



Proliferation Resistance Optimization (PRO-X)

October 12, 2021



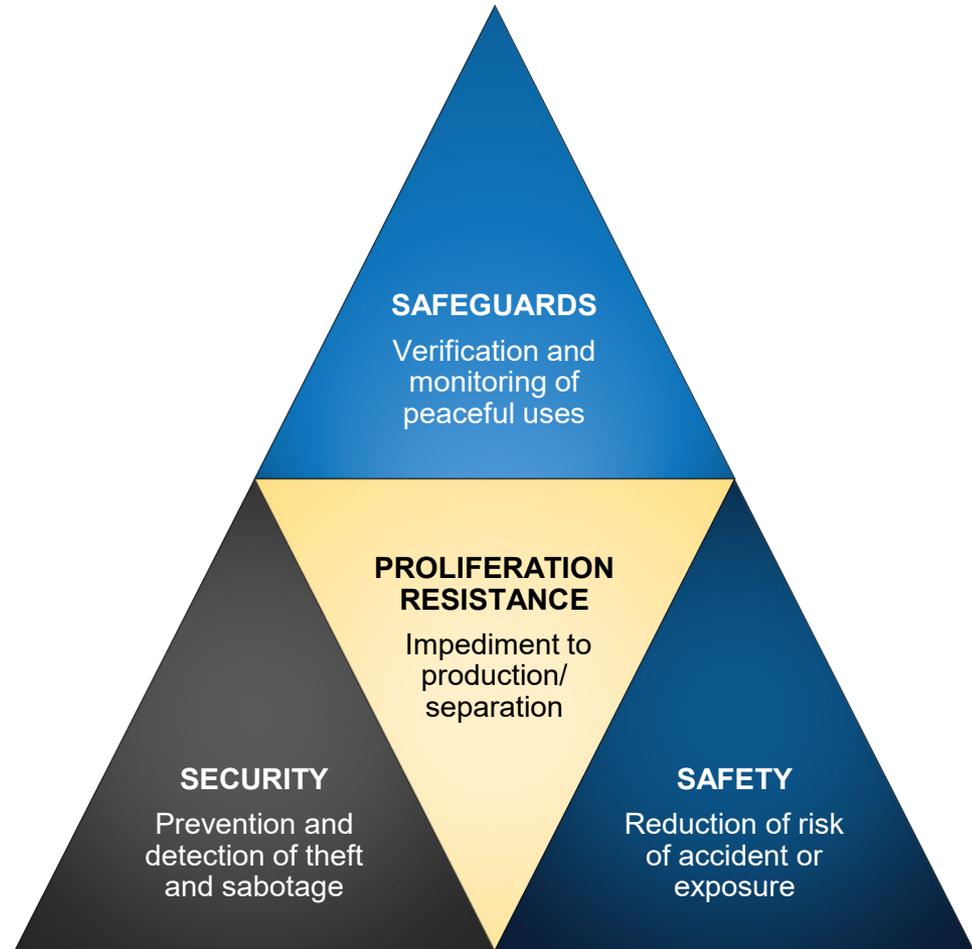


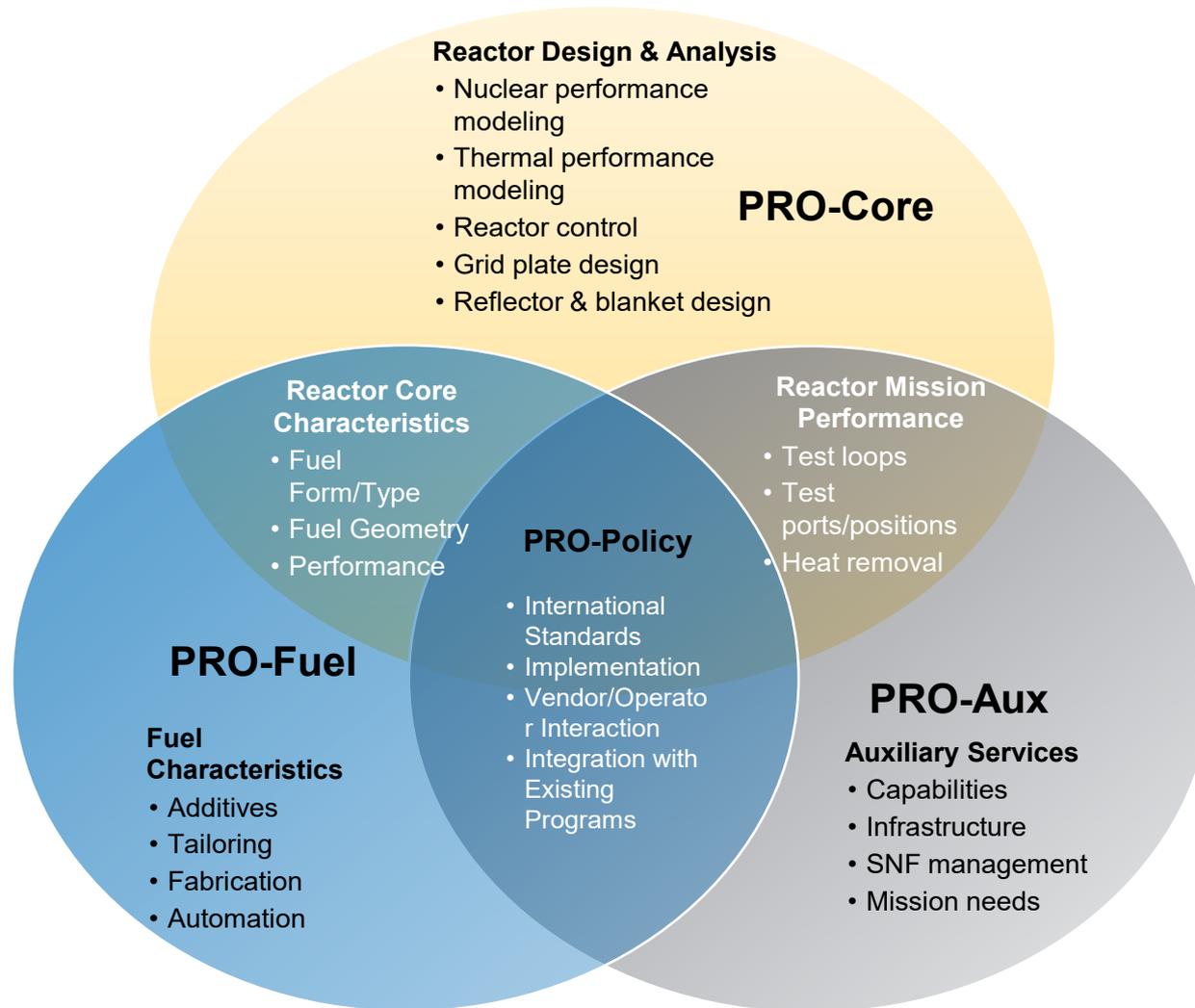
Proliferation Resistance Optimization (PRO-X)

Program Mission The Proliferation Resistance Optimization program maximizes proliferation resistance while optimizing performance for stated peaceful uses in nuclear facility and technology designs.

Program Targets

- Limit the production and/or extraction of weapons useable nuclear material (WUNM)
- Reduce attractiveness of all applicable nuclear material
- Ensure that whole facility and capability is “scaled to meet” mission objectives
- Coordinate measures with facility operations, security, safety, safeguards and forensics to ensure compatibility and effectiveness







IAEA 10 MW Core

Results from Proliferation Resistance Optimization analysis on generic IAEA core

Decreased proliferation threat

- Reduced annual Pu production by 15-20%
- Results for 10 MW core can be scaled for higher power level reactors (i.e. 3x for 30 MW)
- Reduction of potential misuse is addressed through:
 - Power level
 - Core cycle length
 - Number, location and material of targets

Increased reactor performance

- Increased thermal flux in one trap by 50% and maintained flux level in second trap
- Optimization of reactor performance is directly affected by:
 - Number of fuel elements (for same reactor power)
 - Number and location of control elements
 - Reflector material and geometry
 - Number, location and material of targets

With completion of the independently validated PRO analysis on the IAEA 10MW core, it was proven that proliferation resistance optimization can be achieved on various reactor designs while maintaining or improving performance capabilities