Knowledge Management in the context of an ageing workforce

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The UK’s approach to skills through the NSSG

- **The NSSG**: Nuclear Industry Skills lead and provides ‘one voice’ to government

- **It comprises**:
  - major employers who have the plans/expenditure to drive the major developments
  - UK government departments and bodies responsible for nuclear development and skills leadership
  - a representative of the trade unions in the nuclear industries

- **Is accountable for** developing a nuclear skills strategic skills plan to address the key risks
NSSG - why are we here?

- **To bring together major employers**, government, regulators and trades unions to address the sector’s skills challenge

- **To ensure we can meet the demand for more than 100,000 skilled jobs** needed in the UK by 2021

- **To build a more diverse workforce** – including 40% female representation by 2030 (up from 22%)

- **To grow our pool of Subject Matter Experts**, to replace those retiring

- **To improve the mobility of skilled people**, both within our sector and between other sectors

- **To attract young people** into the nuclear sector
REQUIRED INFLOW PER ANNUM
(Total required = 7,000 FTEs)

"Business as usual" inflow "
Incentivised Apprentices
Subject Matter Experts
Transferability & Mobility
Training for Reskilling & Upskilling

50%
13%
1%
18%
18%
Nuclear Sector: experienced personnel close to retirement

Age distributions for males and females

- Under 20: Female, Male
- Age 20-24: Female, Male
- Age 25-29: Female, Male
- Age 30-34: Female, Male
- Age 35-39: Female, Male
- Age 40-44: Female, Male
- Age 45-49: Female, Male
- Age 50-54: Female, Male
- Age 55-59: Female, Male
- Age 60-64: Female, Male
- Age 65+/65+: Female, Male
SMEs/Higher Level Skills form a small but critical group within the sector.
Subject Matter Experts (NWA 2017)

Total: 840 Subject Matter Experts in the civil sector
Also need to consider experienced and more fragile Skills (NWA 2017)

<table>
<thead>
<tr>
<th>Fragile Skills</th>
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<tbody>
<tr>
<td>Safety Case</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>Control and Instrumentation</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Generation</td>
<td>Steel Fixers</td>
</tr>
<tr>
<td>Regulation Site Inspection</td>
<td>Concretors</td>
</tr>
<tr>
<td>Project Planning and Control</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>Commissioning</td>
<td>Scaffolding</td>
</tr>
<tr>
<td>Electrical Engineers</td>
<td>Subject Matter Experts</td>
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<tr>
<td>Emergency Planning</td>
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HPC: MEH Skills Criticality Grid

**Criticality of skill set (risk associated with a lack of skills, either in quality or quantity)**

- **Very high**
  - General Office Admin
  - Document Controller
  - IT & Network installation
  - Electrical Engineers
  - Mech. Fitter
  - Firewatchers, assistants, labourers

- **High**
  - Project Quantity Surveyor
  - Comms installation op.
  - Project Quantity Surveyor
  - Electrical Engineers
  - HVAC operatives

- **Medium**
  - Cable Tray installation
  - Firewatchers, assistants, labourers

- **Low**
  - Welder (inc. HIW)
  - Jointer
  - Pipefitter

**Vertical Axis:** The skill is critical when:
- The skill is strategic for the business and not having this skill (in sufficient number and quality) leads to damaging consequences.

**Horizontal Axis:** The skill is difficult to acquire. It takes time to develop, to replace or is difficult to retain:
- Market scarcity (sourcing difficulty, skills acquisition difficulty)
The programme manages, drive progress towards and oversees the delivery of skills programmes.

Work includes optimising nuclear skills related activity of bodies and associations in the skills system.

Oversees provision of skills products and services to the nuclear industry which align with the Plan.

Integrates with UK Nuclear Sector Deal.

Integrates with Regional Skills Plans.
Clear NSSG targets through to 2021 to build the pipeline

<table>
<thead>
<tr>
<th>Subject</th>
<th>Target</th>
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<tbody>
<tr>
<td>Women in Nuclear Sector (by 2030)</td>
<td>40% (NSD)</td>
</tr>
<tr>
<td>Women apprenticeship starts</td>
<td>50% (NSD)</td>
</tr>
<tr>
<td>Apprenticeship Starts</td>
<td>Increase by 50%</td>
</tr>
<tr>
<td>Companies employing apprentices</td>
<td>Increase by 20%</td>
</tr>
<tr>
<td>Harder to reach communities (BAME/Socio-economic background/areas of deprivation)</td>
<td>20% of apprenticeship starts</td>
</tr>
<tr>
<td>People entering nuclear from other sectors</td>
<td>Extra 20%</td>
</tr>
<tr>
<td>Nuclear related PhDs</td>
<td>72 per annum</td>
</tr>
<tr>
<td>Students supported via Nuclear Centres for Doctoral Training</td>
<td>Extra 50%</td>
</tr>
<tr>
<td>Level 8 Apprenticeship Scheme available and being used</td>
<td>10 starts</td>
</tr>
<tr>
<td>Nuclear employers participating in NCfN accredited curriculum</td>
<td>Increase by 100%</td>
</tr>
<tr>
<td>Number of providers offering NCfN accredited curriculum</td>
<td>Increase by 100%</td>
</tr>
</tbody>
</table>
The SME/HLS challenge

The NSSG Strategic Plan stated:

“in order to increase new recruits to the industry (both new job seekers and transferees from other sectors) the industry needs to remove “barriers to entry”.

One principal barrier is the time to competence for the development of Subject Matter Expertise and Higher Level Skills
Some Current Key Attributes of a Subject Matter Expert

- **Education:**
  - In science, usually at least a Masters
  - In engineering, usually a high classification of degree.

- **Experience**
  - Judged the number of decades of experience, not years
  - Other “newer” industries judge subject matter experience by years of significant influence
  - An SME should act as an **Ambassador** for their industry.
  - **Volunteer** with local / regional / national / international trade organisations
  - Eventually be recognised as a **spokesperson** for the industry
  - **A properly maintained network** lifeblood of a SME and requires investment in speaking, writing and sharing knowledge
Accelerating accelerated speed to expertise/HLS challenge

To be considered as a Subject Matter Expert (SME) in a particular subject can take decades.

*We need to look at different solutions* depending upon the entry points.

Options include:

1. **Pulling through a new talent pipeline** – e.g. post-doctoral industrial programmes
2. **Creating opportunities for different staff deployments** and combining with research.
3. **Knowledge Transfer** – for example a mechanism like *Expert Connect* accelerate expertise
4. **Enabling effective industry/academic engagement** and funding arrangements for SME and Higher Level Skills development
NSSG SME Working Group Outputs

- **Championed** need to increase the number of CDTs/supported submissions to EPSRC (research council)
- **Defined** vision & drivers to become a SME - a ‘functional spec’
- **Captured** SME landscape into a ‘social network map’
- **Reviewing** future technologies skills demand via a ‘horizon scanning workshop’ with senior technical leads
- **Workshop held on transferability** - in particular the barriers to entry.
- **Discussed options with Expert Connect** and a nuclear alumni experts proposal
- **Gauged industry** appetite to create a national SME Development Scheme
- **L8 Trailblazer** developing an Apprenticeship Standard for Technical Specialist in Nuclear Engineering Science or Technology.
- **Scoped parameters for collection of LMI** through the Nuclear Workforce Assessment
To reflect ‘People’ strand of the Nuclear Sector Deal, the NSSG plan is organised along the following Themes:

<table>
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<th>Theme</th>
<th>Description</th>
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<tr>
<td>Enhanced Skills Leadership</td>
<td>NSSG as the leadership community, providing the single voice for the sector (civil and defence) on nuclear skills</td>
</tr>
<tr>
<td>Local Apprenticeships</td>
<td>Enabling the supply chain to commence early development of local apprenticeships with a diverse participation. Ensuring that the nuclear sector has the apprenticeship standards that it needs.</td>
</tr>
<tr>
<td>Staying at the Cutting Edge</td>
<td><strong>To address the required growth in subject matter expertise by enhancing the feed volume into the &quot;SME talent pipeline&quot;.</strong></td>
</tr>
<tr>
<td>Sector Transferability</td>
<td>Create easy access to the nuclear sector from other sectors including oil &amp; gas, armed forces, manufacturing and between the civil and defence sectors</td>
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<td>Exciting the next generation about nuclear</td>
<td>Improving the visibility in schools of career choices that nuclear can bring in STEM areas through early engagement with young people. Create state-of-the-art bespoke simulation facilities to provide a nuclear offering to STEM through T level education and technical assessment</td>
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Supported by Cogent skills
Nuclear Sector Deal: Staying at the cutting edge

- The creation of 24 additional Nuclear Related PhDs pa for 3 years
- Optimisation of existing funding for the expansion of fragile skills areas.
- Subject Matter Expert bespoke development programmes
- A development scheme for mid-career professionals to join the sector and gain accelerated Subject Matter Expertise.
Summary – our ambition

- Appropriate supply of qualified people at all levels
- Regional economic benefit of nuclear renaissance
- Increased workforce diversity
- Increased diversity of thought
- Development of new and future focussed capabilities
- National and regional skills strategies are aligned
- Training provision is meeting sector needs
- The UK Nuclear Workforce is competitive