



Sellafield Ltd

**A Nuclear Management Partners company
operated under contract to the NDA**

The Technology Development Alliance

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Sellafield Ltd

Overview of presentation

- Sellafield Challenges / opportunities
- Working together – Industry, National Laboratories and Academia
- Proposed developments in w Cumbria

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Sellafield has more than 60 years of history

Sellafield challenges / opportunities



1940s/50s



1960s/70s



1980s



1990s



2000s

- Nuclear build begins
- Initially a military programme
- Later civil programme begins

- Waste stored safely – pending treatment
- Storage capacity extended incrementally
- Coarse segregation of waste arising from process
- Magnox reprocessing starts

- Main expansion of site
- Major waste treatment focus
- Environmental impact substantially reduced
- Decommissioning programme started

- True commercialization of reprocessing—Thorp online
- Waste arising from processes treated in 'real time'
- Product waste forms compatible with disposal concepts

- Decommissioning gathering pace
- Sellafield landscape changing forever
- NDA formed
- NMP become PBO

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Current priorities.....

**Sellafield has more than
60 years of history . . .**



1940s/50s

- Nuclear build begins
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- Waste stored safely – pending treatment
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1980s

- Main expansion of site
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1990s

- True commercialisation of reprocessing—Thorp online
- Waste arising from processes treated in 'real time'
- Product waste forms compatible with disposal concepts
- Health and safety executive reports



2000s

- Decommissioning gathering pace
- Sellafield landscape changing forever
- NDA formed
- NMP become PBO



2010/2020s



**High hazards
reduced
significantly**

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Sellafield Today

- The world's most complex and compact nuclear facility
 - In excess of 2600 buildings and 290 active facilities dating from 1940s to present day
 - 1 million m³ concrete above ground, 1 million m³ concrete below ground
 - 37km road, 15km railway, 120km sewers and 65km water pipes
- Owned by Nuclear Decommissioning Authority, Managed by Nuclear Management Partners and operated by Sellafield Ltd
- Employs around 10,000 at Sellafield with additional engineering and functional support at its Warrington office
- Further 5,000 employed through the supply chain
- Costs £1.8bn per year to operate

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Technical Challenges / Opportunities

- Support to continued operations
- Support to design, build and operation of legacy pond and silo treatment facilities
- Preparation for post operational clean out activities
- Bring forward innovative technology for broad front decommissioning

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Technology Development Alliance – What is it?

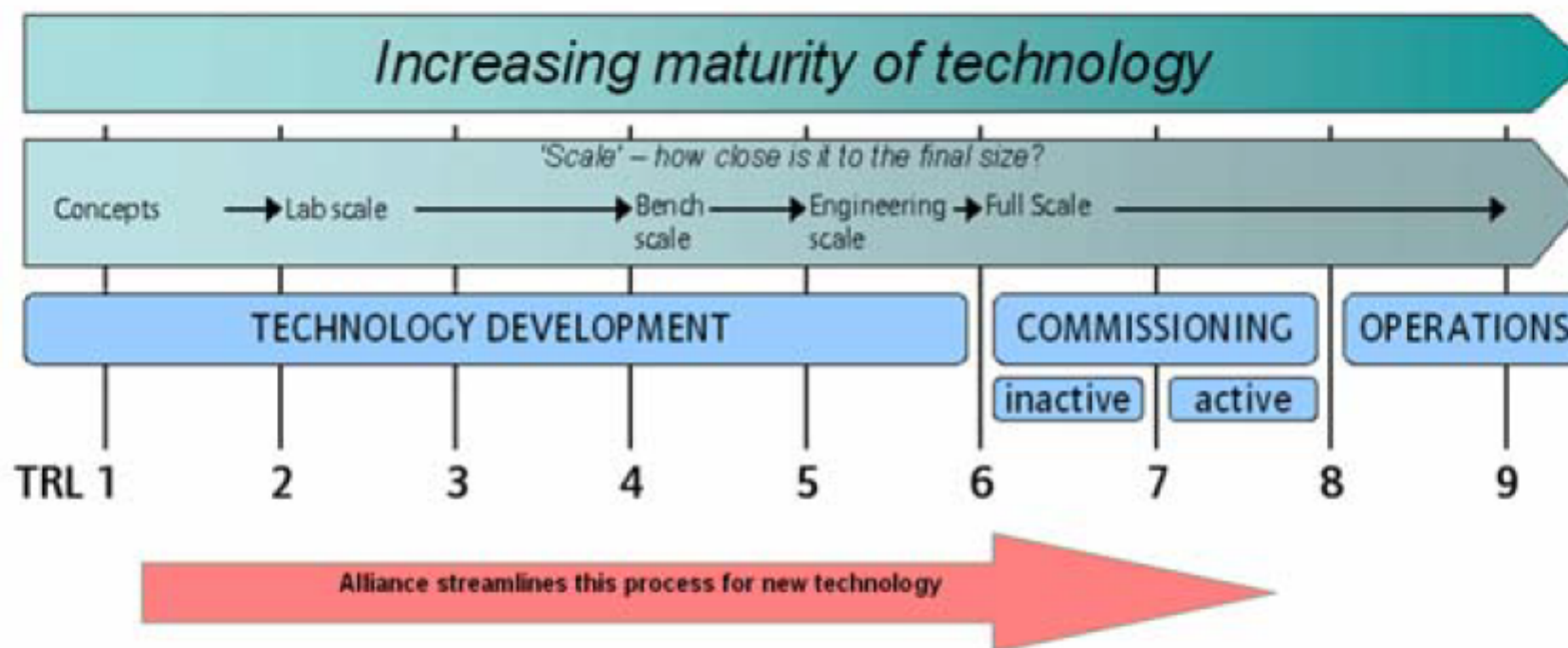
- What is it
 - An industry led alliance of Sellafield Ltd, NDA and its suppliers who carry out research, development and demonstration of innovative technology to support the decommissioning mission
- Why
 - To develop West Cumbria as the World leader in research, development and demonstration of technology in the field of nuclear waste management and decommissioning supporting decommissioning and clean up of Sellafield



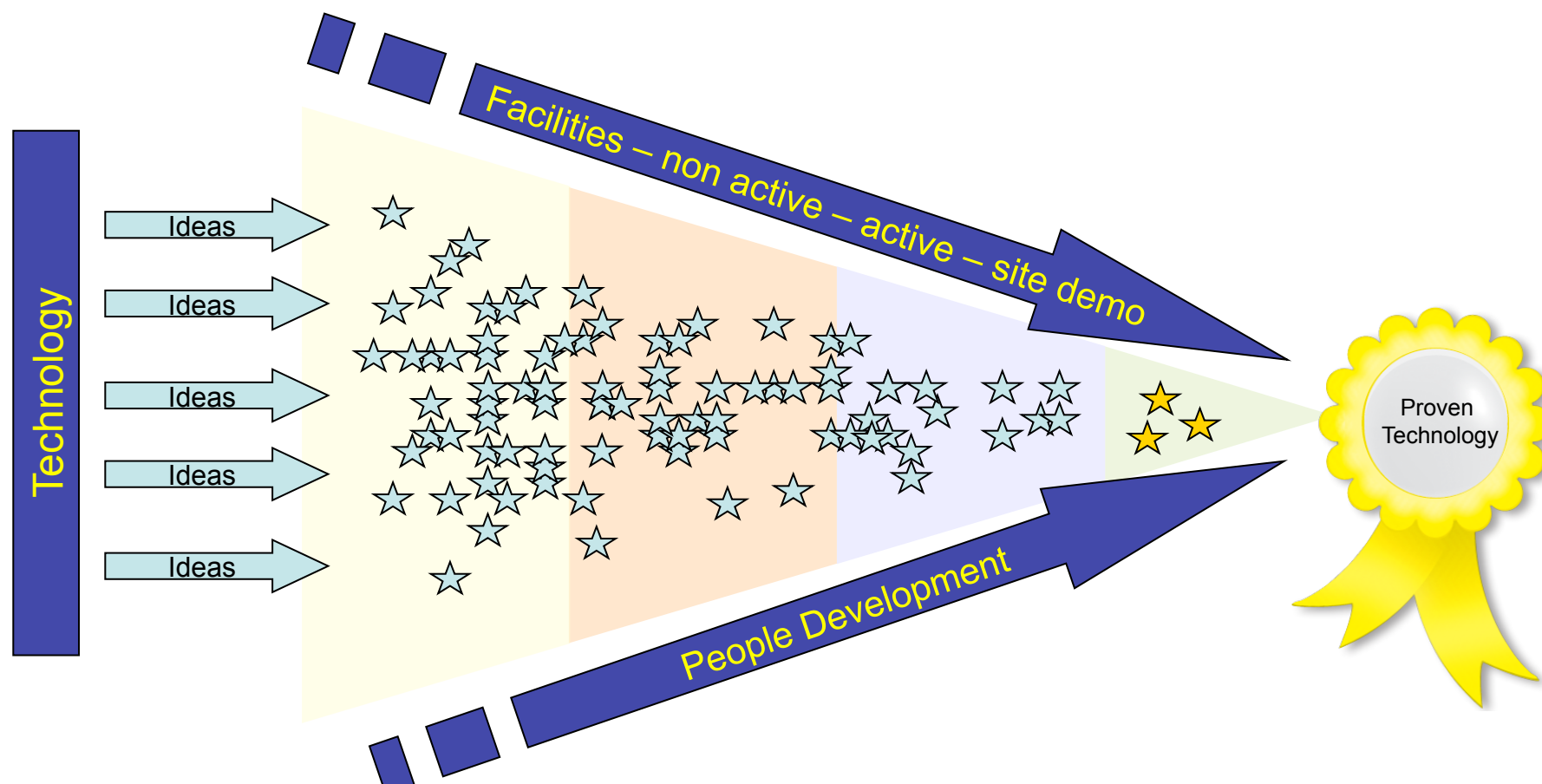
The University of Manchester
Dalton Nuclear Institute



Technology Maturity



Innovation – Facilities - People



Sellafield Ltd

MANCHESTER
1824

The University of Manchester
Dalton Nuclear Institute

NATIONAL NUCLEAR
LABORATORY



NDA
Nuclear
Decommissioning
Authority

Technology Demonstration

- Gap between innovative work in University(s) / SME(s) and deployable systems on site
- Not just about technology – acceptance of new technology, integration of independent technology units into deployable systems, people, management systems, regulators etc etc
- Need to reduce timescales between low TRL technology and deployable systems



The University of Manchester
Dalton Nuclear Institute



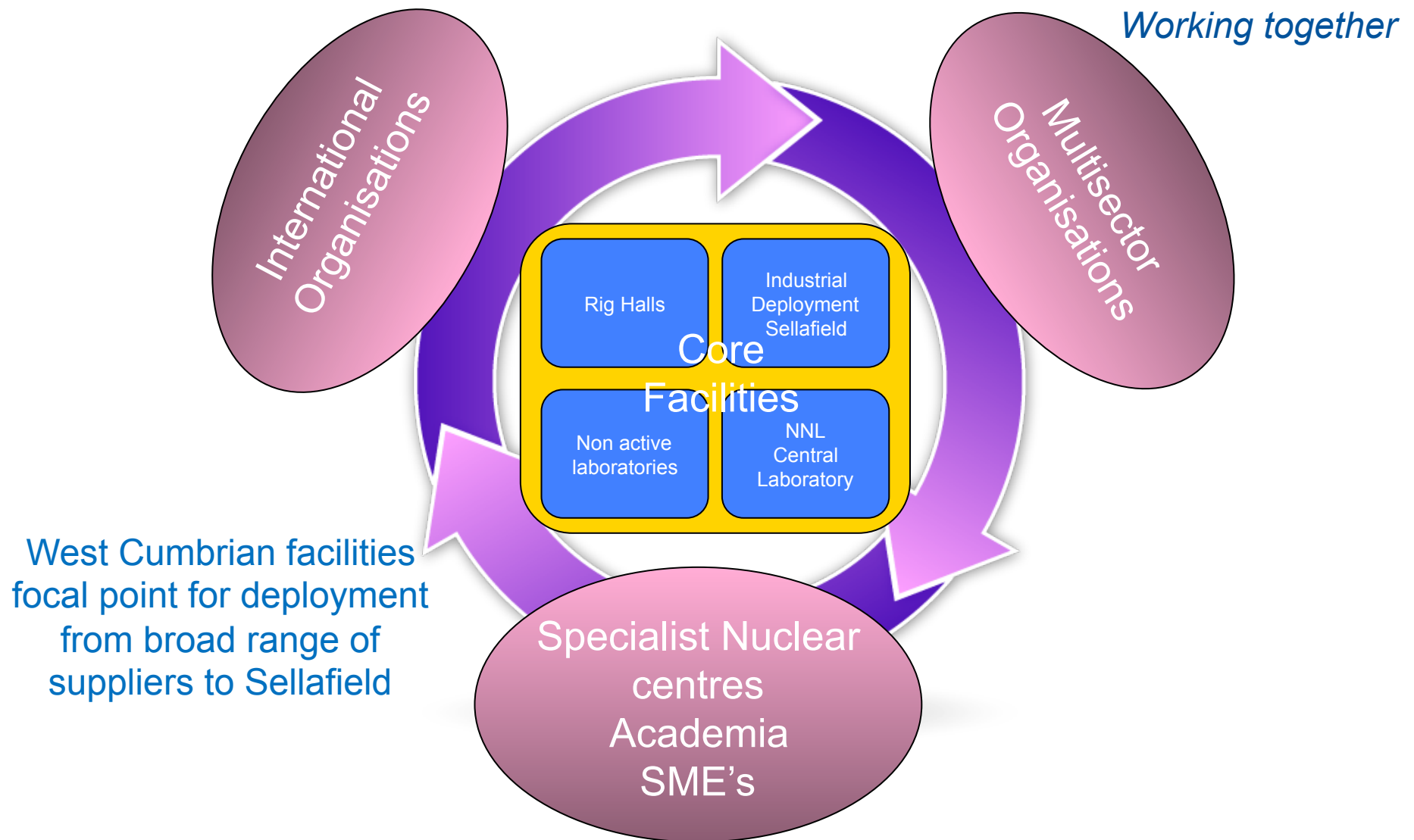
Capability in w Cumbria

- *To develop West Cumbria as the World leader in research, development and demonstration of technology in the field of nuclear waste management and decommissioning supporting decommissioning and clean up of Sellafield*
- Need facilities at or near Sellafield site
- Need skilled people
- Focus on system integration not individual technology options
- Not to replace unique work programmes at specific University or SME organisations.



The University of Manchester
Dalton Nuclear Institute





Active Demonstrator Facilities at Sellafield

- Selected plant with representative alpha / beta-gamma challenges / environments
- Representative of challenges site wide
- Site team being formed
- High level support



Academic hub

- Facilities to test new technology
- Unique facilities to bring together academia and industry
- Host facility for students, postdoc etc – permanent and temporary
- Maximise utilisation of NNL
- New capability – not in competition with specialist groups UK / Worldwide



Summary

- Sellafield presents the major challenge across the UK estate
- Innovation across a wide range of areas is required
- Sellafield is looking to work in partnership with suppliers, universities and National Laboratories to support innovation against the challenges
- New facilities / capabilities required to meet the demands of Sellafield Ltd

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