Our journey towards a digital decommissioning and waste management
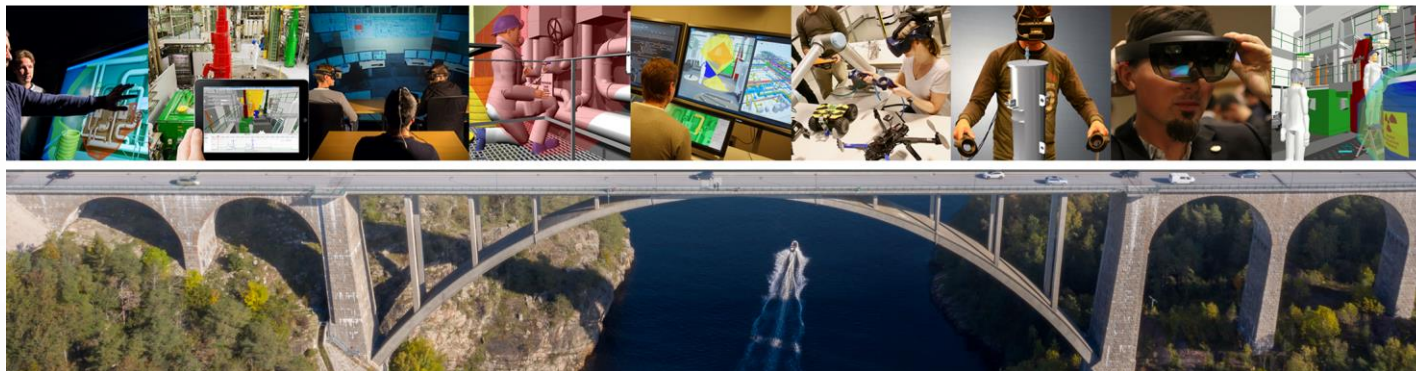

DigiDecom 2021 – DIGITAL

Online international workshop focusing on digital transformation, robotics and other game changing trends in nuclear decommissioning

Ole Jakob Ottestad - ICT manager
+4799576976, ole.jakob.ottestad@nnd.no

DigiDecom, Halden 22.03.2021

NND, Storgata 2, 1767 Halden, Norge – post@nnd.no
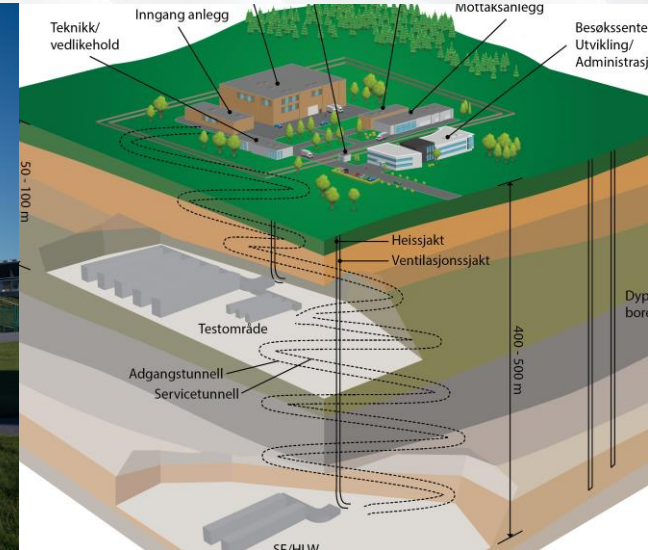
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Handle the nuclear heritage

Nuclear facilities in Halden

Nuclear facilities in Kjeller

Existing and future deposit, radioactive material

2020

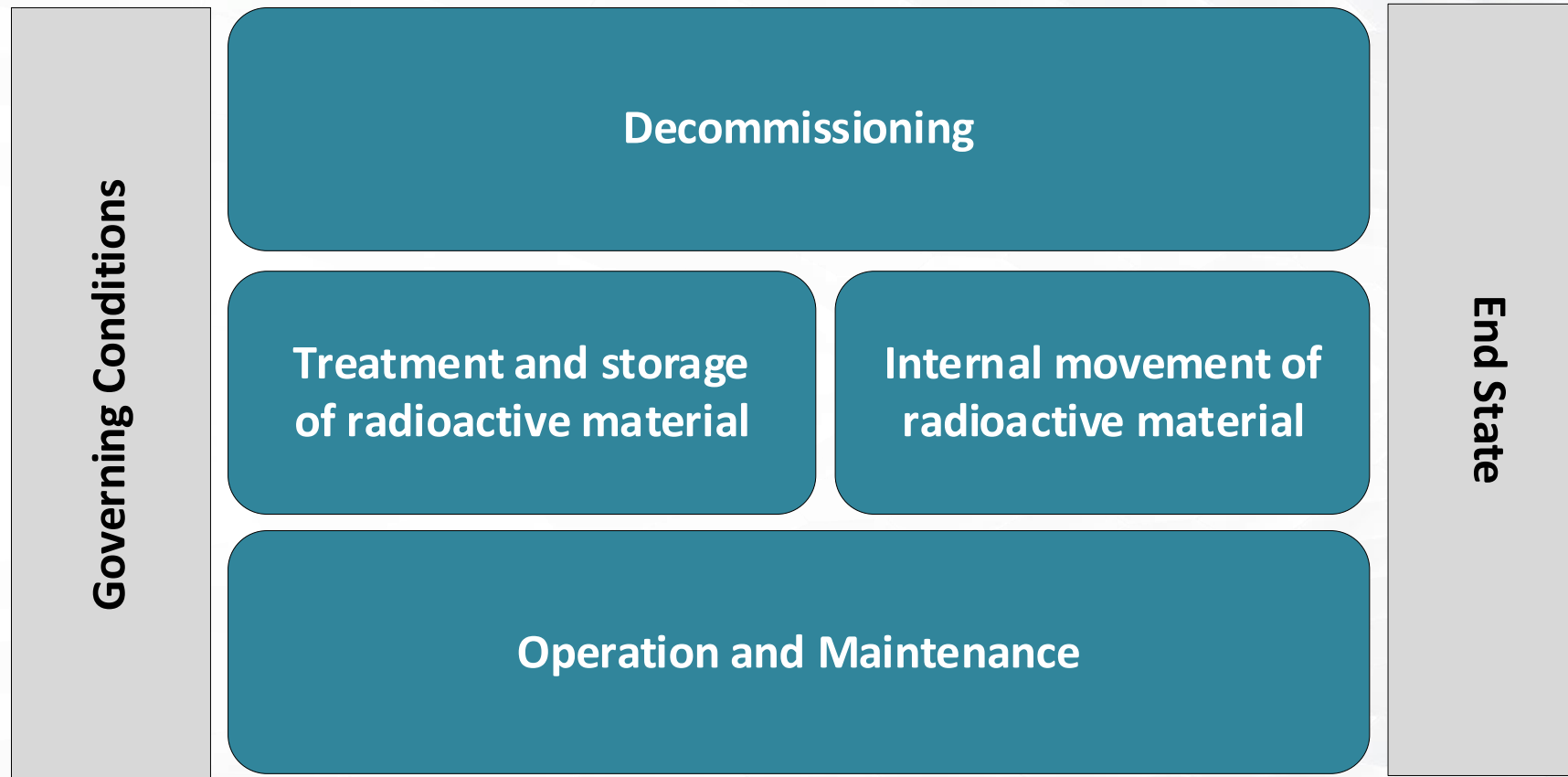+ ~100 yrs

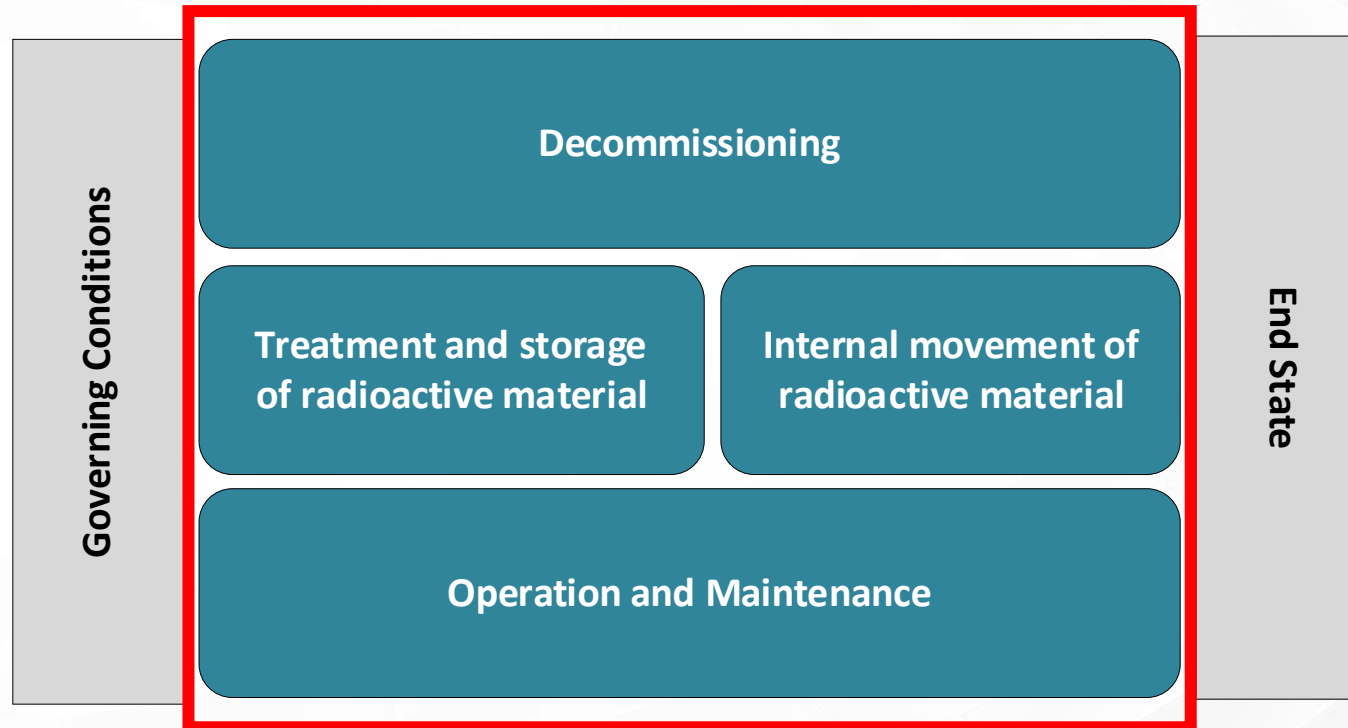Decom   Operation   Monitoring

~2040

+ 300 yrs

Main processes – targets for digitalization

NND processes are still not finalized and may be subject to change

Main processes – targets for digitalization

Governing Conditions

Decommissioning

Treatment and storage of radioactive material

Internal movement of radioactive material

Operation and Maintenance

End State
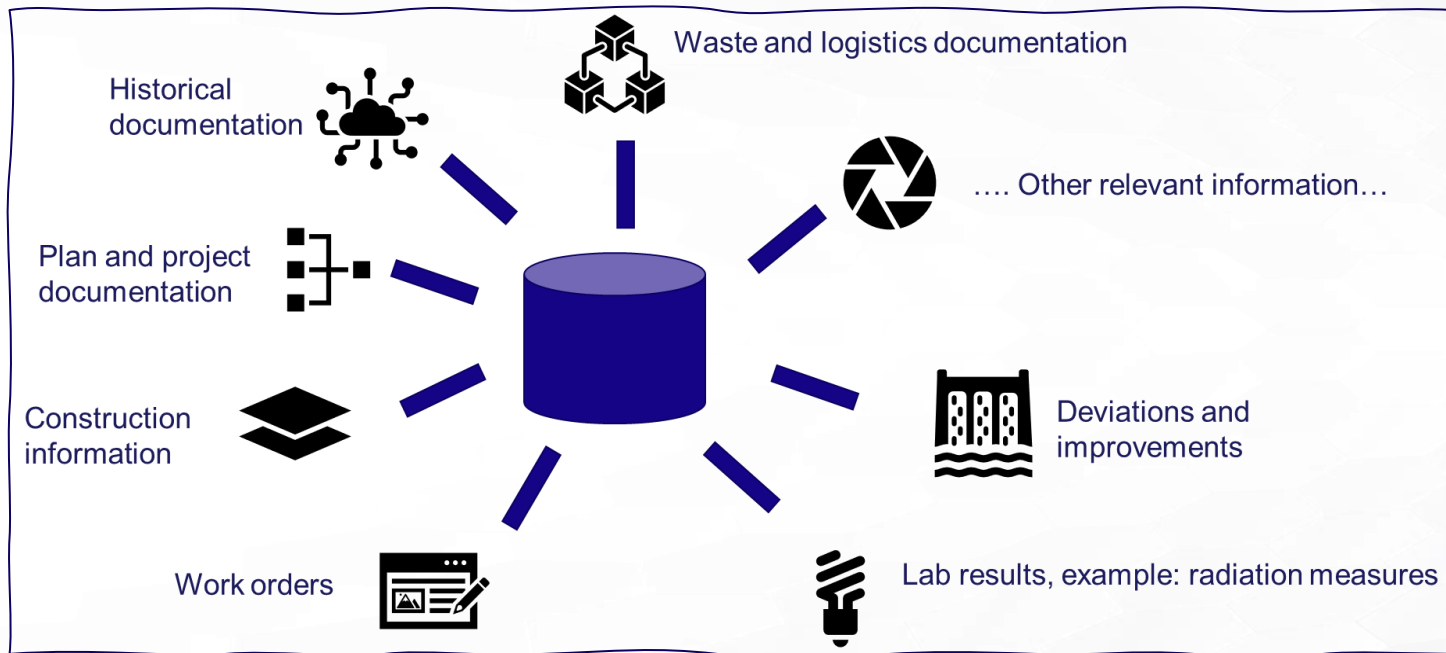
Goals:
- Efficient processes, automate, connect
- Reuse solutions and data where possible
- «One stop» data gathering
- Data as basis for decisions
- Enhance and augment data between subject matters
- Increase safety and security

NND processes are still not finalized and may be subject to change

It's all about logistics and control
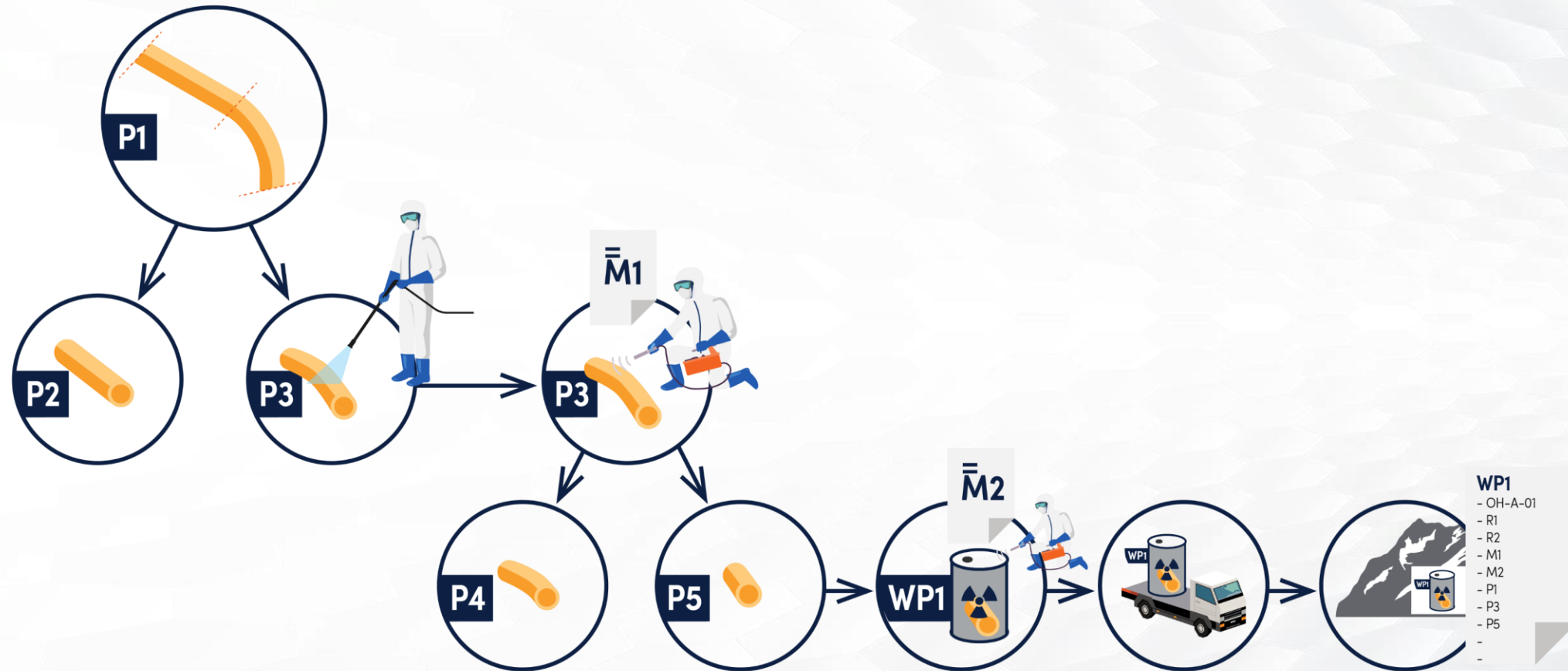
NND common information model

Historical documentation

Waste and logistics documentation

.... Other relevant information...

Plan and project documentation

Construction information

Deviations and improvements

Work orders

Lab results, example: radiation measures

- Needed for digitalisation
- Combine existing and new data
- Common key(s) paramount
- Support logistics tracking across processes

Information objects meant as illustrations only and does not cover the full extent of the needed information model

Approach

- Market dialogue to establish current best practice
- Learn from ongoing research, e.g. at IFE
- Procure IT solutions from the market to support our main processes[1]
- Use own employees for all data gathering
- Push the market with select subprocesses/solutions – e.g robotics for scanning, connect risk to BIM models etc.

[1] procurement to be announced by April 1st

Expectations

- Existing solutions seem to cover the basics for
  - Decommisioning support
  - Waste management support
- Considerations must be taken on balance cost/reward on remodel of facilities
- Still work to do in the market on
  - realizing the full potential of all data sources
  - standardize keys, formats etc to avoid vendor lock-in
- Connecting all the dots – costing, planning, logistics, characterization, labs …. will mature over time
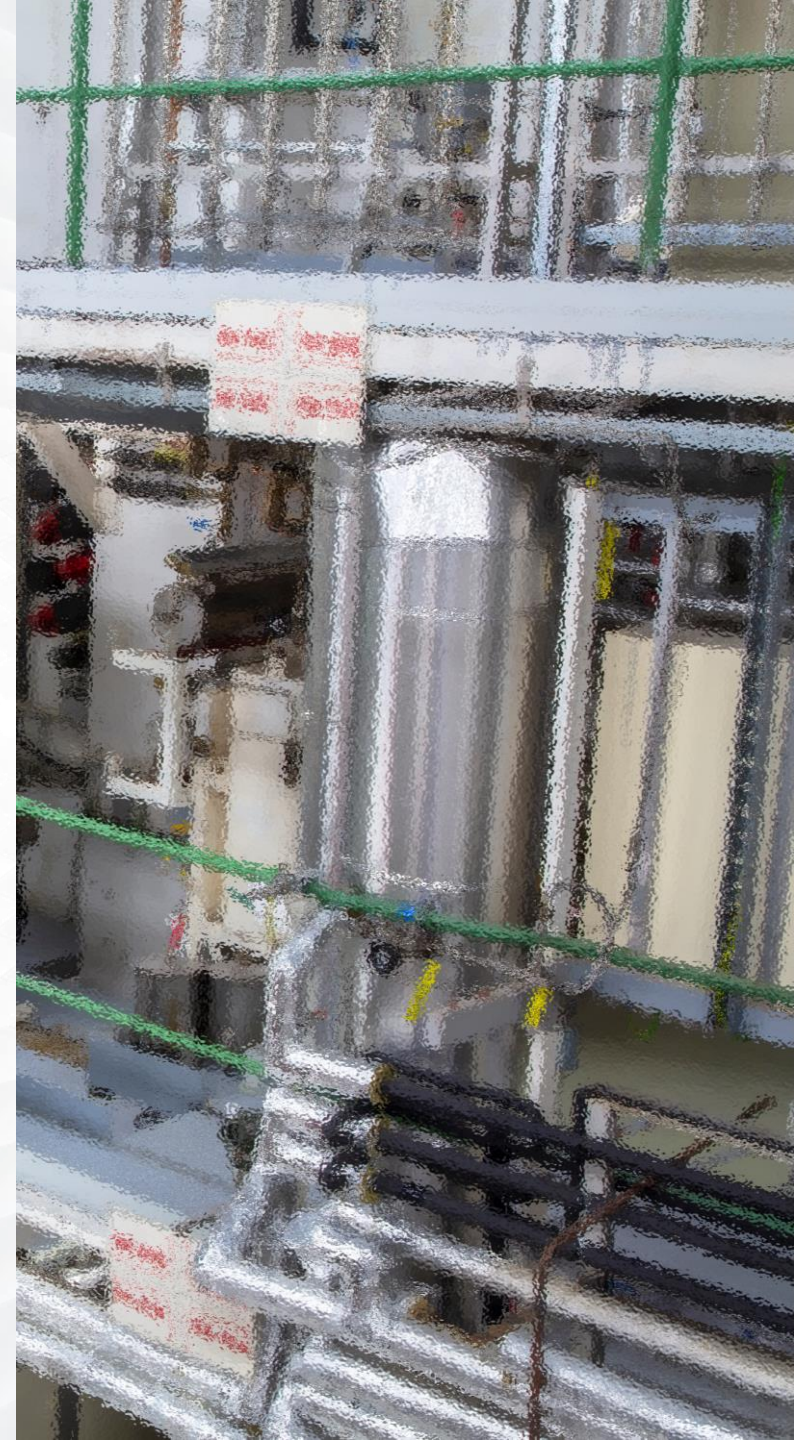
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Short term – Piloting !

While waiting for the main solution, NND will run selected pilots

- To verify the concepts (scanning, «BIM»ifying, connecting to existing data, connect to charactrization data)

- Train and adapt procedures for data gathering (scanning, charactrization)

- To test new concepts, eg connecting risks to BIM model – connected to security studies

=> Prepare workforce and procedures

Thank you

Sample of pipes

Swap samples of steel/metal

Core samples of concrete

Soil samples

$\bar{\bar{R}}1$

P1

P2

P3

$\bar{\bar{M}}1$

P3

P4

P5

$\bar{\bar{M}}2$

WP1

WP1

WP1
- OH-A-01
- R1
- R2
- M1
- M2
- P1
- P3
- P5
- -

Soil samples

UT0

UT80

UT2C

0
1
2
3
4
5
6
7

D
C
B
A

OH

0
1
2
3
4

P1

Sample of pipes – P2

C2

Core samles concrete – C1

C3

P3

VA107

OH-A-01

PA 103

H – UT24 – OH – 1 – Rkrt –

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