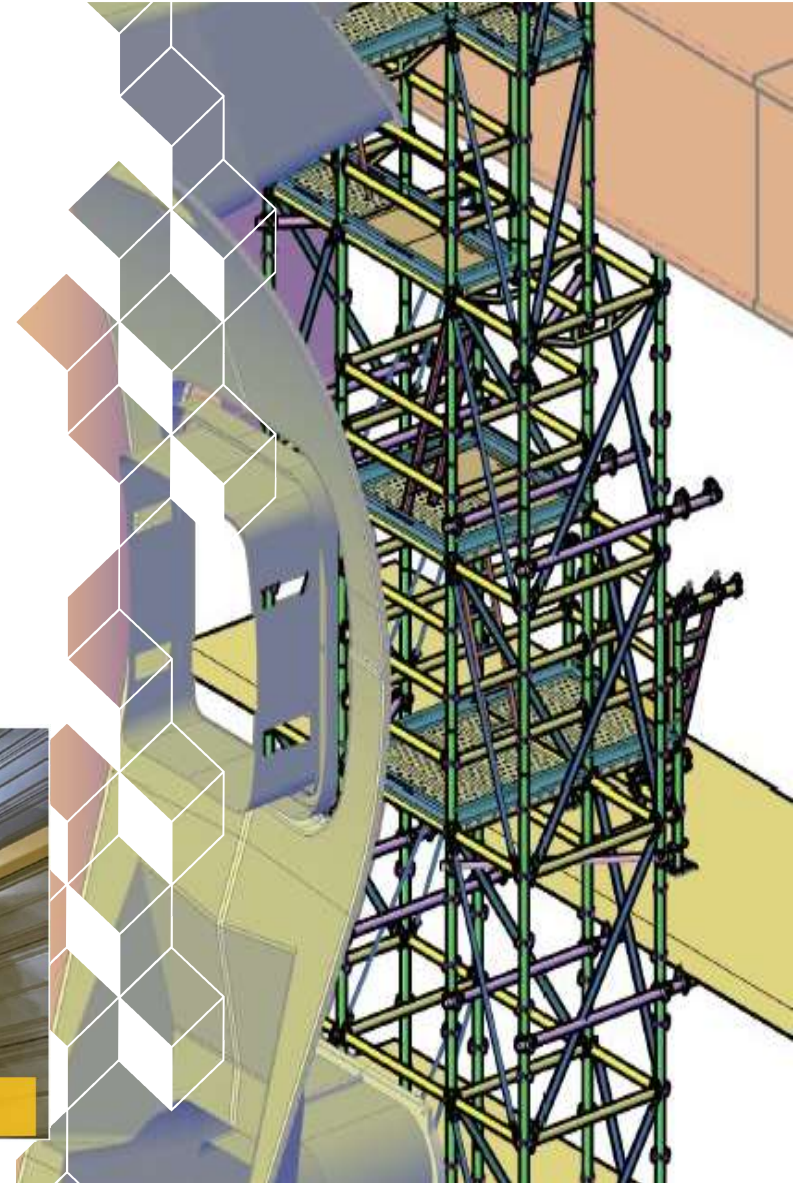
the worldwide industrial fusion network

## Ongoing activities – Support to Construction

**Scaffolding contract : Entrepouse**



**Rope works : Rope Concept**





# Ongoing activities – Support to Construction

Cleaning services and FME : GSF





# Ongoing activities – Support to Construction

Lifting services VERNAZZA Autogru





# Ongoing activities – Support to Construction

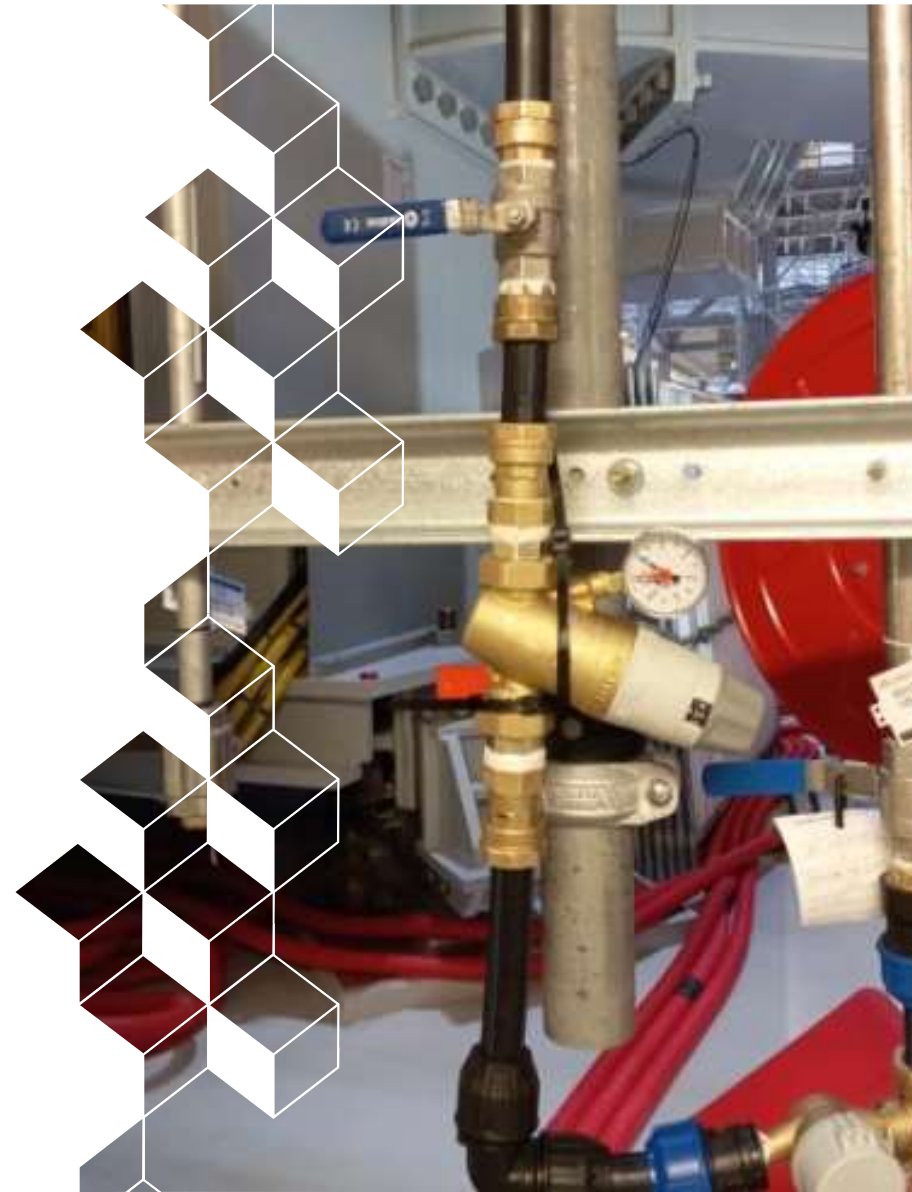
**General services for Construction:  
Dietsmann**

**Minor Mechanical works : CEGELEC**

**Minor Civil works : Eiffage**



the worldwide industrial fusion network



# ITER cranes Operation and Maintenance

ITER cranes Maintenance and Reliability Improvement Plan : REEL



AH Cranes Operation :  
FOSELEV



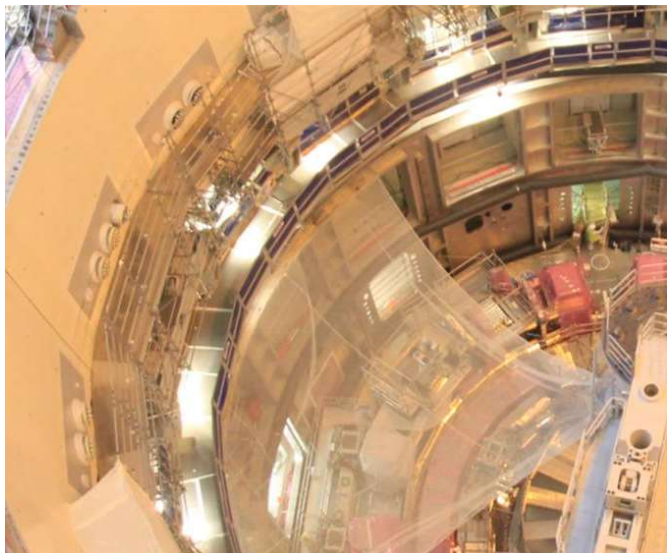


# Backfilling of openings

LTCC and TOCC contracts ; GTM Sud and Nuvia



Backfilling of Upper Pipe Chase penetrations – strong interface with Plant Installation and Machine Assembly



Temporary opening in B11/L1 (DTR ce  
Reinforcement on-going



# ITER water supply and drainage networks

## Contractor :SECHE

- Operation and maintenance of water (Raw, Potable, Fire Protection, demineralized) supply networks
- Operation and maintenance of drainage ( water, Sanitary, Industrial, HRS Blowdown) networks
- Metering and analysis of water consumptions; Pollution/flooding management.





# Operation and maintenance of ITER Buildings and Site Infrastructures

**Contractor :SPIE Nucleaire**

Once the buildings and buildings systems constructed and taken over by the IO, their operation and maintenance is of highest importance.

- 35 operators
- 130000 m2 of buildings ~(50)
- 700 electrical distribution boards
- 70 UPS
- ...



B13 Chillers

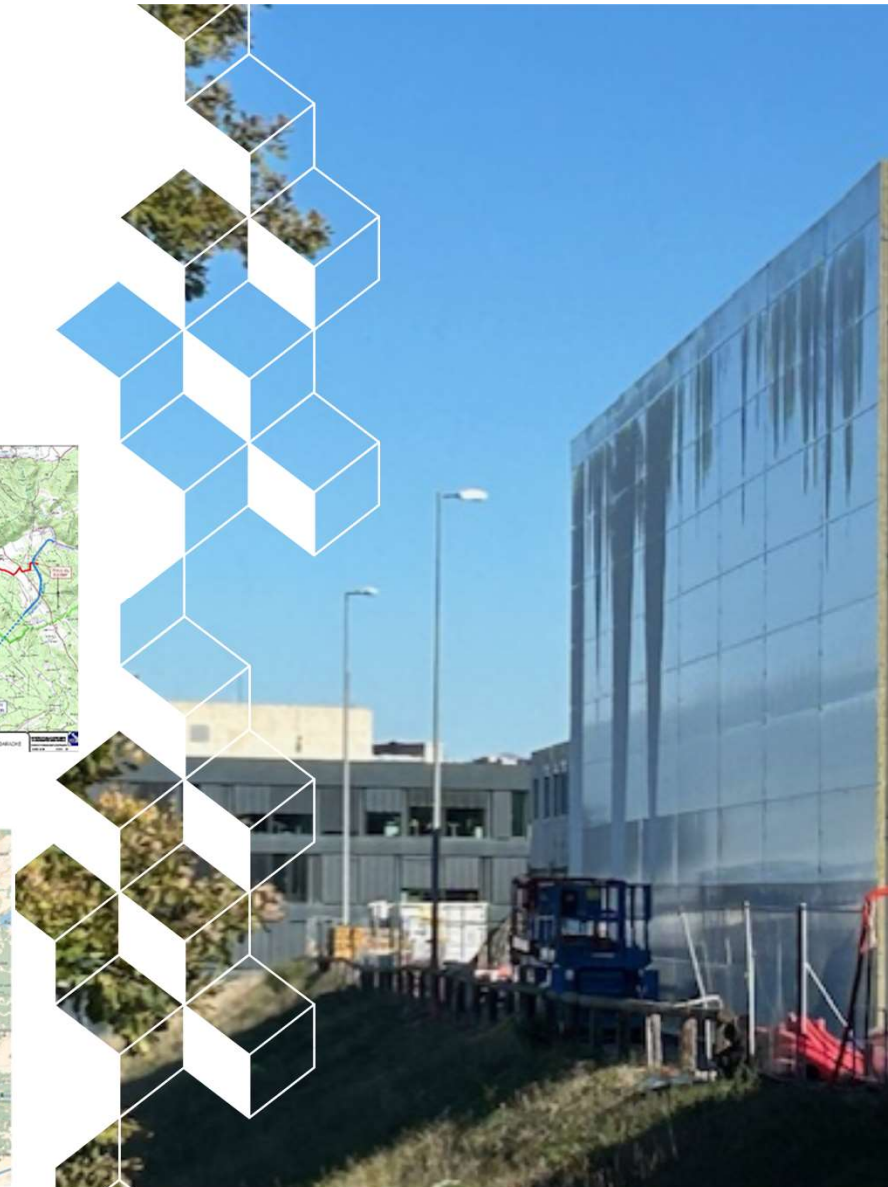
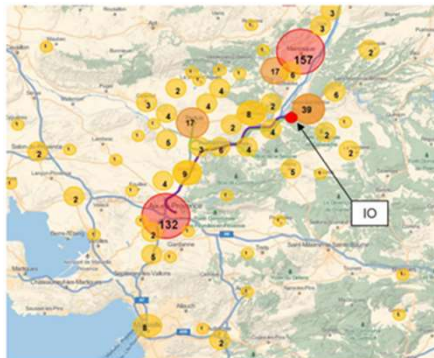
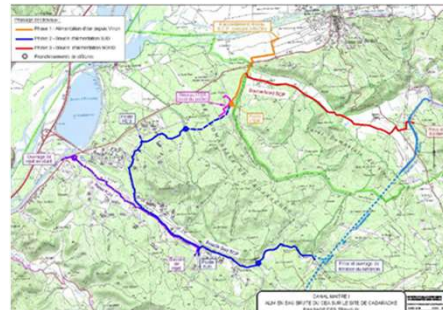


View of the Site services Buildings (B61)

# Facility Management

For the ITER site many other supports have to be deployed for mandatory services:

- New offices and storage buildings
- Raw Water supply (**SCP**)
- Waste management (**VPIS**)
- Catering services (**EUREST**)
- Staff transportation (**SUMIAN**)
- Statutory inspections (**Bureau Veritas, renewal ongoing**)
- Insurances
- ...





## Next Objectives

- Still **16 Buildings to be delivered** (out of the Nuclear Maintenance and Radwaste Facility Buildings)
- Tokamak Complex Building Services remaining design and Procurement (~ 600m€):
  - TB21 Procurement Electrical and Mechanical works for Tokamak Complex and galleries, **framework contract with reopening of competition:**



**FINCANTIERI**



**PONTICELL** FRESES



- TB23 **Procurement Electrical and Mechanical works Tritium building Deuterium Tritium phase** (procurement 2027)
- **Nuclear Maintenance and Radwaste Facility** (presented in next session)

# F4E PROCUREMENTS TO COME

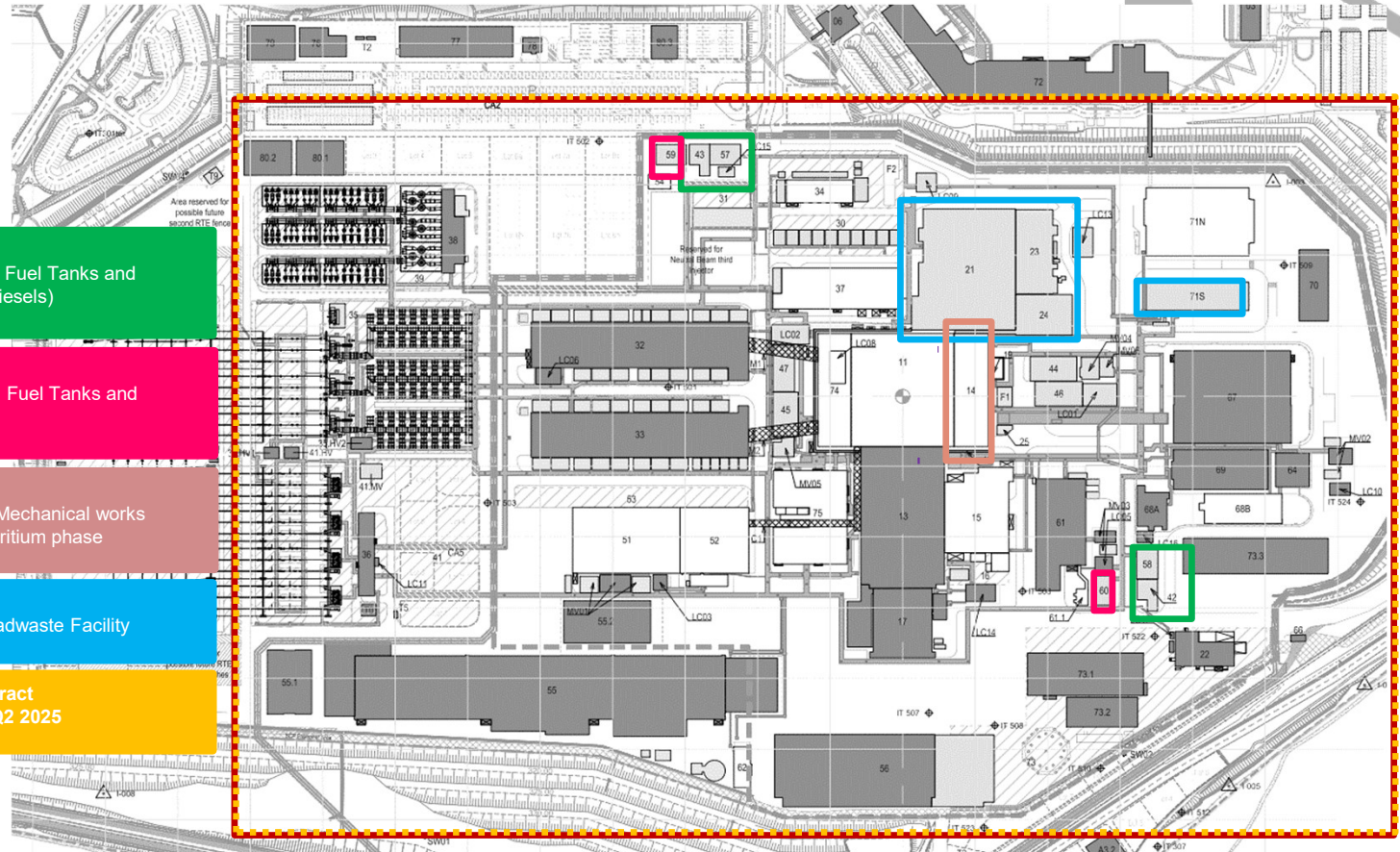
**TB17**  
Electrical Diesel Generators, Fuel Tanks and  
buildings 42 43 57 58 (PIC diesels)  
**Procurement 2028**

**TB24**  
Electrical Diesel Generators, Fuel Tanks and  
buildings 59-60 (IP diesels)  
**Procurement 2025**

**TB23**  
Procurement Electrical and Mechanical works  
Tritium building Deuterium Tritium phase

**NMRF (Hot Cell)**  
Nuclear Maintenance and Radwaste Facility  
**Procurement 2025**

**New Legal inspection contract**  
**Launch of Call for tender Q2 2025**



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# F4E PROCUREMENTS TO COME

## TB24 – Investment Protection Emergency Diesel Generators (IP A and IP B):

- Range: **€ 10m- €50m**
- Classification: Investment Protection Components (Non-PIC) – **Not related with Nuclear Safety**
- Scope: Design, supply, installation, tests and commissioning of :
  - Two (2) **Diesel Generators of 4MW each** (containerized solution to be privileged)
  - Two (2) **reinforce concrete structures** to support the diesel generators

Key dates	Forecast
<i>Call for Tender</i>	<b>Q1 2027</b>
<i>Contract award</i>	<b>Q3 2028</b>



# F4E PROCUREMENTS TO COME

## TB17 – Electrical Diesel Generators (PIC), Fuel Tanks and buildings 42 43 57 58:

- Range: **€50m – €100m**
- Classification: Protection Important Components (PIC) – **Important for Nuclear Safety – Qualified Components**
- Scope: Design, supply, installation, tests and commissioning of
  - Two (2) **Emergency Diesel Generators** of 3.5MW each
  - two (2) **reinforced concrete buildings and all the auxiliary systems** (HVAC, fire detection, etc) for housing the diesel generators

Key dates	Forecast
<i>Call for Tender</i>	<b>Q2 2028</b>
<i>Contract award</i>	<b>Q4 2029</b>





# F4E PROCUREMENTS TO COME

## TB23 – Procurement Electrical and Mechanical works Tritium building Deuterium Tritium phase

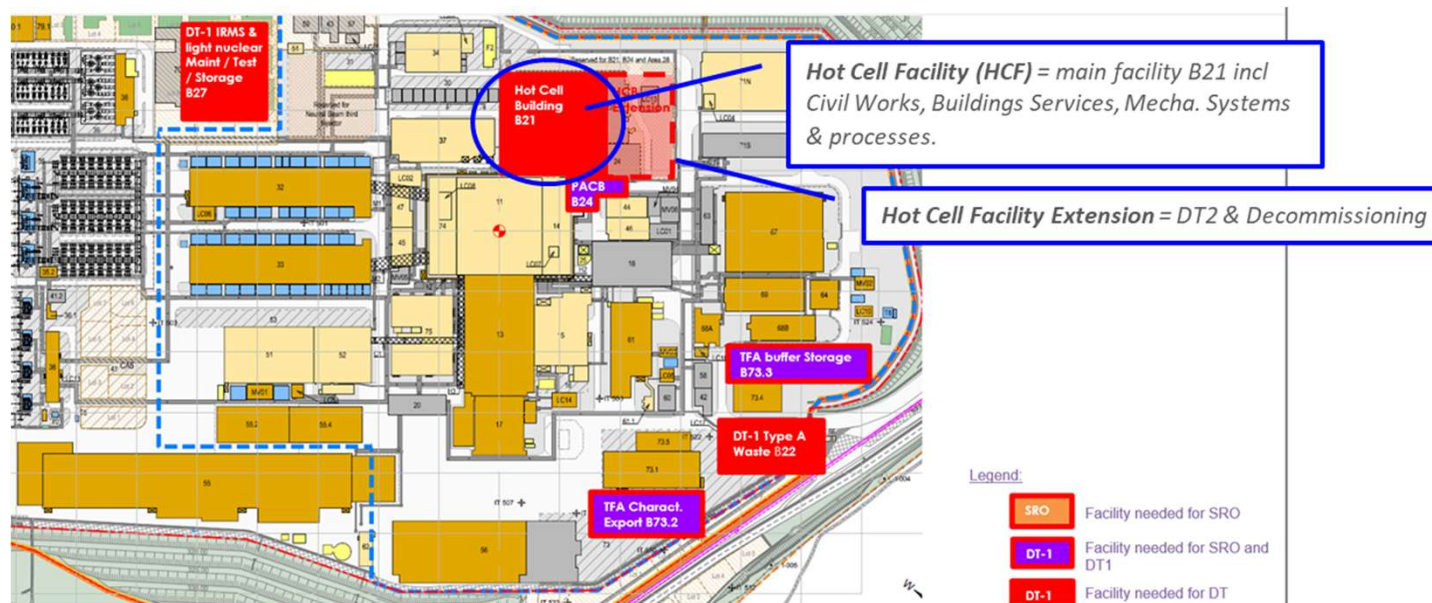
- Range: **€100m – €150m**
- Classification: includes Protection Important Components (PIC) – **Important for Nuclear Safety – Qualified Components**
- Scope:
  - Manufacturing Execution design and Supply of mechanical works i.e. HVAC, liquid & gas networks, drainage and fire extinguishing services
  - Manufacturing Execution Design, Manufacturing, Testing, Certification, qualification and supply of electrical systems, I&C systems and fire detection systems.

Key dates	Forecast
<i>Call for Tender</i>	<b>Q2 2027</b>
<i>Contract award</i>	<b>Q3 2028</b>

# BSM PROCUREMENTS TO COME

## DT1 configuration Nuclear Maintenance and Radwaste Facility (Hot Cell)

- All Buildings and Processes considered to serve the function of nuclear maintenance and radwaste management on ITER (refer to the specific presentation in IBF 25)





# IO PROCUREMENT TO COME

New Buildings, bridges and infrastructures are required for augmented Radio-Frequency Heating capacity



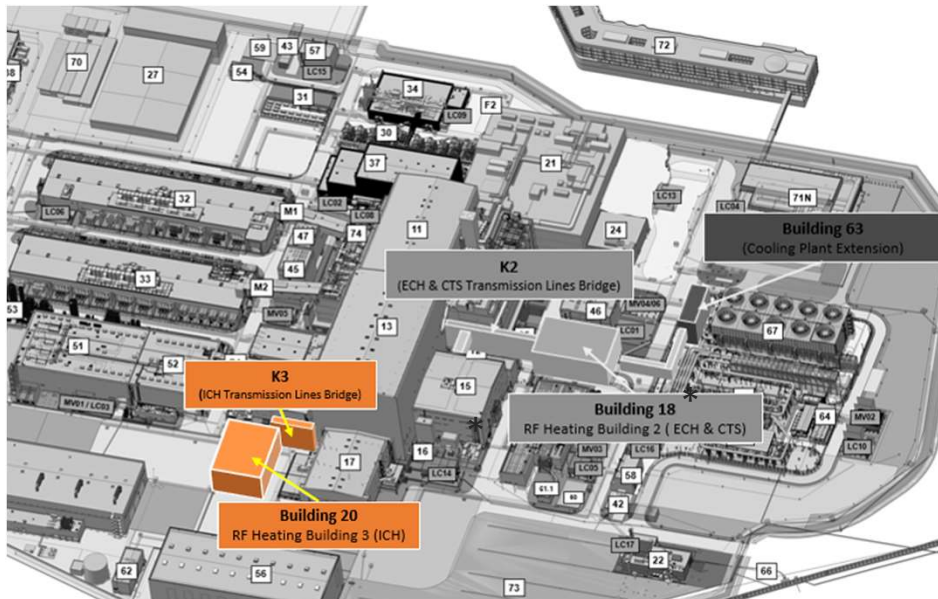
The Construction works will cover:

- New cooling water building B63
- New ECH building B18
- New ECH TL bridge K2
- New ICH building B20
- New ICH TL bridge K3

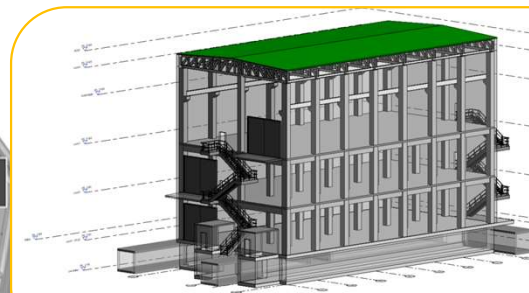
Contracts to be placed in 2027/2028 for Civil Works and Buildings Systems

# New heating Buildings

## New Buildings/ Bridges as per Baseline 2024 :



\* PBS26 Lines connecting B63 with B18 and K2 with B15



### B20

Additional **IC equipment**:

- 37\*19\*23.5 m
- 1 basement and 3 levels
- Surface: 2650 m<sup>2</sup>



### Bridge K3

**IC transmission lines** from B20 to B11 (along and through the B13)

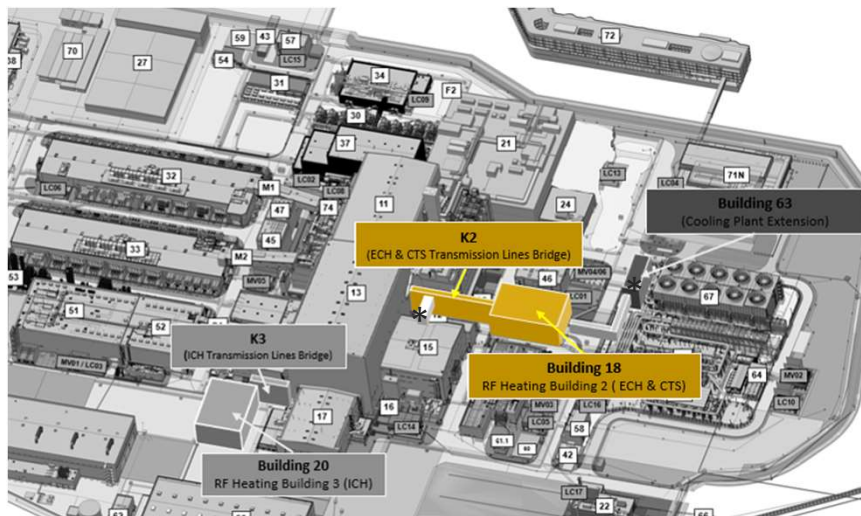
- 97\*5\*3 m
- Volume: 1540 m<sup>3</sup>



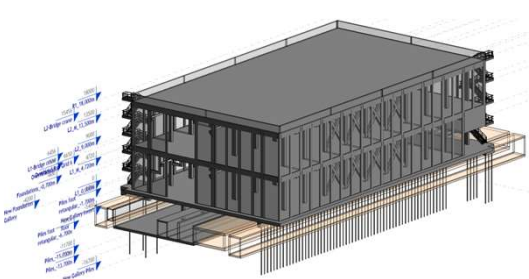
# New heating Buildings

## New Buildings/ Bridges as per Baseline 2024 :

New Buildings, bridges and infrastructures required for augmented Radio-Frequency Heating capacity under the re-baseline exercise (Safety and Seismic Classifications)



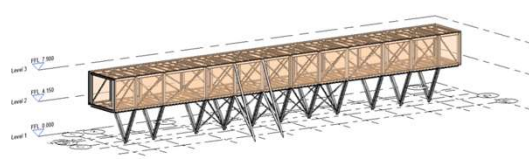
\* PBS26 Lines connecting B63 with B18 and K2 with B15



**B18**

Additional **EC equipment**:

- 66\*37\*18 m
- 1 basement and 2 levels
- Surface: 6200 m<sup>2</sup>



**Bridge K2**

**IC transmission lines** from B18 to B11 (along and through the B13)

- 48\*4.5\*3.5 m
- Volume: 762 m<sup>3</sup>

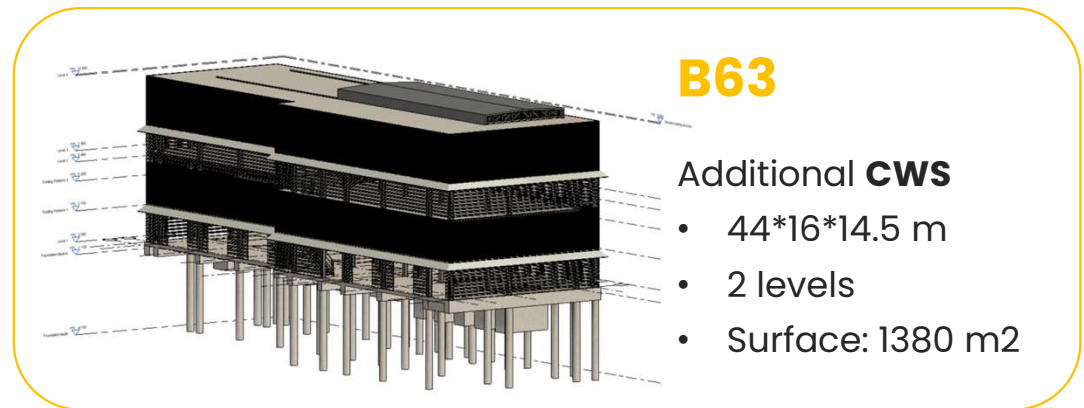
# New heating Buildings

## New Buildings/ Bridges as per Baseline 2024 :

New Buildings, bridges and infrastructures required for augmented Radio-Frequency Heating capacity under the re-baseline exercise (Safety and Seismic Classifications)



\* PBS26 Lines connecting B63 with B18 and K2 with B15





## OTHER IO PROCUREMENTS TO COME

Other IO Procurements are foreseen

- New Cleaning Services contract (2026)
- New General Services contract (2028)
- Site support services (post CMA) (2028)
- Rope access New contract (2027)





# THANKS

TO BE PART OF THE WORLDWIDE **FUSION** NETWORK



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# ITER CIVIL WORKS PROJECT FIRST OF A KIND

ITER BUSINESS FORUM 2025  
FEEDBACK & LESSONS LEARNT



# ITER

## An exceptional project , for the future of energy



Fabrice Lemaire  
Senior Project Director

VINCI Construction Grands Projets



# INTRODUCTION

# VINCI's business lines

~280,000  
employees

€71,6 billion  
revenue

>120  
countries

~4,000  
business  
units

>300,000  
projects  
per year

€67 billion  
market  
capitalisation  
at 31/12/2023



## Concessions

Revenue:  
€6,6 billion

VINCI  
Autoroutes

Headcount: ~6,000

Revenue:  
€ 5,1 billion

VINCI  
Concessions\*

Headcount: ~10,000

## Real estate

Revenue:  
€1,14 billion

VINCI  
Immobilier

Headcount: ~1,000

## Energy

Revenue:  
€20,4 billion

VINCI  
Energies

Headcount: ~90,000

Revenue:  
€7,1 billion

Cobra IS

Headcount: ~45,000

## Construction

Revenue:  
€31,8 billion

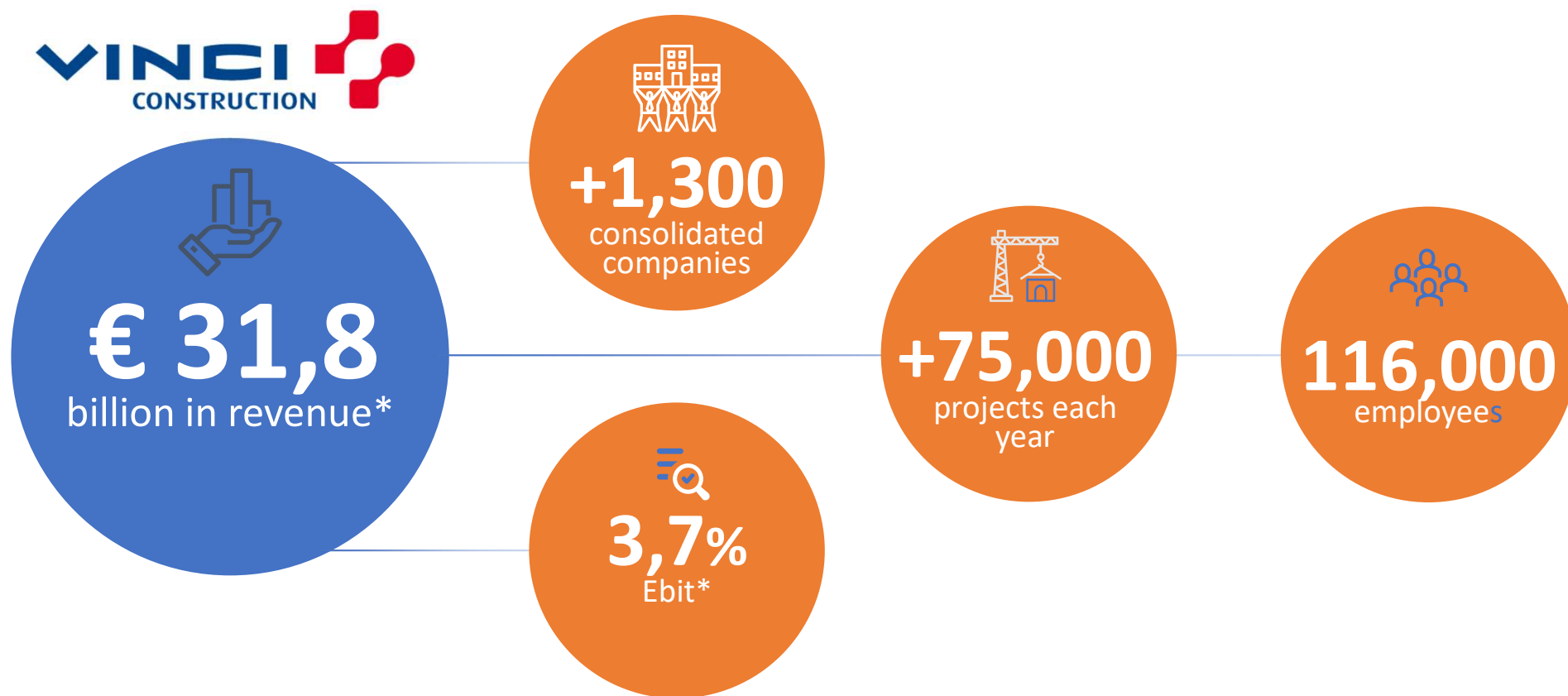
VINCI  
Construction

Headcount: ~116,000

\* VINCI Airports, VINCI Highways, VINCI Railways and VINCI Stadium

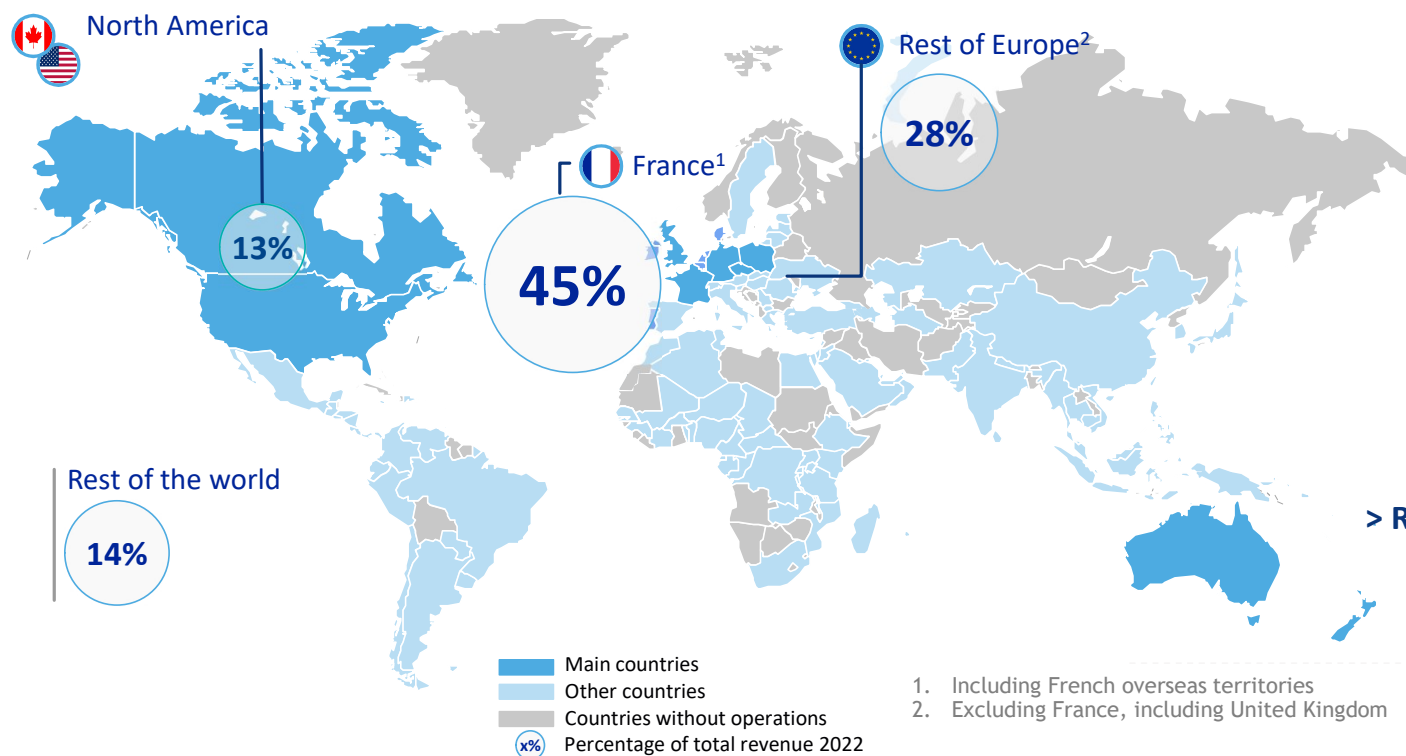


# One of the world's leading construction companies



# VINCI Construction, a strong international presence

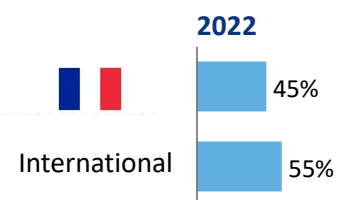
> A presence in over 100 countries



> 85% of the revenue in 9 countries



> Revenue Fr/Int





# OUR MISSION : TB03+TB18

## Auxiliary buildings

(B51, B52, B13, B15, B17, B61)

## Tokamak complex

(B74, B11, B14)

## 50 Heavy Nuclear Doors

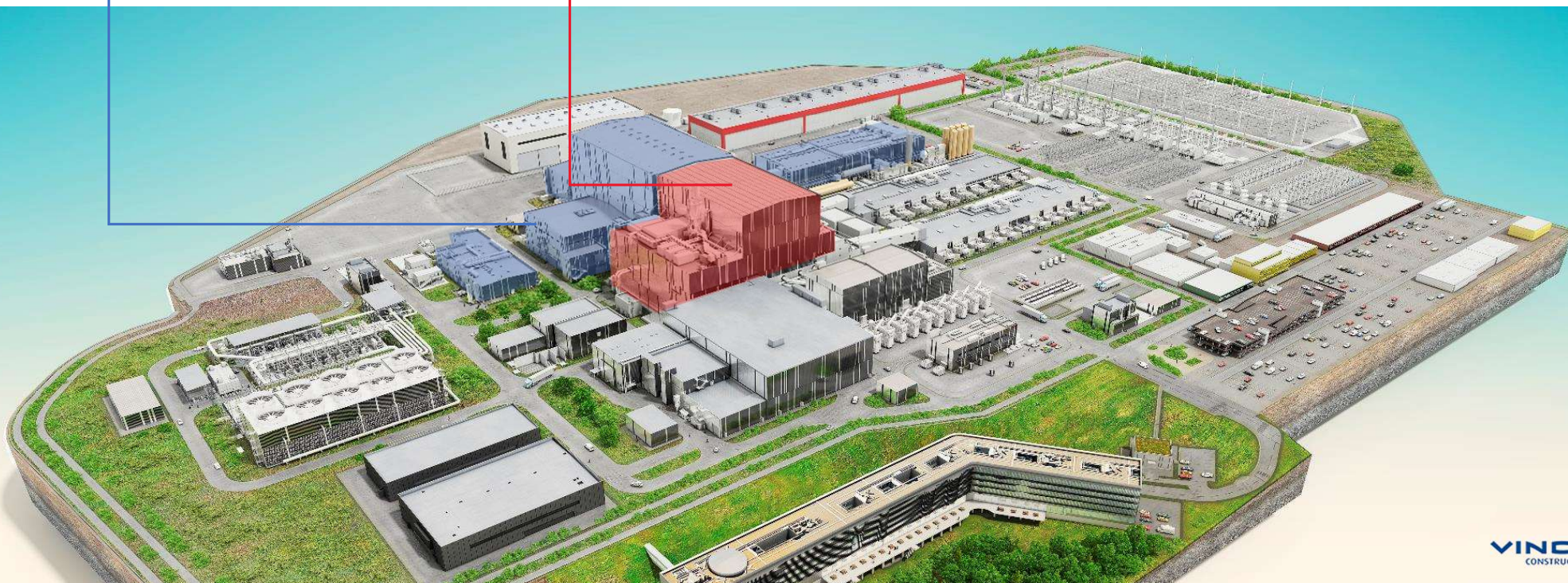
### B06 Doors

(46 Port Cell Doors + 4 Lift Lobby Doors)

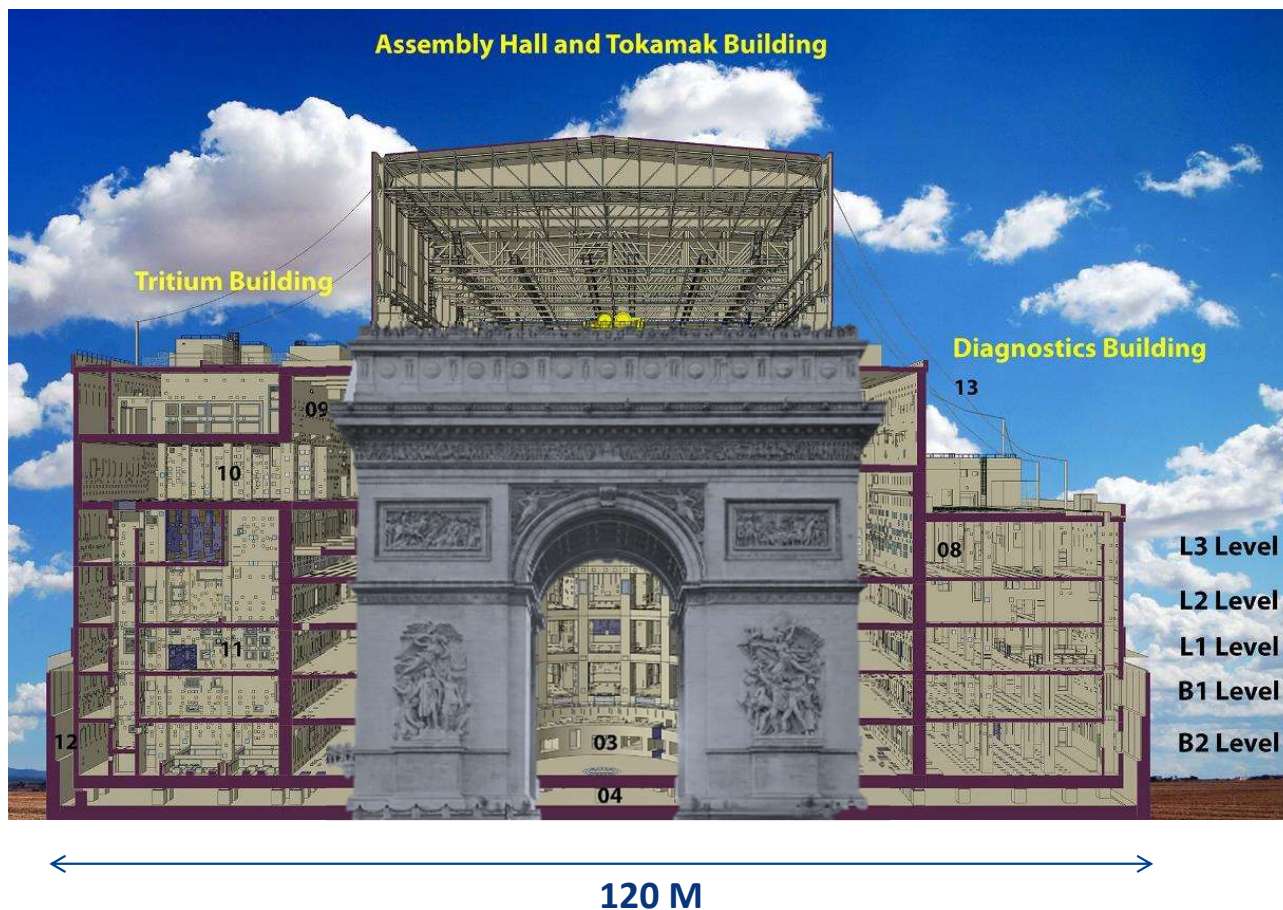
## 194 shielding and confinement doors

### B08/B09 Doors

water/gas, explosion, fire, anti-intrusion specifications



# OUR MISSION

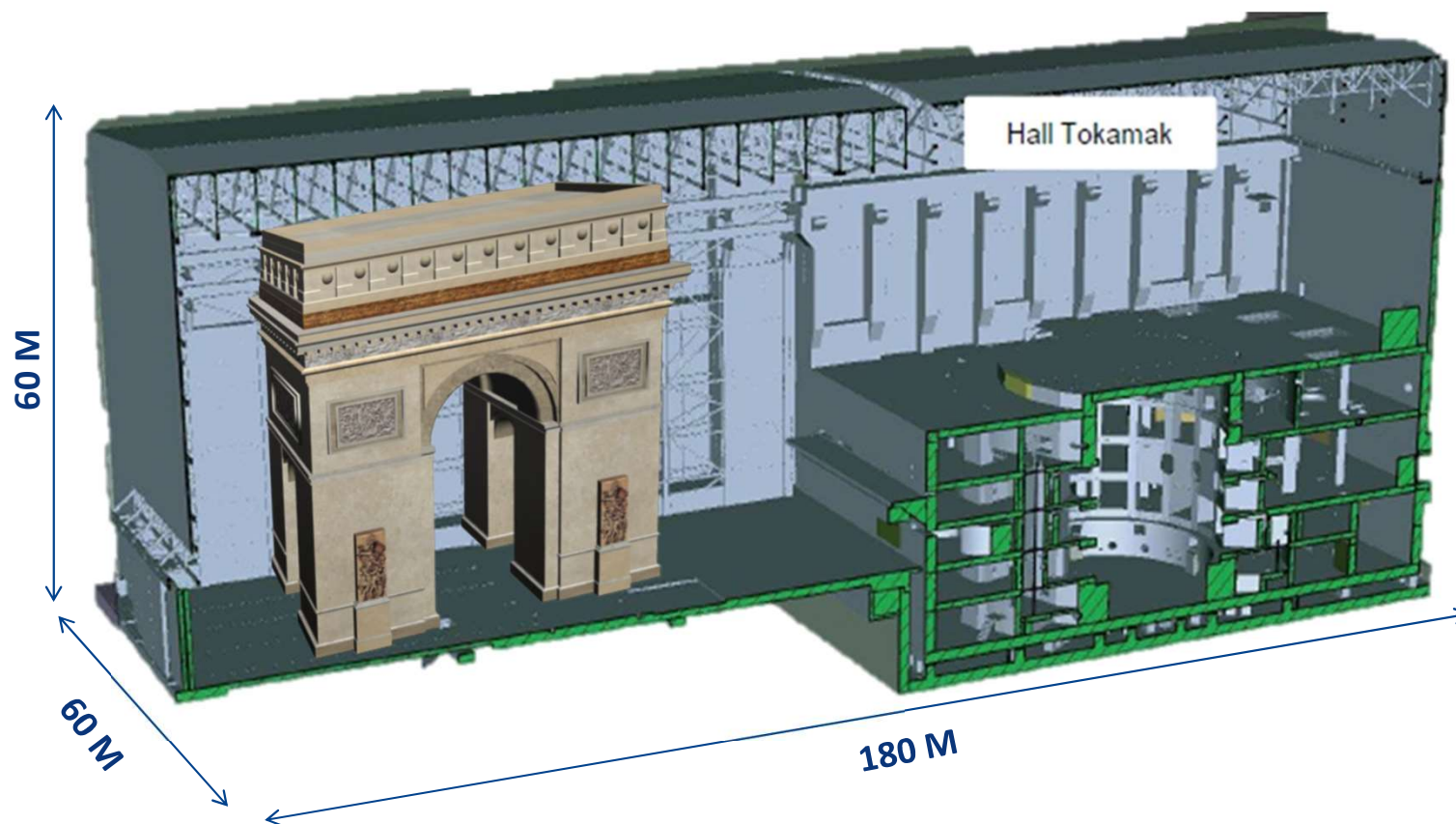


## KEY FIGURES

- ▶ Concrete: 105,000 m<sup>3</sup>  
incl. 70,000 m<sup>3</sup> for the TKC
- ▶ Reinforcements within the TKC: 19,000 T  
i.e. 270 kg/m<sup>3</sup>
- ▶ Embedded plates in the TKC: 105,000 u



# OUR MISSION



## KEY FIGURES

### Steel Structure

- ▶ Assembly Hall:  
6,000 T
- ▶ Crane Hall:  
2,000 T

# COMBINED EXPERTISE for SERVING ITER project

FROM TB03 TENDER STAGE in 2010 until TB18 FINAL DELIVERY in 2024

## CIVIL ENGINEERING AND CONSTRUCTION STUDIES

Fully integrated JV, led by VINCI Construction Grands Projets



Heavy Nuclear  
Doors (HNDs)



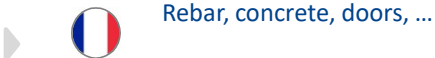
Steel structures



Specialty works



International & Local  
supply chains



## KEY FIGURES

- ▶ 850 employees at the project peak (2019), including:
  - 78% employed locally
  - 165 staff
- ▶ >7,7 million hours worked on site (Oct. 2024)
- ▶ >78 critical subcontractors  
> Approx. 300 suppliers
- ▶ H&S : 0 accidents with medical sequelae
- ▶ QSN : stringent Q&SN system in place, 0 severe non-conformity
- ▶ >57,000 documents produced  
(on average 25 documents per day)



# COMBINED EXPERTISE for SERVING ITER project

FROM TB03 TENDER STAGE in 2010 until TB18 FINAL DELIVERY in 2024



Fully integrated teams on site

Collaborative approach with Client and other stakeholders





# THE CHALLENGES OF A PROTOTYPE UNLIKE ANY OTHER



Complex geometric shapes



Complexity and density of inserts and reinforcements

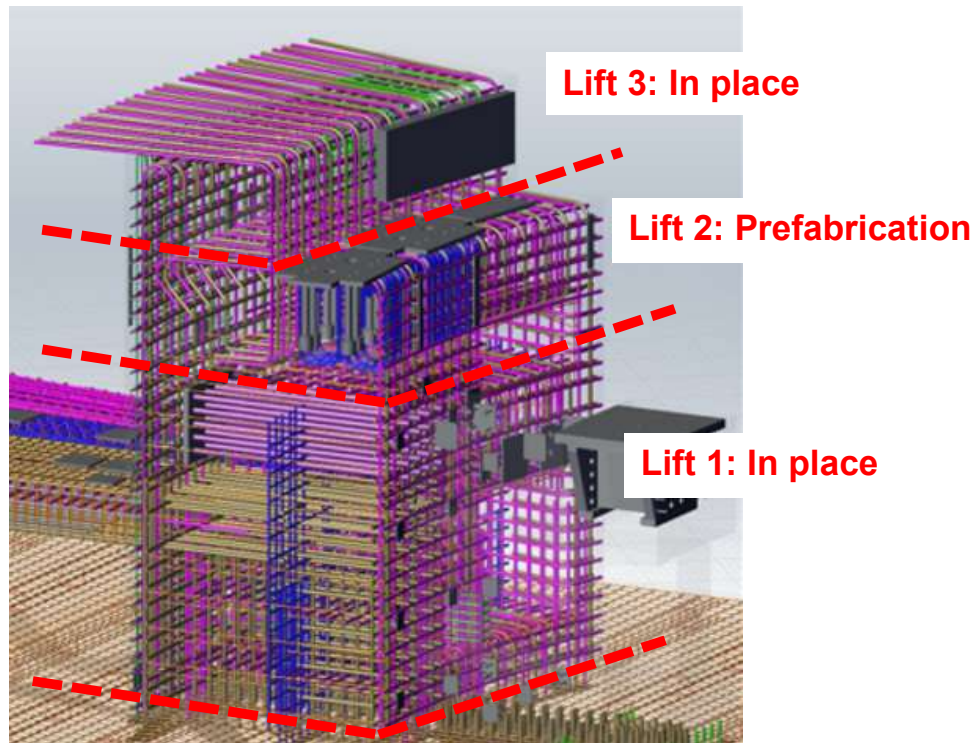


Difficulty to integrate an oddly shaped device to millimetre precision



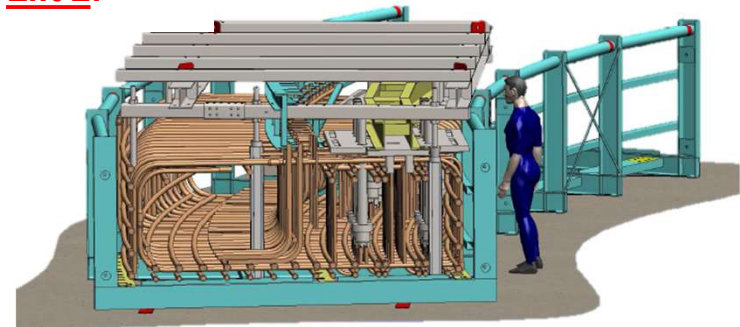
# A NEVER-SEEN LEVEL OF COMPLEXITY

THE PROJECT WOULD NOT HAVE BEEN POSSIBLE WITHOUT 3D DESIGN



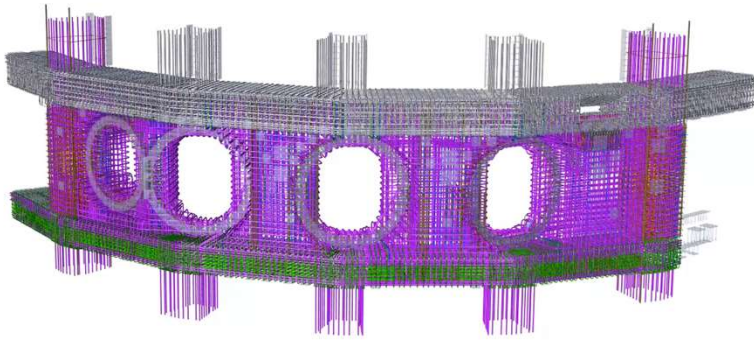
*View of reinforcements of the B2 Level  
Cryostat support chamber and the Tokamak reactor*

Lift 2:



# A NEVER-SEEN LEVEL OF COMPLEXITY

THE PROJECT WOULD NOT HAVE BEEN POSSIBLE WITHOUT 3D DESIGN



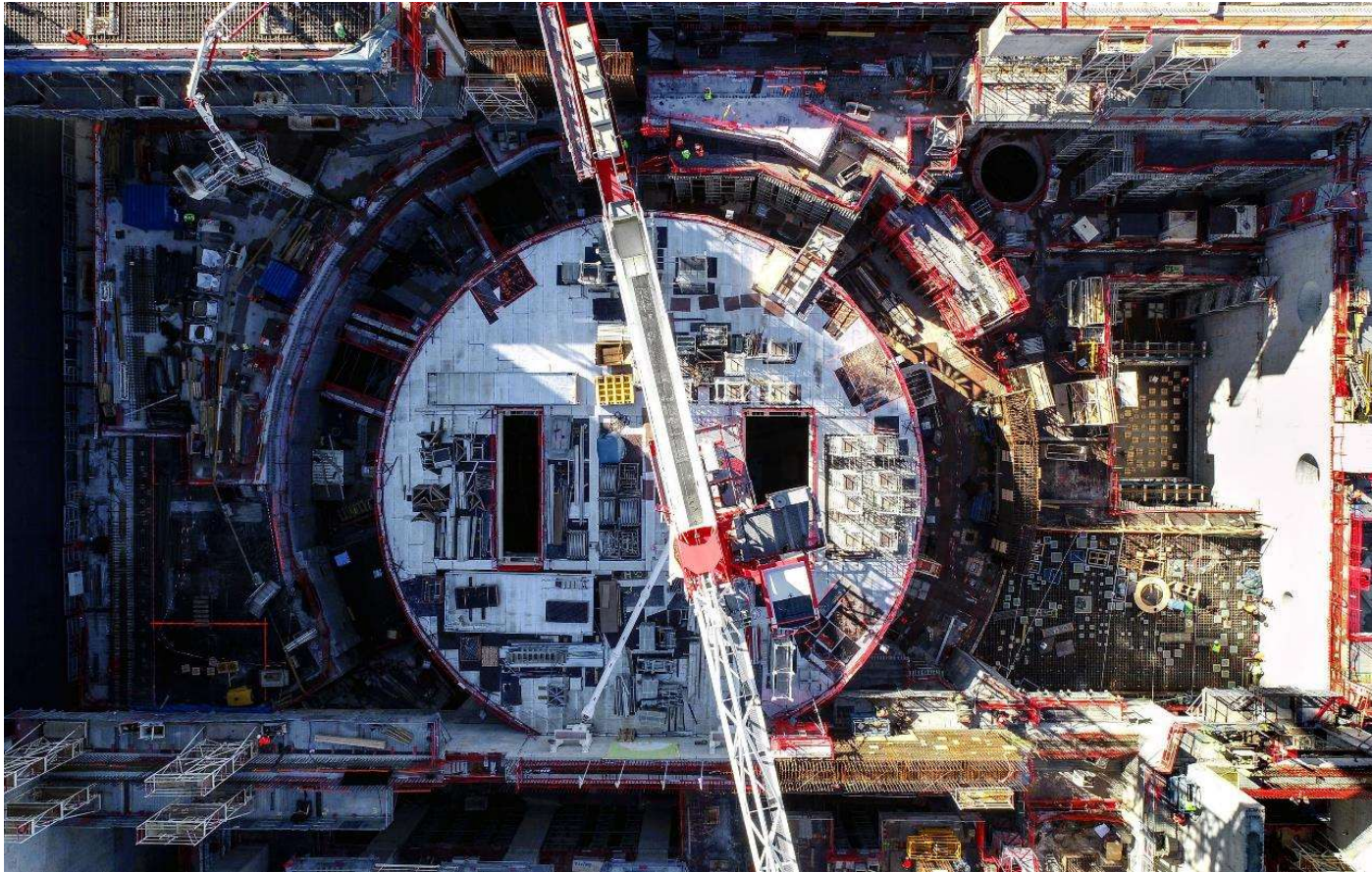
*View of the formwork and reinforcement of the chamber around the Neutral Beam Injectors*





# A NEVER-SEEN LEVEL OF COMPLEXITY

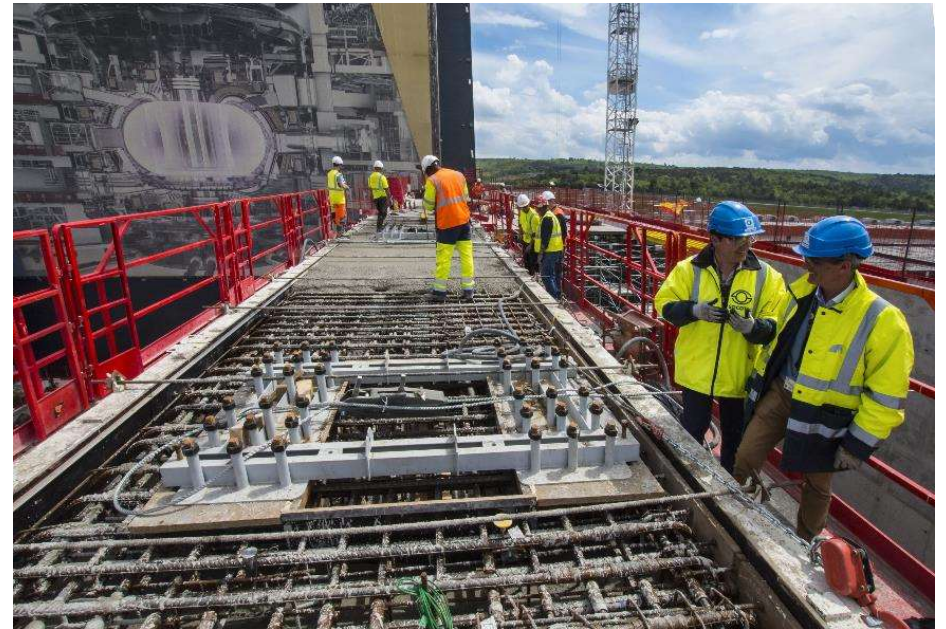
**MULTIPLE ACTIVITIES ON MULTIPLE LEVELS, ON TOP OF ONE ANOTHER –  
AN ORGANISATIONAL CHALLENGE!**





# INNOVATING TO DEVELOP A LIFE-SIZE PROTOTYPE

## EXCEPTIONAL CONCRETES TO ACHIEVE EXCEPTIONAL QUALITY



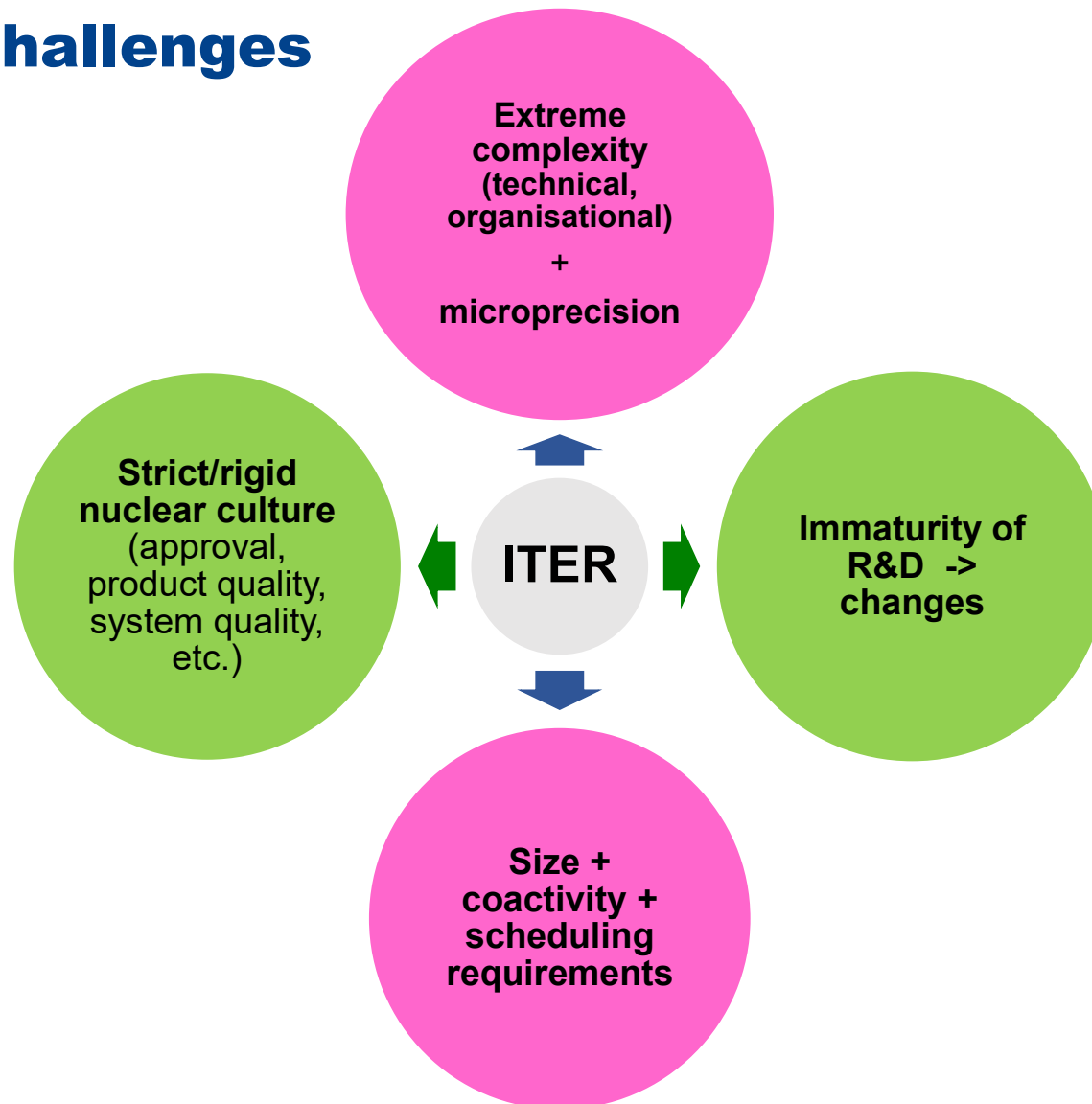
First Of A Kind concretes, developed by the VINCI Construction Technical department





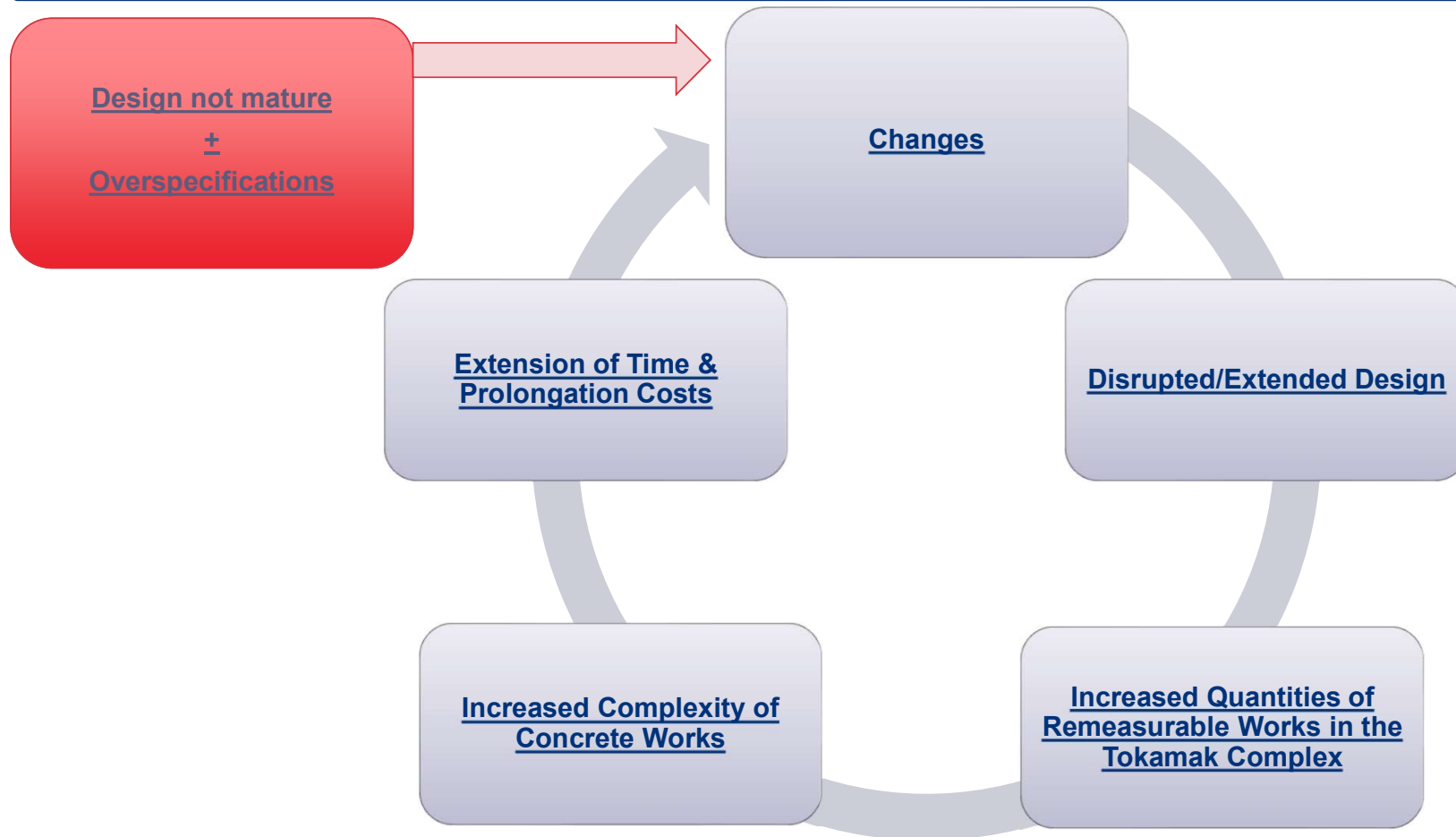
# Part 2 FEEDBACK & LESSONS LEARNT

## ITER: the challenges

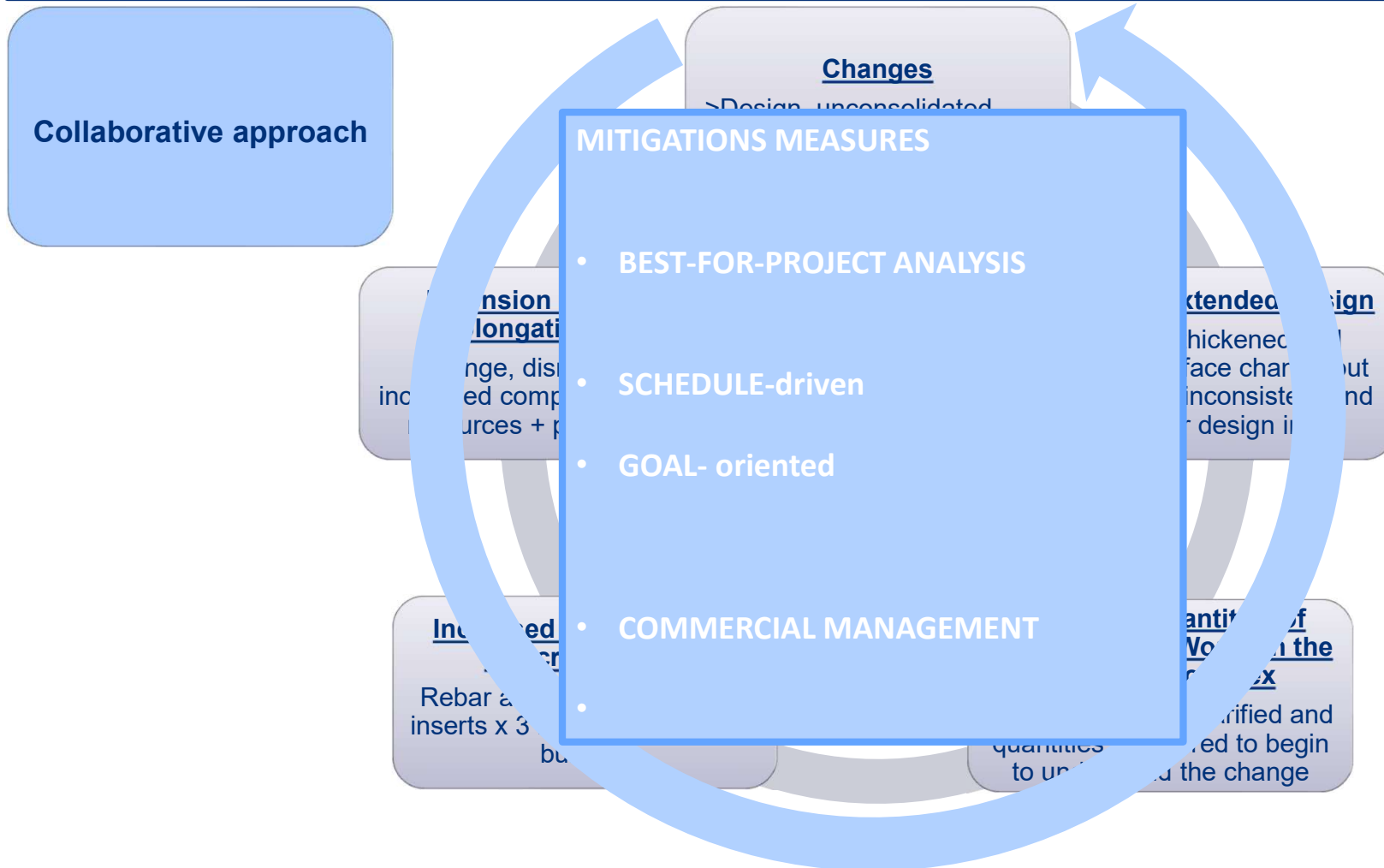




# ITER: difficulties met (2012 to 2016)



# ITER: collaborative approach (since 2015)





# Contractor working for IO / F4E : lessons learnt 1



<b>Robust, resilient Client</b> Financial solvency  Robust track record for on-time payment  Very robust human resources for tackling project challenges		<b>Collaborative approach</b>  Risks management  Best-for-project approach  “Tough but fair” approach + records + evidences + transparency	The VINCI CONSTRUCTION logo, featuring the word "VINCI" in blue, "CONSTRUCTION" in a smaller blue font below it, and the red square icon to the right.
<b>Managing complexity</b>  Strict on Safety  Organization regularly  Integrated F4E/IO teams	<b>Risks transfer</b>  Ad-hoc contracts (FIDIC-based)  Specifications vs adaptation  Contractor’s acceptability limits		

## Contractor working for for IO / F4E : lessons learnt 2



<b>Managing uncertainty with others</b> Be patient  Be able to trust other stakeholders  Anticipate, try to create some float on the schedule		<b>Managing uncertainty internally</b>  Continuity on staff allocation  Consider that learning curve is very long on ITER (1 to 2 years)  Choose personnel, subs, carefully  Transparency as much as practicable
<b>Managing FOAK project</b>  Core business for major CW industry players	<b>What about the future on ITER Project ?</b>  Complex project = simple contract  Collaboration at early stage Early involvement  De-risking the project is a mutual benefit for Client and contractor	



**MERCI !**

**THANK YOU !**

**GRACIAS !**

감사합니다 Natick  
Grazie Danke Ευχαριστίες Dalu  
Thank You Köszönöm  
Спасибо Dank Gracias  
谢谢 Merci Seé  
ありがとう

Obrigado

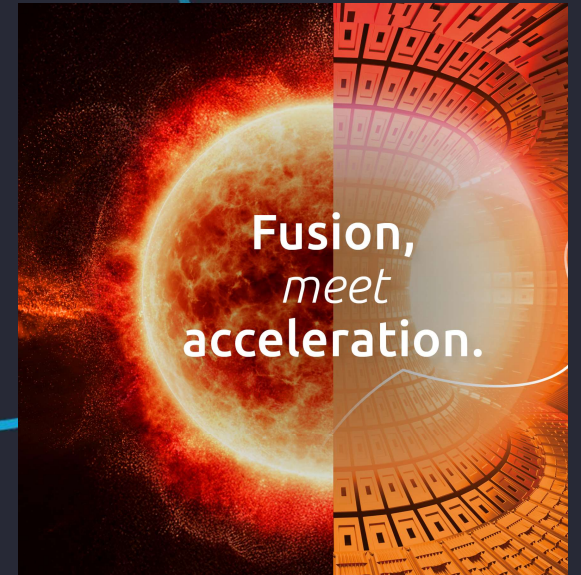




# Capgemini & BSM: 2010-2025 journey

ITER Business Forum 2025

Thomas BACHELLERIE, Pierre-Jean GONNET, Frederic LOPEZ



Company confidential



# Agenda

- 01 Capgemini Engineering support to ITER/F4E BSM
- 02 A look ahead with new perspectives





1

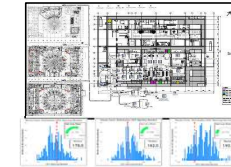
CAPGEMINI  
ENGINEERING SUPPORT  
TO ITER & F4E  
BUILDING & SITE  
MANAGEMENT



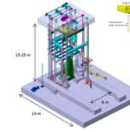
# 15+ years of contribution on ITER project



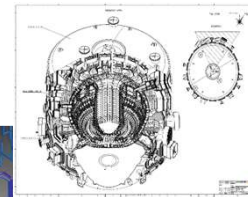
Flow Analysis & Simulation



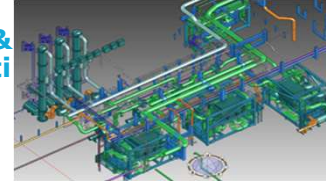
CAD Infrastructure



Mechanical



General Installation & Layout



Electrical Engineering & Instrumentation



Project Control

Office

achieveMENT



DA Support



Support to the owner  
Project control



Counter claim support



CAD design

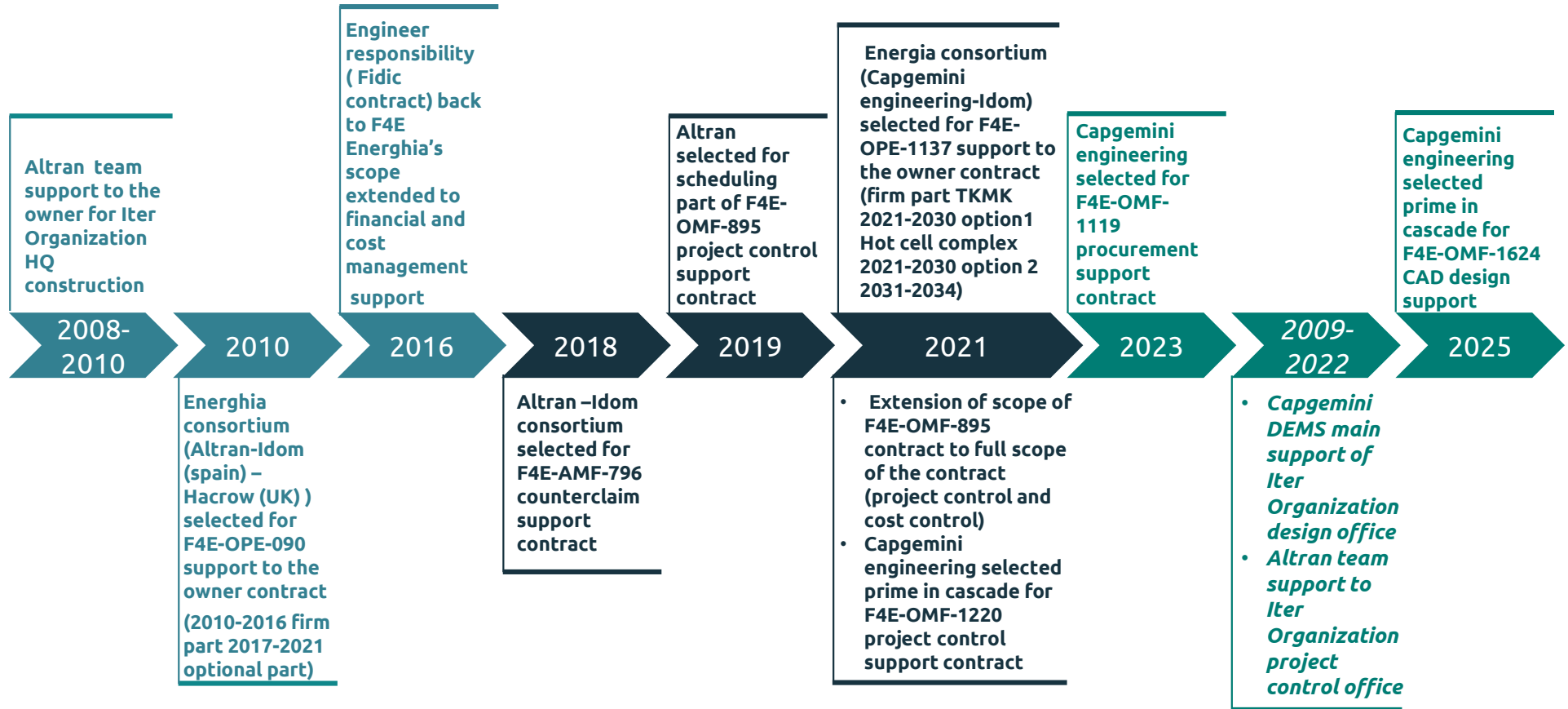






TO BE MERGED WITH  
PREVIUOS

# Timeline





# 15+ years of collaboration with Building & Site Management Teams

## Support to the Owner for the construction of the Nuclear and non Nuclear buildings

Since 2020

- Contractual, Administrative and Technical Project Management Support
- Design and works supervision
- Management of on-Site activities
- Monitoring, commissioning and participating in handover phases

## Project Management services (scheduling, cost, monitoring) (since 2019)

Since 2019

- Cost and Schedule (Primavera) monitoring and control
- Contractors' supervision on site

## Counterclaim support for civil work and facilities design and built contracts

Since 2021

- On site progress measurement
- Productivity analysis
- Contractor claim assessment





# Common HIGH DEDICATION to the success of ITER Program in a SAFETY CULTURE model

- **Transparency and respect : long term relationship**
- **Collaborative win-win TEAM spirit : alignment on key objectives**
- **Flexibility and proactivity : pragmatic and solution-oriented approach**



## Capgemini proposes 3 axis of intervention for the next 15 years....

Monitoring tools

Building is an equipment

Cross-industries best practices





# Capgemini proposes 3 axis of intervention for the next 15 years....

## Monitoring tools

- Implementation of monitoring tools for complex industrial facilities ruled by a Safety Authority
- Documents configuration : requirements management Model Based System Engineering
- Design Configuration & change management : Enriched 3D model BIM approach
- As built configuration and Real time progress measurement : 3D scan + VR/AR

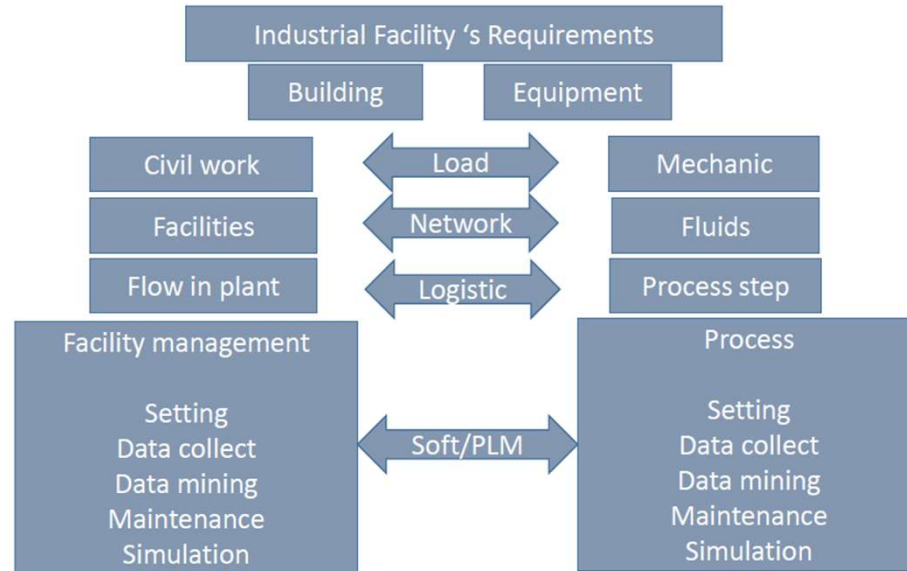




## Capgemini proposes 3 axis of intervention for the next 15 years....

### Building is an equipment

- The Building shall be considered as a primary & safety process Equipment
- Process Functions
- Safety Functions
- Specific constraints must be integrated







# Capgemini proposes 3 axis of intervention for the next 15 years....

## Cross-industries best practices

- Increase and speed up the implementation of relevant best tool and practices of other high-end industries
- From scratch approach vs already manufactured solutions
- Example: Shop floor management like in the Aerospace Industries



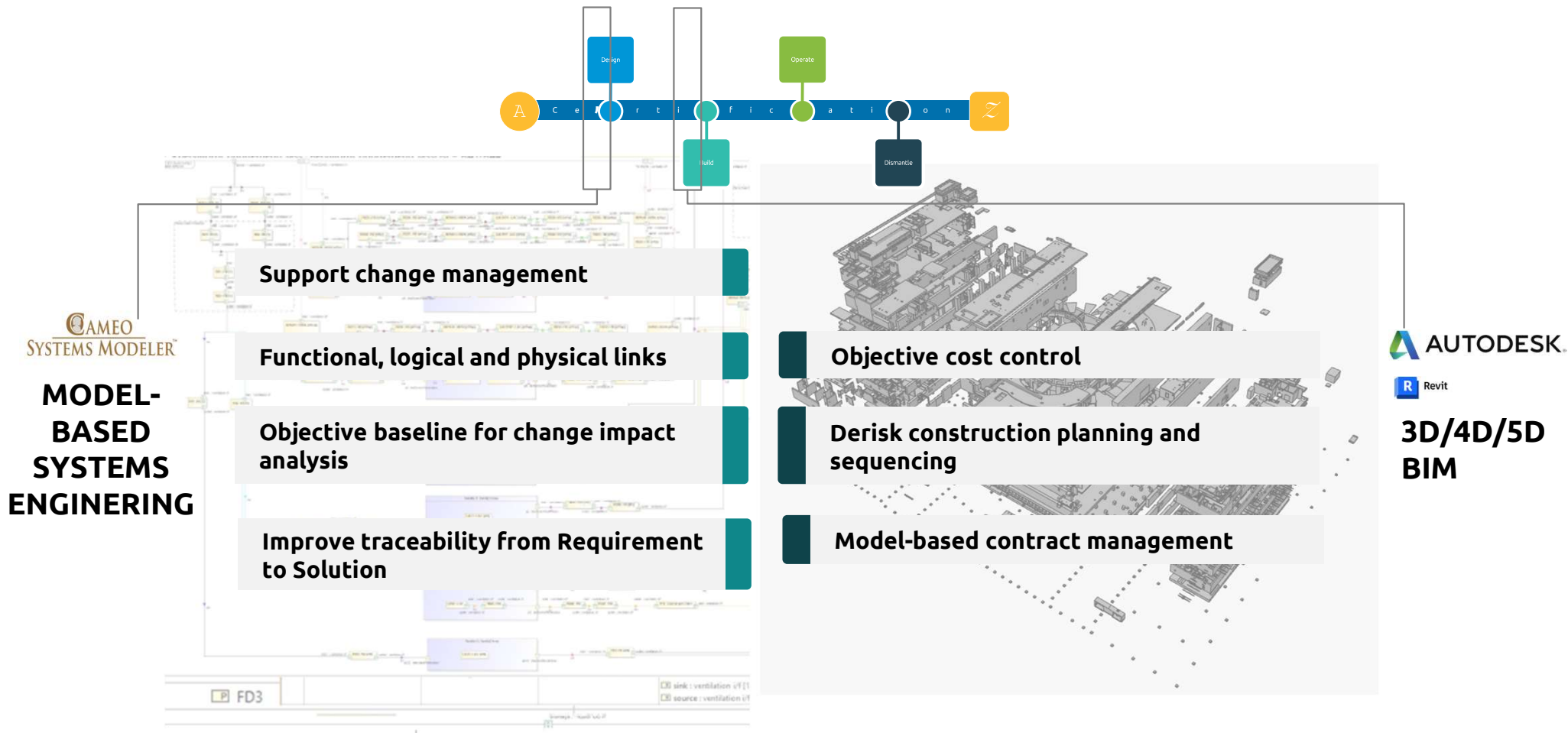
2

A LOOK AHEAD WITH  
NEW PERSPECTIVES





# Our achievements at date are based on MBSE approach to HCF



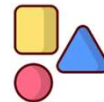


# Capgemini perspective for Building & site Management

Shift from  
Best So Far to  
Modular Building Block Systems  
across the industry



Collaborative platform and  
configuration management  
increasingly key  
to remain competitive



**Introduce change, configuration and variant concepts into capital projects**



**Expand the use of a digital building twin towards “model-based” contract management**



**Reinforce use of virtual twin for commissioning and execution phases**



**Reduce design lifecycle via a truly shared common engineering platform**





**Get the  
future  
you want**

## A propos de Capgemini

Capgemini, partenaire de la transformation business et technologique de ses clients, les accompagne dans leur transition vers un monde plus digital et durable, tout en créant un impact positif pour la société. Le Groupe, responsable et multiculturel, rassemble 340 000 collaborateurs dans plus de 50 pays. Depuis plus de 55 ans, ses clients lui font confiance pour répondre à l'ensemble de leurs besoins grâce à la technologie. Capgemini propose des services et solutions de bout en bout, allant de la stratégie et du design jusqu'à l'ingénierie, en tirant parti de ses compétences de pointe en intelligence artificielle et IA générative, en cloud, et en data, ainsi que de son expertise sectorielle et de son écosystème de partenaires. Le Groupe a réalisé un chiffre d'affaires de 22,1 milliards d'euros en 2024.

Get the future you want\* | [www.capgemini.com](https://www.capgemini.com)

*\*Capgemini, le futur que vous voulez*



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