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FinNuclear Association

Training solutions implemented in Finland for SMEs participating in the nuclear construction

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FinNuclear Association briefly

- Established in 2011, spin-off of a national development programme
- Purposes of the Association is to
  - support the development of the nuclear supply chain in Finland ; methods are networking, joint marketing, training, information services, r&d projects
  - promote internationally the Finnish nuclear know-how and competencies
- More than 100 full and associated members

http://directory.finnuclear.fi

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Background of the training needs in Finland

Existing activities

- 4 nuclear units in operation since 1980ies
- Olkiluoto 3 under construction

New activities

- New nuclear units (2) in sight
  - lifecycle 60+ years - o&m
  - Parliament statement in 2010 for new nuclear builds: **using domestic competencies is expected**
- Construction of spent fuel repository ONKALO
- Attractive export market opportunities for Finnish-special know-how:
  - World record efficient operative units and modernizations
  - Solution for spent fuel storage

→ Additional local resources will be necessary

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Olkiluoto 1-4 (TVO) and ONKALO

Loviisa 1 and 2 (Fortum)

Hanhikivi 1(Fennovoima)

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OL3 experience

- Even though Finland has 4 existing NPPs, local share of supplies in OL3 remains much lower than expected
  - Turn-key EPC contract by foreign NPP vendors → local suppliers compete with global ones
  - Private utility – no clear drive to maximize the local supplies
  - Contractual liabilities too hard particularly for small and medium – sized enterprises
  - Local suppliers readiness to pass audits was not in place ; long gap since the last new nuclear building, no nuclear experience or skills obsolete

→ Needs for training and competitiveness building

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Essential training topics

- Safety culture
- Requirements arriving from the safety culture
  - **Management system**
    - F.ex traceability, documents, hold points, approvals
  - **Technical requirements**
    - F.ex. codes, standards, national/regional rules, working methods, certifications, working instructions, management of requirements, responsibilities
- Adequate resourcing
- International contract management

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Training solutions, learning environment

Classroom

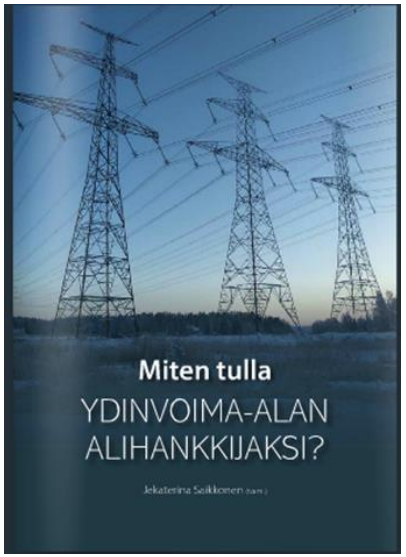
Self-studying

Learning by doing

Approved supplier process

Self-studying

- Mainly for beginners
- E-learning
- Guidebooks



Classroom

- Beginners and advanced
- Lectures, handouts, downloads
- In some cases tests
- 1-2 days at one go; specifically targeted for subcontractors

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Learning by doing, interactive training

- **Simulating** the supply and licensing process between purchase order and commissioning
- From the subcontractor point of view
- Group excercise
- Demonstrative role play
  - Lisencée *(trainer)*
  - Radiation safety authority *(trainer)*
  - Inspection organization *(trainer)*
  - Consultant *(trainer)*
  - Subcontracing company formed of group of trainées with roles of CEO, quality manager, production manager etc
- **Real cases**, f.ex: supply process of a safety class 3 mechanical component
- Roles and responsibilities of various stakeholders related to
  - manufacturer approval
  - construction plan approval
  - manufacturing
  - installation
  - commissioning
- Associated documents

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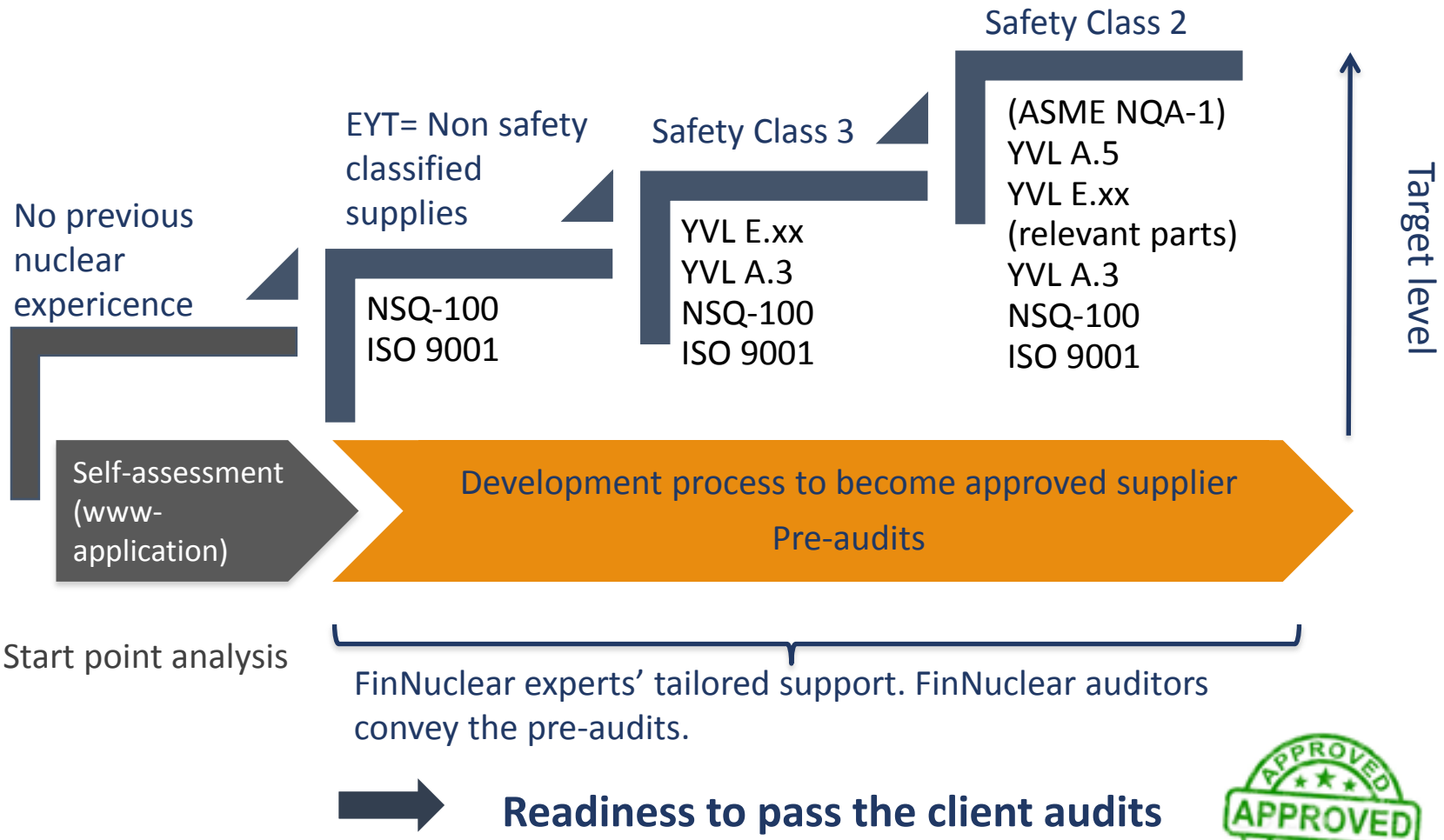
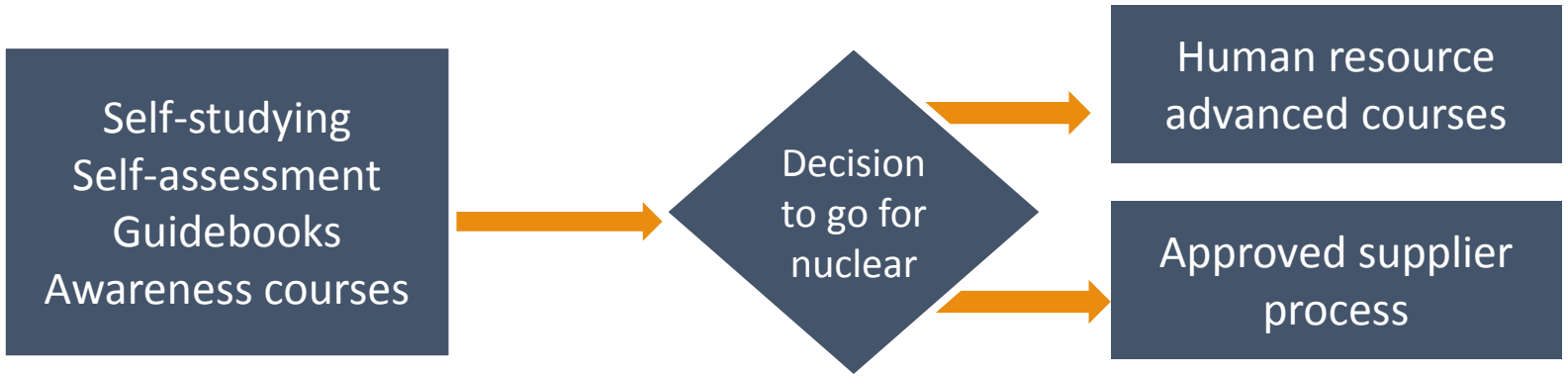
Approved supplier process



Conclusions

- Implementing the nuclear safety culture into subcontracting companies takes time and resources and should be started early, long process
- Lisencée/Vendor/Governmental (public funding) support is necessary for good results
- In the progressive competence building various methods have their place



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Thank you for the attention!

Additional information:

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