Interoperability and Reuse are about Context

Gathering
- Experiments
  - Human data
  - Published data

Analysis

Visualisation

Sharing
- Secure Transfer
- Open Access

Working Storage

Reintegration

Archive storage

Destruction
Data life cycle and metadata

- **Private Domain**: Simple Metadata
- **Group Domain**: Transfer
- **Persistent Domain**: Transfer, Publication
- **Access Domain**: Enriched Metadata
Capturing context along the way

- Adding context retrospectively is hard and next to impossible.
- We can add contextual information as we go along.
- Context sits in domain specific applications, domain specific metadata, and can be tied together by knowledge graphs anchored by persistent identifiers.
Data are Gathered in a Specific Context

• When we collect data in the field, a lot of implicit contextual information could be captured automatically:
  • Time and location
  • Project and mission
  • Operator
  • Workflow-specific data
Breaking the Digitisation Bottleneck

Partial Automation of Data Documentation
Example: FAIMS + IGSN

- We used FAIMS mobile data capture to record soil samples.
- Samples were identified by IGSN encoded in a QR code.
- On scanning the QR code, the mobile form was auto-populated and the sample tied to the (meta)data record.
Automation in the Lab

- Automation of documentation and data management.
- Data is automatically stored in data infrastructure.
- Documentation is automated through configuration files.

Razum, 2010
Automation in Sensor Networks (O2A)
Let the Machines do the Heavy Lifting

- Interoperability and Reuse depend on users understanding the context around a dataset.
- Documenting the context at the time of publication is too late.
- Retrospective digitisation of context does not scale when dependent on human labour.
- Let the machines do the heavy lifting:
  - Capture context as you go through metadata automation
  - QA/QC can be automated too (AI or ML tools)
Thank you

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