



Data in Context

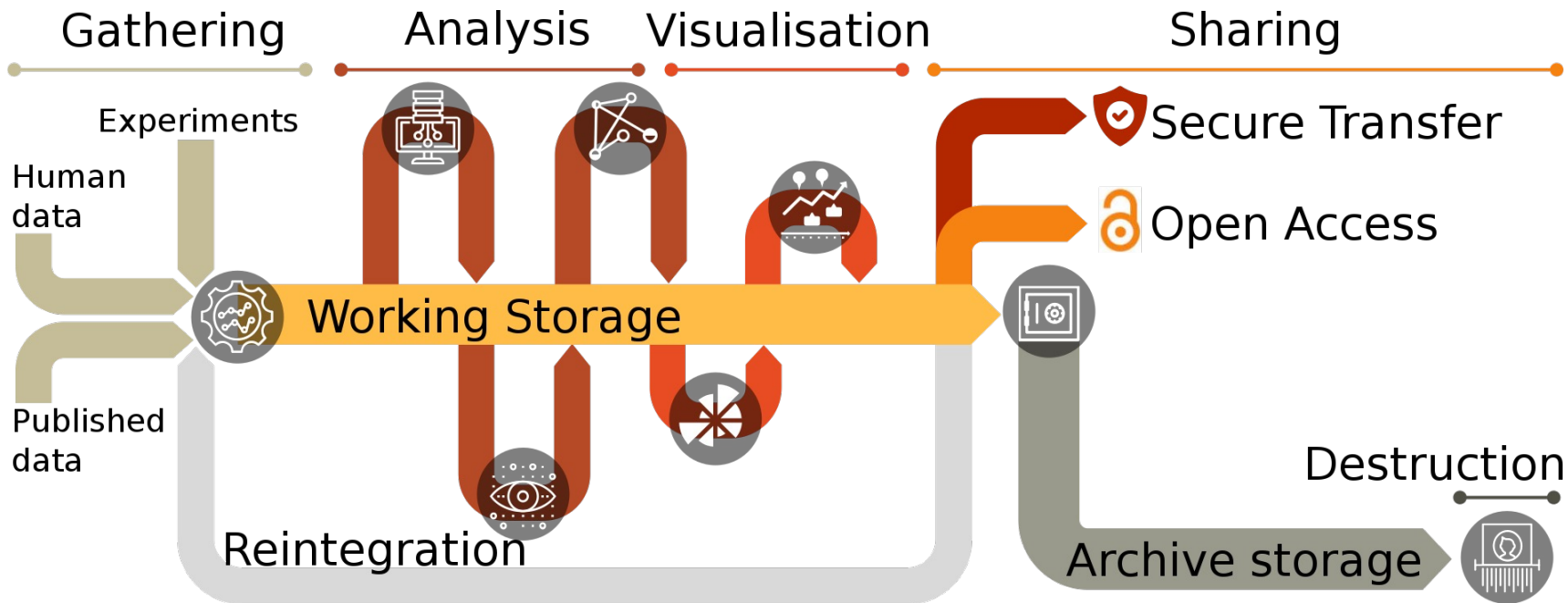
CHORUS Forum

Jens Klump | 17 June 2022

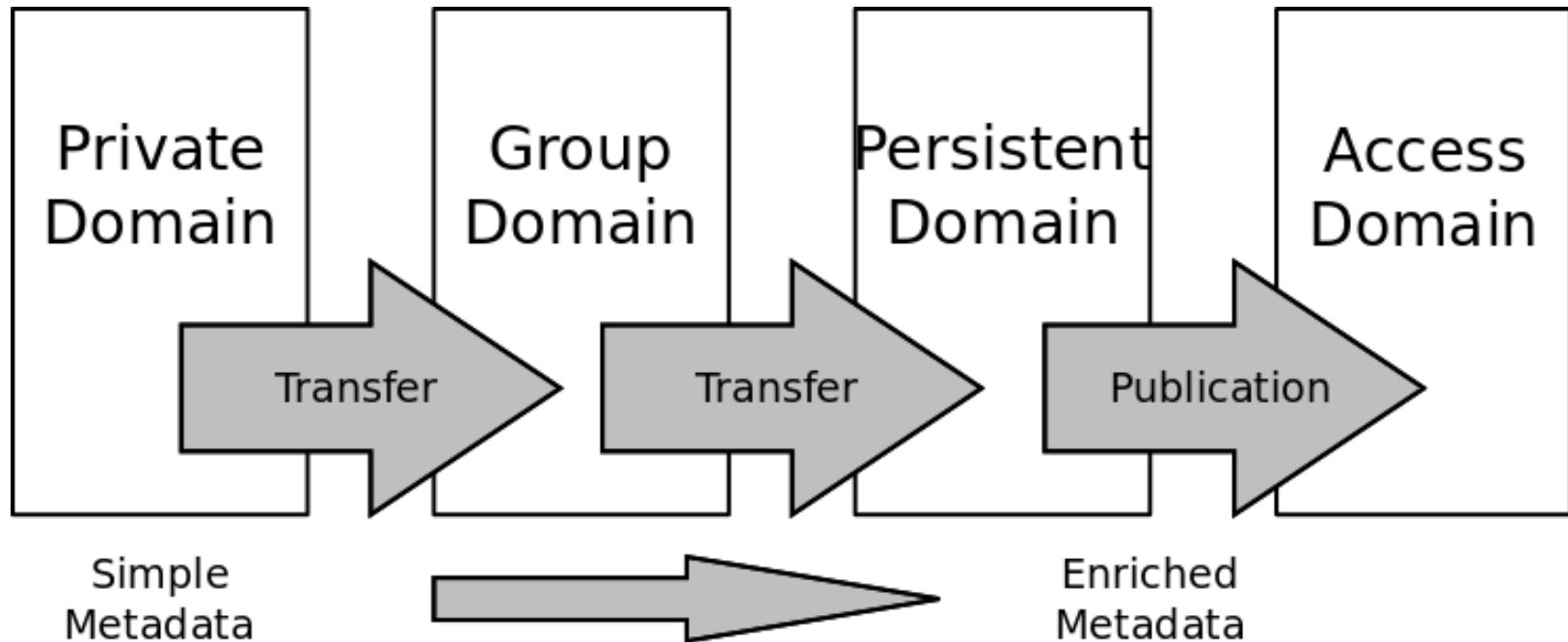
Australia's National Science Agency



Interoperability and Reuse are about Context

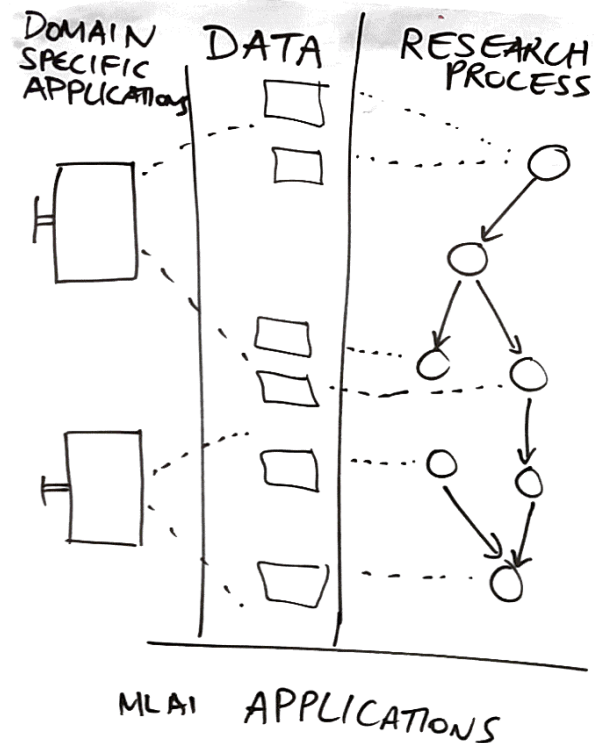


Data life cycle and metadata



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.



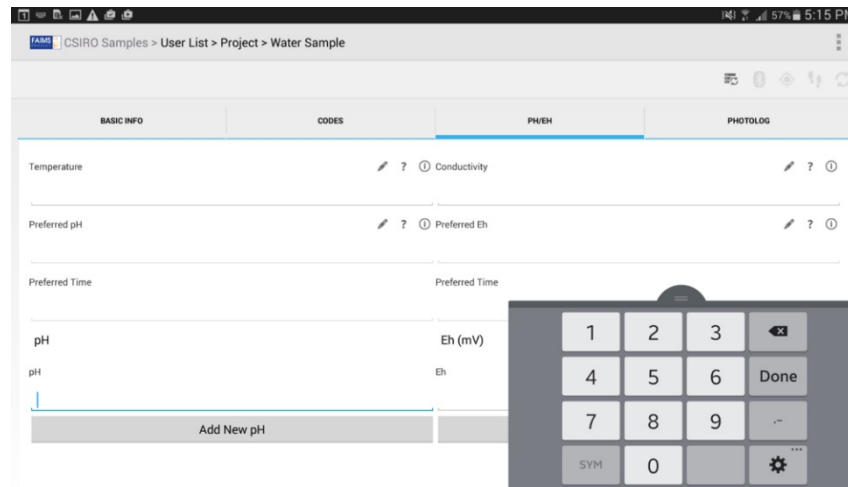
Data are Gathered in a Specific Context

- 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

TM017 Bore - Keelambara Stn					TM019 - Moscon bore - Keelambara Stn				
248573	Metal bore - MP PP				253756	w.T. 6m			
6610440	submersible - flow				6602110	S.D. +6			
el 95.6					el 80.7	open metal bore - bailed			
Temp	Time	pH	Eh	EC	Temp	Time	pH	Eh	EC
24.6	14.31	7.76	-104	3.13ms	22.6	15.44	9.88	28	2112
	14.33	7.79	-109	3.94		15.46	9.88	27	2118
	14.35	7.81	-108	3.75	no veg - in flood plain				
	14.37	7.81	-95	3.74	very murky water - hard to filter				
TM018 Midgah bore - Keelambara Stn					TM020 - Dead fish bore - Keelambara Stn				
252952	w.T. = 0 lots of rubbish				250379	metal bore w/o PP			
6608386	S.D. = +5 spear tip				6599527	submersible pump - flow			
el 71.7m	metal bore - bailed open				el 71.5				
Temp	Time	pH	Eh	EC	Temp	Time	pH	Eh	EC
25.1	15.08	7.96	-31	2066ms	24.9	16.31	7.83	-25	4.19ms
	15.10	7.93	-53	2072		16.33	7.85	-31	4.21
	15.13	7.94	-56	2071		16.35	7.87	-31	4.21
no veg									



CSIRO Samples > User List > Project > Water Sample

BASIC INFO CODES PH/EH PHOTOLOG

Temperature ? ? ? Conductivity

Preferred pH ? ? ? Preferred Eh

Preferred Time Preferred Time

pH Eh (mV)

pH Eh

Add New pH

1 2 3 ⌫

4 5 6 Done

7 8 9 ⌵

SYM 0 ⚙

Partial Automation of Data Documentation

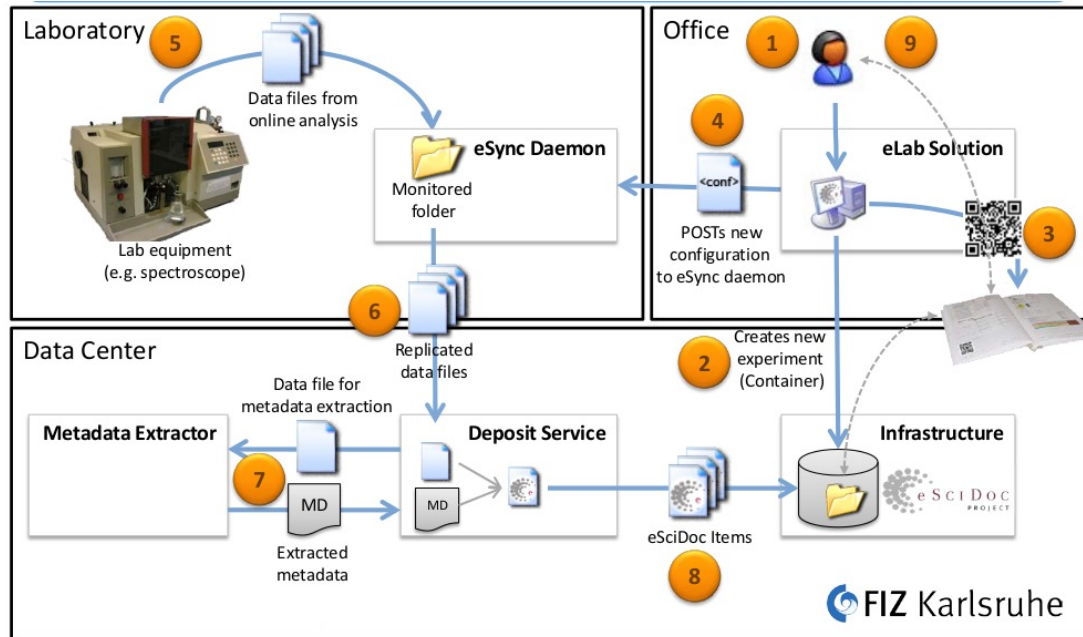


Example: FAIMS + IGSN



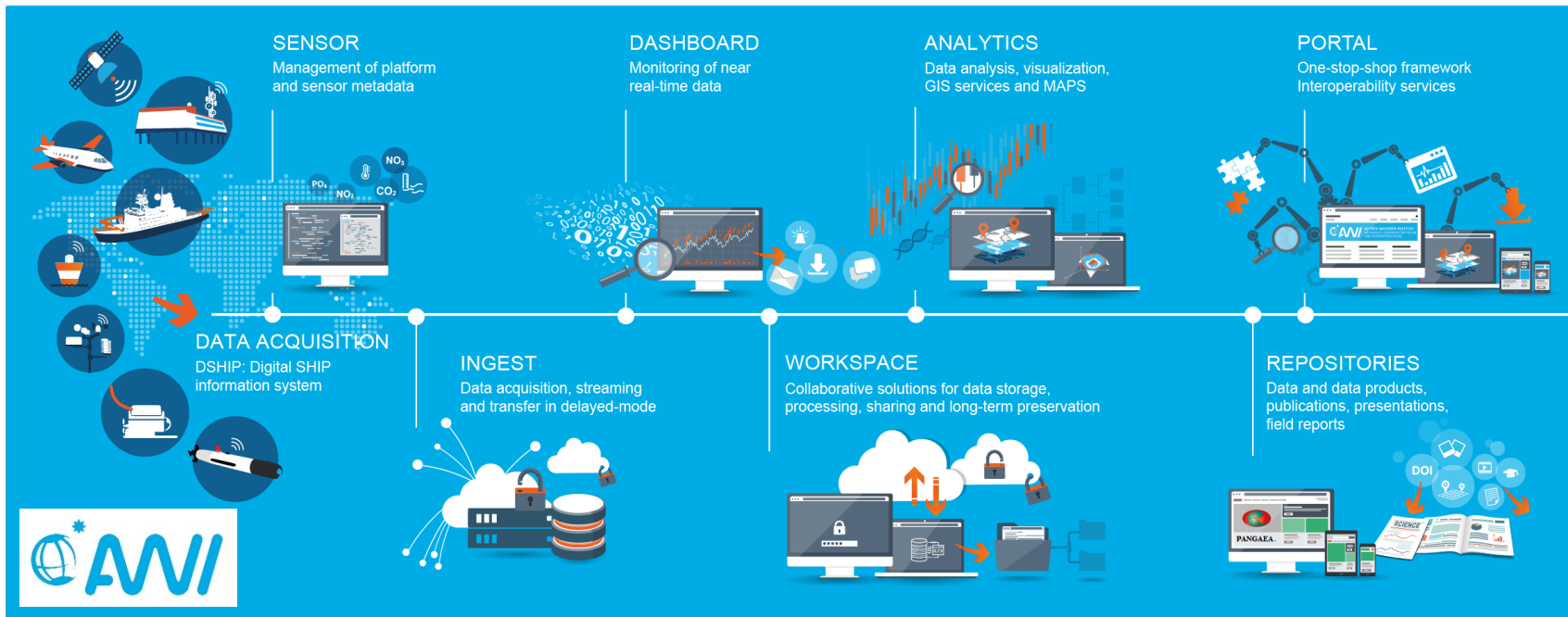
- We used FAIMS mobile data capture to record soil samples.
- Samples were identified by IGSN encoded in a QR code.
- On scanning the QR code, the mobile form was auto-populated and the sample tied to the (meta)data record.

Automation in the Lab



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

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

Mineral Resources

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