

# The U.S. Fusion Science & Technology Roadmap

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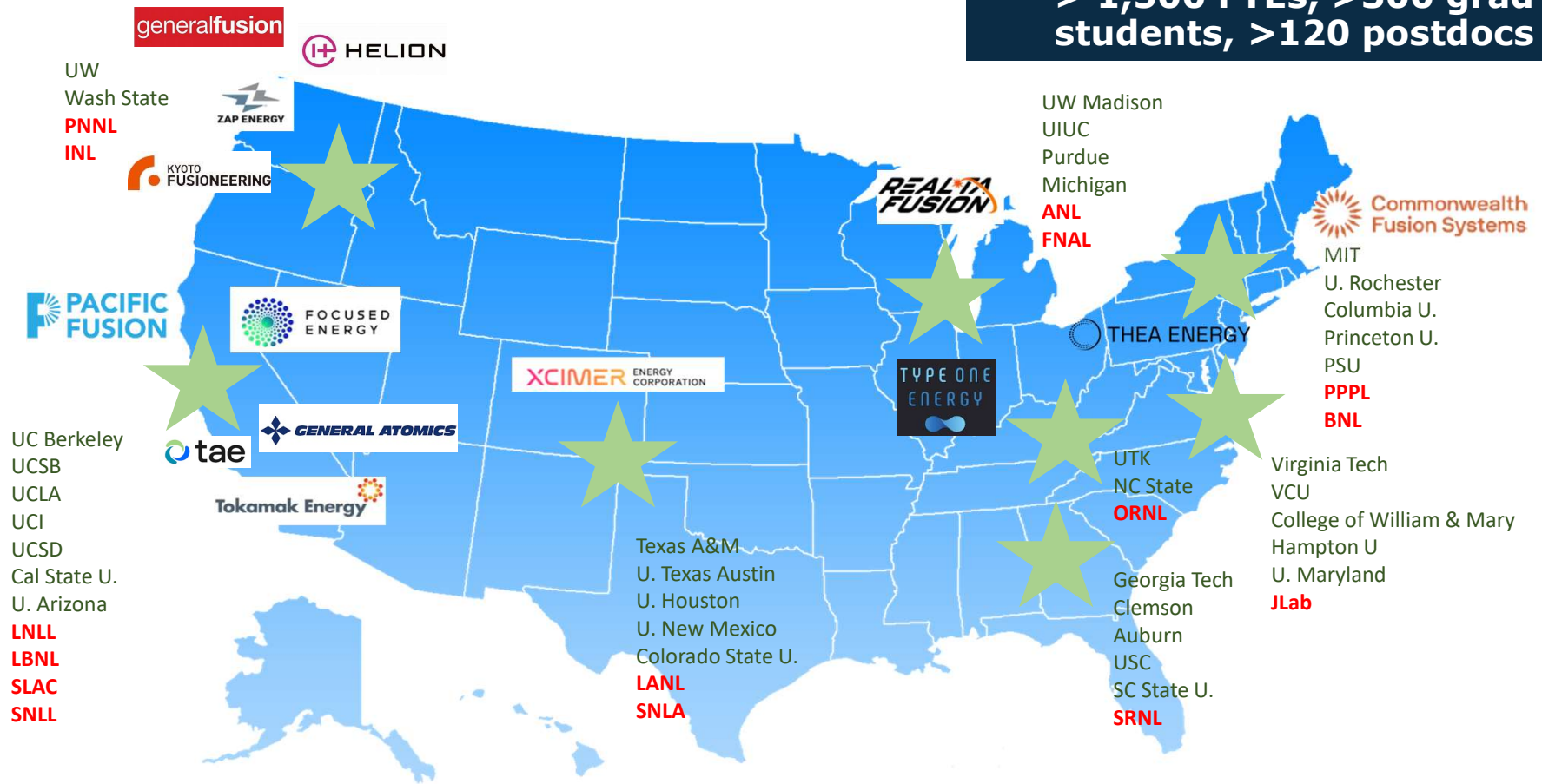
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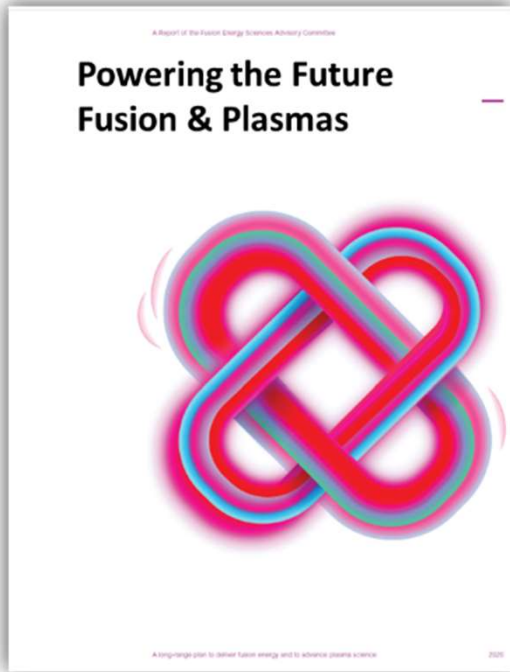
[energy.gov/fusion](https://energy.gov/fusion)

# U.S. Fusion Energy ecosystem: decades of fusion S&T investments

**Funding over 61 universities,  
15 national laboratories, and  
23 private companies  
> 1,500 FTEs, >300 grad  
students, >120 postdocs**



# Alignment of FES to the FESAC Long Range Plan (LRP)

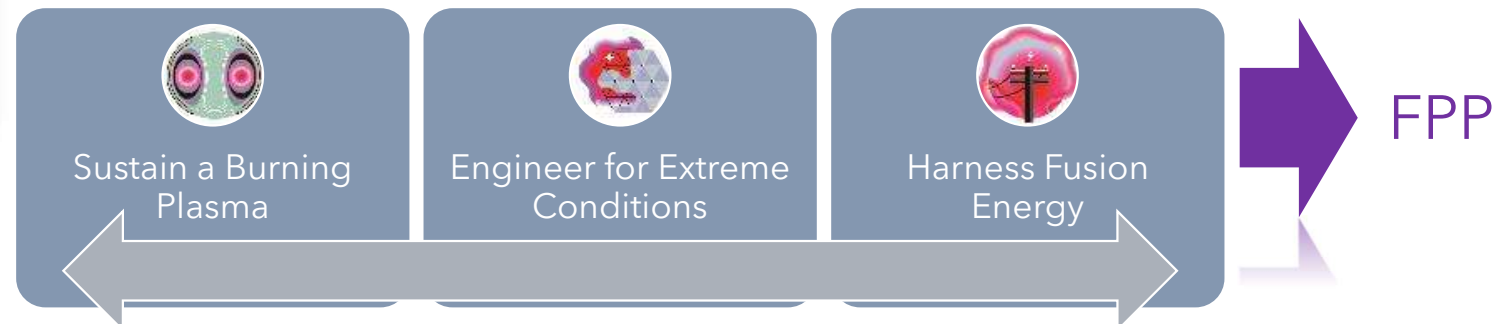


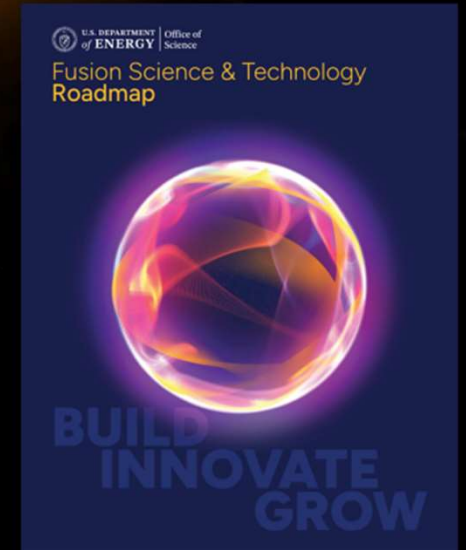
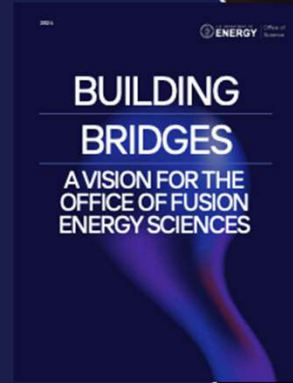
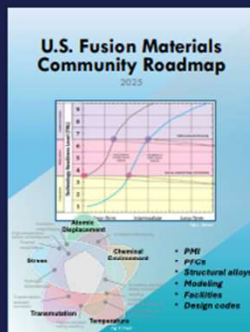
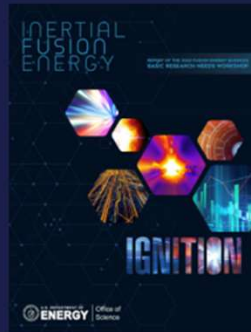
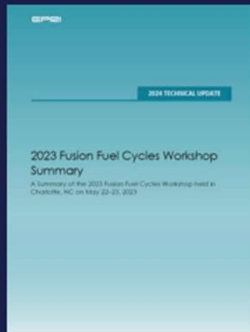
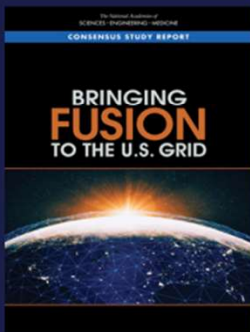
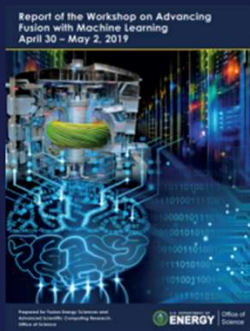
**2020 FESAC  
Long-Range Plan (LRP)**

*“Fulfilling the [fusion] energy mission demands a **shift in the balance** of research **toward FM&T (Fusion Materials and Technology)**, which connects the three science drivers: Sustain a Burning Plasma, Engineer for Extreme Conditions, and Harness Fusion Energy.” p. 6 FESAC-LRP*

- ◆ U.S. Fusion Science and Technology (S&T) Roadmap
- ◆ **Focus:** critical science and technology gaps
- ◆ Support public-private partnerships (PPPs)
- ◆ Leverage international collaborations

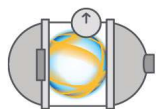
FPP = Fusion Pilot Plant





Roadmap Part I released October 18, 2025, Part II planned for Spring 2026

## Core Challenge Areas



Structural  
Materials Science &  
Technology



Plasma-Facing  
Components and  
Plasma-Materials  
Interactions



Advancing  
Confinement  
Approaches



Fuel Cycle and  
Tritium Processing

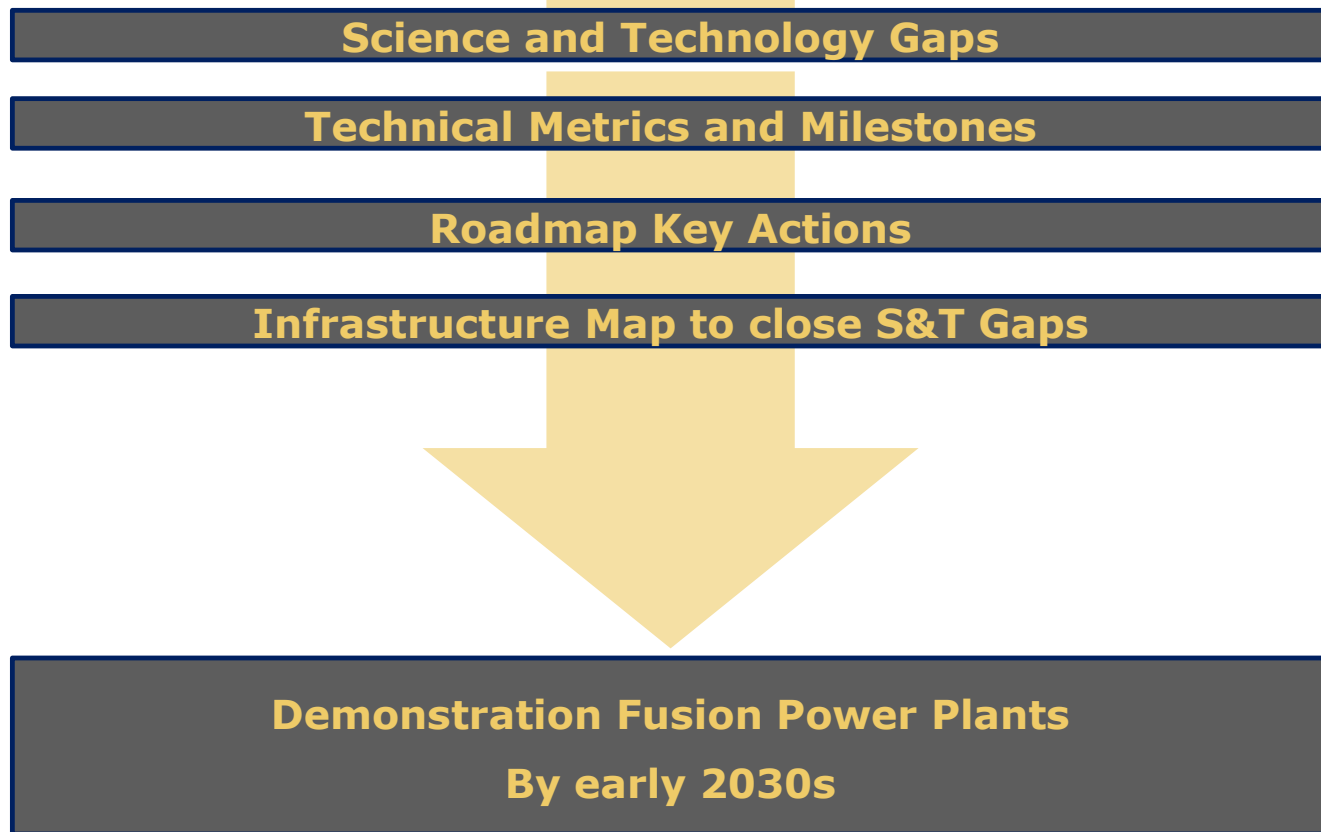


Blanket Science &  
Technology

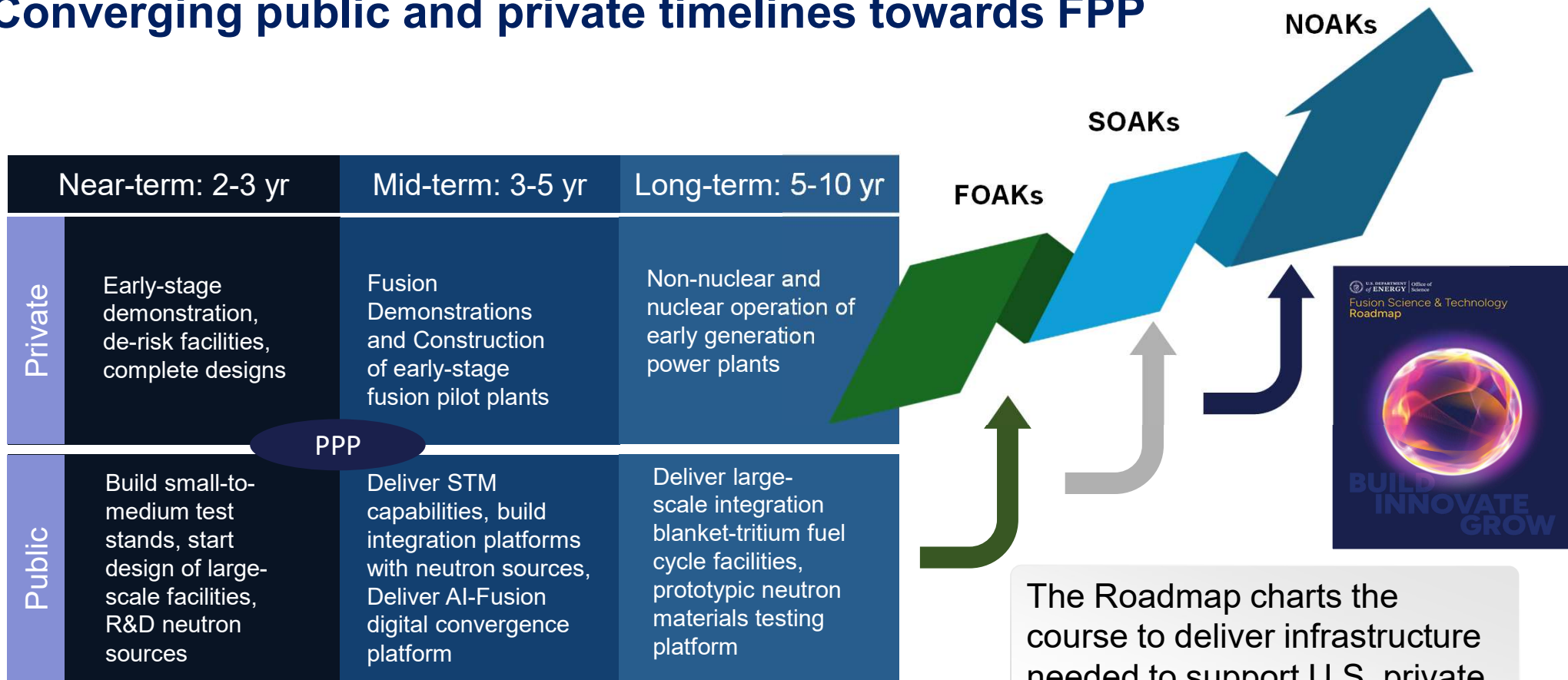


Fusion Plant  
Engineering &  
System Integration

## Roadmap as a Strategic Implementation Tool



# Converging public and private timelines towards FPP



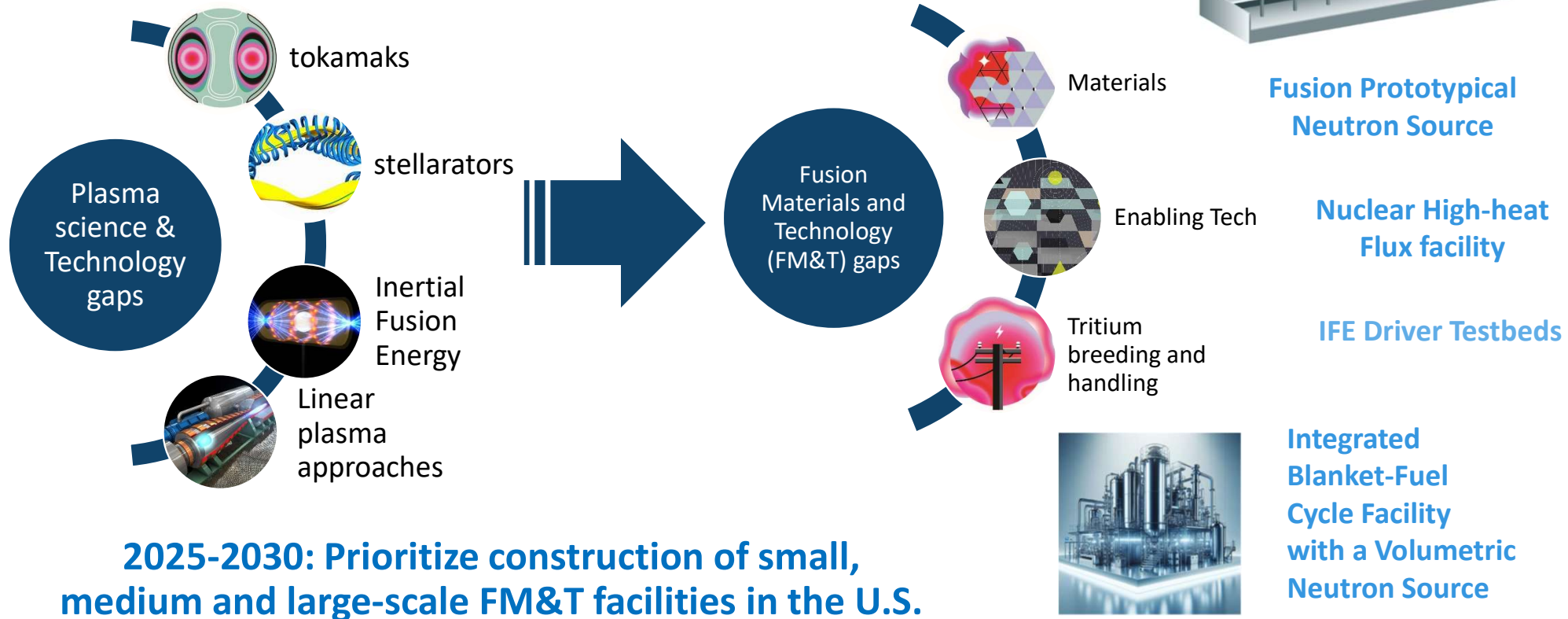
The Roadmap charts the course to deliver infrastructure needed to support U.S. private sector to scale up in the 2030s

\*derived from Fig. 2, FS&T Roadmap, 2025

# Build Fusion S&T Infrastructure and Key Facilities

*PRIVATE SECTOR FOCUS  
PUBLIC-ENABLED*

*PUBLIC SECTOR FOCUS  
PRIVATE-PARTNERED*

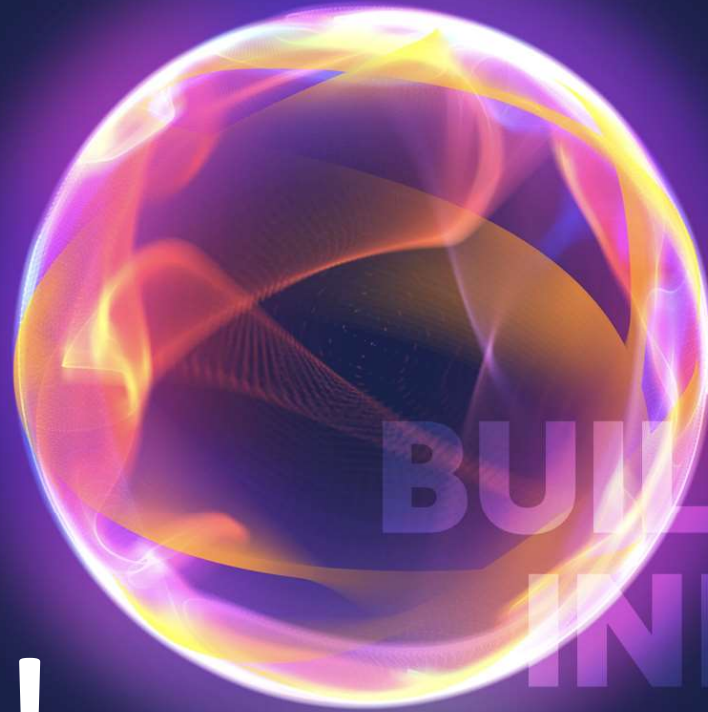




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## Fusion Science & Technology Roadmap

**Thanks  
for your  
Attention!**



**BUILD  
INNOVATE  
GROW**