

## Moderated discussion: Identifying how to support the WaterML development in the domain of Water Quality

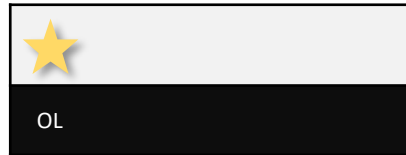
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Centre, ICWRGC, BfG

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# Introduction

*The Vision: Producing high-quality water quality monitoring data through standardized procedures and sharing the data using common semantics in open standard formats through standard web services as the basis for water quality management and decision making.*

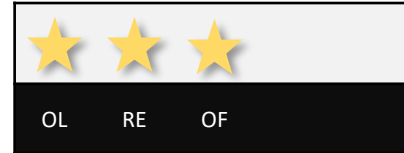
# 5 Star Deployment Scheme for Open Data



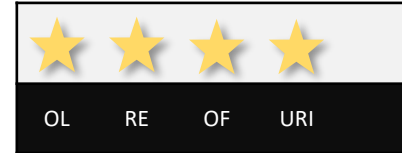
Put your data on the web with an open license



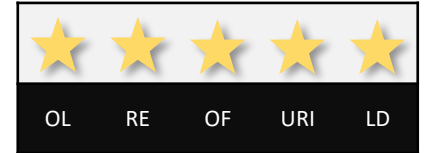
Make it available as structured data



Use open standard formats



Use URIs to identify data



Link your data to other people's data

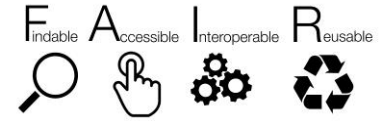


# FAIR data



<https://www.andis.org.au/working-with-data/fairdata/training>, CC-BY 4 International

# 5 Stars of FAIR water quality data



Water quality monitoring data is published online

★ using essential discovery metadata and (open) data license  
=> Kind of findable and re-usable, but hard to understand and work with



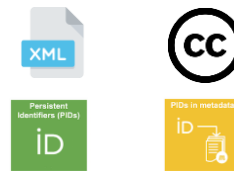
★★ + as structured data (e.g. proprietary format as Excel)  
=> Can be used with COTS



★★★ + using open standard formats (e.g. CSV)  
=> Can be used with FOSS and is portable



★★★★ + using community standard formats (e.g. WaterML) with persistent identifiers/URIs for data and metadata  
=> Data has recognizable structure but not semantics



★★★★★ + using FAIR vocabularies (observation metadata: monitoring location, procedures, observed properties, units, data quality and provenance) and open, free communication protocols in a linked data format  
=> Data has recognizable structure and semantics



# 5 Stars of water quality data - The UK Water Quality Archive

- Publishes data using (open) licenses
  - UK [Open Government License](#) ✓
- Provides access through standard protocols/web services and formats
  - REST API => JSON, CSV, RDF ✓
- Uses open application schemata/ontologies to encode water quality (meta)data ✓
- Uses linked water quality vocabularies to facilitate harmonization and interoperability:
  - Water quality parameters: <https://environment.data.gov.uk/water-quality/def/determinands.html? limit=100& sort=label> ✓
  - Units: <https://environment.data.gov.uk/water-quality/def/units.html? sort=label> ✓
  - Sampling and analytical methods
  - Data quality, provenance ✗

<https://environment.data.gov.uk/water-quality/view/landing>

The screenshot shows the 'Water Quality Archive' search page. At the top, there is a navigation bar with the Environment Agency logo, 'Water Quality Archive', and links for 'Home', 'Download', 'Documentation', and 'Explore'. A 'Powered by' logo for Ordnance Survey is visible in the bottom right. The main content area has a search form with the following fields: 'Sampling point name or ID' (text input), 'EA Area' (dropdown menu), 'Sampling point type' (dropdown menu with 'Freshwater' selected), 'Status' (checkboxes for 'open' and 'closed', both checked), 'Near-to, or within bounding box' (text input), and 'Maximum number of results' (dropdown menu with '25000' selected). A 'Find sampling points' button is at the bottom. To the right of the form is a map of the United Kingdom with numerous blue circular markers, each labeled '10+'. A search bar at the top of the page contains the text 'ALPHA This is a trial service – your feedback will help us to improve it.' Below the search bar, the heading 'Search sampling points' is followed by the instruction 'Look up sampling points in the archive by providing one or more of the search criteria below.'

# How many stars would you give to your WQ data?

Water quality monitoring data is published online

★ using essential discovery metadata and (open) data license  
=> Kind of findable and re-usable, but hard to understand and work with

★★ + as structured data (e.g. proprietary format as Excel)  
=> Can be used with COTS

★★★ + using open standard formats (e.g. CSV)  
=> Can be used with FOSS and is portable

★★★★ + using community standard formats (e.g. WaterML) with persistent identifiers/URIs for data and metadata  
=> Data has recognizable structure but not semantics

★★★★★ + using FAIR vocabularies (observation metadata: monitoring location, procedures, observed properties, units, data quality and provenance) and open, free communication protocols in a linked data format  
=> Data has recognizable structure and semantics



## What do you expect from the WQ standard community to upgrade your WQ data?

- An open community
- Training
- Guidance material
- Workshops
- Tools
- Coordination
- Endorsing standards
- Other



# Which communities should we also engage with, to ensure proper coverage of what needs to be achieved for a 5\* WQ data exchange?

- Research communities (e.g. RDA)
- Governmental authorities
- Software/tool developers
- ....

**What organizations could also step up in this activity to support & follow these developments?**

# Workshop Series on Water Quality Monitoring – Opening Workshop



# Thank you!

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