Water Quality Data Interoperability Experiment

Sylvain Grellet - BRGM, pôle INSIDE

WEATHER CLIMATE WATER

WWQA World Water Quality Alliance

WORLD METEOROLOGICAL ORGANIZATION

WMO HydroHub

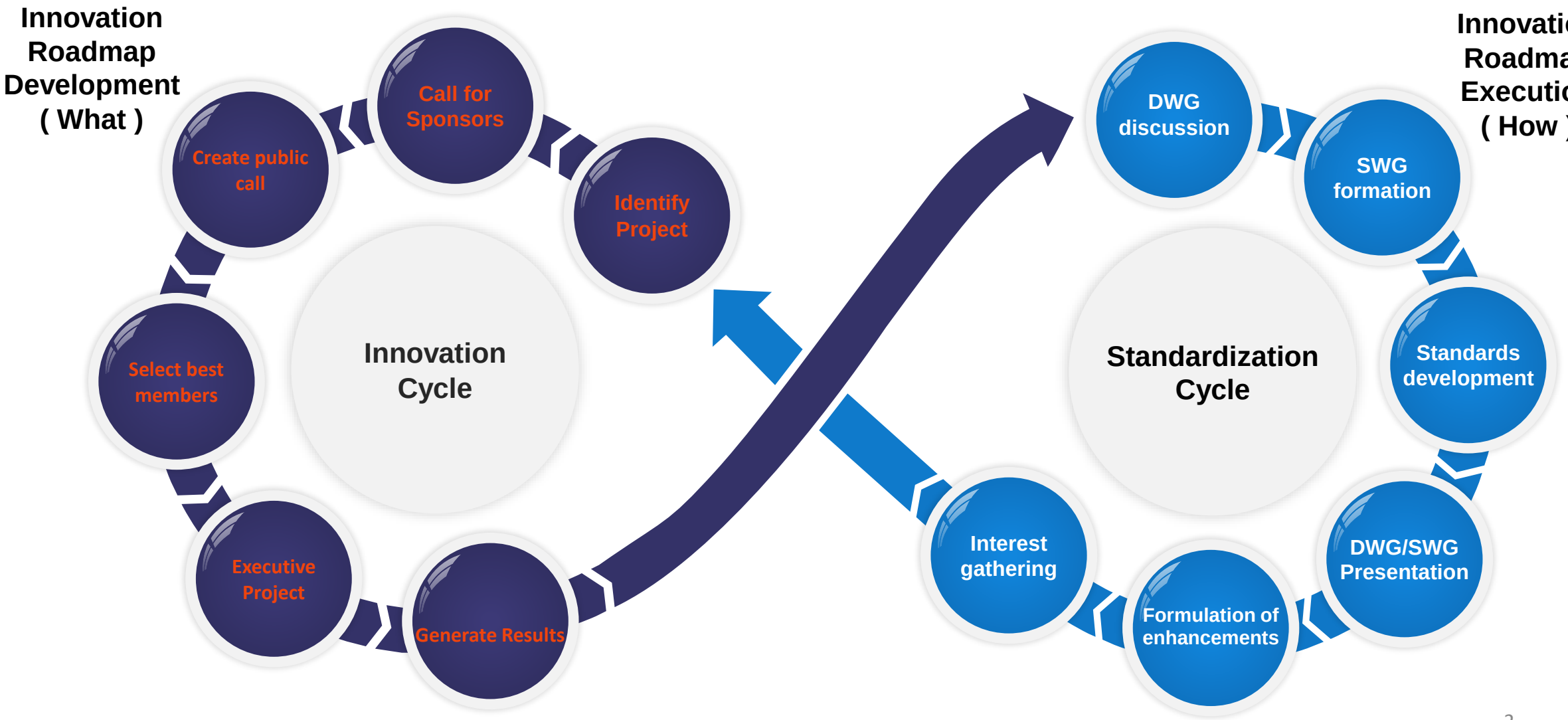
UN environment programme 50 1972-2022

UNESCO

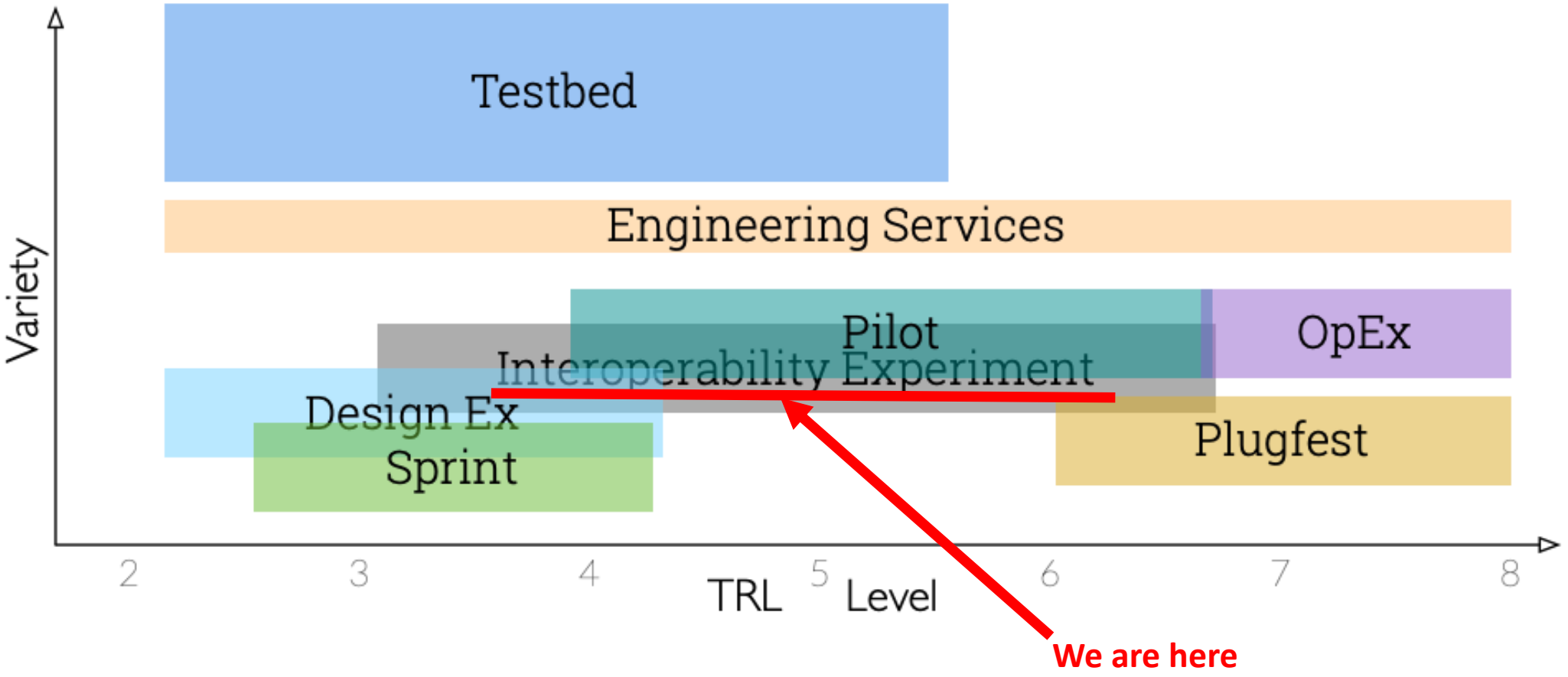
World Health Organization

Open Geospatial Consortium

OGC Innovation Continuum



OGC Innovation initiatives



What is an OGC Interoperability Experiment (IE) ?

- Applied research initiative led by OGC members and supported by OGC staff
  ⇒ Most of the time building on the current standards and best practices : the 'OGC Baseline' (pushing them to their limits / applying them to a new domain)

- Non-OGC member participation is allowed (usually as observers)
  ⇒ In several IEs: GitHub + mailing list + meetings are open
  ⇒ so the 'observers' can be really active

- Topics are focused with the objective of solving interoperability issues of interest to the member leadership
  ⇒ really flexible, it's up to the IE participants to scope the action

What is an OGC Interoperability Experiment (IE) ?

- All participation is in-kind

  ⇒ Depending on each organization capacity, participation can correspond to a light or heavy workload. Can be IT And / Or Domain.

  But: no need to be a 5 stars OGC expert to participate !

  ⇒ Providing data (along with some explanations ☺) is participating

  ⇒ Setting up services/APIs is participating

  ⇒ Reviewing the content produced is participating

  ⇒ Helping tools evolution to support the IE findings is participating …

- Normally run 6 – 12 months

  ⇒ Some last longer (ex : 18 months but we should not exceed this)

What is an OGC Interoperability Experiment (IE) ?

- Results documented in Engineering Report(s) or other OGC documents and generally used to define new Standardization work.
  - ⇒ Some lead to Change Request to the 'OGC Baseline'
  - ⇒ Some to Best Practices in applying it
  - ⇒ Some fill in gaps in the 'OGC Baseline' proposing document ready for the standardization process: exactly what happened to all the WaterML2.0 series of standards

  - ⇒ Most important : it's during the IE that the group decides what the output of the IE will be : through experimentation

What is an OGC Interoperability Experiment (IE) ?

- OGC Hydro DWG community has a long history of IEs
  - See : https://external.ogc.org/twiki_public/HydrologyDWG/WebHome
  - Surface Water
  - Rating & Gaging
  - Hydrologic Forecasting
  - 2 GroundWater IEs
  - ELFIE & SELFIE : Environmental Linked Feature IE
  - Borehole IE (overlap with OGC Geoscience DWG)

⇒ 2022 : now we have enough organizations/people willing to take part to a Water Quality IE

2022 Water Quality IE overview

- 1°/ Domain Use Cases (list & prioritize)
- 2°/ Try to realize the Use Cases building on
  - the experience and data assets from existing systems,
  - the OGC baseline :
    - semantics: WaterML2.0 suite of standards, Observations, Measurements and Samples
    - technical: OGC API - Features, OGC SensorThings API, …
  - early attempts applying interoperability best practices in this field (ex: “OGC WaterML-WQ” Best practice : 14-003, EU “API4INSPIRE” project, “A Harmonized Vocabulary For Water Quality” DOI:10.13140/RG.2.1.2490.4404 …),
  - W3C practices: (spatial) data on the web best practices, SOSA/SSN,
  - Vocabularies : observable properties (RDA:I-ADOPT), ChEBI, UnitOfMeasures, etc…
- 3°/ Iterate
- 4°/ Report

Water Quality IE – Domain Use Cases

- Initial list to be refined with participants (food for thoughts)
  - Surface water chemistry : mainly water samples and chemical concentrations
  - Surface water hydrobiology, microbiology : here we'll have taxa occurrence, indices calculation
  - Surface water hydromorphology: here we'll have category observation (shape/type of bank, flow ‘morphology’, etc…)
  - Ground water chemistry: mainly water samples and chem concentration
  - Ground water microbiology: here we'll have taxa occurrence, indices calculation
  - …

⇒ Do those make sense ?

⇒ Can your organization contribute to one of the above ?

⇒ You can also propose yours

Water Quality IE – IT viewpoint

- Experiment #A: OGC semantic baseline : Compatibility and utility of existing models/ formats -- is a best practice possible ? if none, how much needs to change (extension, profiling) to achieve interoperability?

- Experiment #B: OGC API baseline : which API (& pattern between APIs) to serve what ? how much change (extension, profiling) to achieve interoperability?

- Experiment #C: Bridging the gap with research activities (ex : I-ADOPT). Targeting a fine grain description of vocabularies (observable properties, observing procedure….)

Water Quality IE – intensions

- What do we target ?
  - We are not on a ‘blank page’ situation
  - Guts feelings that we already have ‘almost’ all we need with the current semantic and technical Baseline

  + some LinkedData & Semantic Web best practices

  ⇒ Let’s identify and lay down Best Practice to cover the domain and generate the necessary Change Request to pre-existing standards (if need be)

  - AND let’s not forget about tooling (server, client side) to help implement our findings

Water Quality IE – group organization

- Open contribution to maximize the uptake
- An open Github project
  - Under https://github.com/opengeospatial/
- Open Webconferences using OGC infrastructure
- Meeting log in a shared and open place (ex : G.doc) for everyone to catch up when caught in other projects (we all have other projects commitments)
- Meeting frequency
  - To be refined
  - Rule of thumb : Weekly to every other week meetings depending on work load required.

Water Quality IE – joining

- What next ?
  - OGC Innovation Program : Ok
  - Presentation to the next OGC Architecture Board : planned early April
  - Public call for Participation : early April
  - Kick-off (date to be refined) : May/June
- Read/contribute to the current Activity Plan + identify your organization https://external.ogc.org/twiki_public/HydrologyDWG/WaterQualityIE

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Thank you!

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