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Software by escis

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Beyond CAS: A Shared Global Reference System

FAIR (Findable, Accessible, Interoperable, and Reusable) Data Management in the Environmental Industry

Input

Sample Planning

Field Notes

Lab Reports

Historical Data

EDMS

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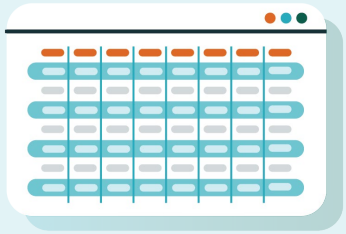
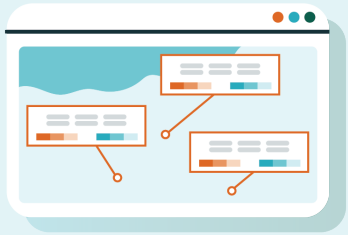
Regulatory Guidelines

Data QA, Review and Acceptance

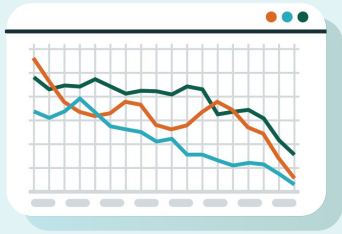
Output



Exceedance Tables



Mapping



Trend Analysis And Graphs

State of the EDD:

"When using an EDD as the medium for exchanging data, the recipient will need to be familiar with the rules established for the EDD by the party that published the source format, and how those rules relate to the data structure and content of the producer and the recipient. Ideally the EDD's rules were crafted with FAIR principles in mind"

"Consequently, the format of an EDD produced by either party may present challenges for communicating information. Navigating differences in EDD formats can impact the effort to exchange data between parties that have made different choices regarding how they expect their data to be preserved and communicated."

Source: https://edm-1.itrcweb.org/electronic-data-deliverables-and-data-exchange/

FAIR Principals at a Glance:

Findable: **Unique identifiers and searchable metadata**

Accessible: Retrievable via standardized protocols

Interoperable: Uses shared vocabularies and ontologies

Reuseable: Minimal effort needed to repurpose data

EDDs in the Wild

Consequences by Use Case

Labs	Consultants	Agencies
• Must maintain unique analyte dictionaries and format rules, creating semantic silos • Must develop new export protocols each time a bespoke EDD is requested • Pass costs onto consultants	• Must maintain additional technical SMEs • Must update internal workflows when new EDD formats are released or upgraded • Requesting multiple EDDs from labs • Smaller firms punished	• Reinventing the wheel • Data not interoperable between groups of the same agency or across various regulatory levels (State v Federal) • Waiting on exports from consultants • Additional contracting work required

The Role of EDMS Providers:

- Act as the common denominator for environmental data
- Can enforce standards at ingestion point and export via relationships with labs and consultants
- Opportunity to unify identifier systems
- Key to enabling FAIR-aligned data ecosystems

Data Processing

Lab Results Issued

Universal EDD

Results imported into EDMS

Excel

ESdat

Other

Reconciliation with field notes

Sample locations

Sample types

Parent samples

QA/QC

RPDs, other DQOs

Fit for purpose

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Introducing a Shared Global Reference System

Benefits

- Simplified data exchange and aggregation
- Reduced lab overhead in changing regulatory environment
- Improved data quality and traceability
- Automatic FAIR alignment for end-users
- Easier regulatory reporting and audits
- Improved usability for small firms
- Lower implementation costs for consultants & regulators

Call to Action

- EDMS providers should lead adoption of shared reference systems
- Integrate FAIR principles at the data entry stage
- Collaborate with labs, regulators, and clients
- Build the foundation for interoperable environmental data

Can this be done?

Yes!

Universal EDD in Action

Australian Government

Defence

New Zealand

MINISTRY OF DEFENCE

Manatū Kaupapa Waonga

Thank you!
Questions?

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