



Rolls-Royce SMR

Clean, Affordable Energy for all

Nuclear Energy Ecosystems – Open Business Day

Rolls-Royce SMR – Building Supply Chains 4 May 2022

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SMR

Rolls-Royce SMR is a totally new way of building nuclear to meet **Net Zero** needs

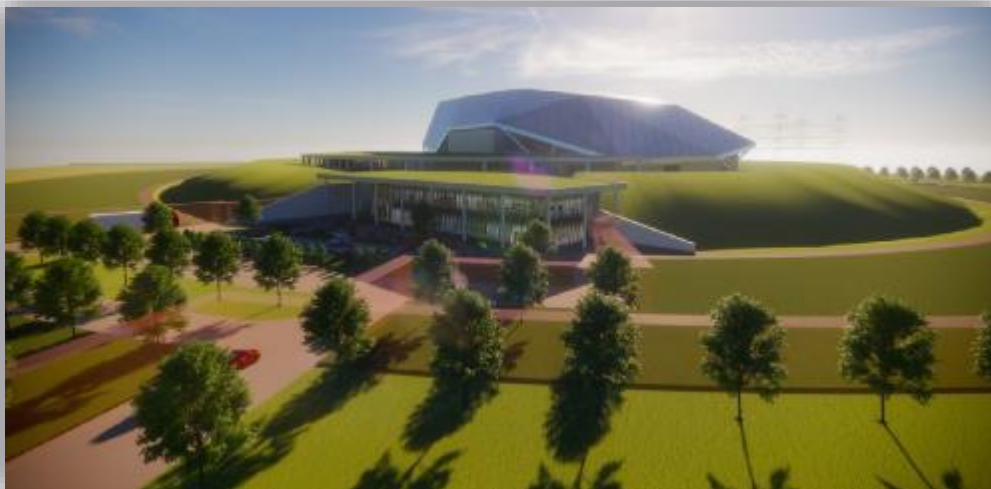
~470 MWe net output

50 Hz design

Proven PWR Technology & Standard Fuel

Power station turnkey delivery

4 yr on-site Construction (Fleet unit)



Enhanced safety and security

1st unit on grid early 2030s

Capital cost under €2.3bn*

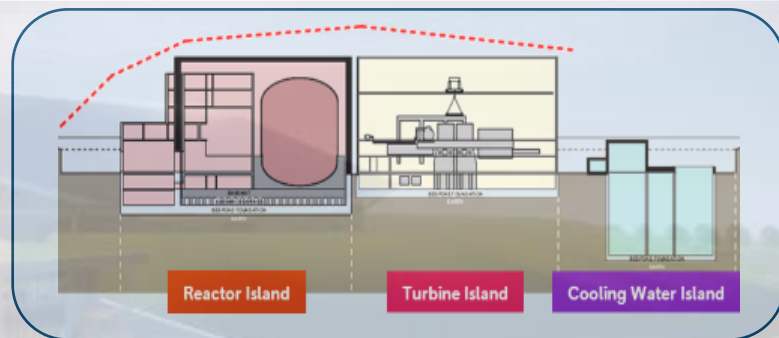
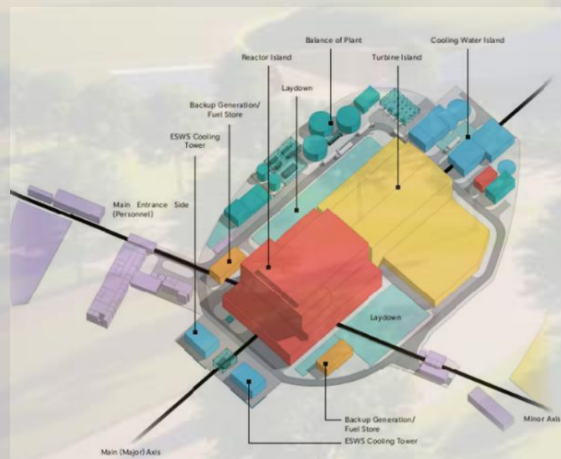
Adaptable, multi-use power & heat output

LCOE range €39-€56 per MWh**



Power Station Overview

- Conventional PWR power station concept.
- Capable of providing both base-load and load following capability.
- Designing the power station to integrate with alternative applications, such as district heating, or hydrogen production.



- Designed in accordance with relevant standards, legislation and key requirements such as ASME, and European Utility Requirements.
- Innovation is in how to design for Modularisation (including standardisation) & road transport.
- Aseismic bearing insulates modules from the site conditions.
- 'Any site, anywhere' philosophy.

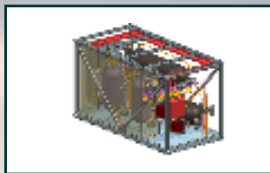
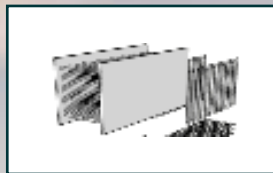




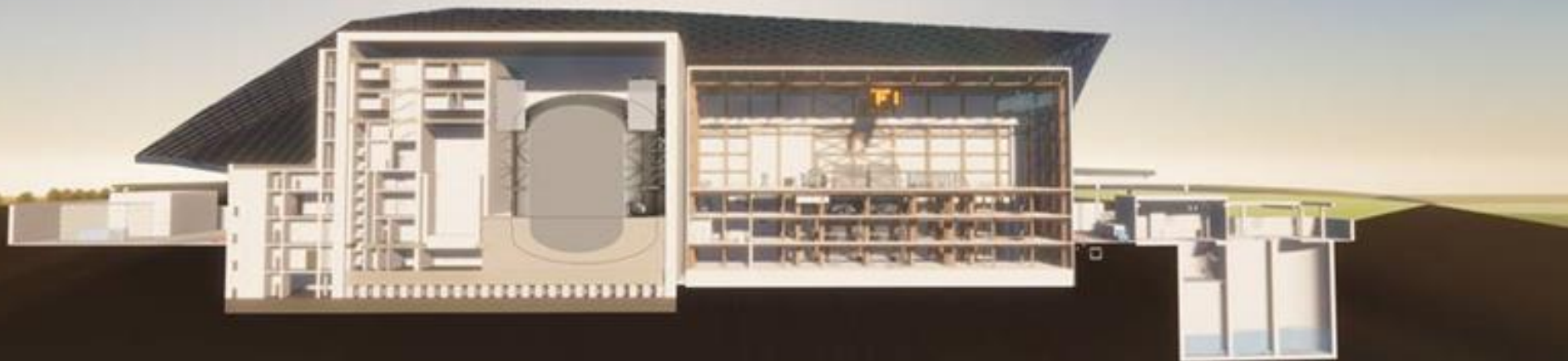
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A whole power plant approach focused on standardisation, repeatability and commoditisation of component and system supply

Whole plant modularisation



Standard commercial parts



Reactor Island

Turbine Island

Cooling Water Island

Turning nuclear into a product not a one-off mega infrastructure project enables a manufacturing supply chain strategy

✗ EPC (mega project)

Conventional EPC (e.g. Large nuclear)

- Mega project GBP10bn+
- Reactor only, *not* whole plant
- Government driven
- Commercially complex



Designed for market requirements



Factory Product



Standardization



Schedule certainty



Commercial simplification



✓ EMA (factory product)

Engineering
Manufacturing
Assembly

- Much lower risk
- Reduced Capital
- Shorter Time to Build

= Reduced financing cost

Reducing Project Risk



A factory fabricated, road transportable product
Standardisation and modularisation of the whole power station

Module Factories



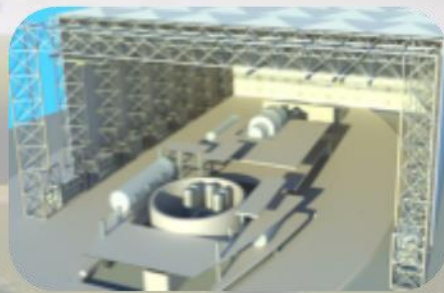
Primary modules



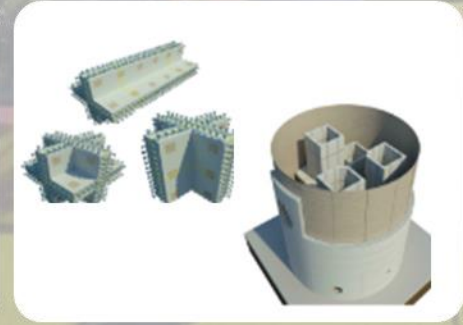
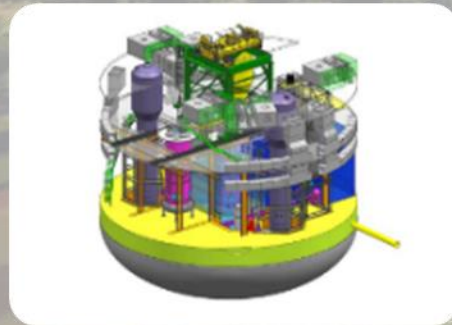
MEP modules



Civil modules



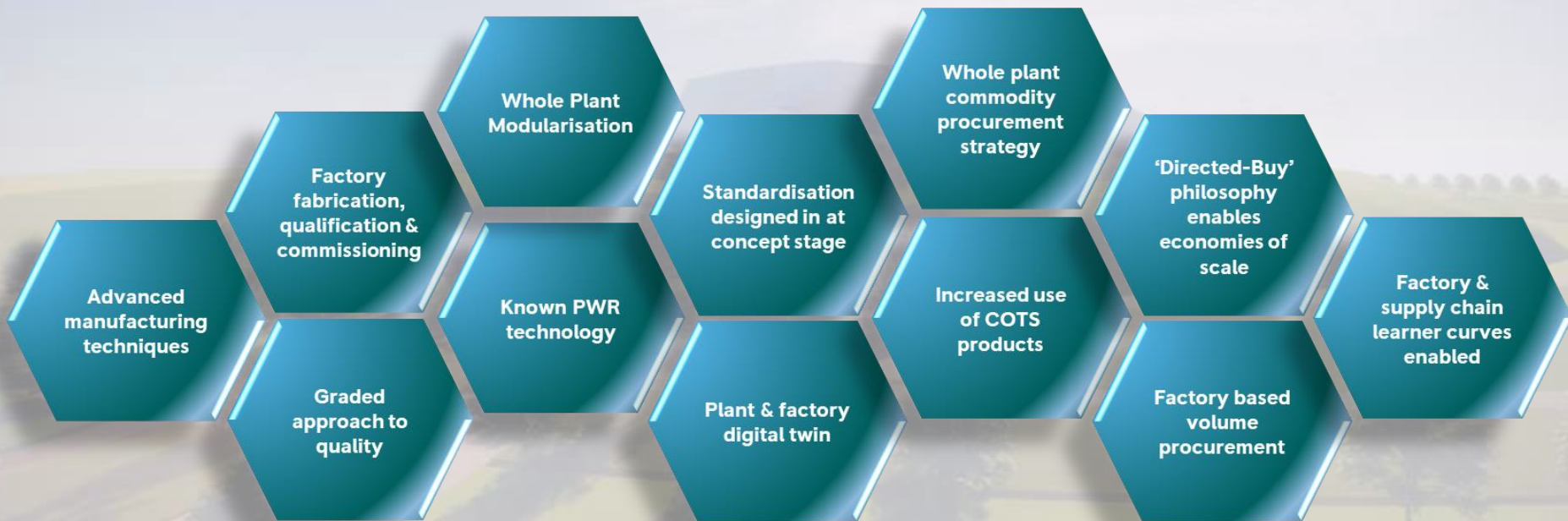
Site Assembly Factory





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Whole plant supply chain strategy enables factory based production





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Nuclear Safety Culture in Rolls-Royce SMR is for everyone (leadership, management, staff, contractors, partners & suppliers)



Understanding the risks, hazards and magnitude of impact in the nuclear industry and the consequence for safety if a failure or unanticipated event occurs.



Developing and sustaining a healthy nuclear safety culture where our thinking, values and behaviour emphasises safety over competing priorities, to protect people and the environment.



Includes product safety, health, safety, environment, security and quality.



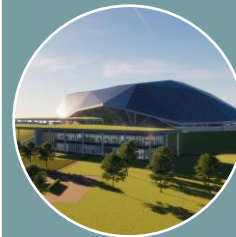
Promoting a questioning attitude and being a learning organisation.



Taking personal accountability in relation to safety.



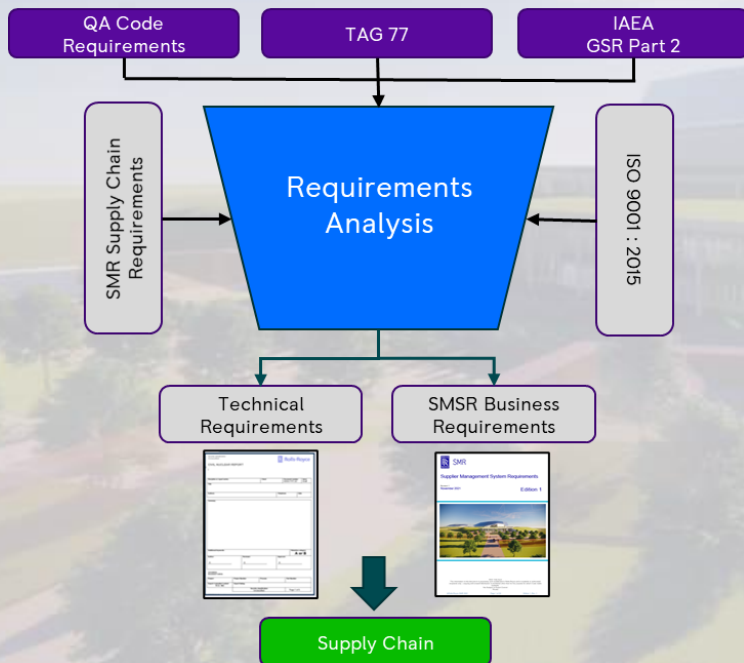
Organisation that fosters trust, collaboration, consultation and communication.



Organisation and individuals approach, interactions and decisions taken.

**Everyone has a responsibility to consider their actions, speak up and challenge
We all contribute to fostering and sustaining a strong nuclear safety culture**





SMSR Key Attributes

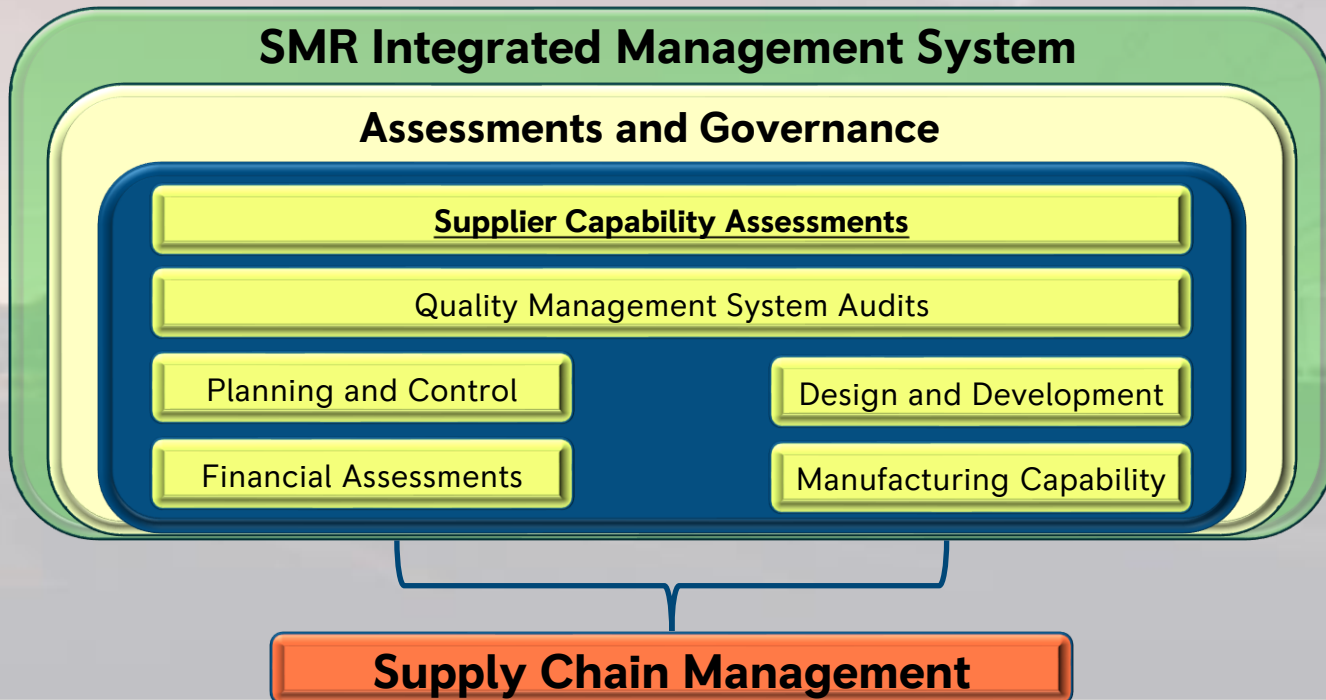
- **Business Management Requirements**
- **HSE Requirements**
- **Security Requirements**
- **Nuclear Safety Culture**
- **Application of the Graded Approach**
- **Quality Assurance Requirements**
- **Counterfeit Fraudulent & Suspect Items Controls**
- **Surveillance Requirements**
- **Documentation Requirements**
- **Competency, Training and Awareness**
- **Quality Plan Requirements**
- **Non-Conformance Controls**
- **Change Management and Controls**





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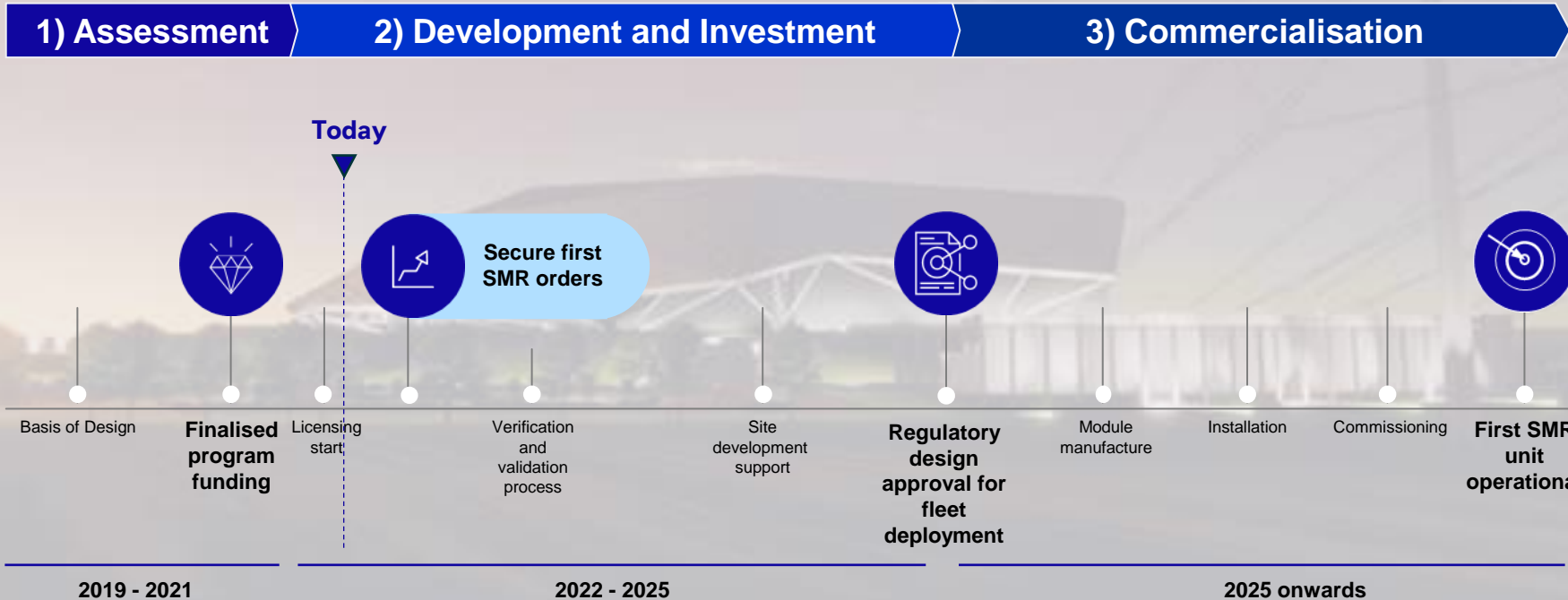
Supply Chain Assessment and Control





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SMR Program - Timeline and Key Milestones





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Thank you

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