

WG3: EQC

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EQC

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General Considerations

Different phases in the evaluation

- Prototype service for acquisition.
- Pre-operational services and updates (very important to flag early problems)
- Operational

In all the phases the different aspects -user requirements /satisfaction, operational delivery, quality of data and prospect for development-should be considered, although with different emphasis:

User engagement important in the acquisition phase

Evaluation of Pre-operational and Operational Service could be more independent.

The evaluation system should evolve.

Evaluation metrics are dynamics. It is recommended to start basic to avoid bureaucratic overload

EQC involves the existence of a procedure/framework (e.g. ISO standards) as well as a more subjective evaluation of “contents” (e.g. value of given metrics).

Need for external EXPERT judgement, from both Science and Services (users), to judge the efficacy of the EQC process.

Should there be EQC standards and evaluation tools common across the different Copernicus Services?

How to ensure that EQC captures user requirements (1) ?

- Define user by understanding the decision process (O&D or ISI responsibility)
 - Can climate information affect the decision process?
 - At European Level one needs to look at regulations
 - Select a few representative users of sectorial services
 - Active in finding users. It may be outsourced?
- Capturing user requirements (ISI responsibility)
 - User Requirement Documents and GMES-PURE: systematic and quantitative approach
 - Evaluate users' current needs, as well as their own perceived medium and long term needs
 - Continuous process. Two way interaction/feedback
 - Get feedback from existing users involved in projects users asap during the ramp-up phase (since there are users in on-going projects with expertise, QA4ECV, CHARMe, CLIPC,)
- EQC should evaluate the ISI activities on capturing user requirements
 - There should be a procedure for taking user requirements/satisfaction into account
 - Established communication links: regular workshop, internet forums, email
 - Existence of User Requirement documents.
- **Gap analysis based on the user evaluation/feedback:**
 - Requirements -> feasibility->readiness->cost->Implementation->Requirements....

How to ensure that EQC captures user requirements (2) ?

Miscellaneous

- **Engage & group sectors users early in the process:** users discuss more at ease with colleagues.
- **Ranking of most useful products** (a priori, most recommended, or/and a-posteriori, most used for a given application).
- **Need to build trust.** This is long-term process. Maturity index may help.
- **Important to engage the user requirements in the prototype/procurement phase**
- **. Business/professional associations may be more outspoken** than individual users. Industry users do not want to reveal their specific requirements because of competition
- **Do not overload** users with requirements for feedback
- **Product Quality and Product Value** are not the same thing. The value depends on the sector and on the application.
 - Value also depends on the timeliness of the service.
 - A reliable operational service has also the added value of transferring liability in the decision process
- If Sector Specific Service that does not get many users. Would that service or sector finished?
- How to get 'unhappy' users on board to capture their needs?
- User engagement can be done in the prototype service by identifying a key set of mature users. But will these identified users bias the service?) How inclusive should we be?
- Organize user requirements by sectors as well as by level of expertise?
- Who is defining the user? The CCCS or the commission?

What are the appropriate methods and metrics for evaluation of operational quality service ?

- **Reliability of Service** is very important for users (and adds value to the product)
 - Timeliness: comply with agreed delivery time
 - Content robustness and completeness (not spurious values, format problems,...)
- **Technical performance metrics** related to web services (number of users, uptime of a web service....). Provide Regular bulletins of service uptake, and service failure.
- **Impact indices:** How much this impacts DG reports etc...? Number of citations?
- Set up (internal) goals for improvements and evaluate how the users react to these improvements. Adjust goals and metrics according to user response. E.g. upgrade reanalyses, higher resolution, up-to-date.
- **Evaluation of the pre-operational phase** and evaluation of the operational.
- **Evaluating the procurement**, by considering:
 - User requirements consideration, Scientific EQC , R&D engagement, Maturity metrics

What are appropriate methods and metrics of scientific quality of service (1) ?

- Metadata: INSPIRE compliant and CHARMe annotation. metadata. DOI, traceability, versioning.
- Scientific Documentation of the data product.
- Record of product usage (scientific papers, applications, ...)
- **Enable procedure for feedback from the scientific and user community**
- Need to provide a list of basic evaluation metrics
 - Based on existing expertise in
 - Seasonal Forecasts (forecast verification)
 - Projections (current climate)
 - Reanalyses
 - No need to start from scratch. Built on existing best practices. Obs4MIP metrics projects
 - Include information on Maturity Index
- Set up (internal) goals for improvements and evaluate how the users react to these improvements. Adjust goals and metrics according to user response. E.g. upgrade reanalyses, higher resolution, up-to-date.

What are appropriate methods and metrics of scientific quality of service ?

Miscellaneous

- **Feedback directly from users:**
 - A la Amazon: It is too sensitive to mass reaction. Too instable.
 - Web user forum for registered users. Give weight to users?
 - Need for feedback from end-user beyond the downstream.
 - Interactive toolbox can be used to monitor requirements (by recording most frequent downloaded datasets, areas, resolution).
- **Procedure for routine evaluation**, because requirements and quality evolve
- **Potential for Product development** should be among the Standards prescribed by the service . Maturity and Tendency should be considered for inclusion.
- If there is a strong requirement for dataset with low Maturity index, pass the request to R&D for product improvement and engage with users to explore their need.
- Procedure to uptake (new) / remove (obsolete) products need to be clearly established?
- **EQC to produce a minimum set of requirements for acceptance.**
 - Metrics for observations, for re-processed observations, for reanalyses, for seasonal, for scenarios.
 - Use experience from existing projects.

How can EQC inform the Research & Innovation agenda in order to support development of new services, or improve current services?

- Link with R&D essential for innovation.
- Research beyond Copernicus: H2020, JPI Climate
- Short-term improvements should be done within Copernicus -> Development.
- **Fostering Development and Innovation at the users' end**
 - Annual competitions for innovative applications
 - Highlight/publish the innovative applications
- **Fostering R&D in science and technology**
 - **Science:**
 - Engage existing R&D projects to share results with Services
 - Based on user feedback identify gap to guide research calls.
 - **Technology:**
 - Develop libraries and software
 - Monitoring and record of the innovations