DANUBIUS-PP

Preparatory Phase for the pan-European Research Infrastructure DANUBIUS–RI "The International Centre for advanced studies on river-sea systems"

Final Report on DANUBIUS Commons principles

Deliverable 6.4

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Table of Contents

List of Figures

Preamble

The DANUBIUS-RI Commons are unique features of the DANUBIUS Research Infrastructure (-RI). For the mission defined in the DANUBIUS-RI scientific agenda, DANUBIUS-RI Principles provide transparency and commitment for stakeholders and users to deliver a set of harmonized regulations, methods, procedures and standards for all kinds of scientific and non-scientific activities, collectively called the Commons. The DANUBIUS-RI Commons provide the framework that binds and governs DANUBIUS-RI activities and its associated impacts The Principles are the commitments of DANUBIUS-RI by which it will fulfil its achievements.

The associated Commons will therefore facilitate consistent outcome and excellent operation of the distributed research Infrastructure. DANUBIUS-RI Principles and Commons go beyond the requirements for a European Research Infrastructure Consortium (ERIC), which are governed by the future ERIC statutes. Specific aspects not covered by the future ERIC statutes, are covered by Commons. This document provides information on the unique features of the DANUBIUS-RI Principles and Commons to create synergies and to bridge the visible fragmentation in research and data handling on River-Sea Systems (RSS). Based on the Commons, DANUBIUS-RI will create the urgently needed harmonization in research and development and the RI's products to create a better understanding of RSS continua and to enable a significant impact with respect to economic, environmental and societal challenges. In addition, the Commons will further guarantee harmonized methods and quality control.

Executive summary / abstract

DANUBIUS-RI is a pan-European distributed research infrastructure (RI) building on existing expertise to support interdisciplinary research on river-sea (RS) systems, spanning the environmental, social and economic sciences. It will provide access to a range of RS systems, facilities and expertise, a 'one-stop shop' for knowledge exchange, access to harmonised data, and a platform for interdisciplinary research, education and training. DANUBIUS-PP is a three-year project to raise DANUBIUS-RI (International Centre for Advanced Studies on River-Sea Systems) to the legal, financial and technical maturity required for successful implementation and development.[1]

DANUBIUS-RI will rely on the integration of knowledge, scientific and technical abilities and services to most effectively deliver excellence in the scientific and cross-disciplinary outputs. This high quality output will be necessary to holistically understand the functioning and evolution of RSS and to deliver the evidence base for effective management, regulation and policy development. DANUBIUS-RI will be based on an equitable and intensive cooperation, exchange and distribution of labour and data between its partners, users and stakeholders.

Such a distributed and highly complex research infrastructure as DANUBIUS-RI will not function effectively without harmonised Principles that form the framework for the common values or common standards (short: Commons), which all partners adhere to. The DANUBIUS-RI Principles are the overarching rules resembling an "umbrella" (cf. figure 1) and the Commons are the "practical tools" to assure the implementation of Principles within the entire RI. All partners will be subject to the same rules and regulations. As a legal entity, DANUBIUS-RI is aiming to become an ERIC. In compliance with the ERIC's legal framework, the agreed Principles and the commitment to the unique Commons will guide the formation, maintenance and development of the RI.

Within DANUBIUS-PP, one objective of Work Package 6 (WP6) is to develop the basic set of Principles that form the guiding framework for the initial set of Commons to be established within DANUBIUS-RI. WP6 has a close connection to all other WPs as well as to the different components of the RI. The content and basic set of the DANUBIUS-RI Principles and Commons was elaborated during a joint workshop with representatives of all components and structures of DANUBIUS-PP in March 2018 in Koblenz.

[1]Grant Agreement number: 739562 – DANUBIUS-PP – H2020-INFRADEV-2016-2017/H2020-INFRADEV-2016-2

1. DANUBIUS-RI Principles

1.1. Introduction of the DANUBIUS-RI Principles

This section delivers an overall explanation of the DANUBIUS-RI Principles. The establishment of Principles has been decided and agreed on within the proposal to join the roadmap of the European Strategy Forum for Research Infrastructures (ESFRI) in 2016. Within WP6, Task 6.2 provides the basic set of Principles unique for DANUBIUS-RI on which the future Commons will be based. The definition and an initial list of the DANUBIUS-RI Principles are included in the section 1.2 of this chapter.

Generally speaking, Principles are:

- basic ideas or rules that explain or control how something happens or works[2],
- the underpinning ideas that provide the foundation for its operation,
- fundamental truths or propositions that serve as the foundation for a system of belief or behaviour or for a chain of reasoning.[3]

The purpose of the Principles for DANUBIUS-RI is to:

- strive for excellence in all activities;
- consider RSS as continua;
- integrate skill sets across a range of disciplines and geographies to facilitate fundamental and applied research, delivering impactful research that resolutes societal challenges;
- use our natural assets and educational resources as living classrooms to support education, training and management of RSS;
- reliably and robustly inform policy by delivering the evidence through active dialogue with local, regional, national and international authorities (e.g. by disseminating the complex findings (products) of the RI);
- engage stakeholders through knowledge exchange regarding the functioning and use of RSS.

The Principles of DANUBIUS-RI actively support Research and Innovation[4], namely:

- Public Engagement (choose together);
- Science Education (creative learning);
- Gender Equality (unlock the full potential);

[2]https://dictionary.cambridge.org/dictionary/english/principle
[3]https://en.oxforddictionaries.com/definition/principle
[4]Responsible R&I is an approach that anticipates and assesses potential implications and societal expectations with regard to R&I, with the aim to foster the design of inclusive and sustainable R&I (source: https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation).

- Ethics (do the right thing and do it right);
- Open Access and Open Science (share results to advance);
- Governance (design science with, and for society);
- Environment (sustainable use, science to save and serve);
- Operability (an infrastructure serving all)

Figure 1 illustrates the scope and the interplay of DANUBIUS-RI Principles and Commons both within the RI's activities and components and between them. The Principles' listed are not comprehensive but are the starting point. The Principles and Commons will be supplemented and updated continuously over the lifetime of DANUBIUS-RI.

In this respect, the Commons are designed as tools to reach common goals, which are questioned and require to be reviewed on a regular basis. The Commons are created on demands from the stakeholders, partners and users of all levels of Components and Structures (Figure 1) and are confirmed by a Committee to be established by WP3/WP5 or as suggested in D6.2.

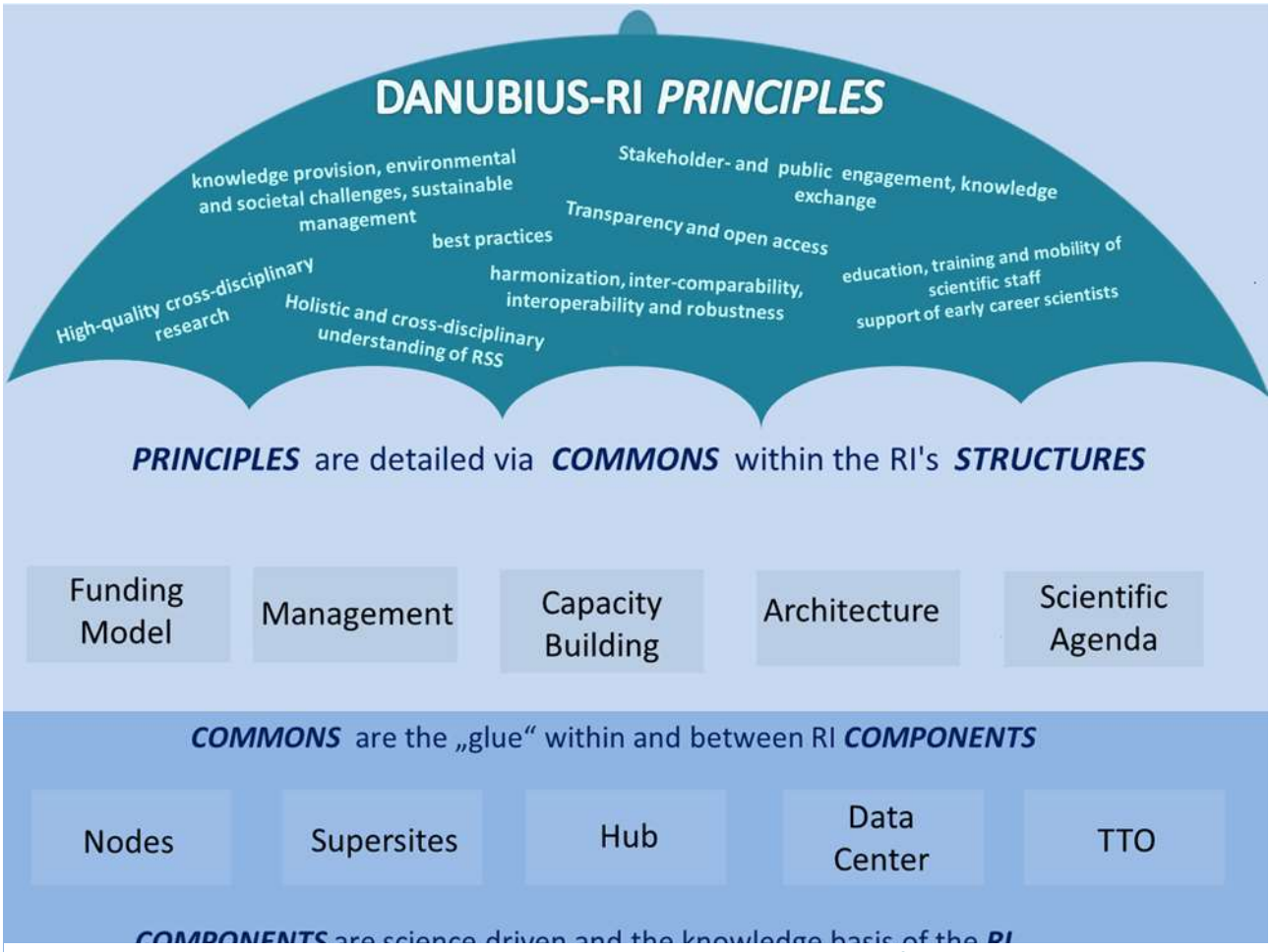

Figure 1: DANUBIUS-RI Principles and their interplay with Commons, the RI's Structures and Components. The Principles named in the figure are the basic set at the beginning of the lifetime of the RI. The Principles' listing is not comprehensive.

The DANUBIUS-RI Principles will be delivered through a series of Commons and may cover a broad range of fields: scientific, technical, societal and ethical, as exemplified in figure 1, including:

High-quality cross-disciplinary research; holistic and cross-disciplinary understanding of RSS; knowledge provision, environmental and societal challenges, sustainable management; harmonization, inter-comparability, interoperability and robustness; transparency and open access; education, training and mobility of scientific staff, support of early career scientists; stakeholder- and public engagement, knowledge exchange; best practices.

These Principles must be built on consensus, scientific and functional needs regarding the goal and intended operation mode of DANUBIUS-RI. Practically, if a need for the integration of a new Principle or Common becomes apparent in the PP/RI, a formal proposal must be submitted, including the exact phrasing, to a board specified by WP3 and WP5 or as suggested in D6.2.

The DANUBIUS-RI Principles and Commons are not limited to certain types of activities, e.g. to laboratory measurements or data processing, but are mandatory to all functional areas of DANUBIUS-RI and their interrelations (Components, Figure 1).

This document on the DANUBIUS-RI Principles and Commons does not intend to include all foreseeable Principles and Commons, i.e. methods, protocols, participation, communication, etc., but it delivers the overall framework to derive the Principles and Commons in all fields of activities of DANUBIUS-RI within the RI's lifetime.

1.2. Definitions of DANUBIUS-RI Principles

The DANUBIUS-PP consortium defined the following initial set of Principles during a joint workshop in March 2018 in Koblenz, Germany and as explained in the previous paragraph they can be updated within the RI's lifetime.

- DANUBIUS-RI enables high quality cross-disciplinary research in RSS.
- DANUBIUS-RI prioritises and promotes a holistic and cross-disciplinary understanding of RSS towards the functioning of RSS. System understanding is the key to deal with the complexity and uncertainty of RSS.
- DANUBIUS-RI provides the underlying knowledge to address environmental and societal challenges and to derive guidelines for a sustainable management of RSS.
- Via harmonization, DANUBIUS-RI achieves a step change by inter-comparability of processes, results and products within a river-sea continuum and between river-sea continua. The DANUBIUS-RI label guarantees inter-operability and robustness.
- DANUBIUS-RI promotes transparency and open access.
- DANUBIUS-RI promotes the education, training and mobility of scientific staff and supports early career scientists. The development of Early Career Investigators (ECI, criterion: max. eight years after PhD) is supported by the RI by developing adequate tools.
- DANUBIUS-RI engages stakeholders and the public through knowledge exchange.
- DANUBIUS-RI will adopt best practices in all environmental, human security and cultural heritage activities.
- Commons will be created to bring the Principles into action and ensure its proper implementation through the entire RI.

2. DANUBIUS-RI Commons

The DANUBIUS-RI Commons need to: (i) fulfil cross-disciplinary research requirements as summarized in the DANUBIUS-RI ESFRI proposal[5]. They need to build on the best internationally accepted standards. The Commons also need to include control over quality and consistency via a comprehensive quality assurance procedure; (ii) provide a framework for the general organisation of DANUBIUS-RI including its internal and external interaction and integration; and (iii) promote the joint vision, values and mission of DANUBIUS-RI and of its stakeholders.

As visualized in Figure 1, the Commons function as connecting items within the RI and its components as well as between these two main organisational levels. However, it is also possible that a Common creates its impact only in a single Component (e.g., within a Node and at this point, limited to a distinct method to meet specific requirements, i.e. detection limits). After the following definitions of Commons, an example on the Structures level (capacity building) and one on the Components level (Analysis Node – Total content analyses of metals and metalloids in fresh water by inductively coupled plasma mass spectrometry (ICP-MS)) is given, followed by the template to create a DANUBIUS-RI Common.

To make the full picture a bit clearer, on how harmonisation can create a significant impact and as an existing real life example from a different working area outside DANUBIUS-PP, the Geotraces initiative can be take (http://www.geotraces.org/). Via a harmonisation of cruises (infrastructure) and standards (cookbook) a significant positive impact on science and a surplus from existing international infrastructure and data is created.

2.1. Definitions and procedures

1. Commons are a set of harmonized regulations, methods, protocols and standards for scientific and non-scientific activities, to guarantee the integrity, relevance, consistency and elevated quality of DANUBIUS-RI's products.
2. Principles are detailed via Commons.
3. A Common can be created by any participant of the RI and is submitted to the respective board defined by WP3 and 5 of DANUBIUS-PP. The responsible board comments on/asks for revisions on the submitted Common. After the required revision (if needed), the board passes the Common to the GA for approval/rejection. The board defined by WP3 and 5 gives advice to the GA.
4. Each Common must be reviewed, on regular basis. The time between two reviews must not exceed five years.
5. Commons are (after the first approval) publicly available via the DANUBIUS-RI website.

An initial set of Commons will be created within the PP and beyond including:

1. Environmental science and monitoring: sampling, water discharge, water level, suspended sediment discharge, total suspended particulate matter, suspended solids, chlorophyll-a, turbidity, temperature, conductivity, pH, NO_3, NO_2, NH_4, total dissolved nitrogen, total nitrogen, total phosphorus, soluble reactive phosphorus, total organic carbon, dissolved

[5]DANUBIUS-PP Part B. Proposal number SEP-210362517, p. 11

organic carbon, colour dissolved organic matter, dissolved oxygen, sensor deployment for remote sensing reflectance and inherent optical properties of water constituents (absorption and scattering).

2. Social sciences and dissemination: content and frequency of DANUBIUS-RI newsletter, information flow (how information is verified and formatted before diffusion via official Danubius-RI channels), procedures for actions involving citizen-science, creation and maintenance of a mailing list of stakeholders, social media, posters with new scientific results, special journal issues, rives-sea-groundwater system training for (young) scientist.
3. Management and service provision: e.g. user management, service level, protection of data privacy (General Data Protection Regulation; GDPR), procedure for exploitation of results and new technologies, coding and traceability of samples, method development, and procedure reviews, etc.

As mentioned before, the Commons are a subject of continuous development and readjustment to display the state of the art at any time.

2.2. Example I:'The Early Career Investigator Panel'

Field of activity	*Capacity Building*
Name of the Common	*Dummy Common on: The Early Career Investigator Panel (ECIP)*
Principle	***education, training and mobility of scientific staff and support of early career scientists***
DANUBIUS-RI number	*D0X*
Responsible Node	*Dummy Node*
Submitted by	*Mr. Common*
Scope	*All partners according to their general and specific commitments, e.g. as node leader*
Date of Request to Committee	*30/08/2020*
Date of first approval	*30/02/2021*
Revisions	*5a after approval*
Revision from/to	*30/01/2025 to max. one legal year later*

1. Scope/Abstract
   This Common belongs to the RI's principle of **education, training and mobility of scientific staff and support of early career scientists**, specifically for early career investigators (ECI). It provides the definition on ECI, the freedom to create an ECI panel (ECIP) and it provides one chair for the ECIP in a high level scientific board.

2. Detailed description
   i. Definition: An ECI is defined as a researcher whose career span is less than 8 years between the date of the PhD/doctorate (or similar experience) and the date of evaluation. The definition is derived from: http://www.cost.eu/service/glossary/ESR.
   ii. DANUBIUS RI supports financially one meeting of the EICP per year (max. 20 persons).
   iii. The RI offers one chair in an adequate high level scientific panel within DANUBIUS-RI to the leader of the ECIP.
   iv. The leader of the ECIP is elected by all registered ECI of the RI by electronic voting once a year after the yearly ECIP meeting.
   v. The ECIP must give itself a structure and details its aims, harmonised with the Hub.

3. Literature
   None

4. Annex
   None

2.3. Example II: an Example from the Analysis Node

Name of the Common	*Dummy Common on: Total content analyses of metals and metalloids in fresh water by inductively coupled plasma quadrupole mass spectrometry (ICP-QMS)*
Principle	***harmonization, inter-comparability, interoperability and robustness***
DANUBIUS-RI number	*A0X*
Responsible Node	*Analysis Node*
Submitted by	*Mr. Common*
Scope (Structures/Components)	*Analysis Node, ASPs, Supersites*
Date of Request to Committee	*30/08/2020*
Date of first approval	*30/02/2021*
Revisions	*3a after approval*
Revision from/to	*30/01/2023 to max. one legal year later*

1. Scope/Abstract

   This Common specifies the ISO 17294 that consists of the following parts, under the general title Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS): Part 1: General guidelines; Part 2: Determination of selected elements including uranium isotopes, for the RI. It is connected to the Commons on analysis of the following elements: aluminium, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, caesium, calcium, cerium, chromium, cobalt, copper, dysprosium, erbium, gadolinium, gallium, germanium, gold, hafnium, holmium, indium, iridium, iron, lanthanum, lead, lithium, lutetium, magnesium, manganese, mercury, molybdenum, neodymium, nickel, palladium, phosphorus, platinum, potassium, praseodymium, rubidium, rhenium, rhodium, ruthenium, samarium, scandium, selenium, silver, sodium, strontium, terbium, tellurium, thorium, thallium, thulium, tin, tungsten, uranium and its isotopes, vanadium, yttrium, ytterbium, zinc and zirconium. It is also connected to the Commons on analysing colloidal fractions and engineered nanoparticles, Commons on coupling techniques to ICP-MS as well as to the Common on the use of high resolution (sector field and multi collector) and triple quadrupole ICP-MS devices. Quadrupole (the term is applied also to e.g., hexa- or octopole)-ICP-MS systems (ICP-QMS) equipped with one collision and/or reaction cells are most commonly used nowadays due to their (i) broad area of application, (ii) comparable low costs and (iii) user-friendly mode of operation. Therefore, this Common specifies the use of ICP-QMS systems within the RI.

2. Detailed description
   i. Specification on the types of devices used within the RI
      Specifications follow
   ii. Specification on the use of collision cell gases
      Specifications follow
   iii. Specification on the use of reaction cell gases
      Specifications follow
   iv. Specification on the use of multi-element calibrations

Specifications follow

v. Specifications on quality control and the use of internal standards
Specifications follow

3. Literature
None

4. Annex
None

2.4. DANUBIUS-RI Commons Template[6]

Name of the Common	
Principle	
DANUBIUS-RI number	
Responsible Node	
Submitted by	
Impacts (Structures/Components)	
Date of Request to Committee	
Date of first approval	
Revisions	
Actual revision from/to	

1. Scope/Abstract
2. Detailed description
   i. All formats are kept as simple as possible (standard = Arial 11, left-aligned)
   ii. Figure captions and table headings = standard
   iii. Citation follows the ES&T citation format
   iv. Basic philosophy: less is more
3. Literature
4. Annex

[6]**The length of a Common** may vary from a few sentences to ten pages in accordance to the Commons template in this document. Annexes may exceed the ten pages.

Literature

Stanica, Adrian (2016). Proposal Part B *DANUBIUS-PP* PREPARATORY PHASE FOR THE PAN-EUROPEAN RESEARCH INFRASTRUCTURE DANUBIUS–RI “THE INTERNATIONAL CENTRE FOR ADVANCED STUDIES ON RIVER-SEA SYSTEMS” (DANUBIUS-PP). Proposal number SEP-210362517

https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation

https://en.oxforddictionaries.com/definition/principle

https://dictionary.cambridge.org/dictionary/english/principle

Definition of a DANUBIUS-RI Common and procedures how to add and revise a Common

Definition:

The DANUBIUS-RI Commons are a set of harmonized regulations, methods, protocols and standards for scientific and non-scientific activities to guarantee the integrity, relevance, consistency and high quality of DANUBIUS-RI's output and products. Commons are designed as tools to reach mutual Principles for the RI, and are constantly questioned and routinely reviewed/revised.

They can be created by any member (both users and staff) of the DANUBIUS-RI community. Each Common may comprise different approaches (e.g. sensors of different branches, addressing a target analyte with different methods or administration procedures that are adapted to different institutions) as long as mandatory defined success criteria (e.g. accuracy, range, indicator thresholds) are met. Commons and their way of implementation, revision and updating must not interfere with national or European legislation.

Suggesting and reviewing a Common

The proposed Common must be submitted to a Commons handling officer, i.e. a designated person who will be responsible for the coordination of Commons and who is assigned by the Quality Assurance Panel (QAP) (Figure 1). Therefore, the attached Commons-template must be used.

The template contains: a scope highlighting the scientific relevance, a detailed description of the Commons, as well as references to confirm the needs and the state-of-the-art of the inquired Common (see Annex I and II). Additionally, each Common should be assigned to at least one appropriate DANUBIUS-RI principle (see Annex III) and field of Common (see Annex IV) to enable a structured handling procedure.

Furthermore, it must be indicated if the proposed Common complements or competes with existing Commons. The handling officer either comments on the suggested Common or directly circulates the suggested Common for approval/disapproval within the impacted/requesting Components (e.g. Supersites) prior to submission to the QAP.

The relevant components will have 8 weeks' time to comment on the submitted Common. If more time is necessary for a sufficient assessment of the affected component, the deadline may be prolonged by the QAP for verifiable reasons. Each QAP member must have a mandate of the respective DANUBIUS-RI component and should act on behalf of it.
Furthermore, the handling officer or the QAP can decide on the need for reviews about the respective Common from independent experts. If no scientific collaboration without any monetary consideration is possible, the external reviewers may be compensated for their work monetarily or via vouchers for a DANUBIUS-RI service. In case of two or more Commons containing guidelines for the same scientific or non-scientific activity, here defined as competing Commons, a comparative review can be demanded. Competing Commons should either be harmonized to one Common or the QAP should decide on one of the competing Commons. It is the obligation of the QAP to make all Commons available on the RI website four weeks prior to the potential approval. RI community members are asked for formal suggestions and objections. Finally, the QAP approves the Common by majority decision based upon the handling officer´s suggestion, (scientific) reviews, the comments of the RI community members, and the impacted/requesting Structures and Components of DANUBIUS-RI. The

QAP may also demand minor or major revisions by the respective authors in coordination with the components.

The entire procedure from submission to decision (revision, or approval) should not take longer than six months. Commons can be resubmitted after rejection with unlimited frequency. At the beginning of the calendar year the QAP delivers two deadlines for submission and two for approval/rejection of Commons.

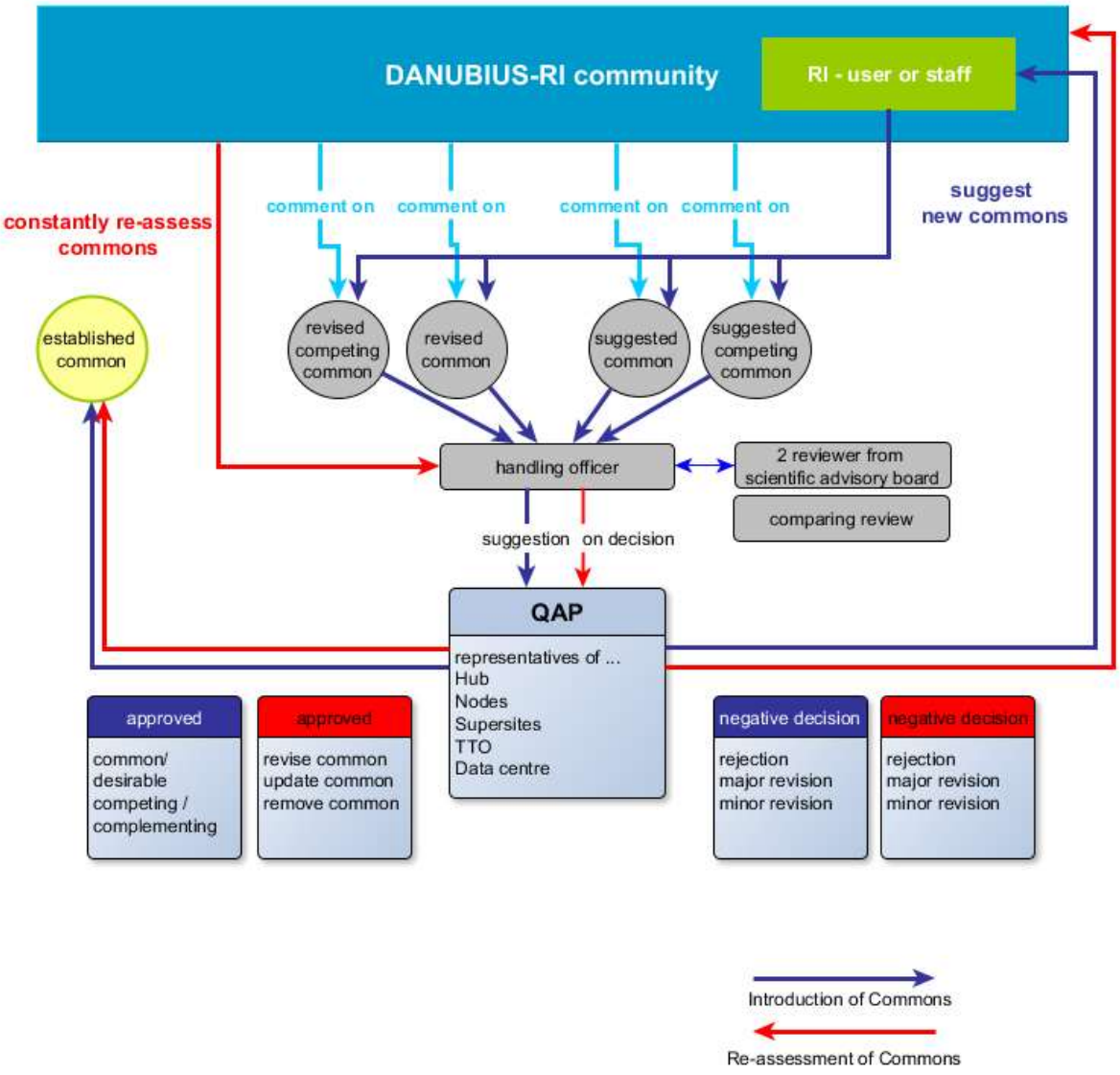

Figure 1: Pathways to suggest, review and revise a Common in the DANUBIUS-Research Infrastructure (RI) through the Quality Assurance Panel (QAP). Blue and red arrows indicate the introduction and reassessment of a Common, respectively.

Implementing a Common:

The approved Common shall be implemented in all services and facilities by the impacted / requested Components (e.g. Supersites, Nodes) as soon as possible, but no later than six months after approval by the QAP. The procedure depends on the scientific or non-scientific character of the Common to be implemented, e.g. the adaptation of a methodology or an administrative process. Data which have been obtained by the application of former Commons only have to be adopted in exceptional cases (after agreement of the QAP). The implementation status of each Component needs to be reported to the QAP. Only after the necessary adaptation of all administrative processes, data analysis or methodological procedures, a Common is considered to be implemented. If a Common is not implemented after six months, the requested Component shall provide reasoning for the temporal delay and suggest a realistic timeframe for implementation. This needs to be approved by the QAP.

If a Component is unable to implement a Common, it is up to the QAP to evaluate the reasoning and either to induce a mandatory implementation or find interim solutions (in case of objective delays due to e.g. lack of sensors on the market). These rules for assessment of the Common by the impacted component and for the case of non-compliance / conciliation of disputes for newly introduced Commons shall also apply along the same lines for implementing revised or updated Commons.

Reassessing a Common:

Time: DANUBIUS-RI Commons are continuously re-assessed and on fixed terms. A re-evaluation of a Common can be initiated by any RI consortium members at any time and has to be evaluated within one year by submitting a justified form (Annex II) to the handling officer of Commons. The version under revision is marked as such on the website and it remains valid/in operation until the revised version is approved by the QAP. In addition, a regular review of all Commons is mandatory, initiated by the handling officer. Commons affecting the structure of the entire RI (e.g. early career scientist definition) are reviewed/revised every 5 years after implementation, Commons associated with Components (e.g. measurement methods) and the Scientific Agenda (e.g. research goals) are re-assessed every 3 years after implementation.

How: The submitted re-evaluation form will be pre-evaluated and collected by the handling officer of Commons before it is sent to the respective Structures or Components (Supersites or Nodes). Likewise to the primary submission of Commons, it is the obligation of the handling officer to initiate the evaluation of Commons based upon assessments (short advisory opinion) from respective/impacted Structures or Components. The handling officer or the QAP is further authorized to request (a) (comparative) review(s) for a Common. All RI participants are asked for assessment by formal suggestions and objections. Ultimately, the QAP decides on the revision, rejection or update of an established Common. The QAP or handling officer must procure that a revision process does not exceed one year.

Updating Commons: In the case that a new Common should replace/update an established Common the QAP can authorize a site specific overlapping time period in which both the previous and the updated version of a Common can be applied for the long term data integrity sake. The timeframe of the overlap is harmonized between the QAP and the respective Structures/Components and may vary significantly between different Commons.

Defining and operating the Quality Assurance Panel (QAP):

As Commons are a key aspect of DANUBIUS-RI that lays the basis for numerous forthcoming actions, Commons need to be defined and elected prior to the DANUBIUS operational phase. Therefore, an interim QAP is formed by the end of 2019 with the end of DANUBIUS-PP. The interim QAP will be responsible for the same tasks as described above for the QAP. The composition of the QAP will be defined within the ERIC statutes and might be identical to the interim QAP.

Each Component of the RI (Hub, Analysis Node, Observation Node, Modelling Node, Impact Node, e-learning Office, TTO and Data Center) is electing or appointing one representative and a substitute for the interim QAP (the term of office is determined by the respective Component). All Supersites are represented together by three elected delegates, since the discussion and evaluation of a proposed Common is done beforehand (see section *suggesting and reviewing a common*) (Figure 2). Thereby, it should be taken into account that each supersite should delegate a representative once in a while. It is suggested that the election period for all interim QAP members will be three years and each position within the interim QAP has to be filled by a different person. To form the interim QAP it should be strived for a balanced representation of genders, scientific disciplines and scientific experience.

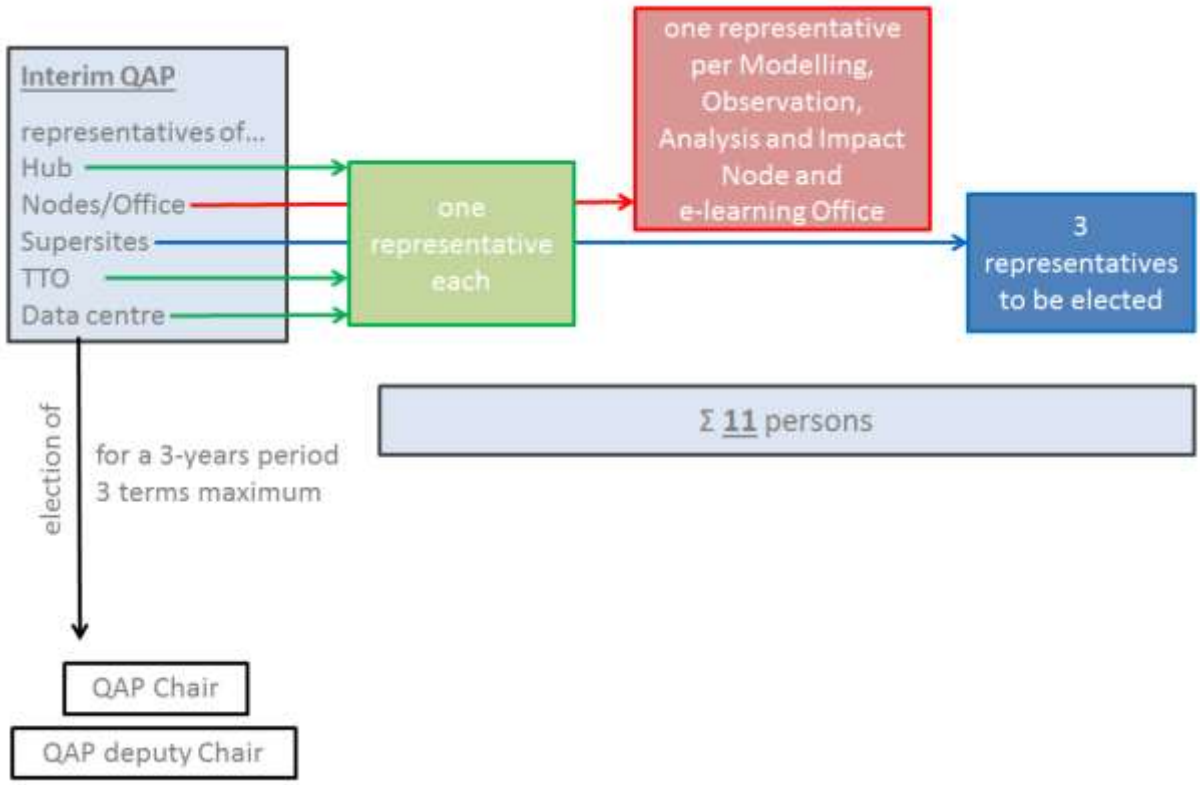

Figure 2: Depiction of the formation of the interim QAP. The composition of the QAP will be confirmed or overruled within the ERIC statutes.

The same persons may be re-elected, but not more than twice consecutively (three terms maximum). The interim QAP shall be convened and chaired by the QAP chair. In her or his absence the interim QAP shall be chaired by the QAP deputy chair. QAP chair and QAP deputy chair are elected for a three years period by majority voting. The QAP shall meet in person not more than twice a year, and online meetings should be preferred. Extraordinary meetings of the QAP may be requested by the chair. If necessary, decisions will have to be taken by at least 1/3 of the elected QAP members. A QAP meeting is either called by the chair (for the regular meetings; during the first five years of establishment also for extraordinary meetings), or following a positive poll (at least 1/3) initiated by a QAP member. A QAP member may be represented by another QAP member if notified to the Chair, but one QAP member cannot represent more than one other QAP member. Decisions can also be made by written/online procedures. The QAP and the interim QAP shall adopt its rules of procedure if necessary. The adopted rules must be approved by the ERIC General Assembly.

Annex:

I) DANUBIUS-RI Commons Template:

Name of the Common	
Related Principle(s)	
Related field(s) of Common	
DANUBIUS-RI number	
Responsible Node	
Submitted by	
Impacts (Structures/Components)	
Date of Request to Committee	
Date of first approval	
Revisions	
Actual revision from/to	

5. Scope/Abstract
6. Detailed description

Compulsory: all formats are kept as simple as possible (standard = Arial 11, left-aligned); figure captions and table headings = standard; citation follows the Environmental Science and Technology citation style; basic philosophy is, less is more.

Compulsory: a (short) review describing and comparing existing methods must be included and the current state-of-the-art method is extracted. It is not sufficient to deliver an in-house standard operation procedure, without thorough cross checks to other laboratories/methods.

Compulsory: name the method to be specified as a DANUBIUS Common alongside a plausible reasoning for selecting this method. The reasoning might consider – but is not limited to – accuracy, reproducibility, feasibility, cost-efficiency, environmental friendliness, and efficiency.

Optional: different methods to be determined as a Common are specified and are weighted with regard to the accuracy, detection limit, reproducibility, and cost-efficiency. To give an example: A certain established method is much cheaper and less complex than a state-of-the-art method and therefore much more cost-efficient. In this case accuracies and detection limits between the methods need to be compared to elaborate the accepted limitations, and an explanation is needed that shows the sufficiency of the “limited”, but cost-effective method. In this case both methods, the selected and the state-of-the-art method, can be named as a DANUBIUS Common with one being the reference which is consulted in case of critical values, and one being the “work-horse” of DANUBIUS-RI.

Compulsory: standard unit of the measurement (e.g., numbers, mg/l, or m^3/s, etc.; SI-units if applicable) and information about the conversion method if applied.

Compulsory: accuracy of the applied method(s) and verification steps to be undertaken.

Optional: an outlook is given about the current development of methods, so that new methods that might soon become state-of-the-art methods will not be missed in the future.

7. Literature
8. Annex

II) Reassessing a DANUBIUS-RI Common Template:

Name of the new /reassessed Common	
Name of the existing Common	
Principle	
DANUBIUS-RI number of the new /reassessed Common	
DANUBIUS-RI number of the new /existing Common	
Requested by (Structures/Components)	
Submitted by	
Impacts (Structures/Components)	
Date of Request to QAP	
Date of first approval	
Revisions	
Actual revision from/to	
Time period of overlap between the new and the existing Common	

1. Justification for reassessment of the existing Common
2. Detailed description
    a. All formats are kept as simple as possible (standard = Arial 11, left-aligned)
    b. Figure captions and table headings = standard
    c. Citation follows the Environmental Science and Technology citation style
    d. Basic philosophy is, less is more
3. Literature
4. Annex

III) DANUBIUS-RI Principles:

- high-quality cross-disciplinary research
- environmental and societal challenges
- inter-comparability
- education
- holistic and cross-disciplinary understanding of RSS
- sustainable management
- interoperability and robustness
- training and mobility of scientific staff
- knowledge provision
- harmonization
- transparency and open access
- support of early career scientists
- best practices
- knowledge exchange
- stakeholder- and public engagement

IV) DANUBIUS-RI Fields of Commons:

The DANUBIUS-RI Commons will be applied to a variety of fields. Most of the Commons will only fall into one of these fields, but some may belong to two fields or even more.

- Organisation
  - Quality Management System
  - Human Resources
  - Internal organization

- Observation
  - Radiometry
  - Bedload instrumentation
  - Geophysical observations
  - Biogeochemical sensors
  - Biogeochemical properties
  - Algorithm development and validation
  - Instrument Deployment and sampling
  - Data formats (Findable, Accessible, Interoperable and Reusable)

- Analysis
  - Instrument Deployment and sampling
  - Approaches and Design
  - Chemistry
  - Biology
  - Ecology
  - Ecotoxicology
  - Hygiene
  - Hydrology
  - HydroGeomorphology
  - Geology

- Modelling
  - Software and Coding
  - Data formats (Findable, Accessible, Interoperable and Reusable)
  - Approach and Design

- Impact
  - Stakeholder engagement
  - Technical solutions

- Data
  - Data (Findable, Accessible, Interoperable and Reusable)
  - Data portal
  - Data standards and formats

V) Suggestions for Commons to be defined for within DANUBIUS-RI

ID	Institute	DANUBIUS-RI component	Possible Field of Common	Person in Charge	Possible Topic	Title	Principle	First Draft
1	BfG	Analysis Node	Analysis-biology/ chemistry	Marie Maßmig	Method	Oxygen measurements	harmonization, inter-comparability, interoperability and robustness	End 2019
2	BfG	Analysis Node	Analysis-biology/ chemistry	Marie Maßmig and Annette Becker	Method	Chlorophyll measurements	harmonization, inter-comparability, interoperability and robustness	End 2019
3	BfG	Analysis Node	Analysis-hydrology	Ole Rössler	Method	Water discharge	high-quality cross-disciplinary research	End 2019
4	BfG	Analysis Node	Analysis-hydrology	Ole Rössler	Method	Water level	high-quality cross-disciplinary research	End 2019
5	BfG	Analysis Node	Analysis-chemistry	Marvin Brinke	Method	Determination of the estrogenic potential of water and waste water	high-quality cross-disciplinary research	End 2019
6	BfG	Analysis Node	Analysis-chemistry	Arne Wick / Michael Schlüsener	Method	Multi-residue analysis of emerging micropollutants and transformation products in water samples by liquid chromatography-tandem mass spectrometry	high-quality cross-disciplinary research	End 2019

7	HZG	Elbe-North Sea Supersite	Analysis-chemistry/ hydrology	to be named	Method	In Situ Measurements of Fluxes at the Sediment-Water Interface	high-quality cross-disciplinary research	End 2019
8	HZG	Elbe-North Sea Supersite	Analysis-chemistry	to be named	Method	Nitrogen Isotopes	high-quality cross-disciplinary research	End 2019
9	HZG / BfG	Elbe-North Sea Supersite / Analysis Node	Analysis-chemistry	to be named	Method	Pollutants (which tbd)	high-quality cross-disciplinary research	End 2019
10	HZG / CEH	Elbe-North Sea Supersite / Thamse-North Sea Supersite	Analysis - Instrument deployment and samping	to be named	Method	Ferrybox Measurements	high-quality cross-disciplinary research	End 2019
11	CNR-ISMAR	Modelling Node	Modelling – data formats	to be named	Standardization	standard formats for hydrodynamic model data on unstructured grids	harmonization, inter-comparability, interoperability and robustness	End 2019
12	CNR-ISMAR/USTIR/BFG and more	Modelling/Observation/Analysis Node	Modelling – apporaches and design	to be named	Method	Model Driven approach for field campaign	high-quality cross-disciplinary research	Is depending on the discussions needed
13	WasserCluster Lunz/Austria	Supersite "Upper Danube Austria and pre-alpine network of tributaries"	Analysis-biology	to be named	Lab Method	Chlorophyll a measurement with photometer (collaboration with Common 2 necessary)	harmonization, inter-comparability, knowledge provision, education	Mid 2019

14	WasserCluster Lunz/Austria	Supersite "Upper Danube Austria and pre-alpine network of tributaries"	Analysis-chemistry	to be named	Lab Method	Determination of total phosphorous (TP) in unfiltered water samples	harmonization, inter-comparability, knowledge provision, education	Mid 2019
15	WasserCluster Lunz/Austria	Supersite "Upper Danube Austria and pre-alpine network of tributaries"	Analysis-chemistry	to be named	Lab Method	Determination of total phosphorous (TP) in sediment samples (Digestion of TP with CEM-microwave)	harmonization, inter-comparability, knowledge provision, education	Mid 2019
16	WasserCluster Lunz/Austria	Supersite "Upper Danube Austria and pre-alpine network of tributaries"	Analysis-biology	to be named	Lab Method	Enzyme assay (microplate reader)	harmonization, inter-comparability, knowledge provision, education	Mid 2019
17	WasserCluster Lunz/Austria	Supersite "Upper Danube Austria and pre-alpine network of tributaries"	Analysis-biology	to be named	Lab Method	Measurement of respiration rates (using optical oxygen sensor spots)	harmonization, inter-comparability, knowledge provision, education	Mid 2019
18	WasserCluster Lunz/Austria	Supersite "Upper Danube Austria and pre-alpine network of tributaries"	Analysis-biology	to be named	Lab Method	Determination of Bacterial Abundance in water samples – Microscope (Epifluorescence, SYTOX Green)	harmonization, inter-comparability, knowledge provision, education	Mid 2019
19	CEH	Thames Estuary Supersite	Analysis-biology	Mike Bowes	Lab Method	Soluble reactive phosphorus by molybdate colorimetry	harmonization, inter-comparability, knowledge provision, education	Mid 2019
20	CEH	Thames Estuary Supersite	Analyis-hydrogeomorphology	Gareth Old	Lab Method	Suspended sediment concentrations	harmonization, inter-comparability, knowledge provision, education	Mid 2019

21	Geoecomar	Hub	Analysis – chemistry	to be named	Method	FT-iR spectroscopy measurements on microplastic particles	high-quality cross-disciplinary research	Ready for submission
22	Geoecomar	Hub	Analysis – geology	to be named	Method	Magnetic susceptibility measurements on sediment or soil cores	best practices	Ready for submission
23	Geoecomar	Hub	Analysis – biology	to be named	Method	Nitrate-nitrogen (NO_3-N) - water	high-quality cross-disciplinary research	Ready for submission
24	Geoecomar	Hub	Analysis – biology	to be named	Method	Nitrite-nitrogen (NO_2-N) - water	high-quality cross-disciplinary research	Ready for submission
25	Geoecomar	Hub	Analysis-chemistry/ ecotoxicology	to be named	Method	Organochlorine Pesticides - water	high-quality cross-disciplinary research	Ready for submission
26	Geoecomar	Hub	Analysis – geology	to be named	Method	Determinative mineralogy - Qualitative X-ray powder diffraction measurements	best practices	Ready for submission
27	Geoecomar	Hub	Analysis – chemistry, bology, geohydromorphology	to be named	Method	Quantitative analysis of microplastic particles from water / sediment / fauna samples	high-quality cross-disciplinary research / knowledge provision	Ready for submission
28	Geoecomar	Hub	Analysis – geology	to be named	Method	Determinative mineralogy - Quantitative X-ray powder diffraction measurements	best practices	
29	Geoecomar	Hub	Analysis – chemistry, bology, geohydromorphology	to be named	Method	RAMAN spectroscopy measurements on microplastic high-quality cross-disciplinary researchparticles	high-quality cross-disciplinary research	Ready for submission
30	Geoecomar	Hub	Analysis – geohydromorphology	to be named	Method	Dissolved Inorganic Silicate - water	high-quality cross-disciplinary research	Ready for submission

31	Geoecomar	Hub	Analysis – geology	to be named	Method	Determinative mineralogy - Single-crystal X-ray diffraction measurements	best practices	Ready for submission
32	Geoecomar	Hub	Analysis – geology	to be named	Method	Spiked whole rock or mineral separate Sr-Nd-Hf isotopic measurements	high-quality cross-disciplinary research	Ready for submission
33	Geoecomar	Hub	Analysis-chemistry	to be named	Method	Total Dissolved Phosphorus (TDP) – water (collaboration with Common 14 necessary)	high-quality cross-disciplinary research	Ready for submission
34	Geoecomar	Hub	Analysis-chemistry	to be named	Method	Unspiked Sr radiogenic isotope measurements	high-quality cross-disciplinary research	Ready for submission
35	Geoecomar	Hub	Analysis-chemistry	to be named	Method	Ammonium-nitrogen (NH_4-N) – water	high-quality cross-disciplinary research	Ready for submission
36	Geoecomar	Hub	Analysis-ecotoxicology	to be named	Method	Determination of antibiotics by ultra-high performance liquid chromatography –UHPLC - sediment	high-quality cross-disciplinary research	Ready for submission
37	Geoecomar	Hub	Analysis-ecotoxicology	to be named	Method	Determination of antibiotics by ultra-high performance liquid chromatography - water	high-quality cross-disciplinary research	Ready for submission
38	Geoecomar	Hub	Analysis-chemistry	to be named	Method	Dissolved Inorganic Phosphorus (DIP) - water	high-quality cross-disciplinary research	Ready for submission
39	Geoecomar	Hub	Analysis – geology	to be named	Method	Determinative mineralogy - EPMA - Quantitative chemical analysis	best practices	Ready for submission

DANUBIUS-PP

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European Commission

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