Industrialization, design engineering, testing, manufacturing, supply chain and construction technology

Topic area 3
• Suggested sub-topics for discussion:
  “how to realize enabling features of SMRs (e.g. volume production) to Industrialize, design eng. etc”

• What could the IAEA do?
Suggested sub-topics for discussion: “how to realize enabling features of SMRs (e.g. volume production) to Industrialize, design eng. etc”

1. Realise through supply chain diversification with the aim of:
   - Reducing costs of component manufacture and construction
   - Localisation of supply

2. How to maximise these opportunity
   - Vendor country to move from stick build to factory build / mass production.
   - Country of deployment to industrialize.
   - Transfer technologies for other sectors.
   - Broaden supply chain (N-Stamp capability)
   - Option to have both vertical integration and horizontal supply chain

3. Key mechanisms and how could these be addressed
   - Regulators
   - Safety classification of components
   - Many standards exist – how are these understood by broader supply chain
   - Quality assurance and quality control for nuclear components.
4. Consideration of the title w.r.t. specific technology challenges / areas:
   - Floating platforms
   - Integral components
   - Factory production
   - Very small technologies (single shot, long lived cores)
   - Fuel cycle / fuel
   - Different coolants
What could the IAEA do (in support of these sub-topics)?

1. Clarify the ‘families of technology’ that are to be considered here as near term deployable
   • Focus on where we have the information e.g. water cooled
   • Coordinate with other TWGs that consider gen 4
   • Have gen 4 in scope as perspective topics

2. Identify neutral/common areas of supply chain e.g. construction and manufacture
   • Common areas of technology across balance of plant, power plant.
   • Instrumentation.
   • Reference case study.

3. Learning from other industries e.g. oils and gas
   • How can companies go into nuclear without the cost.
   • How can companies remain in nuclear for many years.
   • Importance of early sight of opportunities for supply chain (not detailed design as you go).

Mechanisms for IAEA
- gather experts, discuss, record output
- gather information
- information platform for SMRs

- Industrialization
- design engineering
- testing
- manufacturing
- supply chain
- construction technology
What could the IAEA do (in support of these sub-topics)?

4. Nuclear class standards and quality for manufacture and construction
   • What is the range of current standards in nuclear, including quality assurance and control.
   • How can nuclear learn from other regulatory regimes to support a diversified/larger supply chain and enable factory construction.
   • Gap between other industry quality assurance and nuclear quality assurance (can inform the cost of upskilling).

5. Identify relevant existing IAEA standards and guidance and forums
   • Review the relevant outputs and relevance for SMRs.
   • Make suggestions/comments on SMR requirements for the work of other groups.

6. Evaluation and fit of local infrastructure and supplier capability
   • IAEA develop a generic database standard that could be utilized by nuclear projects to help them to identify supply chain landscape.
Prioritization

• Near-term technology is first focus (mid and long term to be prioritised later)?
  • ..
  • ..