EcoSMR-webinar, SMR Licensing Aspects

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The Core Team of Nuclear Experts

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20+ years
50+ experts
600+ projects
in the Nuclear Industry

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1998

Mikkeli (HQ), Helsinki, Rauma, Turku, Tampere, Eurajoki

Miika Puukko, CEO

Supporting Licensees and Suppliers.

Participating to EcoSMR and EcoFusion.

Today

Licensing, Qualification & Authority Requirements

Management of Nuclear Specific Procedures

Management of Project Specific Licensing

Technical Support for Licensing & Qualification

Safety Analyses & Independent Reviews

Nuclear Specific Trainings

Plant Safety & Optimization

Process Modelling

Plant Life Management

RadWaste Management

Radiation Safety

Equipment & System Deliveries

Design & Engineering

Process Equipment & Systems

UF_6 Solutions

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Present state of legislation and development aspects in Finland 1/2

SMR = Small Modular Reactor or other 'small' nuclear reactor

- Nuclear Energy Act and Radiation Act
- Degrees by Ministry or Government
- Regulations by Finnish Nuclear Safety Authority (STUK) ~ hundreds of requirements
- YVL-Guides by STUK ~ 6 000 of requirements
  - New structure of guides under development.
  - Target to separate safety requirements and ways to fulfill them.
  - Kelpo -development work for equipment level qualification.

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Present state of legislation and development aspects in Finland 2/2

SMRs are not separately recognized in regulations.

Licensing can be done by existing regulations, but development is needed.

Big NPPs: (Tens of) thousands of technical requirements to be fulfill.

SMRs: Safety performance demonstration. Very low emissions required even in the worst accident.

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Development investigations of Finnish regulatory

Finnish Energy Technology Association (ET ry) ordered 2021 from Platom investigation studies:

1) Development proposals to Finnish regulation

2) New Licensing Model for SMRs

- Safety has to be ensured without tailoring the design.
- Find an ideal way to get license to built SMRs to Finland.

Over 20 experienced expert and organization was interviewed, such as:

- Ministries (STM, TEM), Authorities (STUK),
- LUT University and Research Institution (VTT)
- Licensees (TVO, Fortum, Posiva) and Fennovoima
- Energy companies

Webrobol questionaries were made, workshops kept etc.

Reports are now delivered to ET (in Finnish) but not published.

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Development assesment, main questions to new licensing model

a) How nuclear and radiation safety of SMR ensured?
b) Is modernization proposal to regulation enough or too big and agile for licensing of SMRs?
c) (How the new model could be challenged?)

Principles:

The new SMR must be profitable for its owner.

Before construction license, costs must be low.

Tailoring is not the answer.

How plant / system / equipment level shall be handled?
Risk-based approach

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Challenges and topics to development 1/2

- Who are the licence applicants and other actors?
- What is needed in the first licensing phase (decision-in-principle phase)? Political and strategical decision or also plant type design, local permission?
- What is needed in the second licensing phase (Construction license phase)? Safety requirements, design basis and principles, Plant Design demonstrated? Local permission and environmental impact assessment, approvals of actors?
- What is needed before operating phase? Plant and system level safety demonstration but how deeply the equipment level?

Focus to the physical processes, not to the management of the processes.

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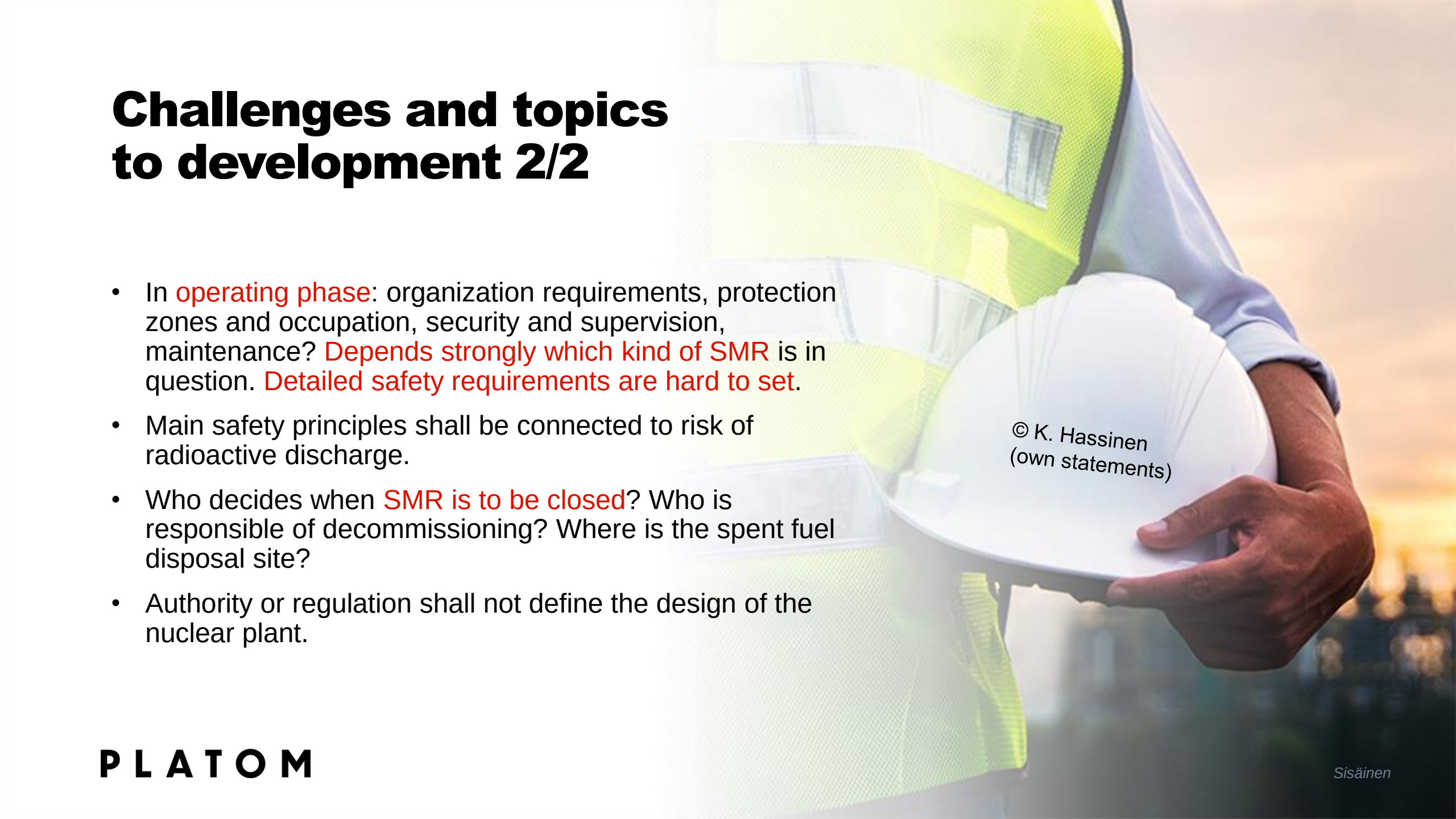
Challenges and topics to development 2/2

- In operating phase: organization requirements, protection zones and occupation, security and supervision, maintenance? Depends strongly which kind of SMR is in question. Detailed safety requirements are hard to set.
- Main safety principles shall be connected to risk of radioactive discharge.
- Who decides when SMR is to be closed? Who is responsible of decommissioning? Where is the spent fuel disposal site?
- Authority or regulation shall not define the design of the nuclear plant.



Main Aspects to SMR licensing

- Overlaps should be eliminated,
- the timing of the delivery and content of documentation and demonstrations should be reviewed and
- the risk of licensing should be reduced and
- the requirements must be proportionate to the level of risks and
- qualification of equipment and component has to be harmonised.
- Predictability and profitability of licensing has to be improved.
- The assessment of social acceptability and the approval of the locality must be maintained.

safety performance →
small releases →
low emissons →
SMR can be **near people.**

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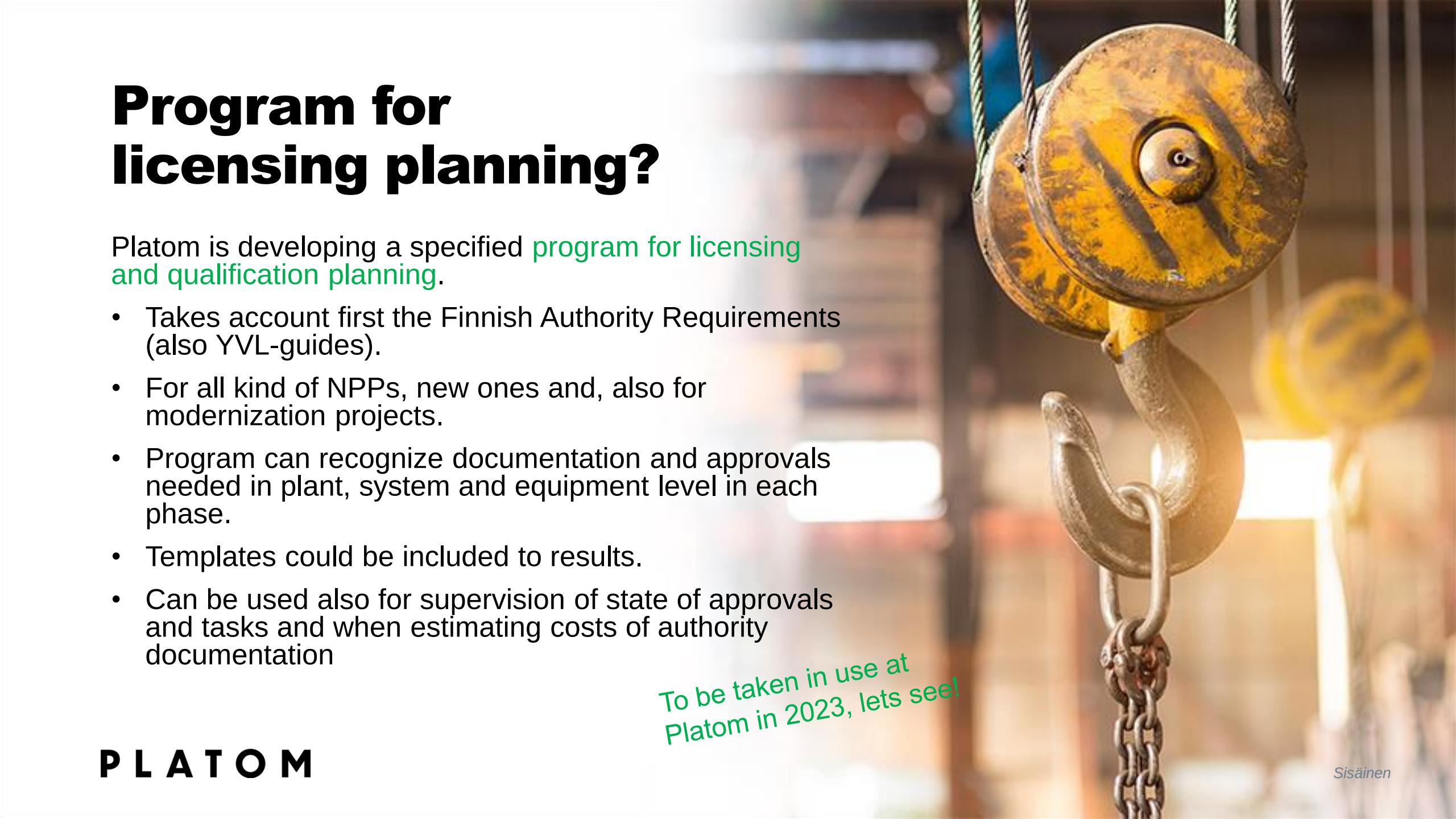
Program for licensing planning?

Platom is developing a specified program for licensing and qualification planning.

- Takes account first the Finnish Authority Requirements (also YVL-guides).
- For all kind of NPPs, new ones and, also for modernization projects.
- Program can recognize documentation and approvals needed in plant, system and equipment level in each phase.
- Templates could be included to results.
- Can be used also for supervision of state of approvals and tasks and when estimating costs of authority documentation

To be taken in use at Platom in 2023, lets see!



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Thanks!

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