

# PREPARATION OF MSR LICENSING IN FRANCE

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# Content

- SMR and MMR specific challenges
- Proposed solutions and strategy to prepare for application
- Requirements on licensing
- Already identified topics for pre-licensing

## SMR / MMR specific challenges

- Innovative SMRs or MMRs target aggressive development timeline
- Steady communication plan to inform investors
- High industrial and financial risks: Sufficient financial resources and skilled workforce are not warranted over the development phase (potential customers could withdraw their order!)
- Preliminary design and detail design may evolve significantly after licensing application
- R&D program will overlap the planning of the regulatory process
- No safety design guidelines except high level requirements

# Proposed solutions and strategy to prepare for application

Condition to start discussions SA-Applicant: Sufficient own funds to sustain activities at least during the pre-licensing phase (around 2 years) / 20 employees

Three steps pre-licensing process:

Phase	Content / Objective	Corresponding development stage
Project screening	Meetings Project overall credibility (technical and financial)	Conceptual design Staff : 20 Financial resources => 2 y of activity
Early review	Meetings for technical overview of the project (No position from SA and TSO) Definition of potential safety issues	Conceptual design
Pre-licensing	Topical assessment files => Review of safety issues to reduce licensing risk / Published conclusions	Basic design Safety option file (possible)

# Requirements on licensing

- Detailed design should be almost completed when submitting the preliminary safety report
  - Delay for PSR review may be too short to be able to assess further design evolutions
- Objectives defined clearly for the experimental reactor and the prototype (FOAK)
  - Minimum R&D required for the exp. reactor
  - R&D results expected with the exp. reactor
  - Compensatory measures not repeated on the prototype
- Limited plant/site lifetime (10 to 20 years) => Credible dismantling strategy and related warranties may be presented at PSR stage
  - Dismantling technologies
  - Waste management options
  - Financial reserves

## Already identified topics for MSR prelicensing

- Definition of general safety objectives (limit doses on the public, etc.)
  - Specific expectations are under consideration for small reactors / multiple units / siting in populated areas
- Envelope safety case and preliminary source term evaluation
- R&D programs and qualification programs for innovative equipment, materials, measuring instruments, ISI and computer codes
- Safety of treatment process of gaseous products and fuel salt (if needed)
- Safety of interim storage and transport (spent salt, fissile material, off-gases)
- *Security*