



UKAEA

Fusion Futures - Industry Capability and ITER

Webinar - 21st February 2024

Welcome

**Fusion Futures - Industry
Capability and ITER**

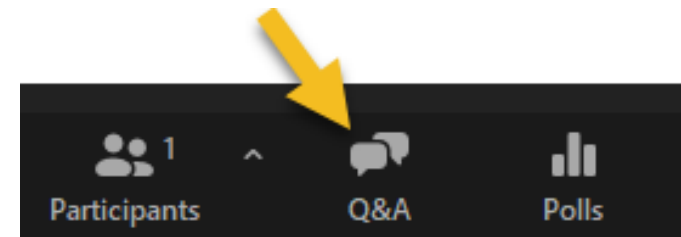
Webinar - 21st February 2024



UK Atomic
Energy
Authority

Housekeeping

- This is an online session.
- This presentation is being recorded. This is to ensure UKAEA have an accurate record of the event.
- Questions should be asked via the **Q&A functionality**. This is to ensure UKAEA have an accurate record of the questions.
- Presentation slides will be distributed after the event.



Agenda

- **Background and programme goals** – Stephen Wheeler, Executive Director for Fusion Technology, Fuel Cycle and ITER Components
- **Timelines & Launch plan** – Chris Neeson, Head of Programme
- **Commercial Strategy and Procurement routes** – John Ruddleston, Strategic Sourcing Lead
- **Market Map**– John Ruddleston, Strategic Sourcing Lead
- **Q&A**

Aims of Today

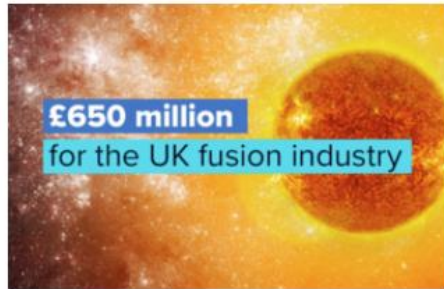
1. To provide a reminder of the programme and its objectives
2. To provide an update on progress
3. To explain how to get involved



Measures announced by Nuclear Minister Andrew Bowie at IAEA Fusion Energy Conference.

From: [Department for Energy Security and Net Zero](#), [UK Atomic Energy Authority](#), and [Andrew Bowie MP](#)

Published 16 October 2023



- Plans to transform UK fusion include training for over 2,000 people, a new fuel cycle testing facility and dedicated funding to support fusion companies
- £650 million package will help cement UK as world leader in development of innovative technology
- Nuclear Minister Andrew Bowie outlined details of the Fusion Futures Programme at key international conference



Background and Programme Goals

Stephen Wheeler, Executive Director for Fusion Technology, Fuel Cycle and ITER
Components

£650M FUSION FUTURES PROGRAMME



WORKSTREAMS

FACILITIES

INDUSTRIES

SKILLS

RESEARCH

OPERATIONS

MECHANISMS

- Fusion Fuel Capability (Blankets)
- Technology Transfer Hub
- Cluster Development

- ITER industry access via in-kind contribution
- International Collaborations
- Fusion Industry Programme
- STEP Enhancement/ Systems Prototype

- International fellowships
- Skills elements are also developed within the other workstreams

- ITER science agreement
- JET
- EUROfusion
- Fission R&D

- ITER operational exchange
- Operational experience will also be developed within the other workstreams



1. For the UK to demonstrate the commercial viability of fusion by building a prototype fusion power plant in the UK that puts energy on the grid.
2. For the UK to build a world-leading fusion industry which can export fusion technology around the world in subsequent decades.

Workstream Goals - Capability

Secure access to or provide directly, large scale **design and build** opportunities to UK industry.

These are opportunities to develop industry **capacity and capabilities** which are key to the development of future fusion powerplants.



“ Capability ”

Ability to efficiently and effectively produce goods and services



Competence

- Knowledge
- Technical Expertise
- Skills
- Tools

Facilities

- Production
- Test
- Development

Relationships

- Supply Chain Networks
- Partnership and collaboration networks

Ability to innovate and adapt

- Learning by doing
- Experience

Fusion Futures Programme for Industrial Capability

£147 million investment, to ensure that industry can develop and design components for future fusion powerplants.

Starting April 2024 and lasting for 4 years.

Our preference is to use the funding to support the ITER Programme.

- We continue to actively pursue new ways to collaborate with the ITER Programme
- This could include both resource and hardware, financed by UKAEA and provided as an in-kind contribution to IO.
- If this is not possible, we will seek to deliver the same impacts through different mechanisms, focusing activities in areas that will build the capabilities required to deliver a fusion power plant

**Remote Handling
Assembly
Hot Cell
Tritium Fuel Cycle
Waste
Management
Fusion
Diagnostics**

Areas of Capability

Remote Handling
Assembly
Hot Cell
Tritium Fuel Cycle
Waste Management
Fusion Diagnostics

Machine Protection
ECRH Devices and Technology
Cryogenics
Neutron Hard Diagnostics
Reactor Relevant Controls
Materials
Lithium Processing
Additive Manufacturing
Magnet technology
NDE
Control Systems
Digital Twinning
Materials processing
Shielding

Programme Objectives

- Commission work packages in order to build **capability** and **capacity** in the UK industrial supply chain to **support the realisation of a fusion powerplant** and **maximise export potential** of fusion relevant technologies
 - Develop workforce skills
 - Develop tools and methods
 - Develop enabling networks, partnerships and collaborations
 - Deliver products, production capability and development facilities
 - Develop IP
 - Increase the number of companies delivering fusion relevant products and services

Monitoring and Evaluation

- Supply chain engagement events, with 50% to be held regionally
- Number of contracts placed with industry
- % value of spend placed in industry
- Number of individuals involved in new fusion work
- Number of tier 2 & 3, and SMEs engaged by principle contractors
- Opportunities for apprenticeship involvement
- Spinout opportunities linking capabilities to other applications

Timelines and Launch Plan

Chris Neeson, Head of Programme

Where we are today

- Business case for FY24/25 submitted December 2023
- Funding decision to facilitate 1st April start
- Shaping and building the programme
- Standing up key roles and team internally

1st April 2024

What comes next?

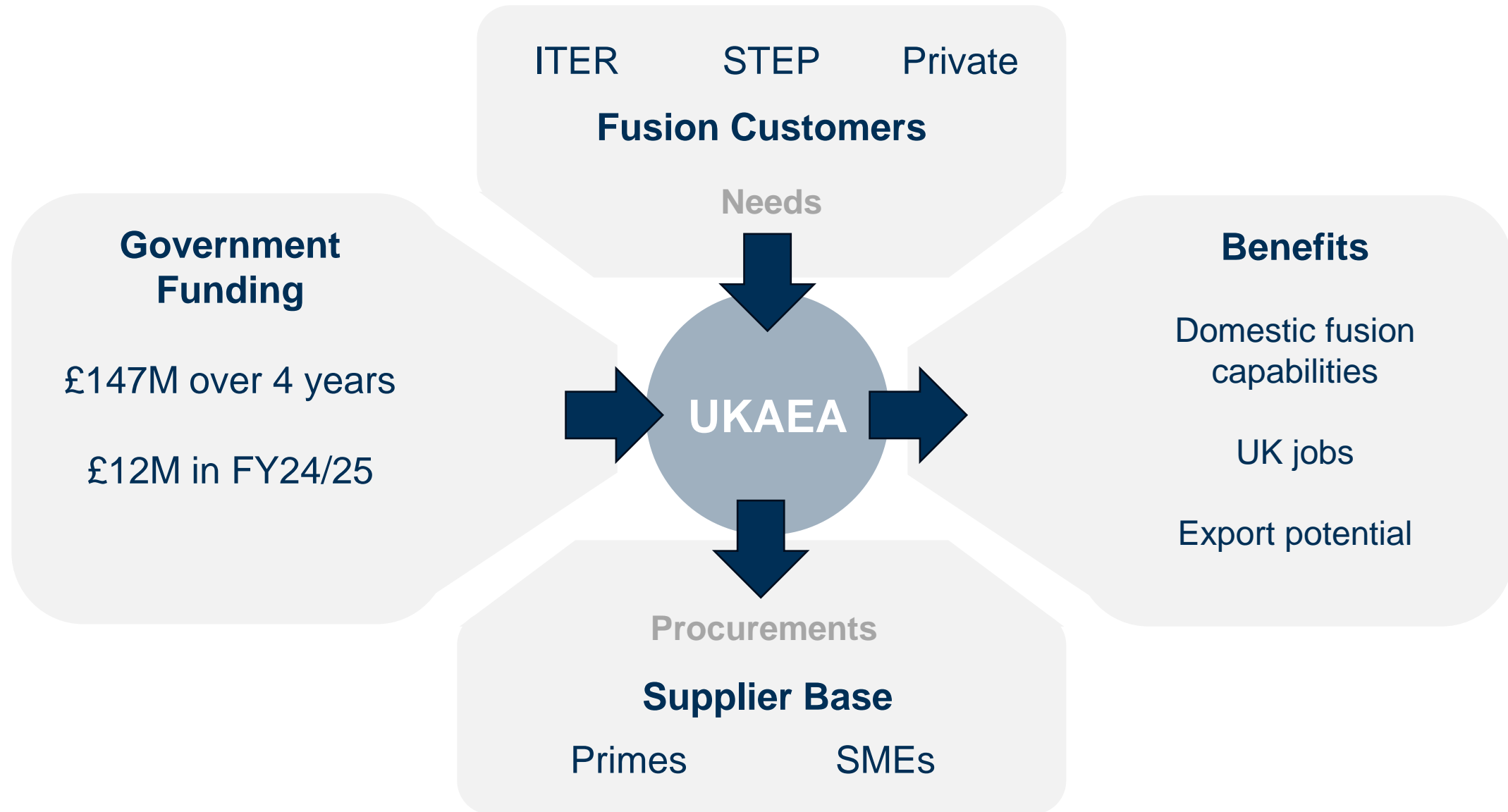
£M	FY24/25	FY25/26	FY26/27	FY27/28
ITER Industry In-kind Contracts	11.75	30.9	48.8	56

Year 1 is a
mobilisation
year

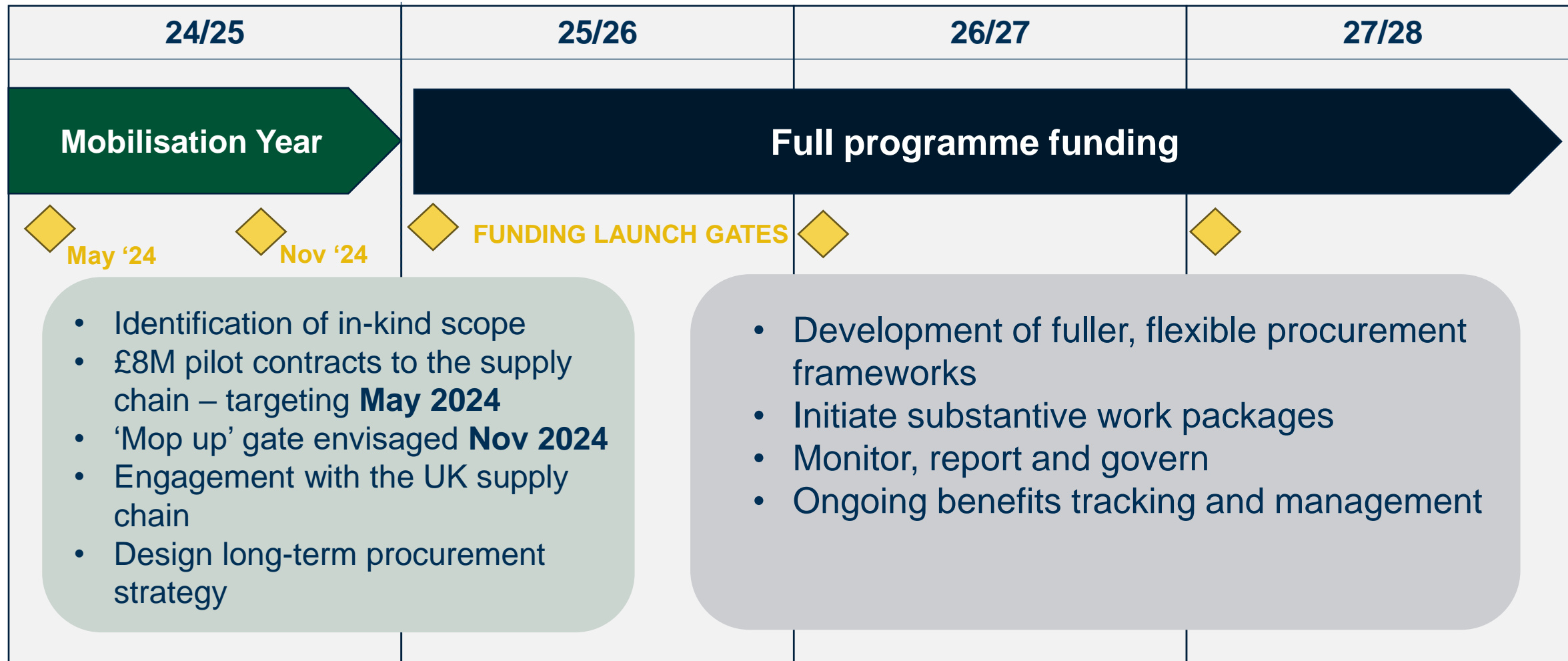
Circa **£8M** in
contracts in
FY24/25

Longer term
funding subject to
a **Full Outline
Business Case**

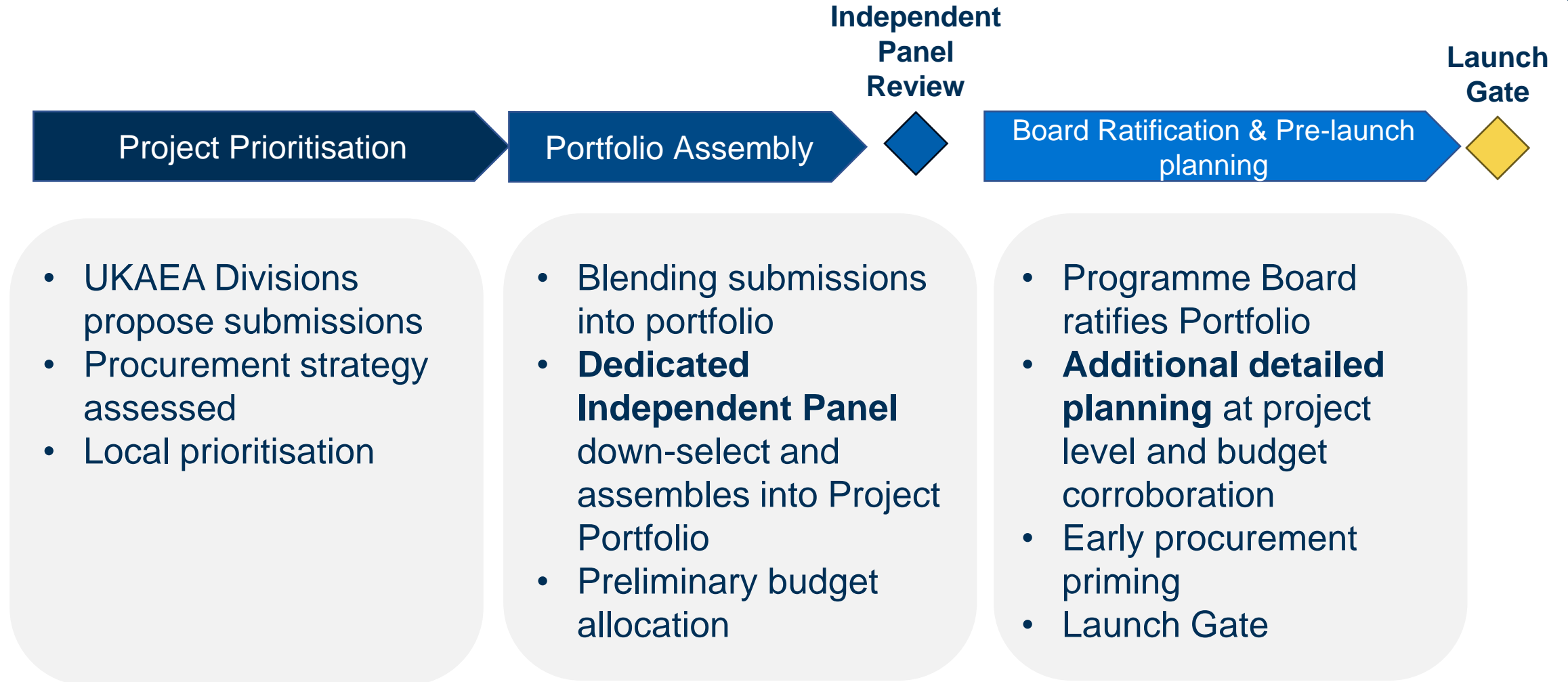
The UKAEA will act as a “Domestic Agency”



There are multiple procurement opportunities throughout the 4-years

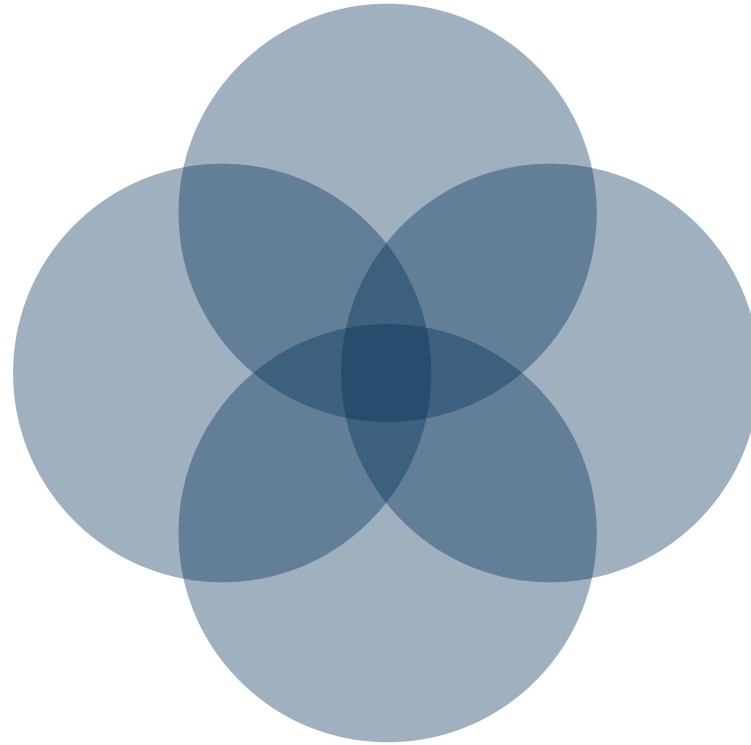


How the FY24/25 proposal selection process works...



The panel is there to balance the portfolio

Voice of Fusion Customers



Voice of ITER

Voice of STEP

Voice of Fusion Supply Chain

**Remote Handling
Assembly
Hot Cell
Tritium Fuel Cycle
Waste Management
Fusion Diagnostics**

....

Key criteria for proposals

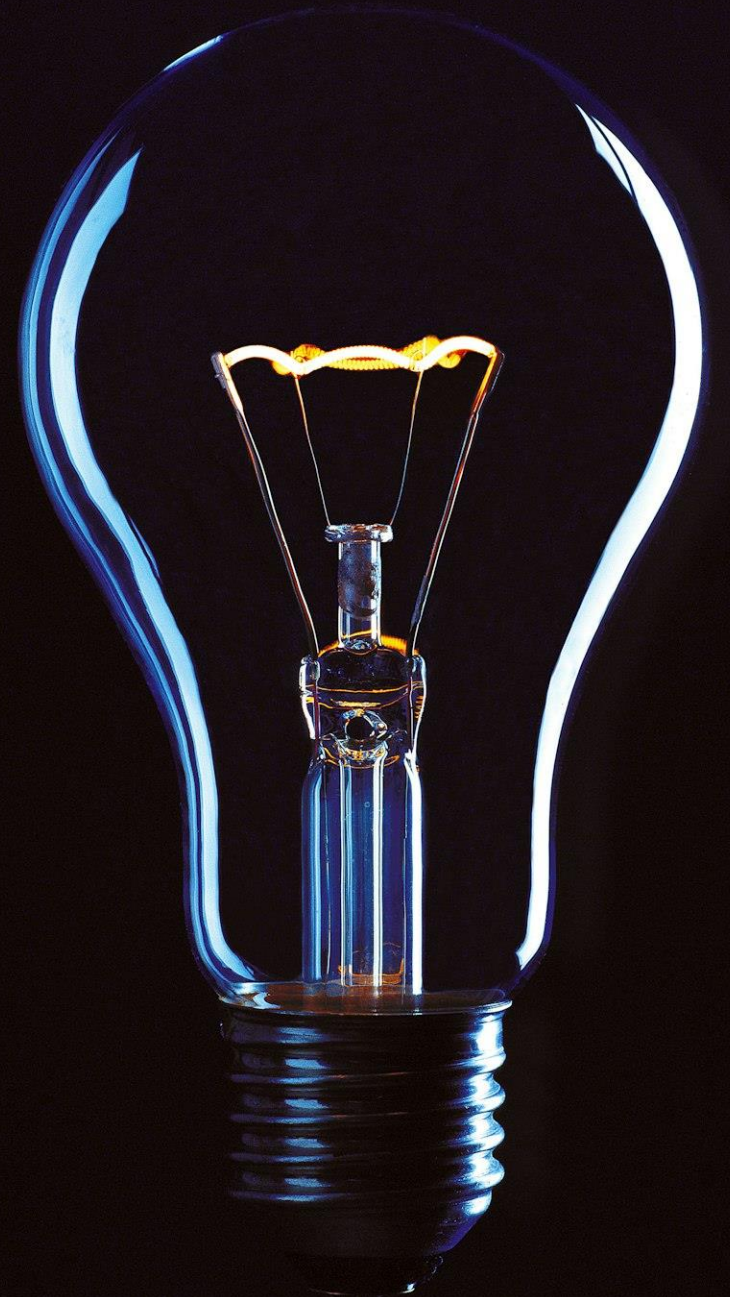
- Address a key fusion challenge with relevance to ITER / STEP / Other
 - Those proposals that are cross-cutting will be prioritised where possible
- Develops a key capability required by a future fusion power plant
- Must be delivered by UK industry with jobs based in the UK
- Viable procurement path with a March 2024 breakpoint

Have an idea? Get involved.

Contact us:

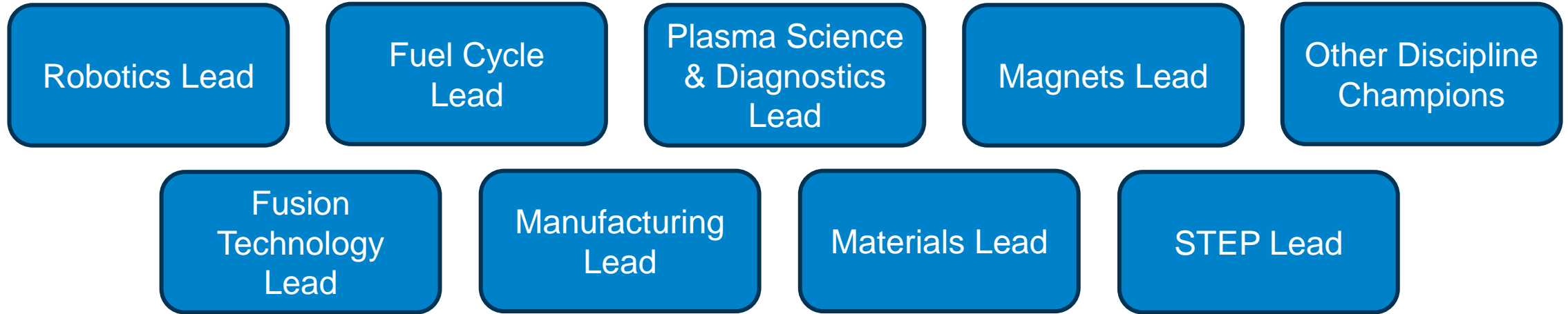
Enquiries@FusionFutures.ukaea.uk

The programme welcomes ideas for work packages from external parties. External parties may also submit a detailed project proposal for panel review and endorsement, but you cannot submit a detailed project proposal to the panel and then bid to deliver it.



Key positions in post

Discipline Leads



Programme Team

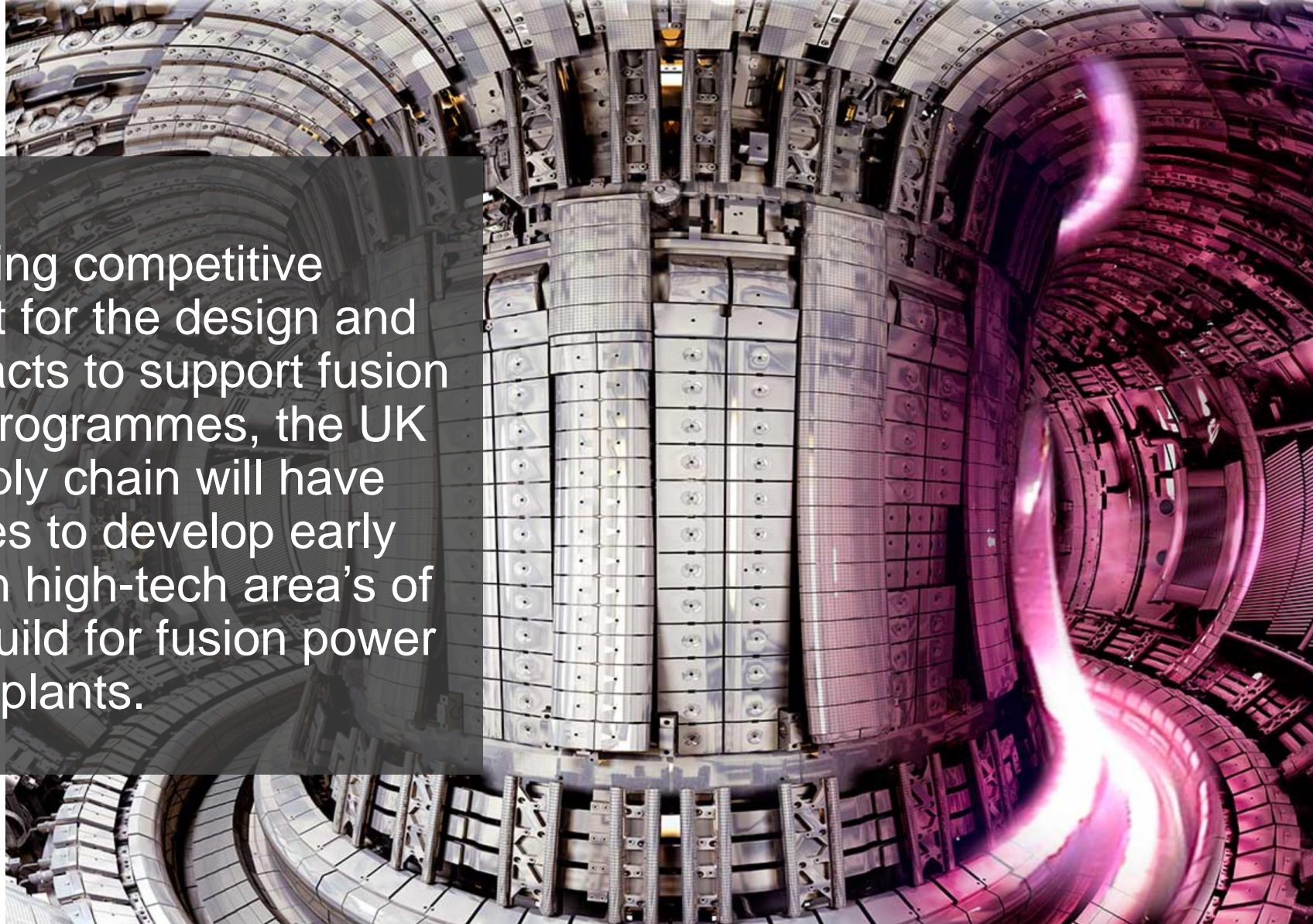


Commercial Strategy and Procurement Routes

John Ruddleston, Strategic Sourcing Lead

Why

By utilizing competitive procurement for the design and build of contracts to support fusion pilot plants programmes, the UK fusion supply chain will have opportunities to develop early capabilities in high-tech area's of design and build for fusion power plants.



Routes to Market - Year 1

Frameworks

- Immediate mobilisation - existing frameworks (for year 1 only)
- If there is no suitable framework, UKAEA will utilise the open market by advertising the requirements on Contracts Finder and Find a Tender web portals. Both are free to access.
- UKAEA Procurement Pipeline will provide details of potential procurement opportunities for Fusion Future.

Name	Embedded Engineering Framework (EERF)	Plant Maintenance & Operational Support (PMOSS)	Engineering Design Services 2 (EDS2)	Project Delivery Services Framework (PDS)
Scope	Resource	Resource	Scope	Resource
Expiry Date	Dec 2025	Jul 2026 (with option to extend until Jul 2027)	Mar 2028	Apr 2026 (with option to extend until Apr 2027)
Services	<ul style="list-style-type: none">• Nuclear Engineering• Mechanical Engineering• Engineering Analysis• Process Engineering• Systems Engineering• Electrical, Control & Instrumentation Engineering• Control / Software Engineering• Functional Safety Engineering• 3D Design and Modelling (Mechanical)• 2D Electrical Drawings• 3D Design and Modelling (Electrical)• Systems assembly (Electrical)• Systems assembly (Mechanical)	<p>Lot 1 - Electrical, Control & Instrumentation Engineer</p> <p>Lot 3 - Research Engineer(Mechanical)</p> <p>Lot 4 - Research Engineer (Chemical)</p> <p>Lot 5 - Research Engineer (Nuclear)</p> <p>Lot 6 - Research Scientist (Chemistry)</p> <p>Lot 7 - Research Scientist (Physics)</p> <p>Lot 8 - Research Scientist (Materials)</p>	<ul style="list-style-type: none">• Mechanical Engineering• Process Engineering• Electrical, Control & Instrumentation• Minor Structural Engineering for Design• Computer based Modelling & Simulations• Specialist Nuclear Services	<p>Lot 1 - Project/Programme Manager (Technical, IT)</p> <p>Lot 3 - Planner (Primavera and Microsoft Project)</p> <p>Lot 4 - Risk Manager</p> <p>Lot 5 - Document Controller/Document Manager</p> <p>Lot 6 - Cost Engineer/Estimator</p>
Suppliers	Atkins Ltd IDOM UK Ltd Assystem Nuvia Morson Projects EASL Norton Straw	Atkins Ltd Jacobs UK Ltd	To be confirmed	Arcadis (UK) Ltd Atkins Limited Prima Uno Limited Gleeds Management Services Limited Turner & Townsend Mace Limited

Name	CCS Construction Professional Services	CCS Construction Professional Services DPS
Scope	Scope	Scope
Expiry Date	Sept 2025	Nov 2025
Services	<ul style="list-style-type: none"> Design Services Architectural Urban Planning Cost Consultancy Civil, mechanical and Structural Engineering Project Management Building Services/Surveyors Programme Management 	<ul style="list-style-type: none"> Project management Cost management Engineering, for example civil, structural, electrical Architectural and design services (design of buildings, spaces and infrastructure) Environmental and sustainability services, for example: carbon neutral efficiencies which will help you to achieve carbon neutral
Suppliers	25 Suppliers including: Atkins Gleeds Jacobs Turner and Townsend	183 Supplier (DPS so new suppliers can be added)

Routes to Market - Years 2 - 4

Framework

- New tenders
- New open (Dynamic) frameworks to be launched
- Existing frameworks if relevant
- Hybrid approach dependent on the activity or the item being procured

Programme engagement workstream

Tim Davies

Colette Broadwith

Charlotte Byrne

John Ruddleston

This will continue to grow.

Key supplier resources:

- [Procurement webpage](#)
- [Social Value Dashboard](#)
- [Social Value Charter](#)
- [Supply Chain Charter](#) - 2nd Issue
- [Modern Slavery Statement](#)
- [Industry Directory](#)
- [Supply Chain Newsletter](#)
- [Supplier Mailing List](#)
- [LinkedIn Suppliers' Group](#)
- [Transforming Public Procurement](#)
- [Procurement Pipeline](#)
- [EU Supply](#)
- [Contracts Finder](#)
- [Find a Tender Service](#)
- [Crown Commercial Services](#)
- [PCR 2015](#)

Market Map

John Ruddleston, Strategic Sourcing Lead

Market Map

What is a market map?

Helicopter view of:

- Capabilities
- Skills
- Technologies
- Materials

That could be relevant to the fusion industry, not just Tokamaks

Key sectors:

- Fusion
- Defence
- Aerospace
- Oil & Gas
- Nuclear
- Niche companies



Global.

Note: UKAEA is not conducting any procurement, commercial, business development or supply chain activity with any Belarus or Russian entity.

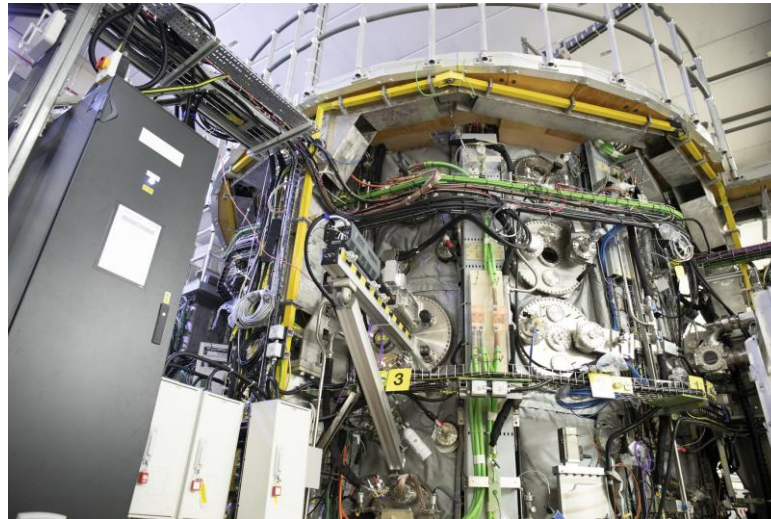
How

Open space

- Knowledge within UKAEA and the fusion Industry
- Desktop searches
- Portals
- Clusters
- LinkedIn
- Journals
- Contacts
- Events

What it's use?

- Strategic sourcing
 - Intelligence
- Gaps / weaknesses
 - Collaboration
- Geographical spread



Can you help?

If you feel that you have a capability that might be of interest to the fusion industry, please let me know. I am interested in both UK and international companies, some of the areas I am interested in:

- Artificial Intelligence
- Materials for fusion power plants
- High performance computing
- Diagnostics
- Plasma control systems
- Magnets
- Plasma heating
- Fuelling fusion

And the list goes on, if you think you have something to offer, I would like to know about it.

For more information

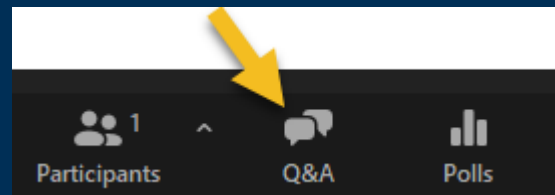
Contact:

Enquiries@FusionFutures.ukaea.uk

The next update will be in April

Q&A

Questions should be asked via the Q&A functionality.



Please give us your feedback!



<https://forms.office.com/Pages/ResponsePage.aspx?id=S2asxieuXU205rtXFxlvx5PgUhfe-ChNmDUyu4su-oBUOFo3T0gzMIRBRzc1QVdEUTUzSzhRVFJCTy4u>