



The 2nd IAEA Workshop on Fusion Enterprises

Road to commercialisation: UK

Dan Wolff (UKAEA) – 12th July 2022

Overview

- UK Fusion strategy
- Key players in the UK
- UKAEA's STEP programme

UK Fusion Strategy


Department for
Business, Energy
& Industrial Strategy

Towards Fusion Energy

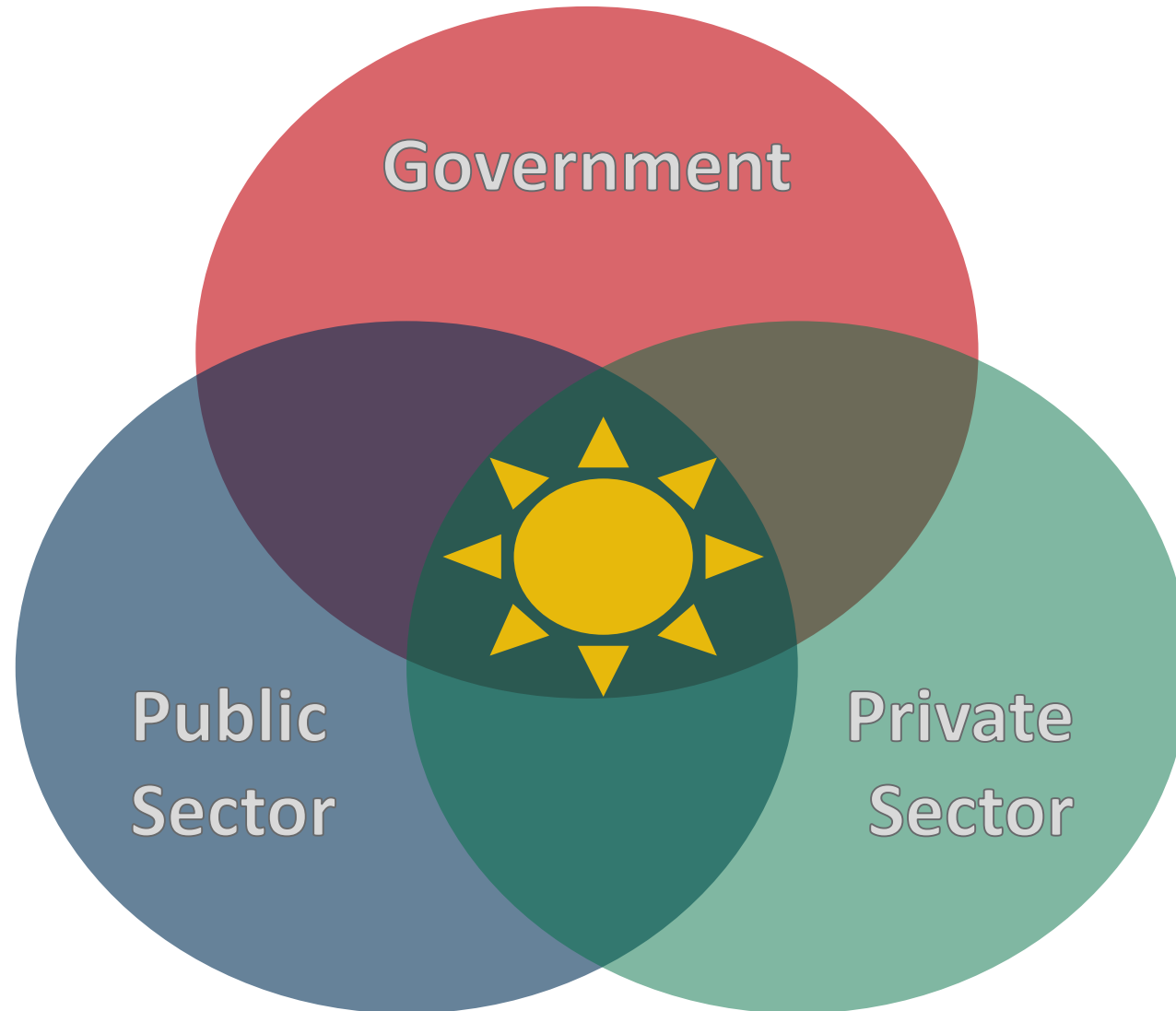
The UK Government's Fusion Strategy



October 2021

- Overarching Goals
 - Demonstrate the commercial viability of fusion by building a prototype fusion power plant in the UK that puts energy on the grid
 - Build a world-leading fusion industry which can export fusion technology around the world in subsequent decades
- Three Pillars
 - International Leadership
 - Scientific Leadership
 - Commercial Leadership

Key players in UK fusion



THE FUSION CLUSTER

THE FUTURE OF ENERGY STARTS HERE.

- * The Fusion Cluster brings together private fusion companies, UKAEA, the supply chain, investors and policymakers to get to fusion faster.
- * Operates around the UK, but strong presence in Oxfordshire where many fusion organisations are based.
- * Active since November 2021, more than 70 companies are taking part including Tokamak Energy, First Light Fusion and General Fusion.
- * The cluster creates connections, facilitates knowledge sharing and helps organisations find the partners they need to advance their work on fusion.

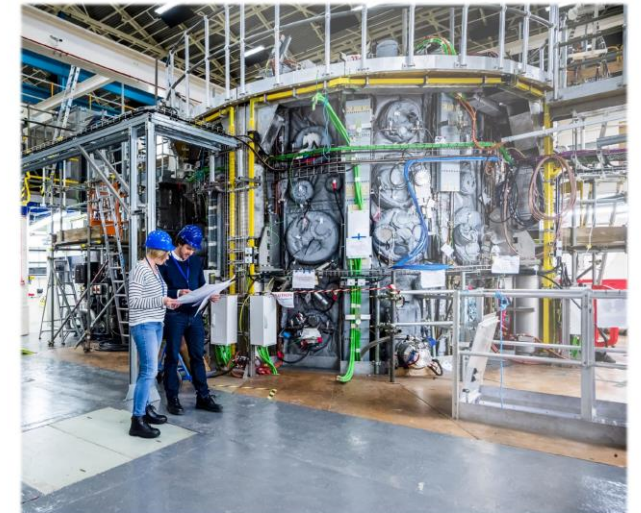
Fusion regulation

“The RHC recommends that the **UK champions the way for a non-fission approach**, by setting out and consulting on a bold, forward-looking vision of how HSE and EA could lead and evolve the regulatory approach for STEP”

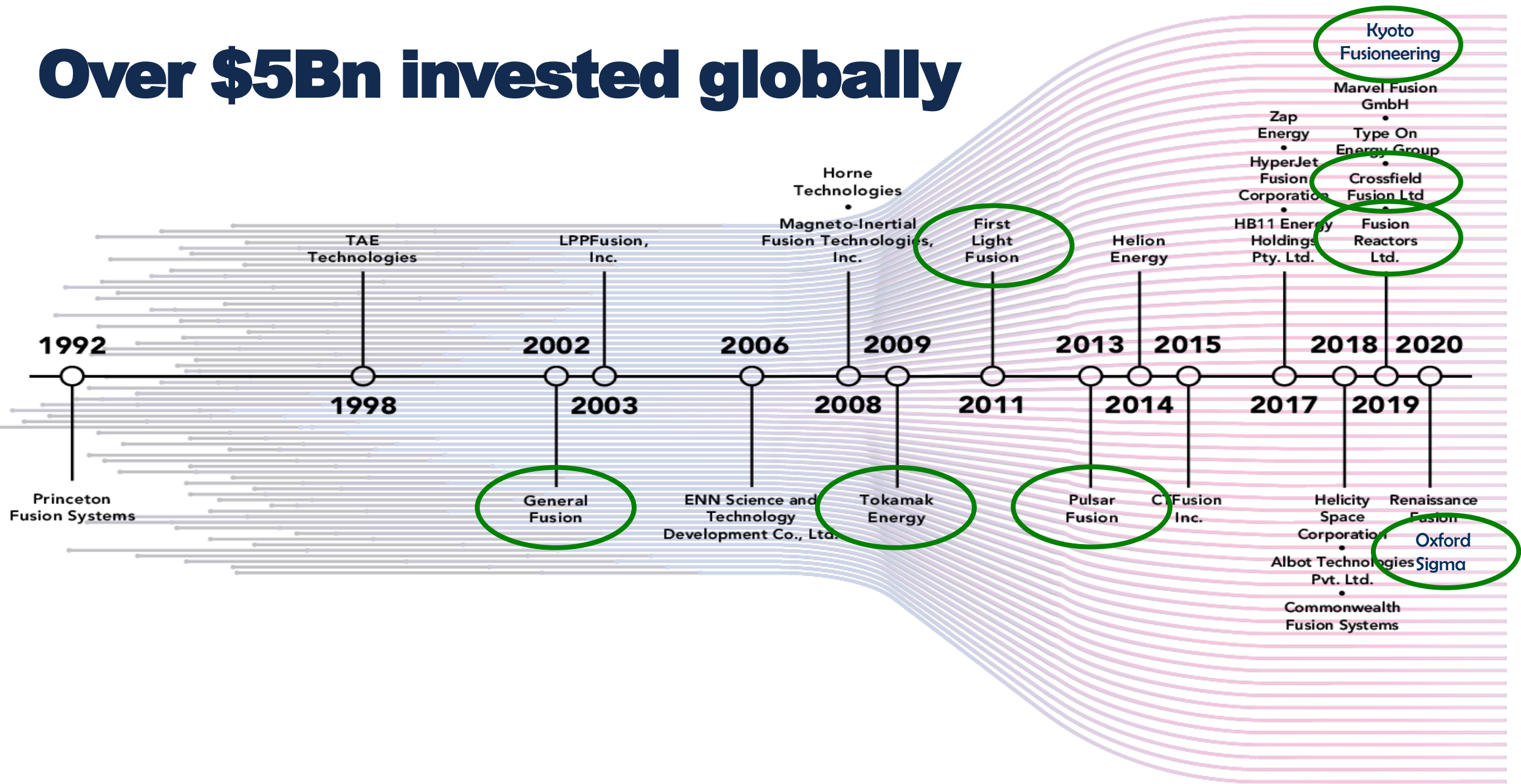
Green Paper: “We want to **trailblaze a proportionate and pro-innovation approach** and collaborate internationally to maximise fusion’s long-term global potential. With this plan, the UK hopes to lead the world on fusion regulation and enable the safe and rapid development of [fusion]”

Towards Fusion Energy

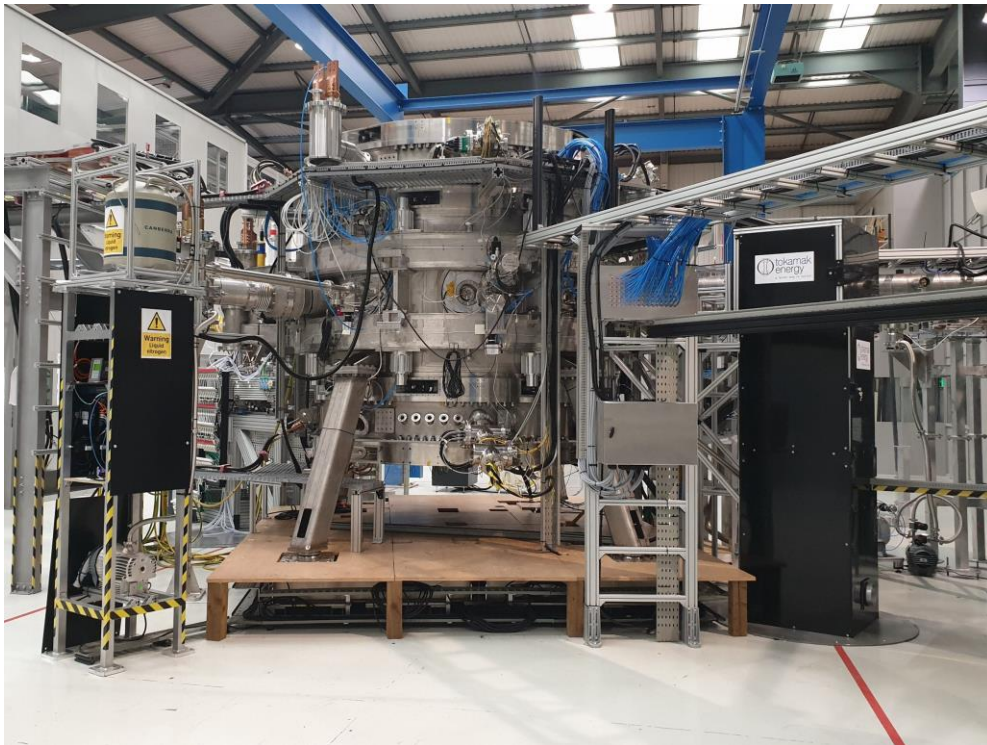
The UK Government’s proposals for a regulatory framework for fusion energy



Over \$5Bn invested globally



Home grown UK fusion industry



New entrants to the UK

Hosted By The United Kingdom, General Fusion's Fusion Demonstration Plant Is Set To Begin Construction By 2023

The Fusion Demonstration Plant is hosted by the UK Atomic Energy Authority at its Culham Centre for Fusion Energy

Strategic Benefits

Located at leading fusion research center

Financial support

Jointly funded collaborative research and development on key technologies

Co-location with Joint European Torus (JET) provides:

- Resources for engineering and operations
- Preferred access to UK supply chain

Strategic Implications

Major programmatic and financial risk reduction milestone

Expands North American presence into Europe

General Fusion now supported by 3 governments



“

Fantastic news that General Fusion is building a plant in the heart of UK fusion at Culham Science Centre!

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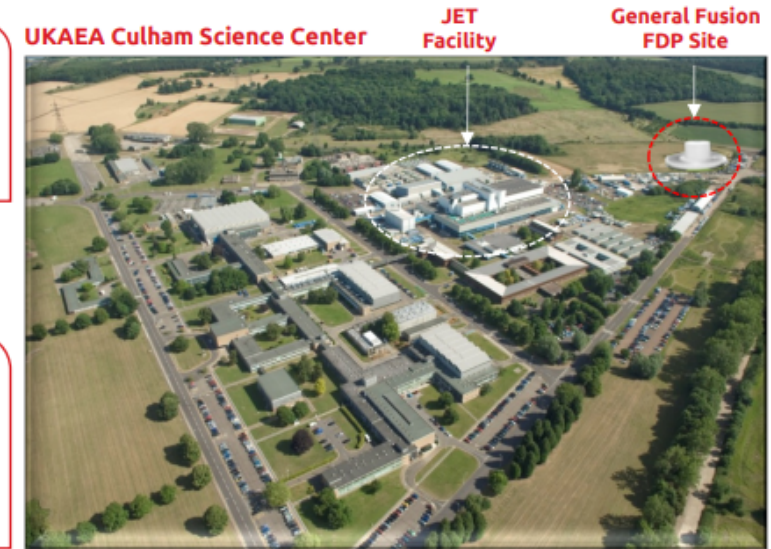
**Boris Johnson, Prime Minister,
United Kingdom**
June 2021

“

We want General Fusion to become a central part of the UK's fusion ecosystem, driving forward innovation and research in this hugely promising field.

”

**Amanda Solloway MP, Science Minister,
United Kingdom**
January 2021



Collaboration agreement with UKAEA propelling General Fusion's technology and commercialization plans forward



STEP

Spherical Tokamak for Energy Production



Deliver a UK prototype fusion energy plant, targeting 2040, and a path to commercial viability of fusion.

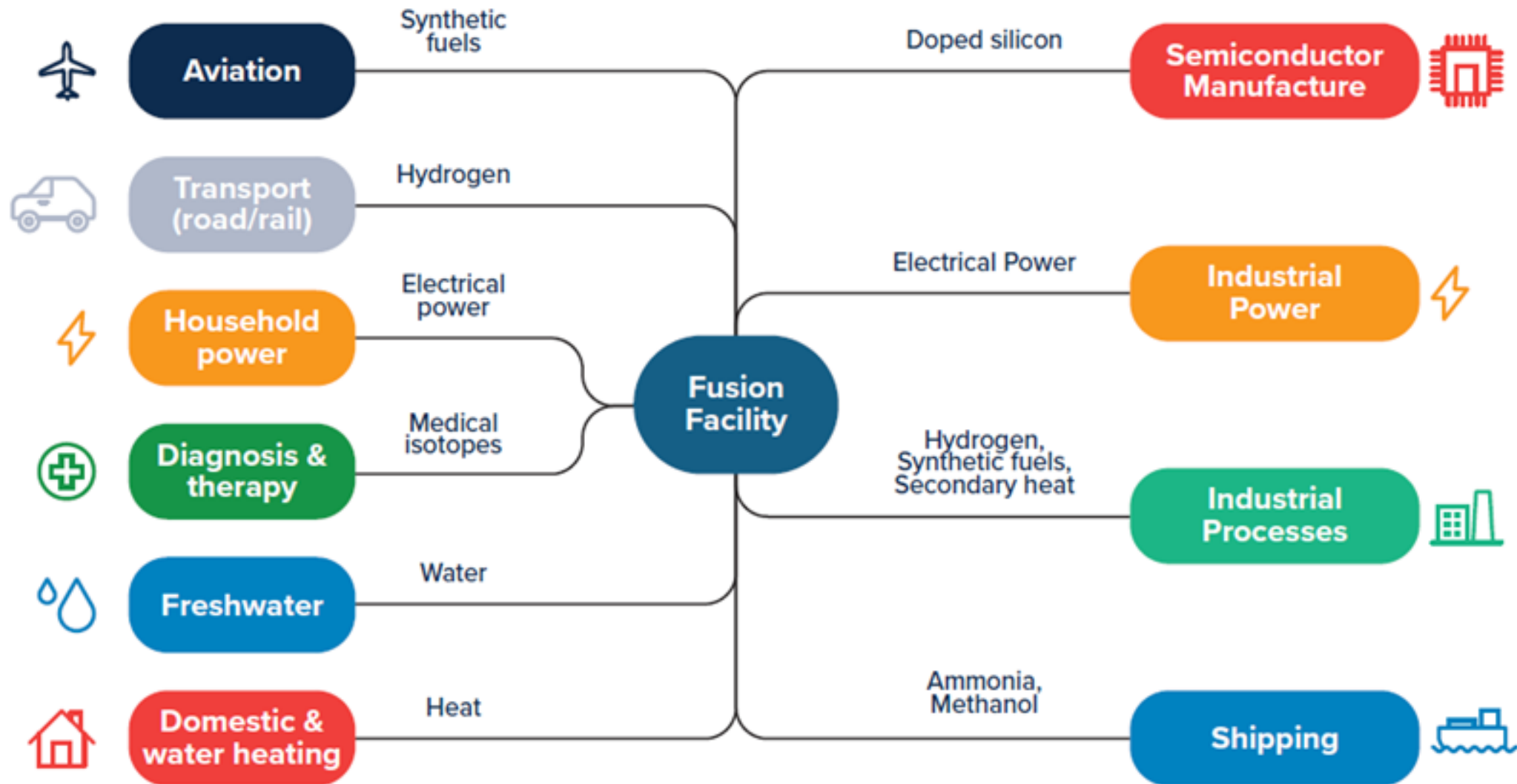


STEP mission

A STEP up the mountain and beyond



Fusion energy uses



STEP high-level schedule

2021

2025

2030

2035

2040

Concept (till 3/24)

- ▶ Concept / Reference Plant Design
- ▶ Programme Development
- ▶ Site selection
- ▶ Transition to Target Operating Model

Detailed Design and Mobilisation

- ▶ Engineering Design
- ▶ Long lead procurement
- ▶ Early Manufacture
- ▶ Site development

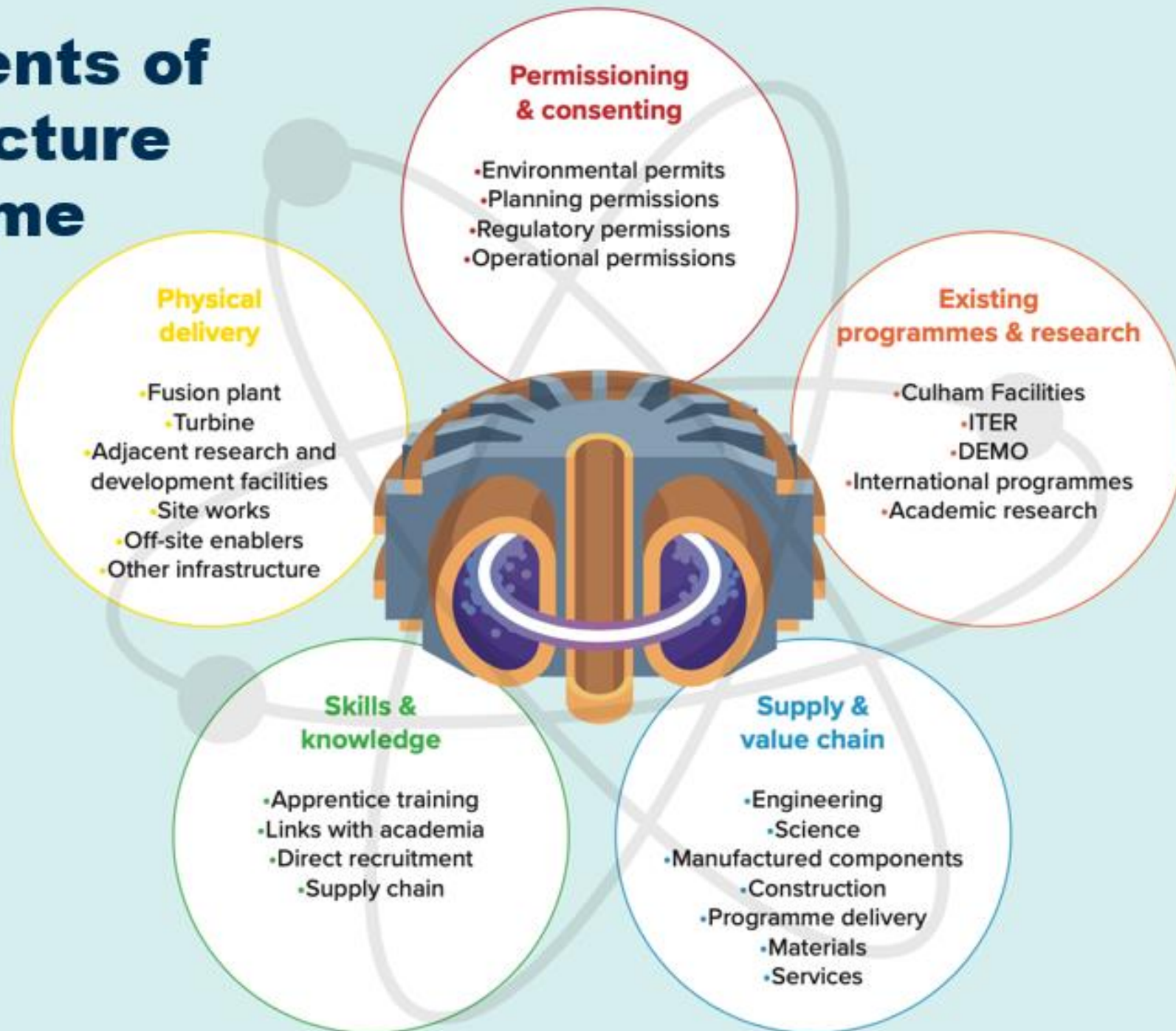
Main Construction

- ▶ Full plant manufacture and assembly
- ▶ Full site development
- ▶ Equipment and system testing

Commissioning and Operations

- ▶ Non-active and active commissioning
- ▶ Prototype ops

Components of infrastructure programme



Summary

- UK Fusion strategy
 - Provides centralised vision
- Key players in the UK
 - All working together to ensure the UK continues to lead the way in fusion
- STEP programme
 - A catalyst to developing the capability and capacity to deliver UK led commercialisation of fusion