WP 17 MODATS

Exchange Meeting
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Context

- **MO**nitoring equipment and **DA**ta **T**reatment for **S**afe repository operation and staged closure
- Monitoring plays an essential role in development and operation of long-term safety of DGR, from siting to closure
  - Licensing requirements
  - Design optimization
  - Societal interest
  - etc.
- This project continues the work performed in previous monitoring projects:
  - EU stage: Thematic network, MoDeRn, Modern2020
  - Others (NEA, IAEA)

Project overview

- Three year duration: June 2021 – May 2024
- Coordinated by ANDRA
- A total of 21 organisations
  - 5 WMO: ANDRA, NAGRA, POSIVA, RWM, SKB
  - 12 RE: incl. Euridice through O/N as linked third party
  - 3 TSO (IRSN, SSTC NRS, VTT)
  - 1 civil stakeholder (Nuclear Transparancy Watch)
- About 11 person months for EURIDICE

Technical tasks

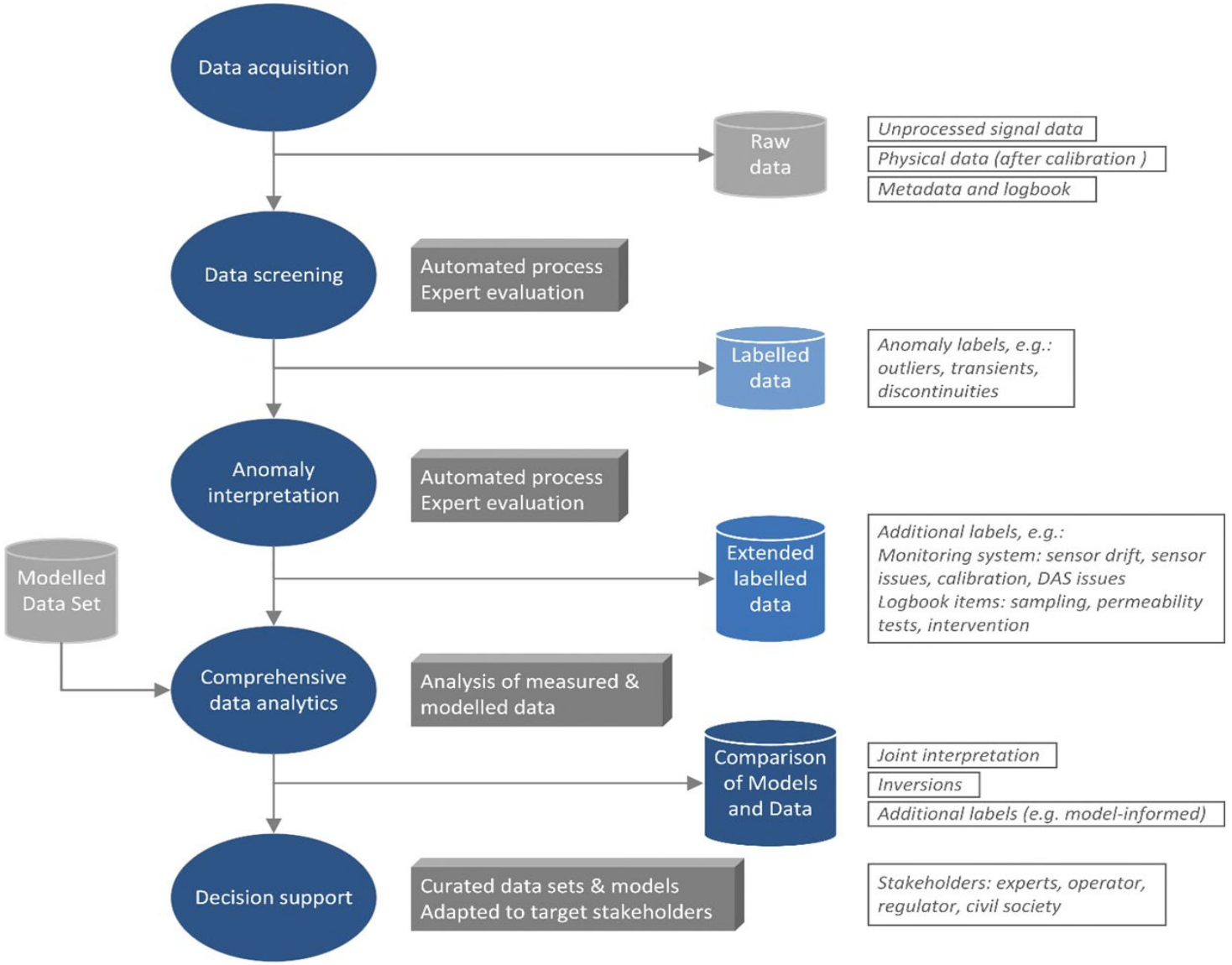
- Task 2: Data Treatment for Increased Confidence in Repository Monitoring
  - EURIDICE is only involved in Task 2
- Task 3: Novel and Optimised Monitoring Technology for Repository Monitoring
  - Continuation of monitoring technology developments focused on DGR
  - Non-invasive (wireless monitoring) or low-invasive techniques, such as Geophysical techniques, Fiber Optic technology (distributed sensing)

Methodology

- URL survey
  - Review of monitoring and data management practices at different URLs/organizations
  - Including those from the most advanced programs (POSIVA, ANDRA, NAGRA)
  - Including practices from PRACLAY, ATLAS tests in HADES URL
- Guidance for drafting a DGR monitoring QAPP (Quality Assurance Project Plan)
  - Formalization of “good practices”
  - With input from URL survey
- Using materials (operation & selected monitoring data sets) from Reference Experiments:
  - Our contribution: PRACLAY Heater test (HADES)
  - NAGRA: FE (Mont Terri)
  - ANDRA: HLW disposal cell (CMHM Bure)
  - POSIVA: Poplu Plug demo (Onkalo)
  - SKB: Prototype Repository (Aspo)

Main achievements (1)

- Data management practices at other partners
  - No formal standard approach
  - However common ideas on data processing
    - From sensor signal to final data for different end users: modellers, civil stakeholders, regulator, …
    - Particular focus on data cleaning (QA labelling of monitoring data)
- Added value of digital twins, hybrid twins, PBM and DDM when analysing/interpreting monitoring data



Proposed workflow for data handling from acquisition to decision support.

Main achievements (2)

- Triggered developments at PPS
  - Data management strategy for all experimental data generated and used in the PPS projects
    - First applications to monitoring cases for the cAt waste (caissons and Test Cover)
  - Explore role of Machine Learning in data labelling process (through Master Thesis)
- Stay up-to-date with monitoring technology developments for DGRs
  - e.g. application of distributed monitoring for cAt caisson tests

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