



TRANSMUTEX

Re-inventing Nuclear to Accelerate the Energy Transition

October 2022

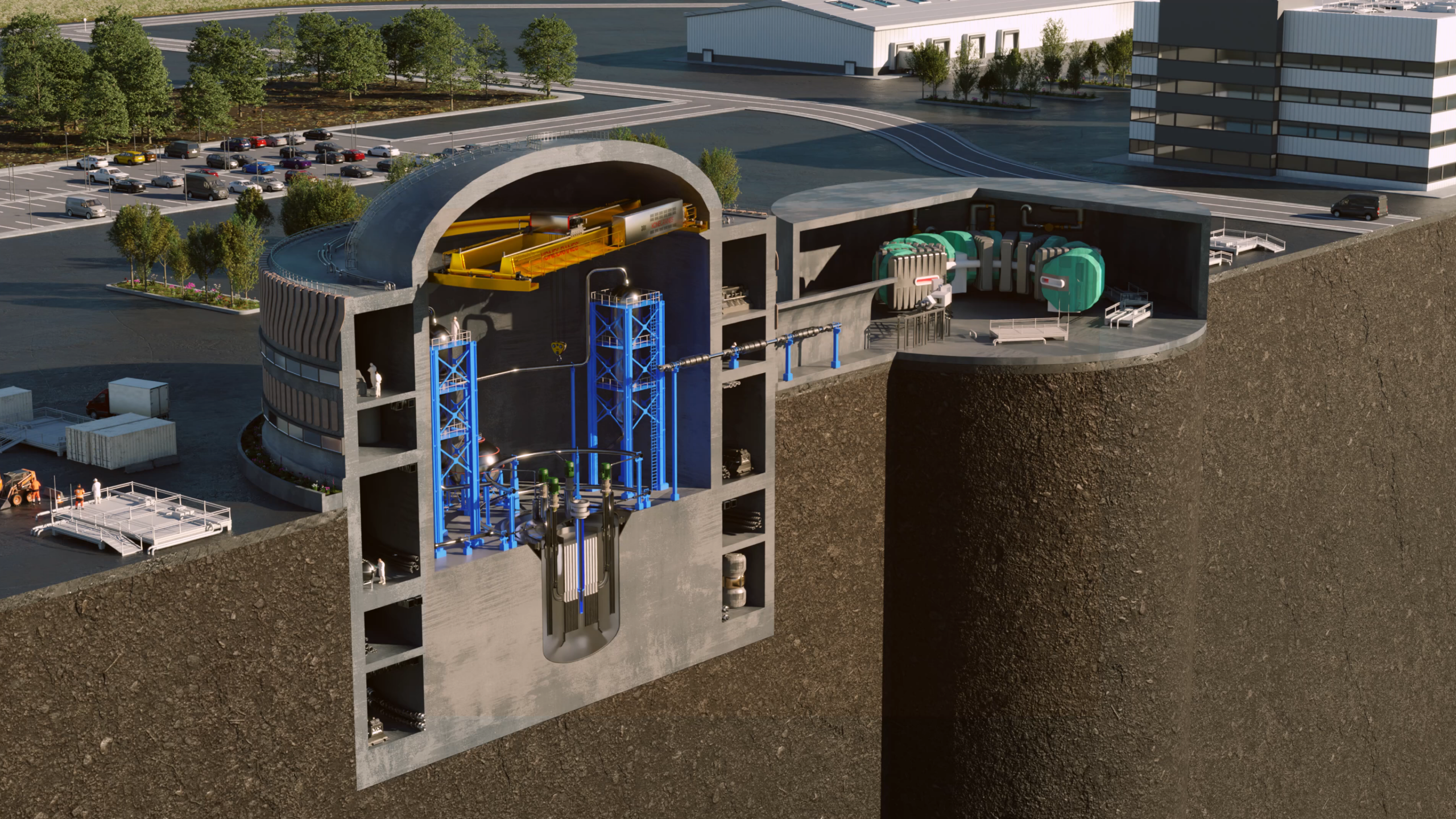
Transmutex Clear Value Proposition

- Highest safety profile due to Sub-Criticality
- Highest waste burning potential – x20 per GWh – over any critical reactor (ref. CEA)
- Dramatically shorter licensing process due to Sub-Criticality safety profile
- Transmutex fills the imperious need of burning waste but produces profitable power
- Possibility of financing and/or bank guarantees for construction from Waste funds, governments, grants, operators, and private investors

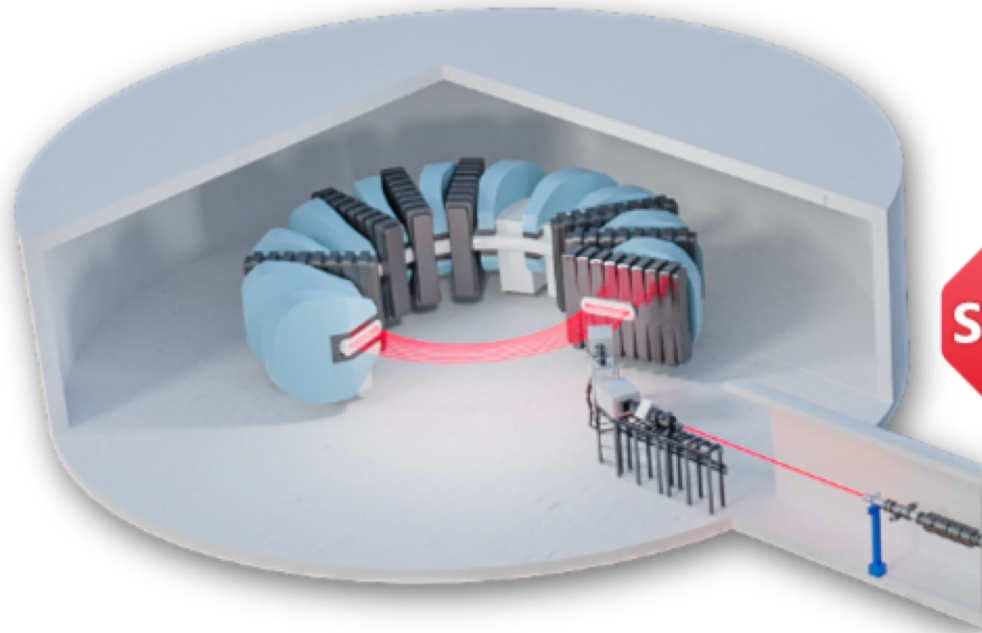
START



*Subcritical
Transmuting
Accelerated
Reactor
Technology*



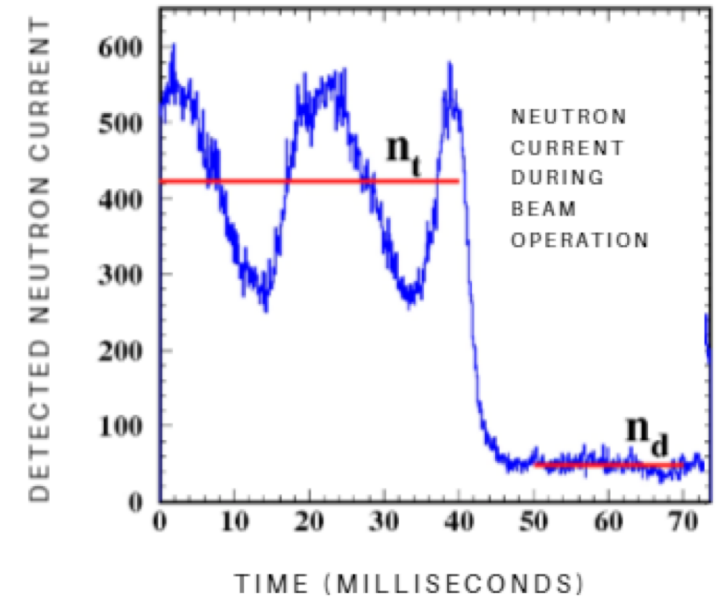
Sûreté intrasèque: la sous-criticité



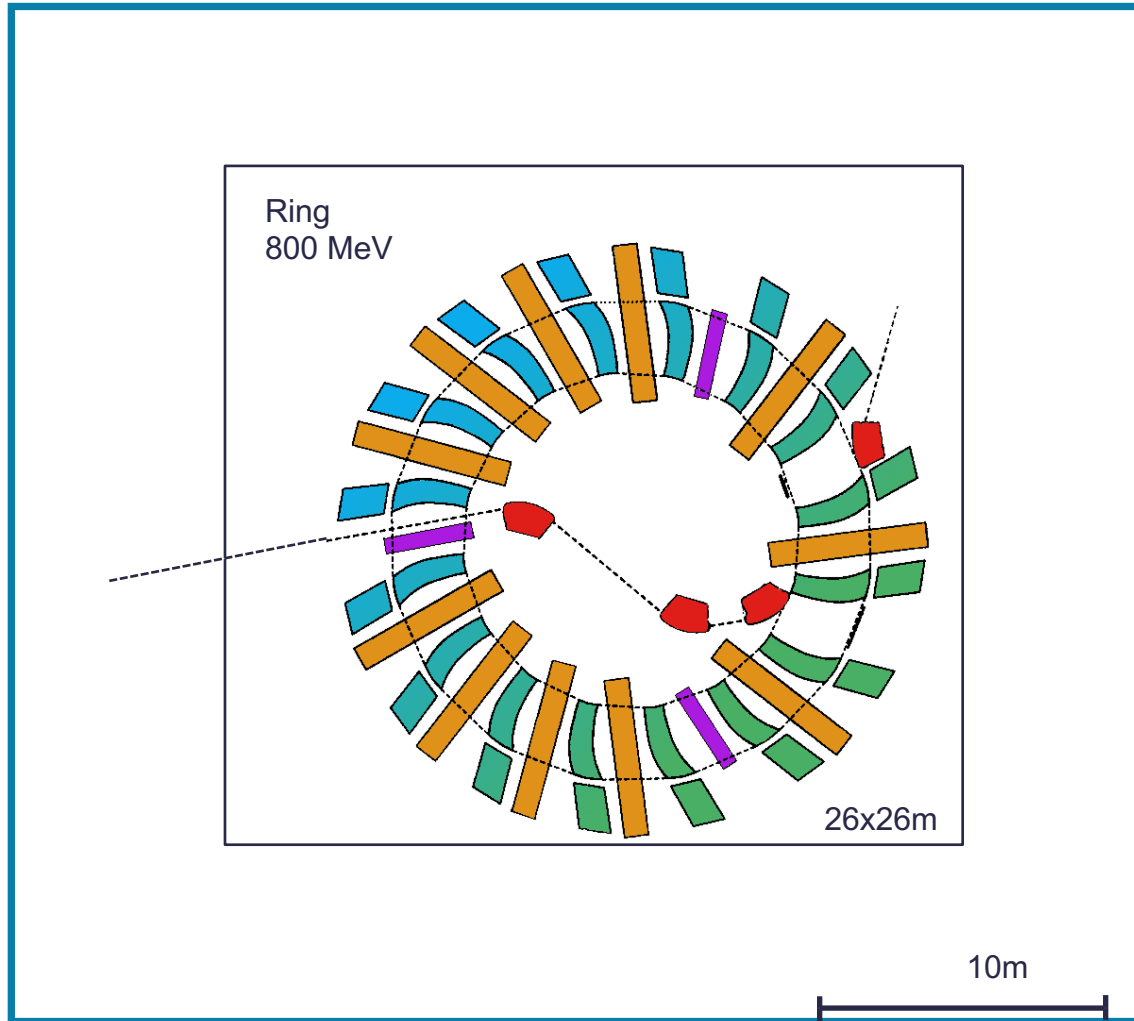
STOP



2 ms



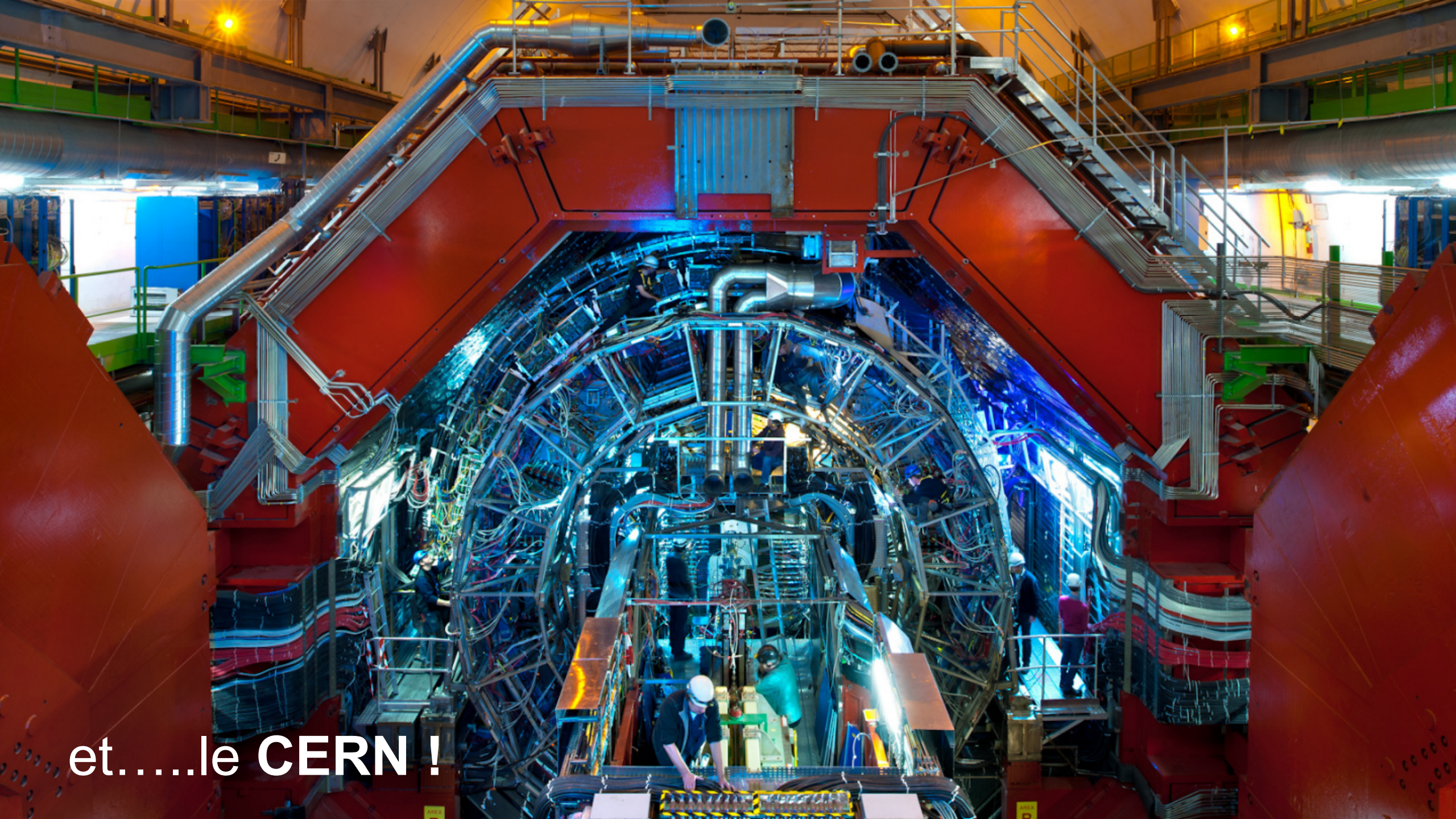
Cyclotron à protons



- Cyclotron Multi-stage
- 800MeV – 5mA
- Empreinte au sol de 60 m x 40 m
- Non-superconducteur pour plus de fiabilité
- Basé sur le cyclotron opérationnel du PSI

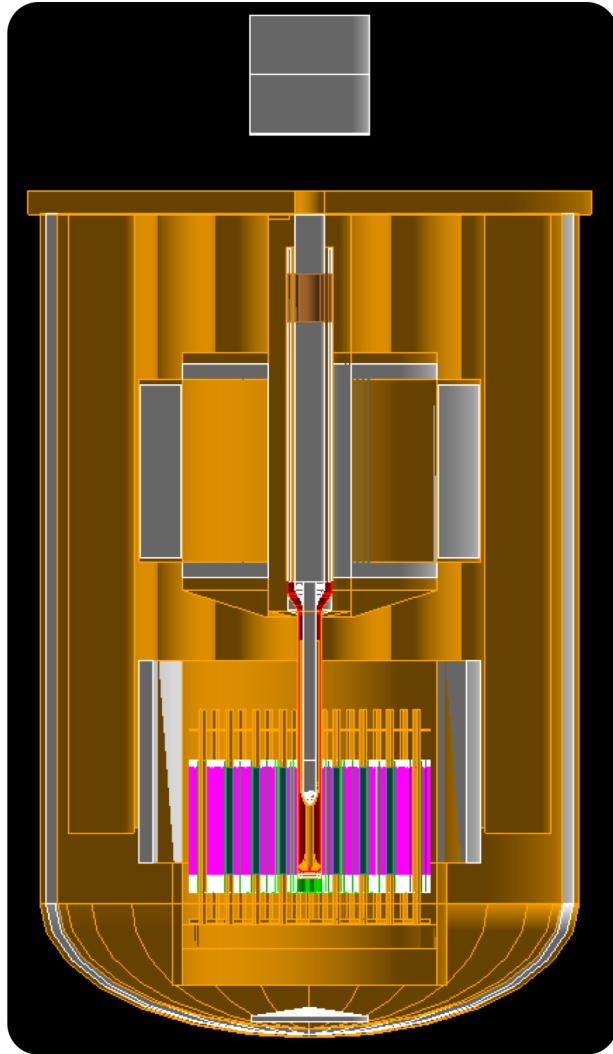
A large group of people, including men and women in various attire, are posed in several rows on a tiered platform at the top of the image. Below them, the PSI neutron source is visible, featuring four large, light-green, capsule-shaped components arranged in a circular pattern. Numerous people are also standing and sitting on the metal structures and walkways surrounding these capsules. The entire scene is set within a large, industrial-looking hall with concrete walls and floors. A sign on the left wall reads 'HABEGGER 3000 kg'. The text 'Une technologie unique à la Suisse – ici le PSI' is overlaid at the bottom of the image.

Une technologie unique à la Suisse – ici le PSI

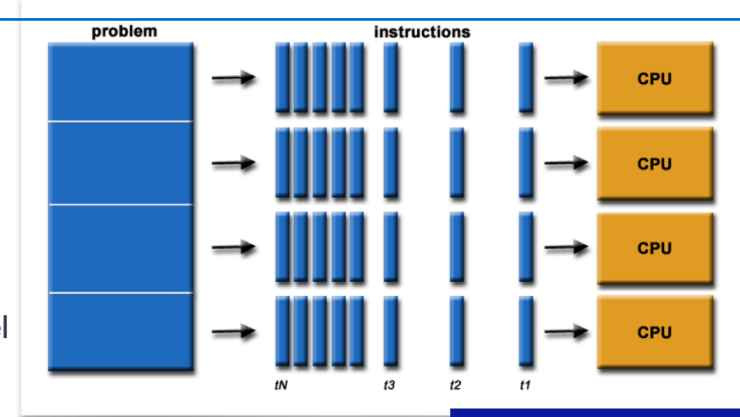
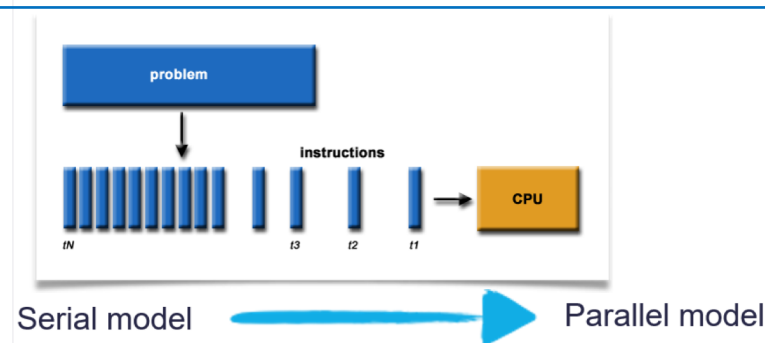


et....le CERN !

Digital Simulation



- Based on CERN's open source Geant 4
- Geant 4 in use for 20 years at CERN
- Covers High to Low neutron energies unlike any other nuclear reactor software available
- Added: time evolution of fuel burn up, reactivity coefficient "k" estimator, time evolution of beam current, DPA calculation, thermohydraulic simulation using deterministic equations.
- Massively parallel implementation

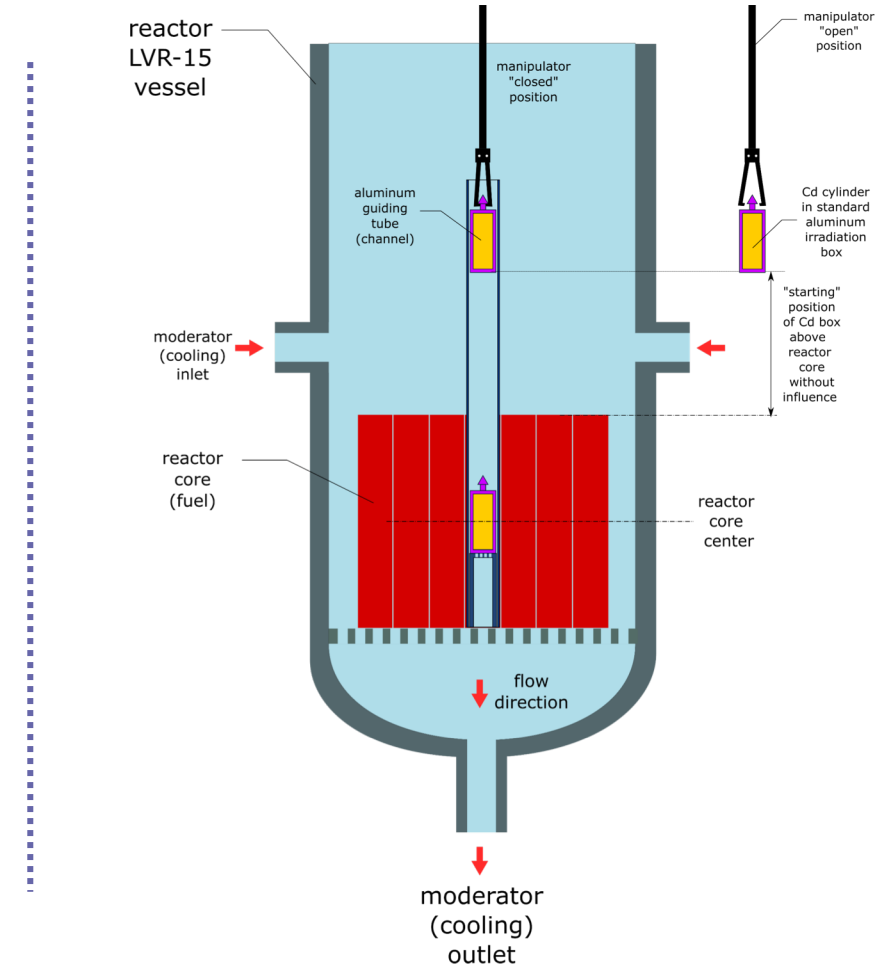


Experimental Validations

- Access to nuclear facilities at CVR-REZ in the Czech Republic
- Negotiating with SCK_CEN in Belgium for burn up validation



Transmutex head of experimentation, Dr. Massimo Barbagallo, at supervising the reactivity coefficient “k” measurement in the LVR-15 reactor of CVR-REZ – March 2022



Worldwide Technical Partnerships



Accelerator Tech



Fuel



Target, Core



Cyclotron, Target



Experimental Validations



Fuel Hot-Cells

Digital Partnerships



Geant 4 Software



Thermo-hydraulic Simulations



Software Validations



Software Benchmarking



UNIVERSITÀ
DEGLI STUDI
DI PADOVA



AI machine learning



Quantum Algorithm

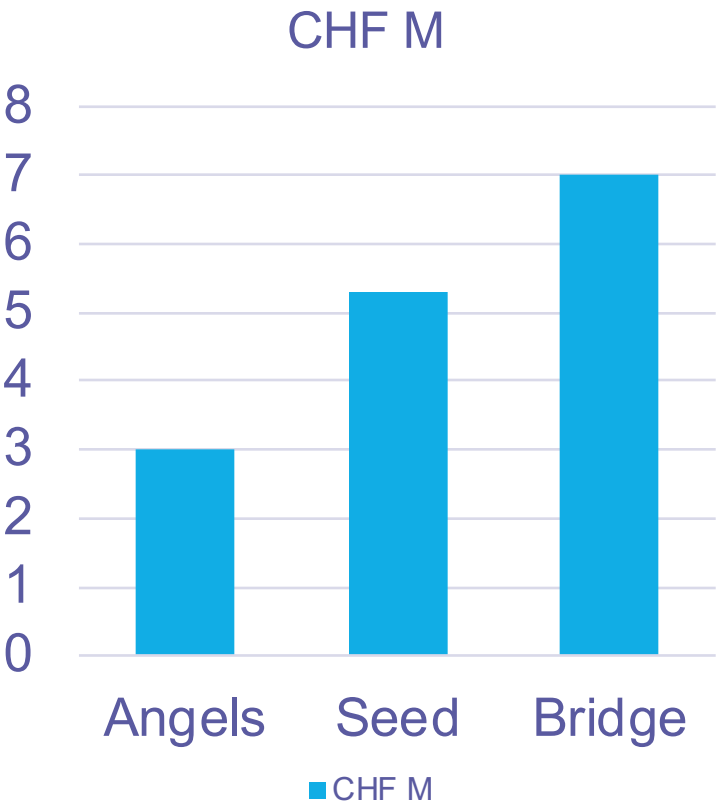


OVHcloud



Cloud Computing

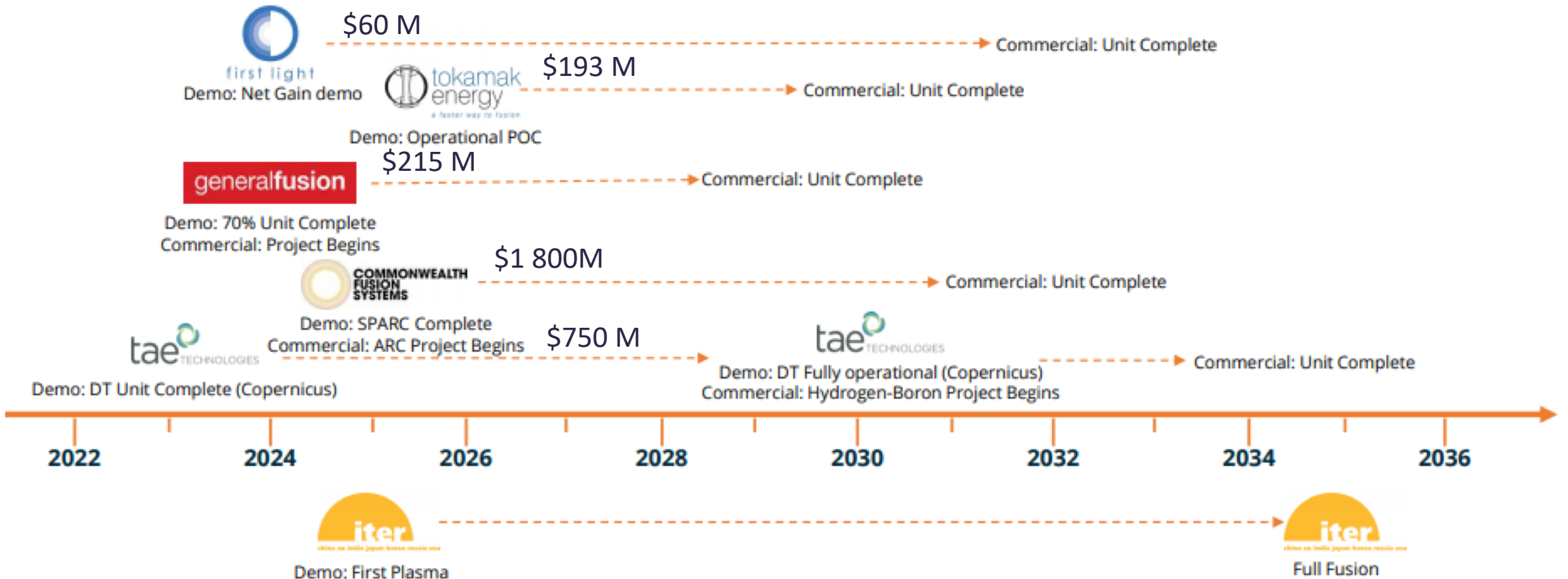
Transmutex International Financing



Funding Competition: Fusion

“Until demonstration plants are built, the economical value of fusion systems cannot truly be proven.”

Clean Tech Group – 2020 June ([link](#))



Expected global energy gain, $Q = 0$

Strong support from the scientific community



“ The Transmutex project is scientifically proven, technologically credible, and led by an exceptional team.

Humanity needs their success, as soon as possible.”

Prof. Gérard Mourou
Nobel Laureate, Physics, 2018
Ecole Polytechnique, Paris