



d4SCIENCE

Project acronym	D4Science-II
Project full title	Data infrastructure ecosystem for science
Project No	239019

**Deliverable No
DNA1.1**

Quality Plan

November 2009

**SEVENTH FRAMEWORK PROGRAMME
Research Infrastructures**

INFRA-2008-1.2.2: Scientific Data Infrastructures



e-infrastructure

DOCUMENT INFORMATION

Project	
Project acronym:	D4Science-II
Project full title:	Data Infrastructures Ecosystem for Science
Project start:	1 st October 2009
Project duration:	24 months
Call:	INFRA-2008-1.2.2: Scientific Data Infrastructures
Grant agreement no.:	239019
Document	
Deliverable number:	DNA1.1
Deliverable title:	Quality Plan
Contractual Date of Delivery:	November 2009
Actual Date of Delivery:	15 December 2009
Editor(s):	P. Andrade
Author(s):	L. Candela, G. Kakalettris, J. Michel, P. Pagano, V. Viollier
Reviewer(s):	J. Michel
Participant(s):	CERN, CNR, ERCIM, FAO, NKUA
Work package no.:	NA1
Work package title:	Project Management
Work package leader:	ERCIM
Work package participants:	CERN, CNR, FAO, NKUA
Est. Person-months:	2
Distribution:	Public
Nature:	Report
Version/Revision:	1.1
Draft/Final	Final
Total number of pages: (including cover)	49
Keywords:	Quality Assurance, Project Management, Indicators, Procedures, Tools

CHANGE LOG

Reason for change	Issue	Revision	Date
Table of contents	0	1	29/10/09
Version for internal review	0	4	18/11/09
Version for official review	1	0	20/11/09
Version after official review	1	1	03/12/09

DISCLAIMER

This document contains descriptions of the D4Science and D4Science-II project findings, work and products. Certain parts may be under partner Intellectual Property Rights (IPR), therefore please contact the consortium lead for approval. E-mail: info@d4science-ii.research-infrastructures.eu

Should you believe that this document harms in any way IPR held by you as a person or as a representative of an entity, please notify us immediately.

The authors of this document have taken measures to ensure that the content is accurate, consistent and lawful. However, neither the project consortium as a whole nor the individual partners that implicitly or explicitly participated in the creation and publication of this document hold any sort of responsibility that might occur as a result of using its content.

This publication has been produced with the assistance of the European Union. The content of this publication is the sole responsibility of the D4Science-II consortium and can in no way be taken to reflect the views of the European Union.

The European Union is established in accordance with the Treaty on European Union (Maastricht). There are currently 27 Member States of the Union. It is based on the European Communities and the member states cooperation in the fields of Common Foreign and Security Policy and Justice and Home Affairs. The five main institutions of the European Union are the European Parliament, the Council of Ministers, the European Commission, the Court of Justice and the Court of Auditors. (<http://europa.eu.int/>)



D4Science-II is a funded in part by the European Union.

LIST OF ABBREVIATIONS

AFD	Administrative and Financial Director
BSCW	Basic Shared Collaborative Workspace
CERN	European Organization for Nuclear Research
CNR	Consiglio Nazionale della Ricerche (National Research Council)
D4Science-II	Data infrastructure ecosystem for science, an EC FP7 funded project
EAB	External Advisory Board
EC	European Commission
ERCIM	European Research Consortium for Informatics and Mathematics, an European Economic Interest Grouping
EU	European Union
EUPL	European Union Public License
FAO	The Food and Agriculture Organization of the United Nations FAO
FP7	Seventh Framework Programme of the European Community
IPR	Intellectual Property Rights
JRA	Joint Research Activity
MGA	Members General Assembly
NA	Network Activity
NKUA	National and Kapodistrian University of Athens
PD	Project Director
PMB	Project Management Board
QATF	Quality Assurance Task Force
QR	Quarterly Report
SA	Service Activity
TB	Technical Board
TCom	Technical Committee
TM	Technical Manager
TMT	Technical Management Team
VOs	Virtual Organizations
VRE	Virtual Research Environment
IDA	Interchange of Data between Administrations
GPOSS	Good Practice in Using Open Source Software

TABLE OF CONTENTS

DOCUMENT INFORMATION	2
CHANGE LOG	3
DISCLAIMER	4
LIST OF ABBREVIATIONS	5
TABLE OF CONTENTS	6
LIST OF TABLES	7
LIST OF FIGURES.....	8
SUMMARY	9
EXECUTIVE SUMMARY	10
1 QUALITY ASSURANCE TASK FORCE	12
2 PROJECT GOVERNING BOARDS	13
3 COLLABORATION TOOLS	18
4 REVIEWS AND MEETINGS	21
5 RISK MANAGEMENT	25
6 CONFLICT RESOLUTION	27
7 SOFTWARE LICENSE	30
8 ACTIVITY REPORTING	34
9 DELIVERABLES.....	36
10 MILESTONES.....	38
11 DISSEMINATION.....	39
12 TECHNICAL PROCEDURES	42
13 QUALITY INDICATORS.....	43
14 GENDER ACTION PLAN	44
APPENDIX A. RISK ANALYSIS METHODOLOGY.....	45

LIST OF TABLES

TABLE 1 – GOVERNING AND MANAGEMENT BOARDS MEETING PROCEDURES	23
TABLE 2 – DELIVERABLE REVIEW PROCESS.....	36

LIST OF FIGURES

FIGURE 1 – PROJECT GOVERNING BOARDS.....	13
FIGURE 2 – PROJECT MANAGEMENT STRUCTURE.....	14
FIGURE 3 – CONFLICT RESOLUTION FLOW.....	28
FIGURE 4 – OVERALL RISK MANAGEMENT ACTIVITIES	45

SUMMARY

Quality Assurance is an important task within the scope of any IT project. The implementation of such activity is usually defined through a Quality Plan.

The objective of this deliverable is to report the Quality Plan established for the D4Science-II project. This plan covers many activities of the project by gathering procedures concerning different managerial and technological aspects of the project. The ultimate objective of this Quality Plan is to ensure the production of concrete and high-quality results inline with the project plans.

EXECUTIVE SUMMARY

The objective of deliverable DNA1.1 is to report the Quality Plan established for the D4Science-II project. This plan focuses on several activities of the project, trying to ensure the achievement of concrete and efficient results.

The different activities of the project are governed by a number of procedures and guidelines described in different project documents: Annex I to the Grant Agreement (Description of Work), Consortium Agreement, individual work package work plans, etc. This deliverable gathers in a single document all this disperse information which together will foster the achievement of the project objectives.

The D4Science-II management structure is based on three **governance and management boards**: Members General Assembly, Project Management Boards, and Technical Board. Other committees with precise mandates are also defined: Quality Assurance Task Force, Technical Management Team, and Technical Committee.

A number of procedures are defined for the preparation of **project meetings**. These meetings are organized several weeks in advance following the rules defined for each meeting type. Other procedures exist to prepare the yearly **project reviews** with EC representatives where the project major achievements are presented. These reviews are evaluated, and a number of recommendations are provided to the project in a review report. Such recommendations are addressed by the project management in an official reply to the EC.

The quality plan defines a **risk management** strategy consisting of two main phases: risk analysis and risk control. A number of possible risks are identified and clear strategies to control them are defined.

The resolution of project conflicts is also controlled. The **conflict resolution** procedure defines which boards are called to intervene when major problems arise.

Concerning **software license**, the default license selected by the project is the EUPL. Other licenses can also be adopted for particular components but must follow a licensing procedure in order to be accepted by the project.

As with any EU funded project, **official reporting** to the EC is an important task. This reporting is based on (1) quarterly reports covering all project work packages describing the main achievements and problems of the project for that period, (2) periodic reports prepared at the end of each year summarizing the work of the year, and (3) effort reports sent every quarter illustrating the effort spent by each partner in each work package.

The preparation of project **deliverables** and **milestones** follows a strict procedure to ensure that all official documents (or others) are of high quality and are made available on time. Deliverables must be ready 15 days before their due date. After a period of official review, all deliverables are sent to the PMB for silent approval. At the end of this process they are dispatched to be EC. These procedures also define rules concerning naming, monitoring, and templates.

The project **dissemination** is governed by a number of guidelines to be applied when a member of the consortium: writes an article, presents the project in conferences, needs to use the project logo, etc.

Also important, are the **technical procedures** that guide the daily technical activities of the project. These procedures cover different aspects, from the development of code to its deployment in production.

The QATF also decided to collect **indicators** related to the main activities and results of the project. These indicators are collected every month and quantify the work done on important tasks of the project. This activity allows to create a more clear vision on how the project is progressing.

To support all these procedures and guidelines, the project decided to adopt a number of **collaboration tools**: BSCW as document repository, TRAC as issue tracking system, Mediawiki for collaborative editing, mailing lists, etc.

1 QUALITY ASSURANCE TASK FORCE

Quality Assurance is a dedicated task under the NA1 “Project Management” work package. To implement all the activities related to Quality Assurance, a special task force has been formed. This task force was called Quality Assurance Task Force (QATF). The establishment of special task forces is foreseen in the project description of work to create small working teams assigned to work on particular aspects of the project.

1.1 Mandate

The mandate of the QATF is to ensure that the project processes, services and deliverables are of high quality by continuously monitoring and assessing the progress and results of the project.

1.2 Members

The QATF is composed by four members involved in the NA1 work package:

- CERN: Pedro Andrade
- CNR: Pasquale Pagano and Leonardo Candela
- NKUA: George Kakaletis

1.3 Responsibilities

The main responsibility of the QATF is to manage the project Quality Plan. This includes the definition, elaboration, update, and monitoring of such plan.

The project operation is based on a number of management and administrative procedures defined in various official documents, i.e. the project’s Technical Annex (Annex I or Description of Work), other D4Science-II Grant Agreement Annexes, and the project Consortium Agreement. These procedures are complimented by other more fine-grained procedures defined to regulate other activities of the project. The QATF is responsible for describing such procedures in the Quality Plan and enforcing its execution to guarantee a successful achievement of the project objectives. Moreover, technical procedures, such as the ones defined by the Service and Joint Research Activities, are also linked to the Quality Plan.

Project reporting, deviations from the work plan, resources spent, deliverable quality, review preparation and post-review follow-up, activity-specific process, and document management are all examples of the activities belonging to the realm of the QATF.

In addition to the above-mentioned responsibilities, the QATF is responsible for defining and monitoring performance indicators to assess the quality of the project results, its progress and impact. This work will be done in close collaboration with the project work package leaders. Finally, the QATF is in charge of the preparation of a statement on the treatment of gender equality.

2 PROJECT GOVERNING BOARDS

The D4Science-II management structure distinguishes between the Governance and the Management of the project:

- The Governance is carried out by the Members General Assembly (MGA). The MGA is responsible for decision-making affecting consortium composition, resource allocation, implementation of the work plan, and all other decisions having a direct legal or financial impact on project beneficiaries;
- The Management is carried out by the Project Management Board (PMB), the External Advisory Board (EAB), and the Technical Board (TB). The PMB is responsible for decision-making affecting project strategy, including risk management. The PMB activity is supported by the EAB that provides valuable recommendations on all project strategies. The TB leads the technological activities encompassed by the development and implementation of the D4Science-II e-Infrastructure.

The following diagram depicts the interaction between Project Governance and Project Management as represented by the various boards.

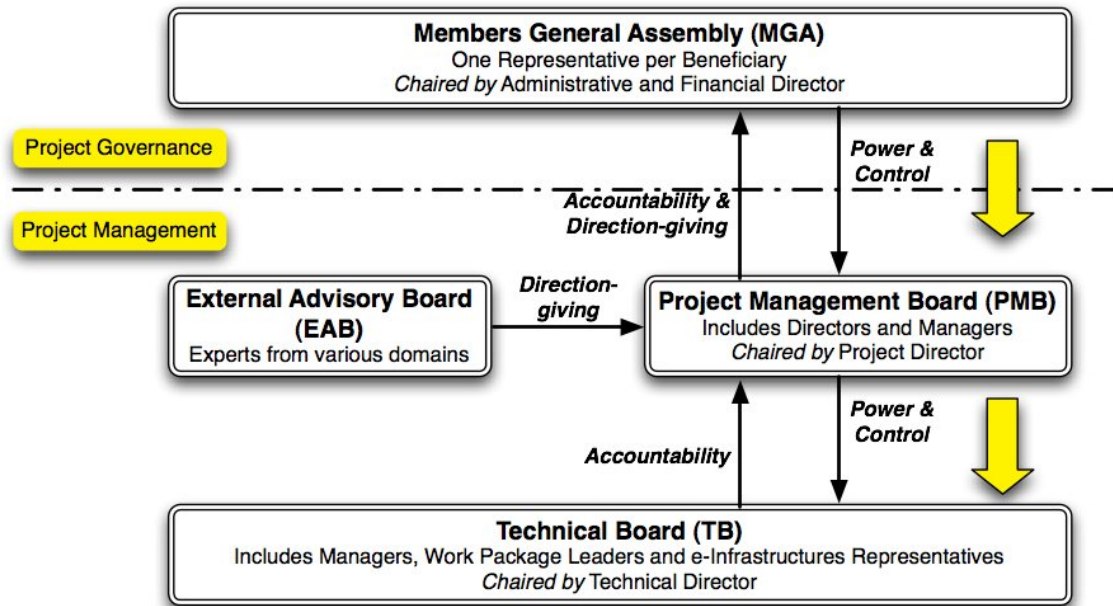


Figure 1 – Project Governing Boards

2.1 Project Governance

The Project Governance operates through the Member General Assembly (MGA) while the Project Coordination is shared between the Administrative and Financial Director (AFD) and the Project Director (PD).

The Administrative and Financial Director is the recognized project Coordinator and serves as the official contact point for the European Commission. The AFD directs the administrative and financial management across work packages and reporting across partners. The AFD manages the Project Office in Sophia Antipolis where a dedicated staff supervises all administrative and financial operations and provides general project support. The AFD is assigned to Ms. Jessica Michel of ERCIM.

The Project Director leads the scientific and technical coordination of the project by supervising the project across all activities and is responsible for creating the conditions

necessary for successful and effective collaboration of the D4Science-II team. The PD’s high-level view permits her to also serve as the ambassador of the project, establishing meaningful cooperation with other projects and initiatives at the national and international level. The PD is also responsible for the monitoring of the time schedule and the timing of related activities in close collaboration with the Technical Director. The role of PD is assigned to Donatella Castelli of CNR.

2.1.1 Members General Assembly

The Members General Assembly is responsible for decision-making affecting consortium composition, resource allocation, implementation of the work plan, and all other decisions having a direct legal or financial impact on consortium members. The MGA ensures that the EU contract is properly executed and that the terms of the agreed Consortium Agreement are properly implemented. It covers all aspects of the relations between partners, their responsibilities, liabilities, ownership of IPR, licensing, and exploitation issues.

The MGA encompasses one representative per partner and is chaired by the Administrative and Financial Director (AFD).

The members of the board will meet in person at least once per year, with telephone conferences convened as relevant issues arise. Electronic voting outside the annual meetings of the MGA is authorised.

2.2 Project Management

The Project Management operates within a hierarchy of delegated responsibility, with all management functions providing support to project activities and for the accomplishment of the goals of the consortium.

The organisational chart depicted in the following figure represents the relationships between the project’s boards and operations directors and managers.

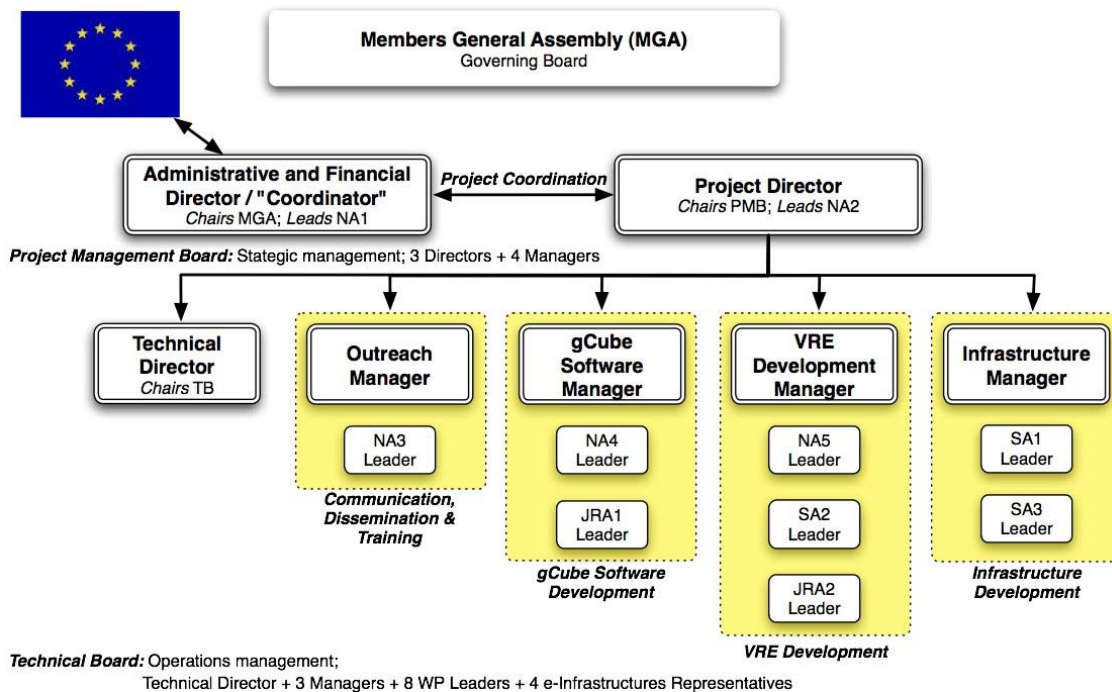


Figure 2 – Project Management Structure

The Technical Director (TD) coordinates technical aspects across all activities (i.e., software development, VRE development, infrastructure development and outreach where relevant), surveying to ensure that the project managers provide the proper level of support to all work packages. The engagement of the Technical Director in multiple heterogeneous technical activities makes him the best person to provide detailed resource allocation and scheduling, while monitoring the time schedule and the timing of related activities. Therefore, the Technical Director becomes a close advisor to the Project Director who employs a high-level approach to the supervision of the project across activities. In particular the TD coordinates on a day-to-day basis the progress of the technical work under the Technical Board following up decisions made by Consortium Bodies insofar as they affect the Activity Areas; communicates any plans, deliverables, documents and information connected with the Technical Board between its members and, if relevant, to the Project Management Board; submits the implementation plan of the Activity Areas to the Project Management Board for review and proposing an update of the Consortium Plan; advises the Coordinator of any discrepancy with the Consortium Plan, including any delay in delivery. The role of Technical Director is assigned to Pasquale Pagano of CNR.

The Outreach, gCube Software, VRE development, and Infrastructure Managers have the following general responsibilities:

- To be informed on the status of the work packages within his/her area;
- To support the TD in coordinating relationships across development areas;
- To advise the PMB on strategic decisions related to his/her activity area;
- To contribute to the tasks of the Technical Board.

Specifically, the Outreach Manager devises D4Science-II outreach strategy, while coordinating and supervising the work performed in the fields of Communication, Dissemination and Training. The role of Outreach Manager is assigned to Johannes Keizer of FAO.

The gCube Software Manager is responsible for gathering the requirements of the D4Science-II knowledge ecosystem, and the subsequent implementation of interoperable solutions. He must investigate and promote the usage of standards supporting several parts of the gCube system, from low-level communication protocols and encoding schemes, to data models to classification systems. Furthermore, the gCube Software Manager will contribute to the implementation of the project quality procedures by monitoring the related quality indicators and ensuring an appropriate management of related risks. The role of gCube Software Manager is assigned to George Kakalettris of NKUA.

The VRE Development Manager coordinates the involvement of the D4Science-II target communities in an iterative process for VRE configuration, testing and providing feedback; supporting and maintaining the resources for providing the VREs of the target scenarios; and providing the design and implementation of the case-specific needs for each scenario. The VRE Development Manager is the facilitator between the various communities, the developing technology and the infrastructure. Furthermore, the VRE Development Manager contributes to the implementation of the project quality procedures by monitoring the related quality indicators and guaranteeing an appropriate management of related risks. The role of VRE Development Manager is assigned to Leonardo Candela of CNR.

The Infrastructure Manager coordinates the operation of the infrastructure by overseeing the planning of the deployment of the infrastructure and the definition and enhancement of the procedures needed to ensure its proper functioning. The Infrastructure Manager coordinates cross work packages relations and issues resolution and report to the PMB on the status of these activities. Furthermore, the Infrastructure Manager contributes to the implementation of the project quality procedures monitoring the related quality indicators and ensuring an appropriate management of related risks. The role of Infrastructure Manager is assigned to Pedro Andrade of CERN.

Project managers are equipped with the necessary quantitative and analytical skills, tools, knowledge and decision-making capabilities to fulfil the functional responsibilities required for the achievement of the project work plan.

To assist them in accomplishing this goal, separate boards for strategy and operations are established. The Project Management Board formulates and leads the implementation of the overarching D4Science-II strategy, including the creation of synergies with other initiatives and long-term sustainability issues on which an External Advisory Board will provide guidance. The Technical Board leads the diverse technological activities encompassing the development and implementation of the D4Science e-Infrastructure, and consequently, the D4Science-II ecosystem.

2.2.1 Project Management Board

The Project Management Board (PMB) is the supervisory body of the project. It is designed to promote continuous sharing of project knowledge across all areas of activity and according to the defined work plan. In this way, the PMB can make informed decisions affecting the project strategy, while proposing and rapidly implementing corrective measures concerning the work plan in the emergence of delays or deviations. Monitoring risk assessment and partner performance is an essential objective of the PMB and this will be performed through collaboration with the Quality Assurance Task Force.

The PMB is also responsible for the proper execution and implementation of the decisions of the Members General Assembly and it will apply recommendations from the External Advisory Board in order to improve or reorient project strategy.

The PMB is chaired by the Project Director for the duration of the project and includes all “Directors” and “Managers”: the Administrative and Financial Director, Technical Director, Outreach Manager, gCube Software Manager, VRE Development Manager and Infrastructure Manager.

The PMB will meet in person at least two times per year, with telephone conferences once per month as a minimum. Electronic voting outside the bi-annual meetings of the PMB is authorised. The Project Management Board shall prepare the meetings, propose decisions and prepare the agenda of the Members General Assembly.

2.2.2 Technical Board

The Technical Board (TB) manages the numerous technological activities encompassed by the development and implementation of the Project’s Activity Areas, in particular with regard to:

- The timely delivery to the PMB and the Coordinator of:
 - Reports about the activities and results of the project activities;
 - Communication of delay in the performance of a project activity;
 - Communication, analysis, and documentation of breach of responsibilities of any partner and a proposal of remedies;
 - The proposals for the admission of new partners to the Grant Agreement and to the Consortium Agreement;
 - Proposal of changes to the Annex I of the Grant Agreement;
- The formulation and approval of:
 - An implementation plan for the project activities for the future period;
 - Tasks and related budgets exchange between the partners in an Activity Area when such exchange has no impact beyond the scope of the Activity Area and its budget.

The TB is chaired by the Technical Director for the duration of the project and includes the gCube Software, VRE Development, and Infrastructure Managers; Work Package Leaders; and one representative for each of the interfaced e-Infrastructures (i.e. GENESI-DR, DRIVER, INSPIRE, and AquaMaps).

The TB will meet in person four times per year, with telephone conferences held every two weeks if deemed necessary by the TD. Electronic voting outside the quarterly meeting of the TB is authorised.

2.2.3 Sub-Project Committees

The project's managerial boards (i.e., PMB and TB) have the possibility of proposing to the Members General Assembly the formation of sub-project committees as needs are identified. Sub-project committees are intended to assist in the efficient undertaking of the work plan by bringing together selected representatives from the various consortium members on particular tasks, providing them with a forum for discussion and debate, with the mission of communicating the outcomes to the relevant audience. When approved, sub-project committees become informal bodies that define their own distinct rules for collaboration. At the present, the following D4Science-II sub-project committees have been formed:

- **Technical Management Team (TMT):** The Technical Management Team is simply comprised of the Technical Director, gCube Software Manager, VRE Development Manager and Infrastructure Manager, i.e., the people primarily responsible for the project's Service and Joint Research Activities. The TMT will meet by telephone on a weekly basis, promoting a very close collaboration between them and facilitating efficient knowledge exchange at all project levels. The Technical Management Team may invite any person to attend a weekly discussion, depending upon the topic(s) at hand. The TD chairs the activities of the TMT;
- **Technical Committee (TCom):** The Technical Director leads cross-work package meetings for collaboration and alignment issues related to implementation of the knowledge ecosystem. These meetings between the participants of the project's technical work packages serve to discuss about progress of work and to brainstorm, and to address integration issues by the use of a working group methodology. The TCom is an extension of the Technical Board, and these face to face meetings are held in parallel with the quarterly meetings of the TB.

3 COLLABORATION TOOLS

In order to support the cooperation among the members of a widely distributed consortium such as D4Science-II, a comprehensive and complementary set of tools has been deployed at the beginning of the project. These tools range from mailing lists to shared workspaces, wikis, software repositories and issue trackers. Moreover, multiple instances of the same technology will coexist to properly satisfy the needs arising in different contexts, e.g. multiple instances of wiki will be created to host diverse information and thus serve different clientele. Thus, the same technology will be deployed in multiple instances conceptually leading to multiple tools tailored to serve specific D4science-II application scenarios.

In order to provide D4Science-II members as well as users with a complete, yet concise picture of what is available, a web page giving direct access to all of them has been implemented and made available through the project website.

This set of tools can be clustered in four main groups: *Projects*, *Technology*, *Infrastructure* and *Networking*. In the remainder of this section each group of tools is described.

3.1 Project

The Project group of tools consists of various services strictly related to the operation of the project as a whole. In particular, the following services have been deployed:

- Collaborative Working Space Service
 - <http://bscw.d4science-ii.research-infrastructures.eu>
 - A service based on the BSCW technology¹ to provide its users with a cooperative support service through which project members can share documents and other material, manage appointments, contacts, tasks, notes, create blogs, use polls to sample teammates' opinions, use versioning, stay aware of teammates' activities, send reminders, etc.
- Mailing List Service
 - A comprehensive set of mailing lists have been created to be used as official communication channels to reach the project members involved in the various activities and bodies:
 - Project as a whole mailing lists:
 - all@d4science-ii.research-infrastructures.eu
 - info@d4science-ii.research-infrastructures.eu
 - support@d4science-ii.research-infrastructures.eu
 - Management boards and task forces:
 - mga@d4science-ii.research-infrastructures.eu
 - pmb@d4science-ii.research-infrastructures.eu
 - tb@d4science-ii.research-infrastructures.eu
 - gatf@d4science-ii.research-infrastructures.eu
 - tmt@d4science-ii.research-infrastructures.eu
 - tcom@d4science-ii.research-infrastructures.eu
 - admin@d4science-ii.research-infrastructures.eu
 - Activity areas:
 - networking@d4science-ii.research-infrastructures.eu
 - service@d4science-ii.research-infrastructures.eu
 - jointresearch@d4science-ii.research-infrastructures.eu
 - Work packages:
 - {na1|na2|na3|na4|na5}@d4science-ii.research-infrastructures.eu
 - {sa1|sa2|sa3}@d4science-ii.research-infrastructures.eu

¹ <http://public.bcs.w.de>

- {jra1|jra2}@d4science-ii.research-infrastructures.eu
- Research Infrastructures Administration Toolkit
 - <http://manage.research-infrastructures.eu>
 - A tool for managing the set of users (through their accounts, memberships and profiles) partaking in the D4Science-II project, to assign them roles and rights of access to the various tools put in place, etc. This tool facilitates the management of such a complex set of tools both for the administrator and for the end user , by providing a single access point to manage their credentials and the policies governing tools usage.
- Quality Assurance Documentation Service
 - https://networking.wiki.d4science-ii.research-infrastructures.eu/networking/index.php/QATF_Home
 - A Wiki based content management system dedicated to describe the procedures defined by the Quality Assurance Task Force as well as to document their implementation. Examples of the implementation of these procedures are Wiki pages dedicated to monitor the status of the project deliverables as well as milestones.

3.2 Technology

The Technology group of tools consists of various services strictly related to the machinery guaranteeing the operation of the D4Science-II Ecosystem, namely gCube and gCore technologies. In particular, the following services have been deployed:

- gCube System Web Site
 - <http://www.gcube-system.org>
 - The official web site dedicated to advertise the gCube system as well as the gCore application framework and to provide information about it. It includes facilities for downloading the various versions of the developed technologies.
- Issue Tracker System
 - <https://issue.gcube-system.org>
 - A Trac² based issue-tracking system configured to manage requests, raise defects and assign tasks governing the technology development and evolution.
- Code Repository Service
 - <http://issue.gcube-system.org/browser>
 - A Subversion³ based version control system used to maintain current and historical versions of the developed technology. It is completely integrated with the Issue Tracker.
- Technology Documentation Service
 - <http://technology.wiki.gcube-system.org>
 - A Wiki based content management system dedicated to collaboratively create, edit, link and organize documentation material concerning the D4Science-II technology. It includes and promotes discussions, knowledge sharing and remote collaboration among the members of the technical team spread over the various Institutions.

3.3 Infrastructure

The Infrastructure group of tools consists of various services strictly related to the operation of the D4Science-II Ecosystem. In particular, the following services have been deployed:

- Service Activity Documentation Service
 - <http://service.wiki.d4science-ii.research-infrastructures.eu>

² <http://trac.edgewall.org>

³ <http://subversion.tigris.org>

- A Wiki based content management system dedicated to collaboratively create, edit, link and organize documentation material concerning the D4Science-II Ecosystem. It includes the procedure and tools governing the infrastructure operation and gCube releases,
- Monitoring Service
 - <http://monitor.d4science-ii.research-infrastructures.eu>
 - A web based console providing D4Science-II Ecosystem administrators with a set of comprehensive and multifaceted views describing the operational status of the resources and services partaking to the Ecosystem. In addition to a graphical user interface, it includes an alert service that notifies the administrators on malfunctions.
- Support Service
 - <http://issue.d4science-ii.research-infrastructures.eu>
 - This service mainly consists of a combination of (i) a web site providing Infrastructure practitioners with a comprehensive bunch of information like FAQs and links to procedures and documentation, and (ii) an issue tracker through which users and practitioners can raise various requests for support.

3.4 Networking

The Networking group of tools consists of various services strictly related to the operation of the project as a whole. In particular, the following services have been deployed:

- Networking Documentation Service
 - <http://networking.wiki.d4science-ii.research-infrastructures.eu>
 - A wiki based content management system dedicated to collaboratively create, edit, link and organize documentation material concerning the D4Science-II technology. It includes and promotes discussions, knowledge sharing and remote collaboration about these main topics: dissemination and training (complementing the web site and the training environment), interoperability challenges and solutions toward Ecosystem building, applications scenarios definition.

In the following paragraphs the principles of risk management are roughly established. The details of risk management methodology are captured in a deliverable dedicated to this activity, DNA1.3 "Risk analysis and risk response" due on project month 3.

4 REVIEWS AND MEETINGS

4.1 Review Procedure

The aim of a technical audit or review is to assess the work carried out under the project over a project period (i.e. one year) and provide recommendations to the Commission. Such review covers managerial, scientific, technological and other aspects relating to the proper execution of the project.

The mandate of the project is to ensure that project's external evaluators can review the degree of fulfilment of the project work plan for the period; the continued relevance of the objectives and breakthrough potential with respect to the scientific and industrial state of the art; the resources planned and utilised in relation to the achieved progress, in a manner consistent with the principles of economy, efficiency and effectiveness; the management procedures and methods of the project; the beneficiaries' contributions and integration within the project; the expected potential impact in scientific and technological terms, and the plans for the use and dissemination of results.

In order to ensure the fulfilment of this mandate at the first review planned at the end of Period 1, the QATF will monitor the quality and prompt delivery of the following achievements:

- Solutions defined for implementing interoperability with existing infrastructures;
- Environment collecting requirements concerning the project VREs;
- Evaluation of the developed VREs;
- Updated project website;
- Communication, dissemination and training activity report;
- Portal for administrating the supported VOs and VREs according the established procedures as well as the records of the activity performed for operating them;
- Software distribution site and documentation about the software components released in the period.

At the end of the project a second review is planned where all envisaged outcomes must be demonstrated to the project's external evaluators.

Review meetings are thus a fundamental conduit to communicate to the European Commission the progresses, the achievements, the added-value, and the plan of the project consortium. As a consequence the preparation of such review meetings is an important activity that is monitored by the QATF according to the following procedure:

1. The AFD and PD inform the QATF of the planned date for the review;
2. The QATF in 5 working days submits for PMB approval the following suggestions:
 - a. A schedule of two rehearsal meetings to be held within ten and two days before the official review respectively. The most suitable location where to run such meetings will be identified by considering the needs of all project delegates;
 - b. An agenda of the review meeting with major slots, responsibilities, and time allocation;
3. Upon reaction of the PMB, the QATF accepts the suggestions and requests for changes received by the PMB and in two working days the QATF starts the collaboration with all project managers for the preparation of the material to be presented at the review meeting and the monitoring of the quality and prompt delivery of the requested material;
4. The QATF promptly communicates to the PMB any delay in the production of what is expected to be presented at the review meeting together with a recovery plan.

4.2 Review Recommendations

At the end of the review meeting, the external evaluators prepare a report with their findings. This report contains an assessment of the facts as well as suggestions for further actions or changes. These recommendations and requested actions have to be

properly addressed by the consortium. This activity is monitored by the QATF according to the following procedure:

1. The QATF in 10 working days prepares an informal and confidential analysis of the reviewers' report. This analysis complete the request prepared for approval of the PMB with the following suggestions:
 - a. an assignment of each review recommendation to the most suitable person chosen among directors, managers, work package leaders, and task leaders;
 - b. a plan including steps and time allocation for the production of a report replying to the reviewers' recommendations and an assessment plan to accommodate their requests;
2. Upon reaction of the PMB, the QATF accepts the suggestions and requests for changes received by the PMB and in 2 working days the QATF starts the collaboration with the identified delegated people for the analysis of the reviewers' recommendations. A confidential wiki site will be prepared and monitored continuously and a summary table will be elaborated for the PMB's benefit. The QATF management activity is expected to avoid incompatibilities among solutions identified by different project delegates;
3. The QATF informs promptly the PMB if the production of what is expected to be delivered by a project delegate is delayed or not compliant with the expected quality together with a recovery plan within the end of the business day following any deadline;
4. A complete assessment report including an analysis of the recommendations, a report to reply to them, and an assessment plan to correct project activities are expected to be delivered within one month's time by the QATF to the PMB for its approval;
5. The PMB can approve, amend, or reject the work managed by the QATF. If needed, the PMB can restart the cycle by asking modification and/or additions to the assessment steps identified by the project delegates. In case the PMB identifies the needs to further improve this assessment report it is a mandate of the QATF to ensure that a new report is elaborated within 10 additional days.

4.3 Meeting Procedures

The procedures described in this section apply to all meetings of the project governance and management boards. Meetings of project boards can be held by summit in a location identified by the chairperson of that project board, can be a teleconference, or can be organized by exploiting any other available telecommunication means.

Any member of a project governance or management board should be present or represented at any meeting of such project board. If his/her participation cannot be assured, he/she may appoint a substitute or a proxy to attend and vote at any meeting. Moreover, the participation has to be cooperative and aimed to meet the needs of the project.

The meetings of the project boards can be ordinary or extraordinary and are convened by the chairperson of the board who shall give notice in writing of a meeting and prepare and send the final agenda to each member of that project board as soon as possible and within the minimum number of days preceding the meeting as reported in Table 1.

Any agenda item requiring a decision by the members of a board must be identified as such on the agenda. Any member of a board may add an item to the final agenda by written notification to all of the other members of that project board within the minimum number of days preceding the meeting as reported in Table 1. However, during a meeting the members of a project board present or represented can unanimously agree to add a new item to the approved agenda.

Project Board	Frequency	Notice of a meeting (calendar days)	Sending the agenda (calendar days)	Adding agenda items (calendar days)
Ordinary meeting				
MGA	At least once a year	45	21	14
PMB	At least every 6 months	30	7	2
TB	At least every 3 months	10	7	2
Extraordinary meeting				
MGA	At any time, upon written request of the chairperson of the PMB or 1/3 of the members of the MGA	15	7	5
PMB	At any time, upon written request of any member of the PMB	7	3	2
TB	At any time, upon written request of any member of the TB	7	3	2

Table 1 – Governing and Management Boards Meeting Procedures

Each project board shall not deliberate and decide validly unless a quorum of two-thirds (2/3) of its members is present or represented. Each member of a project board present or represented in the meeting shall have one vote.

The chairperson of a project board shall produce written minutes of each meeting which shall be the formal record of all decisions taken. The minutes must be produced according to the following template:

- Meeting classification (ordinary or extraordinary);
- Meeting location (teleconference or physical location);
- Meeting agenda or objective;
- Meeting start and end date/time;
- Meeting participants' names, organizations, and roles in the meeting. People attending remotely must also be listed;
- Reference to all presentations performed or documents presented;
- Enumeration of all issues raised, either solved or pending with some context (if required). The "opposing" opinions must also be properly summarised;
- All formal decisions taken;
- Actions and their deadlines for further work;

The minutes must be made available within 10 calendar days after the meeting through an online page under the Quality Assurance wiki site by ensuring the right confidentiality. The wiki page will be editable until the minutes are accepted.

The minutes shall be considered as accepted if, within 15 calendar days from sending, no member has objected in writing to the chairperson with respect to the accuracy of the draft of the minutes. If a party objects in writing to the accuracy of the minutes, and all other parties agree that the minutes are correct, then the objecting party will be overruled.

The accepted minutes shall be sent to all of the members of the project board and the AFD, who shall safeguard them. When requested, the AFD shall provide authenticated duplicates to parties.

A member who can show that its own work, time for performance, costs, liabilities, intellectual property rights or other legitimate interests would be significantly affected by a decision of a project board may exercise a veto with respect to the corresponding decision or relevant part of the decision.

When the decision is foreseen on the original agenda, a member may veto such a decision during the meeting only. When a decision has been taken on a new item added to the agenda before or during the meeting, a member may veto such a decision during the meeting and within 15 days after the minutes of the meeting are sent.

In case of exercise of veto, the members of the related project board shall make every effort to resolve the matter which occasioned the veto to the general satisfaction of all its members.

A party may not veto decisions relating to its identification as a defaulting party. The defaulting party may not veto decisions relating to its participation and termination in the Consortium or the consequences of them. A party requesting to leave the consortium may not veto decisions relating there to.

5 RISK MANAGEMENT

The goal of the risk management activity is to provide the consortium with guidelines and instruments for managing the project actual and potential risks that can occur during the project lifetime.

In this report, the principles of risk management are roughly established in Appendix A, aiming to define the procedures that will render the activity an essential tool for safeguarding the project objectives. In accordance to the D4Science-II work plan, the details of risk management methodology are captured in a deliverable dedicated to this activity, DNA1.3 “Risk analysis and risk response” due project-month 3. As such, it is not the objective of the Quality Plan to define precise risk analysis metrics or to perform risk enumeration.

However the procedures described here will exploit Risk Management terms and procedures, whose contextual meaning is given in the aforementioned appendix.

5.1 Risk Analysis

Risk Analysis (§A.2) procedure is carried out as part of DNA1.3 Deliverable production, orchestrated by the QATF. However as several individuals are involved in the preparation of this deliverable, who are also permanent participants of the Risk Management procedures, the tasks and steps of Risk Analysis have to be further defined a-priori. Overall the preparation of the risk management activity is accomplished as follows:

- Risk Methodology Development: QATF
- Risk Analysis: The Risk Identification and Risk Evaluation require the involvement of a large number of persons in the procedure: activity managers, work package and task leaders, as well as Subsystem Managers⁴ can support the collection of risks at their source/target. In detail:
 - Risk Identification
 - Collection: QATF, Activity Managers, Task Leaders.
 - Homogenization: QATF
 - Risk Evaluation: QATF, Activity Managers, Task Leaders.
 - Risk Classification: QATF

The result of risk classification produces a full risk list that is placed at the disposal of D4Science-II consortium members for reference and is periodically updated and included in the Quarterly Reports.

5.2 Risk Control

Risk Control (§A.3) involves three individual steps, starting from Risk Analysis output:

- The Risk Control Plan: should foresee the involvement of Activity Managers, work package and task Leaders, as well as Subsystem Managers. These members of the project work team closely follow all the activities of their area and they are the best candidates to identify the status of a risk and reduce its probability of occurrence or recover by a damage, by implementing the required countermeasures.
- The Risk Monitoring: which is performed continuously and formally tracked in the Quarterly Reports under the following procedure:

⁴ Subsystem Managers are individuals assigned to the management of integration and release tasks of software components that act in a functional area that is defined as a “subsystem”. Subsystems and their managers are defined by SA activities as part of the software production cycle.

- During the Quarterly Report, the QATF launches a request to Activity Managers for identifying problems met or concerns that arose during the last period, as these are the main (but not the only) reasons for raising risks' ranking;
- Activity Managers pass this list of potential risks to work package leaders and this delegation can reach task leaders or even subsystem managers and partner representatives, if required for obtaining low/mid level details on risk evolution;
- Activity Managers revise higher level risks according to the input received or their own justified perception of risk evolution;
- QATF aggregates and homogenizes information received and enriches it with conclusion and higher lever risk evaluation so as the full risk ranking list is produced. It is important that supplied information is adequately linked to the formal risk classification list, i.e. risk identification is supplied and valid values are provided for the various measures required;
- As risks are identified, the respective Activity Managers are notified, while beyond a certain threshold the PMB is informed about a particular risk;
- Similarly but with the reverse impact, risks that gradually diminish, have their countermeasures relaxed.

Even if otherwise assigned to a different set of actors of the project, the results of this control activity should be reported in the Quarterly Report document in order to advise the PMB on potential risks.

- The Risk Resolution: where proposals are led through the PMB and the rest of the project's mechanisms, after being pointed out by the QATF through the Quarterly Reports. More particularly the steps that are involved in the procedure are the following:
 - The QATF examines the Risk Ranking List that is produced as part of the Risk Monitoring Procedure.
 - The QATF evaluates and proposes withdrawal or adoption of measures for Risks of dropping or rising ranks, by consulting the in-project "experts" (e.g. work package leaders) and the associated Risk Analysis Plan.
 - The QATF proposes to the PMB the areas of action for risk management and the concrete actions (as described in the Risk Analysis Plan) to be taken. In complex cases, indicates that the PMB must take further action to face or recover from a risk.
 - In both cases the PMB is responsible for taking the decision;
 - The QATF proposals for Risk Management are led through the quarterly reports, unless exceptionally urgent cases rise.

6 CONFLICT RESOLUTION

Conflict resolution in D4Science-II refers to situations that can potentially occur among elements of the project. Cases of conflict resolution can be found below:

- Partner(s) to partner(s) conflict within the scope of a single activity;
- Partner(s) with project management boards;
- Non-voting board conflict;
- Voting board conflict;
- Document conflict.

The above categories are not exhaustive.

6.1 Document Conflict Resolution

A completely different type of conflict is the one that can occur among documents of the project. In this case the following order is maintained:

- Grant Agreement;
- Consortium Agreement;
- Other document (deliverable, minutes, internal document exchange).

Unless an error is identified, deliverables approved by the project bodies prevail over all other internal documents. Otherwise meeting minutes formally circulated take precedence.

6.2 Partner Conflict Resolution

The term “conflicting partners” is used but should be read in the sense of a single partner entering conflict with a governing or management board decision.

As D4Science-II is a collaborative project, its main concern is the maintenance of best relationships among its project’s members as organizations, teams, and individuals. Thus the general policy of conflict resolution is to suggest the conversation and smooth diminishment of any disagreement or concern without reaching the top-level project’s instruments for final action. As such, voting, also escalated among different boards, is left aside as the last resort of resolution. Although it is a major concern of the project that even voted decisions are taken unanimously, it is enough that 2/3 approval is required for a decision to be taken. Yet, even in the case of non-unanimous voting it is considered that decisions have to be generally welcomed, thus post-voting deliberations are suggested, if they can drive a full agreement under the light of the majority-favoured voted decision.

Within this conflict resolution chain, graphically depicted in the following diagram, the Members General Assembly (MGA) is the ultimate decision-making body that a decision can be taken within the project’s limits. This board comprises one representative per partner. The Project Management Board (PMB) is the second board usually involved within this escalation procedure.

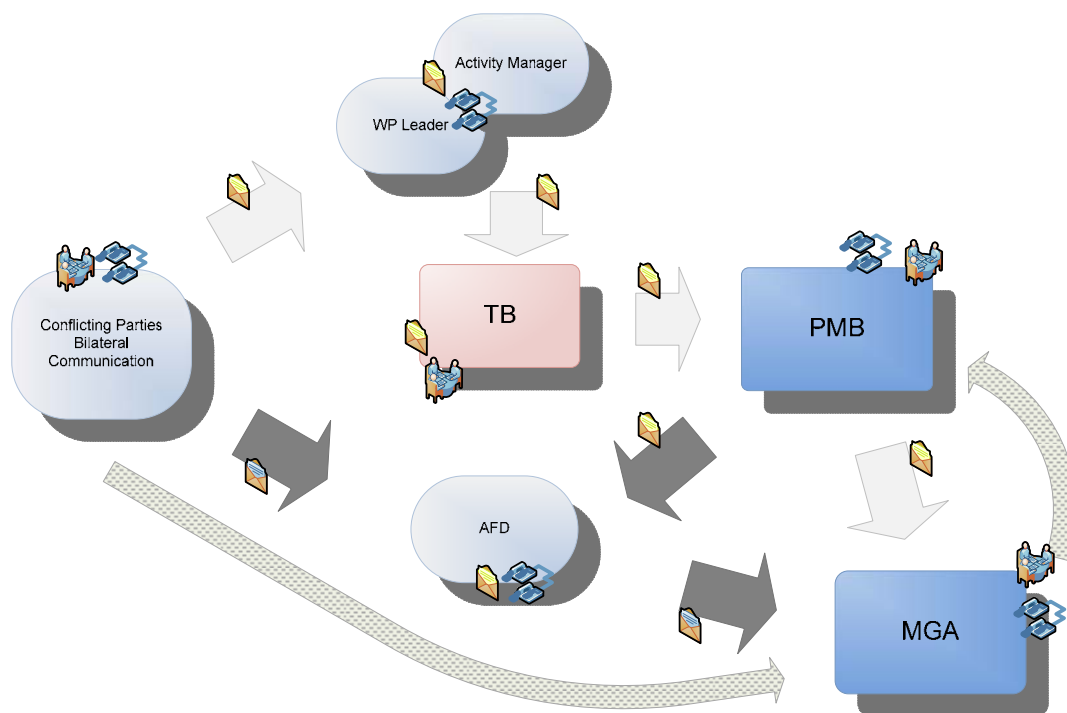


Figure 3 – Conflict Resolution Flow

In Figure 3 there are two main paths of conflict resolution:

- The light coloured path is followed for topics concerning conflicts that their major factor is on technical or work aspects;
- The dark coloured path is followed for topics that are mainly concerned about administration, bilateral relationships and financial issues.

A third path is sketched by curved arrows is an exceptional path described below. Committees are drawn with rounded rectangles (dark/blue rectangles represent voting committees) while individuals are drawn with light coloured ovals. It has to be mentioned the means of communication (email, phone, meetings) are indicative and demonstrate best practices of the past rather than formal rules.

In detail a need for Conflict Resolution can start at any node of the diagram. In the following, the details of each action are presented:

- **STEP 1:** Conflicting members attempt to resolve their conflict in a bilateral manner. It is expected that this is done mainly by telecommunication means (phone and email) and the inclusion of a Task leader is welcomed in this procedure;
- **STEP 2 (opt a):** If the conflict is concerned with technical or work decisions, the work package leader is involved to assist in achieving a cooperative solution and avoid the escalation of a conflict to formal project instruments. Notification at this level can be sent by email or other telecommunication means, as well as the resolution itself can follow any type of channel. Formally the work package leader is identified as the first project-wide nominated responsible for coordinating work and technical decisions in a particular area, however his/her involvement is in the form of consultancy, as no enforced decision can be made at this level;
- **STEP 2 (opt b):** If the conflict is concerned with financial, administrative or other non-technical/work issues, then the Administrative and Financial Director is consulted;
- **STEP 2a.1:** In case of non-resolution at this level, the Activity Manager is introduced into the conflict for supporting its resolution. The Activity Manager involvement is in the form of consultancy, as no enforced decision can be taken

by him/her. However as Activity Manager's opinion is directly represented also to the PMB, it is expected that his/her consultancy is more effective than WP leader:

- **STEP 2a.1.1:** As a further step the discussion can be led to the Technical Board instead of a single WP leader, by requesting a special session to a planned event, or by raising an open email discussion at the TB mailing list. Although TB is led by the PMB, this step is also informal and contributes to the collective resolution of conflicts without concluding to the top level governing bodies. The related Activity Manager is responsible for leading the topic to the PMB for this informal first level discussion;
- **STEP 2a.2:** Both the Technical Board and an Activity Manager can introduce the conflict to the PMB, if the conflicting parties are not satisfied by his suggestions and the TB conclusions. No other individual can raise a topic to the PMB. Request to the PMB is sent by email;
 - **STEP 2a.2.1:** If a Manager or the TB avoids introducing a topic to the PMB, then the conflicting members can decide to bring the topic to the MGA, which in turn can instruct the PMB to deliver its opinion on a particular conflict, or even redirect the resolution to the PMB. Beyond this point escalation will follow the normal path;
- **STEP 2a.3:** PMB proposes a formal solution to the conflict:
 - The PMB can call a meeting with the conflicting members for elaborating the details of a potential resolution;
 - Two-thirds participation is required for driving any decision at PMB level;
 - In case of voting in the PMB, two-thirds approval is required for considering a decision as adequately acceptable for resolving the issue and being forwarded to the MGA as a solution, in case it is not directly acceptable by the partners;
 - A physical meeting, or at least a teleconference is preferred for voting;
 - It is proposed that in case that the resolution method proposed has clear and major financial impact to a partner, then the Administrative and Financial Director is consulted by the PMB rather than directly the MGA;
 - Mail is a valid means of communication;
- **STEP 2b.3:** The Administrative and Financial Director can consult for the resolution of a conflict of management of financial character after being instructed either by the PMB or by an individual Partner. The AFD is also entitled to bring topics to the MGA for resolution if the path of the PMB is not being followed. Notification to the MGA can be sent by email;
- **Step 3:** The MGA obtains a conflict resolution task normally by the Project Administrator or the PMB, and exceptionally directly by the conflicting partners;
 - During a conflict MGA can request consultancy from PMB for sub topics of the conflict, including budgetary issues. Requests are raised by email.
 - The MGA attempts to locate a collaborative solution before concluding to voting. This can be driven by teleconferences and email exchanges;
 - Two-thirds participation is required for driving any decision at MGA level;
 - Voting is the ultimate means for the resolution. Precedence over voting is given only to the formal documents Consortium Agreement and Grant Agreement;
 - In case of voting in the PMB, two-thirds approval are required for considering a decision as adequately acceptable for resolving an issue:
 - If voting is required, the preferred means for conflict resolution is conducting a physical meeting, or at least a teleconference;
 - MGA instructs Project Management Board for the proper execution and implementation of its decision on a conflict resolution;
 - The Defaulting Parties can only be identified by the MGA after considering the breach of the Consortium Agreement and the precise procedure is defined in the Consortium Agreement.

In each and every case it is the rule that all decisions have to be in accordance with the formal documents and obligations of the project, as stated in section 0.

7 SOFTWARE LICENSE

Software Licence refers to the licence that will be adopted in order to distribute the binaries and source code produced by the project under the gCube name. It is considered that the licensing scheme is crucial not only for the long term sustainability of the technical activities of the project, but also for the mid term envisaged quality of its artefacts.

It is considered that within the domain of activation of the project, i.e. scientific communities and infrastructure, and under the general rules of e-Infrastructures software development practices, an “open” licence is the most appropriate for adoption.

On the other hand gCube software is a system D4Science has inherited from its predecessor project DILIGENT, that has been consolidated by D4Science project for supporting specific community oriented needs. As such it comes with an existing licensing policy, whose appropriateness is once again examined under the prism of D4Science-II. As gCube system adopts the EUPL licensing scheme it is fully in line with the perception obtained within D4Science-II for its enabling software.

It is valuable to understand why this licensing scheme is selected, instead of one which is more widely accepted by the worldwide open source development communities. In assistance to this comes the ‘Report on Open Source Licensing of software developed by The European Commission⁵’, released in December 2004. In this report, the Enterprise Directorate General, IDA/GPOSS⁶, aimed at “Encouraging Good Practice in the use of Open Source Software in Public Administrations’ goal”, reported what follows:

The most significant Free / Open Source Software (F/OSS licenses) (BSD, GPL, MPL, OSL and CeCILL) have been compared and analysed according to the European legal framework, demonstrating that none of the existing OSS licences answers to the requirements.

The BSD, Berkeley Software Distribution, license should be put aside given the absence of copyleft clause. This is however a fundamental feature in order to avoid the appropriation of the program by third parties.

The GPL, General Public License V. 2, major problem is that the right of communication to the public is not provided explicitly amongst the granted rights, and that a clause limits furthermore the granted rights to what is explicitly provided by the license. Moreover, the GPL is known for being the most viral license ever, whereas massive spreading through dynamic linkage is not the aim of the European Commission.

The MPL, Mozilla Public Licence 1.1, main problems reside in its applicable law and forum clause, referring to California.

Whereas the CeCILL⁷ could be deemed the best license given that it is the only one to be drafted according to EU terminology, its liability clause is really insecure and could jeopardize its compatibility with any other F/OSS license. Furthermore, its clause concerning its compatibility with the GPL is likely to

⁵ Report on Open Source Licensing of software developed by The European Commission (applied to the CIRCA solution) is accessible at <http://ec.europa.eu/idabc/servlets/Doc?id=19296>

⁶ Interchange of Data between Administrations/Good Practice in Using Open Source Software

⁷ CeCILL: (Ce:CEA ; C:Cnrs ; I:INRIA ; LL:Logiciel Libre) is supported by the French CEA (Commissariat à l’énergie atomique), the CNRS (Centre National de la Recherche Scientifique) and INRIA (Institut National de Recherche en Informatique et en Automatique). It is available at www.inria.fr/valorisation/logiciels/Licence.CeCILL-V1.pdf

turn rapidly the CIRCA⁸ license into a GPL license and therefore attract the drawbacks of this latter.

The OSL, Open Software Licence 2.1, does not present any major problems, but is drafted using US legal terminology.

Based on the above the possible solutions are:

- 1. To choose the license that fits the best with the European Commission requirements and apply it "as is" (in that case, the OSL is the best choice, but it exists in English only, and uses US terminology).*
- 2. To ask the author of an existing license to modify/translate/adapt according to the EU needs, with the advantage of facilitating recognition by the OSS community.*
- 3. To create a specific OSS license, which is the more open solution, but implies more work, more commitment to promote it as best practice and the risk of non-acceptance by the OSS community.*

Essentially this testifies that the choice of the licence cannot be based on simple considerations or desires but has to take into account the applicable law, the forum clause, the protection of the copyright, and all other aspects that protect the investment of European institutions and companies.

7.1 EUPL

To address the above issues, it is important to know that on 9 January 2007 the European Commission approved the European Union Public Licence (EUPL v.1.0)⁹. The licence was made available in English, French and German. In a second Decision of 9 January 2008, the European Commission validated the EUPL in all the other official languages, in respect of the principle of linguistic diversity of the European Union. At the same time, due account has been taken of the European Union Law as well as of the specificity and diversity of Member States Law.

EUPL has been approved as a licence to be used for the distribution of software developed in the framework of the IDA and IDABC¹⁰ programmes. Nevertheless, the licence text is drafted in general terms and could therefore be used for other software applications, as explicitly reported in the initial declaration:

This European Union Public Licence (the "EUPL") applies to the Work or Software (as defined below) which is provided under the terms of this Licence. Any use of the Work, other than as authorised under this Licence is prohibited (to the extent such use is covered by a right of the copyright holder of the Work).

The Original Work is provided under the terms of this Licence when the Licensor (as defined below) has placed the following notice immediately following the copyright notice for the Original Work:

Licensed under the EUPL V.1.0

or has expressed by any other mean his willingness to license under the EUPL.

⁸ CIRCA: Communication and Information Resource Centre Administrator, a simple and effective groupware, developed by the European Commission under the IDA Programme. It is a web-based application providing online services that offer a common virtual space for Workgroups, enabling the effective and secure sharing of resources and documents.

⁹ <http://ec.europa.eu/idabc/en/document/7330>

¹⁰ IDABC stands for 'European Community programme'. It aims to promote Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens. IDABC continues and deepens the previous IDA, 'Interchange of data between Administrations', programme.

By a Decision of 9 January 2009, the European Commission adopted a revised version of the Licence while at the same time validated it in all the official languages (EURL v.1.1). The changes were minimal:

- Work distributed under the EURL v.1.0 may be re-distributed under the EURL v.1.1 or any later version;
- A statement paragraph to declare that all linguistic versions of the licence, approved by the European Commission, have identical value was been added, so that parties can take advantage of the linguistic version of their choice.

EURL is also intended to be the first open source licence with:

- A compatibility clause that identifies compatible licences;
- An officially sanctioned translation in 23 official languages of the European Union that makes its language clear and largely unambiguous.

Moreover, EURL includes a 'copyleft'¹¹ clause but it does not present problems for compatibility since it does not create obligations down a stream of distribution. EURL downstream is compatible with another licence, e.g. GPL, through the compatibility clause that specifically lists licences to be considered compatible. Those licences are considered compatible. In case of conflict, the conditions of the compatible licence will prevail.

Finally, EURL provides: (i) a full European copyright coverage (communication / moral rights); (ii) EU compatible liability and warranty clauses; (iii) EU compatible applicable law and jurisdiction clauses.

Analysed the above cited sources of information and taking into account the motivation expressed by the European Commission in the preparation and delivery of the EURL^[12,13], as well as the history and licensing of D4Science project (i.e. D4Science-II predecessor and current owner of gCube software) the QATF considers the adoption of EURL as license for future distributions of the D4Science-II core software, known as gCube system as the only option available. gCube System software comes already licensed under the EURL scheme and any change in the licensing of the software that is concurrently being developed by D4Science and soon other, external to the project, task forces (i.e. former D4Science partners), would severely impact its sustainability.

The validation of this statement remains to be approved by the MGA as approval of the central licence can only be performed by this Governing Board (Consortium Agreement § 6.3.1.2). It is recommended that a voting decision should be scheduled before project month 6, Feb 2010, thus providing adequate information to the developing teams about their capacities for reuse and distribution of software.

7.2 Other Licenses

D4Science-II has a different scope than D4Science, which involves external infrastructures and tools that are not entirely conceived at the time of this report, in terms of technology exploited. It is highly probable that interacting with such infrastructures will involve different licenses, as for instance:

- Proprietary licenses for exploiting service APIs of infrastructure wrappers, even in the case they are freely given out;
- Other Open Source licenses for reusing components of the OSS nature;

¹¹ Copyleft is a play on the word copyright to describe the practice of using copyright law to remove restrictions on distributing copies and modified versions of a work for others and requiring that the same freedoms be preserved in modified versions (text extract from Wikipedia)

¹² 'Report on Study of the compatibility mechanism of the EURL v1.0' accessible at <http://ec.europa.eu/idabc/servlets/Doc?id=27472>

¹³ 'EURL's Rationale & Drafting Process' accessing at <http://ossipedia.ipa.go.jp/legalinfo/20071221-5.pdf>

- Proprietary usage licenses of integrated systems (e.g. applications and components);
- Proprietary development licenses of integrated systems (e.g. development environments).

It is quite important for project's sustainability that minimal deviation is performed compared to the basic licensing scheme. This deviation should be well justified before followed and should follow a preference towards Open licenses. However, due to the special needs of the project, it is considered that a relative flexibility in licensing has to be obtained by the JRA teams.

This flexibility, suggests that satellite systems and components can be potentially covered by other licensing schemes under an informed decision made by the appropriate project boards.

The approval of the individual satellite system licenses requires deep technical knowledge of a domain and should follow a clear path of decision:

- Out of the relevant task, a license deviation request should be forwarded to the Software Manager;
- The Software Manager requests an analysis by the task involved members and introduces the topic to the Technical Management Team (TMT) along with his suggestion and reasoning for a decision;
- The TMT can elaborate counter proposals if the reasoning for a decision is not sufficient to suggest a deviation from the common adopted licensing scheme. As result of this activity the TMT produces an evaluation of the impact in terms of sustainability of the software and of the infrastructure and passes it to the PMB;
- The PMB evaluates the impact of the licensing deviation as well of the impact of the non-deviation and takes a final decision on the topic;
- In the case of deviation approval, the topic is forwarded to the MGA by email for approval. In this case the MGA can approve the license with the least overhead imposing means, such as silent approval.

8 ACTIVITY REPORTING

Activity reporting assists project management, and the European Commission, to monitor project progresses, achievements and difficulties encountered. During the course of the project, activity reporting will be conducted in three forms: (i) *Quarterly Reports* prepared every three months by Managers and Directors; (ii) *Periodic Reports* prepared annually by Work Package Leaders and MGA members; and (iii) *Effort Reporting* prepared per partner and in parallel with Quarterly Report.

It is possible that partners will be requested to participate in other types of reporting throughout the project and after its completion. Examples of additional types of obligations include responding to: questionnaires for socio-economic reporting, implementation of gender actions, and impact on science and society; evaluation and monitoring exercises; contribution to standardization activities; etc.

8.1 Quarterly Reports

Quarterly Reports (QRs) are prepared by project Managers and Directors by collecting information from the work package Leaders. Managers and Directors contributions are integrated by the deliverable lead Beneficiary (CNR).

Contributions to the Quarterly Reports are expected to contain:

- A descriptive part listing the major achievements, progresses, and problems verified during the period;
- A report on the risks related activities (cf. Section 5), e.g. risks occurred during the reporting period, risk resolution activities, changes in risk evaluation and classification;
- A numeric part including the quality indicators (cf. Section 13) and few lines discussing the reported figures;
- The report template is available at:
<http://bscw.d4science-ii.research-infrastructures.eu/bscw/bscw.cgi/148727>

The Quarterly Report is produced according to the following schedule:

- 10th of Mx: Managers and Directors send the relative activity description to CNR;
- 20th of Mx: CNR sends the QR to ERCIM for official review;
- 25th of Mx: ERCIM completes the official review;
- 30th of Mx: ERCIM circulates the deliverable to the PMB and sends it to the EC.

The roadmap for production of the Quarterly Reports is outlined on the wiki maintained by the Quality Assurance Task Force:

https://networking.wiki.d4science-ii.research-infrastructures.eu/networking/index.php/QATF_Deliverables_Status

8.2 Periodic Reports

Two periodic reports (DNA1.4a-b) will be produced during the course of the project. ERCIM must submit the periodic reports within 60 days of the end of each reporting period, thus partners must strictly adhere to the deadlines that will be established for contributing to the production of the periodic reports.

This activity will be implemented by relying on the Basic Shared Collaborative Workspace service.

This deliverable will be produced by following the template produced by the EC.

Deadlines for contributions will be established at least 30 days prior to the end of the reporting period. The production of this report implies actions from work package leaders and beneficiaries.

Every work package leader is required to:

- Summarize the progress towards objectives and details for each task;

- Highlight clearly significant results;
- Explain the reasons for deviations from Annex I (Description of Work) and their impact on other tasks as well as on available resources and planning (if applicable);
- Explain the reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (if applicable and the explanations should be coherent with the declaration by ERCIM);
- Provide a statement on the use of resources, in particular highlighting and explaining deviations between actual and planned person months per work package and per beneficiary in Annex I (Description of Work);
- Propose corrective actions (if applicable). The work package contributions as described above will comprise work progress and achievements during the period of the periodic report.

Work package leaders must also inform ERCIM of milestones on achievement date and comments, such as means of measurement/verification.

Prior to the submission of any contribution to the periodic report, the work package leader must send the contribution to the corresponding activity manager for validation. The manager reserves the right to edit the contribution, requesting more information as necessary. Once approved, the manager may forward the work package contribution to ERCIM for consolidation.

Every Beneficiary will be required to provide a thorough "Explanation of the use of the resources", including an explanation of personnel costs, subcontracting and any major costs incurred by the partner, such as the purchase of important equipment, travel costs, large consumable items, etc., linking them to work packages. Beneficiaries will also provide Financial Statements, or Form Cs.

Templates have been created by the Commission and will be used for both of the above items.

8.3 Effort Reporting

All partners will be requested to provide a report on effort spent, per task, in alignment with the production of the Quarterly Reports. One person per partner should be designated to report effort for the three-month period.

A folder has been established on the D4Science-II BSCW that includes a template for producing the quarterly monthly effort report:

<http://bscw.d4science-ii.research-infrastructures.eu/bscw/bscw.cgi/155990>

Greyed areas of the template are indicative of work packages in which the partner has no effort allocated in the Annex I (Description of Work). However, it is possible for partners to transfer effort between work packages if prior agreement has been obtained from the PMB. Transfer of effort between tasks requires prior agreement from the corresponding work package Leader.

Partners should download the template for the effort report, enter their contributions and save the file in the folder corresponding to the correct quarter. The suggested naming procedure should be used:

- D4Science-II_Effort_QR_Mx_PartnerNumber_PartnerName.xls
- D4Science-II_Effort_QR_M3_01_ERCIM.xls

The due date for the completion and posting to the BSCW of the three-month effort report is the 15th of Mx. On the 25nd of Mx, ERCIM forwards the consolidated three-month effort report to the PMB, along with the corresponding QR.

The three-month effort report is not required in parallel with periodic reporting, i.e., at M12 and M24.

9 DELIVERABLES

Deliverables are an important channel to communicate to the European Commission the project progresses and results. As a consequence the preparation of such documents is an important activity that should be properly monitored by the QATF.

This section describes the procedure identified to review project deliverables, the naming convention, the templates for such documents, and how to monitor the deliverables preparation.

9.1 Review Procedure

All deliverables prepared by the consortium, before being submitted to the European Commission, must undergo an official review. This review procedure applies to both types of deliverables defined in project description of work: "Report" and "Other". The review process is organized in 3 main phases:

- Preparation and internal review;
- Official review;
- PMB review and approval.

These three phases are further organized in seven steps:

1. The QATF informs the deliverable reviewer and deliverable editor that the review process has started. The QATF makes sure BSCW is ready;
2. The reviewer confirms with the editor that everything is ready to start the deliverable editing (e.g. Table of Contents is approved, website is ready, time plan is clear);
3. The editor sends the deliverable for official review, after executing an internal deliverable review done by the work package or the deliverable authors;
4. The reviewer sends its comments and proposal of changes to the editor;
5. The editor provides the reviewer with the final version of the deliverable applying the review comments and, if needed, a textual reply to the comments;
6. The reviewer checks if all comments have been applied and sends the deliverable to ERCIM together with a deliverable approval statement;
7. ERCIM circulates the deliverable to the PMB for silent approval. In case of negative comments the editor analyzes them and applies possible changes.
8. ERCIM sends the deliverable to the EC.

For the successful execution of the procedure above, the different steps must strictly follow the deadlines presented in **Error! Reference source not found..** Step 3 and step 8 are of particular importance and must be followed closely by the QATF.

Who	Step	Date
QATF	1. Starts the review by informing the reviewer and editor	1 of Mx-1
Reviewer	2. Confirms with the editor that everything is ready	15 of Mx-1
Editor	3. Sends the deliverable to the reviewer	15 of Mx
Reviewer	4. Sends the deliverable comments to the editor	21 of Mx
Editor	5. Send the final deliverable to the reviewer	23 of Mx
Reviewer	6. Sends the final deliverable to ERCIM	25 of Mx
ERCIM	7. Sends the deliverable to the PMB for silent approval	26 of Mx
ERCIM	8. Sends the deliverable to the EC	30 of Mx

Table 2 – Deliverable Review Process

If one of the deadlines falls on a weekend or holiday, the deadline is postponed to the first working day after the deadline.

The preparation of any D4Science-II deliverable must use BSCW in order to store the deliverable and manage the transitions between the review steps. To each deliverable a BSCW workflow folder is assigned. These folders are located at:

<http://bscw.research-infrastructures.eu/bscw/bscw.cgi/148857>

They must be used for two purposes:

1. To host all versions of the deliverable (from the initial deliverable structure to the final version) and all other associated files (review comments, review reply, review statement, etc.). All deliverables uploaded to BSCW must be compatible with MS Word 2003;
2. To manage the transitions between the seven steps of the review procedure. This is executed using the workflow associated to the folder. To move from one step to the other, the responsible for the current step must access the corresponding deliverable folder and forward the workflow. This will complete the current task and automatically send a notification to the responsible for the next task.

Deliverables DNA2.1a-f (aka Quarterly Reports) follow a slightly modified version of this procedure. The procedure governing the preparation of such deliverables is defined in Section 0

9.2 Naming

Each deliverable must be associated with one unique document identifier to ensure effective version control. This unique identifier is the deliverable filename. The filename of all deliverables must be compliant with the following rules:

- Author Integration:
 - <deliverable name>_v<version>.doc
 - e.g. DSA1.1b_v1.1.doc
- Editor Contribution:
 - <deliverable name>_v<version>_<partner>.doc
 - e.g. DNA1.1_v0.2_CERN.doc

9.3 Template

All deliverables must follow the project templates:

- Deliverables of type "Report":

http://bscw.research-infrastructures.eu/bscw/bscw.cgi/d158052/D4Science-II_deliverable_template_REPORT.doc

- Deliverables of type "Other":

http://bscw.research-infrastructures.eu/bscw/bscw.cgi/d158048/D4Science-II_deliverable_template_OTHER.doc

9.4 Monitoring

The status of the deliverables can be monitored in the "Deliverables" section of the Quality Assurance wiki page:

https://networking.wiki.d4science-ii.research-infrastructures.eu/networking/index.php/QATF_Deliverables_Status

This information is retrieved by the QATF from the status of the BSCW workflow associated to all deliverables. Whenever a deliverable is in late with respect to the procedure, a red colour in the monitoring page is associated to the deliverable.

Based on this information, the QATF sends a reminder to the PMB and TB mailing lists, on the 28 of each month, describing the status of the ongoing deliverables.

10 MILESTONES

Project milestones are important tools to inspect the status of the project and the achievement of results. These tools are useful to present to the EC the achievement of results but are also useful to internally monitor the evolution of the project or of individual work packages. As a consequence, the achievement of project milestones should be properly monitored by the QATF.

This section describes the procedure to announce project milestones, the milestone naming convention, and how the QATF monitors the announcement of milestones.

10.1 Announcement Procedure

Milestones must be announced by the work package leader (or task leader) responsible for the milestone. Such declaration includes two actions:

- Each work package has a BSCW “Milestones” folder associated located at: <http://bscw.research-infrastructures.eu/bscw/bscw.cgi/148857>
When a milestone is achieved, a new BSCW object must be created inside such folder. This object can be link or a textual description;
- An email to the QATF (qatf@d4science-ii.research-infrastructures.eu) and NA3 (na3@d4science-ii.research-infrastructures.eu) mailings list must be send pointing to the just created BSCW milestone object.

All milestones must be announced by the last working day of the milestone due month.

10.2 Naming

Each milestone object must following this naming convention:

- <milestone identifier>_M<due month>.<extension>
- e.g. MNA1.1_M1.txt

10.3 Monitoring

The status of the milestones can be monitored in the “Milestones” section of the Quality Assurance wiki page:

https://networking.wiki.d4science-ii.research-infrastructures.eu/networking/index.php/QATF_Deliverables_Status

Whenever a milestone is in late with respect to the procedure, a red colour in the monitoring page is associated to the milestone.

Based on this information, the QATF sends a reminder to the PMB and TB mailing lists, on the 28 of each month, describing the status of the ongoing milestones.

11 DISSEMINATION

The D4Science-II Communication, Dissemination and Training Plan (DNA3.1) focuses on the definition of the project's dissemination and training strategy, and means of implementation. The plan will be published and regularly updated at:

https://networking.wiki.d4science-ii.research-infrastructures.eu/networking/index.php/NA3_Home

11.1 Approach

11.1.1 Mailing list

The NA3 work package "Communication, Dissemination and Training" is led by FAO and is divided into two tasks. One of them focuses on Dissemination "TNA3.1: Dissemination and Awareness". This task is led by FAO with the participation of ERCIM, CNR, NKUA and CERN. It is strongly advised to use the NA3 mailing list to communicate with the NA3 team, ask for assistance, request a clearance, and send suggestions:

na3@d4science-ii.research-infrastructures.eu

11.1.2 NA3 contacts

Each D4Science-II partner will assign one or two persons responsible to collect and share communication activities with the NA3 work package Leader.

The WP leader will get in touch with these contact persons once a month, to know about ongoing, planned, or perhaps unforeseen communication activities.

11.1.3 Partners' contribution

All project partners can contribute to the various dissemination activities by:

- Presenting the project in conferences;
- Promoting the benefits of the project to a large community of (potential) users;
- Writing papers and producing documentation;
- Developing platforms (D4Science portal, Distance learning courses, Wikis);
- Editing and providing source material for press releases;
- Responding to interviews;
- Documenting their work via e-mail;
- Documenting their work via social networking tools;
- Suggesting web links, resources, and events.

11.2 Key Message

When engaging in any type of communication or dissemination activity, project participants should keep in mind the project's "key messages" as defined by NA3:

*Built on the experience gained during the DILIGENT and D4Science projects, D4Science-II will develop the technology to enable interoperation of several scientific data e-Infrastructures that are running autonomously, thereby creating an **innovative and sustainable e-Infrastructure Knowledge Ecosystem**. To set up a prototypical instance of such a Knowledge Ecosystem, D4Science-II will **bring together e-Infrastructures** established in areas such as biodiversity, fishery resources management and high energy physics. This will support several critical **scientific scenarios** serving communities dealing with multidisciplinary challenges.*

11.3 Logo and Templates

11.3.1 Logo

Project and partners' logo are available at:

<http://bscw.research-infrastructures.eu/bscw/bscw.cgi/148652>

11.3.2 Deliverables

Two MS Word "deliverable templates" for 'Report' and 'Other' are available on the BSCW and shall be used for the preparation of all deliverables.

The files are called D4Science-II_deliverable_template_OTHER.doc and D4Science-II_deliverable_template_REPORT.doc and are available at:

<http://bscw.research-infrastructures.eu/bscw/bscw.cgi/148727>

11.3.3 Slides

An MS PowerPoint template is available on the BSCW and shall be used for all D4Science-II related presentations.

The file is called D4science-II_template.ppt and is available at:

<http://bscw.research-infrastructures.eu/bscw/bscw.cgi/148727>

All slides created in the D4Science-II context should be copied on BSCW.

11.4 Events Participation

Anyone participating in an event where D4Science-II is presented, either directly or indirectly, should include all meeting related information on BSCW so that anyone in the project (including NA3) is informed.

- For internal project meetings:
 - <http://bscw.research-infrastructures.eu/bscw/bscw.cgi/146816>
- For external dissemination events:
 - <http://bscw.research-infrastructures.eu/bscw/bscw.cgi/148353>

The meeting folder can be created using the following naming convention (this is only an example): *2009-12-09/11 - 1st TCom Meeting*

It is recommended to attach all meeting-related information (minutes, slides, agenda, etc.). A simple .txt file can also be created to include the following minimum information, if available / if applicable:

- For external events:
 - Title of the event
 - Date and place
 - Name of presenter
 - Title of presentation/paper
 - Type of audience (Research, Industry, General Public, Policymakers, etc.)
 - Number of attendees (rough estimation)
 - Countries addressed
- For internal meetings:
 - Title of the meeting, type of meeting
 - Date
 - List of participants
 - Agenda
 - Decisions/actions

11.5 Disclaimer

The EU can not be responsible under any circumstances for the contents of communication items prepared by project partners. All items must therefore include the following disclaimer in their publications: "This publication has been produced with the assistance of the European Union. The contents of this publication are the sole

responsibility of <name of the author/beneficiary/implementing partner/D4Science-II project participants> and can in no way be taken to reflect the views of the European Union." The following box includes the disclaimer used in deliverables.

This document contains descriptions of the D4Science and D4Science-II project findings, work and products. Certain parts may be under partner Intellectual Property Rights (IPR), therefore please contact the consortium lead for approval. E-mail: info@d4science-ii.research-infrastructures.eu

Should you believe that this document harms in any way IPR held by you as a person or as a representative of an entity, please notify us immediately.

The authors of this document have taken measures to ensure that the content is accurate, consistent and lawful. However, neither the project consortium as a whole nor the individual partners that implicitly or explicitly participated in the creation and publication of this document hold any sort of responsibility that might occur as a result of using its content.

This publication has been produced with the assistance of the European Union. The content of this publication is the sole responsibility of the D4Science-II consortium and can in no way be taken to reflect the views of the European Union.

The European Union is established in accordance with the Treaty on European Union (Maastricht). There are currently 27 Member States of the Union. It is based on the European Communities and the member states cooperation in the fields of Common Foreign and Security Policy and Justice and Home Affairs. The five main institutions of the European Union are the European Parliament, the Council of Ministers, the European Commission, the Court of Justice and the Court of Auditors. (<http://europa.eu.int/>)



11.6 Recognition

Communication items must include recognition of financing by the European Union. Thus, all items must include a statement such as the following in a highly visible area (e.g., press release, cover page, top or bottom of a poster): "D4Science-II is financed in part by the European Commission's Seventh Framework Programme." These items must also include the relevant logos:

- EU flag: http://europa.eu/abc/symbols/emblem/graphics2_en.htm
- 7h FP: http://ec.europa.eu/research/fp7/index_en.cfm?pg=logos

12 TECHNICAL PROCEDURES

As introduced in Section 1, the project Quality Plan should take in consideration not only administrative and managerial procedures but also the technical procedures to ensure wider project coverage.

This section highlights in particular two procedures related to the release of the project software and its consequent deployment in the production infrastructure.

12.1 Software Release

The release cycle of the software developed by the project (called gCube) includes several tasks: integration, packaging, testing, distribution, etc. The orchestration of the different activities associated to these tasks is based on the release cycle procedure. This procedure is described in detail in the “SA3 Software Integration, Testing and Distribution” work package wiki page:

https://service.wiki.d4science-ii.research-infrastructures.eu/service/index.php/Procedure_Release_Cycle

12.2 Infrastructure Operation

One of the project major objectives is the deployment of an e-Infrastructure ecosystem to provide reliable Virtual Research Environments (VREs) to the project scientific user communities. The operation of such infrastructure follows well established procedures, covering different operational areas: software installation and upgrade, site certification, user support, monitoring, etc. These procedures are described in detail in the SA1 and SA2 work packages wiki page:

https://service.wiki.d4science-ii.research-infrastructures.eu/service/index.php/SA1_Infrastructure_Procedures

12.3 Software Validation

Software development is an important activity with the D4Science-II project. Consequently it cannot fall outside the quality assurance plans. The goal of the software validation procedure is to verify the quality of the software developed by the project. The execution of the procedure should however be straightforward and do not bring extra work on the development teams of the project. The procedure is based on the fact that, a developer who, according to the software architecture, is responsible for “consuming” a given component must state the degree that the component met his/her expectancies and requirements upon its release. More information about this procedure can be found at:

https://service.wiki.d4science-ii.research-infrastructures.eu/service/index.php/Procedure_Software_Validation

13 QUALITY INDICATORS

To follow the progress of the project work packages in a continuous basis and better understand possible problems or deviations to the original plan, the QATF defined a list of project quality indicators.

These quality indicators are organized by project work packages (or tasks). Each work package (or task) Leader is expected to update the indicators of his/her work package (task) once every month. The indicators of Mx must be collected by the 10th of Mx+1 and uploaded to the Quality Indicators page of the Quality Assurance wiki site:

https://networking.wiki.d4science-ii.research-infrastructures.eu/networking/index.php/QATF_Indicators

Unless indicated, all indicators are project-wide and reflect the work of one month. Each indicator is associated to one identifier for easy future reference. A possible example of an indicator associated to the NA3 work package is:

- NA3_I3 - Number of website visitors

The official list of project indicators is available in the Quality Indicators page of the Quality Assurance wiki site. Such list might suffer modifications during the initial phase of the project in order to achieve a meaningful list of indicators to collect.

14 GENDER ACTION PLAN

D4Science-II will strive to:

- Create an inclusive research environment in which men and women, scientists and administrators can combine family and work, children and career;
- Maintain a philosophy that includes the individual needs of all participants.

Our statement on the promotion of gender equality is the following:

The accomplishment of D4Science-II's far-reaching objectives is only possible through the motivation and wellbeing of project participants. D4Science-II will promote a culturally diverse virtual research community wherein women and men with varying needs can be supported in achieving and maintaining a work-life balance.

This principle will be applied to all levels of the project, from development to management, and without regard to the person's level of experience. Members of the Project Management Board can influence the length, duration and location of project meetings. When participation in a meeting is not possible due to constraints, personal or professional, the use of certain communication tools will be encouraged in order to facilitate remote participation, e.g. Skype, audio conferencing systems, distribution of minutes and actions. The establishment of this Quality Plan will contribute greatly to an understanding of expectations and functioning at various levels of the project.

However, project management can only guide the project participants. Participants are expected to respect the guidelines established by the project, and in this Quality Plan. Members of the General Assembly must follow the lead, and observe these guidelines for D4Science-II participation, bearing in mind the guiding principles of gender equality and mainstreaming.

Guiding actions

Guiding actions will be implemented at the project level, within each partner's team and within the virtual team that comprises the work packages. It is the responsibility of Work Package Leaders and MGA representatives to ensure that the guiding actions are promoted throughout the project duration through:

- Introduction of gender awareness raising activities at the partner level;
- Sharing "best practices" or other model examples with the MGA or PMB;
- Encouragement and support of a work-family balance for project participants, including:
 - Respecting deadlines for contributions to prevent overload at the end of the delivery chain;
 - Reducing the duration of Plenary Sessions by preferring shorter more focused topical meetings;
 - Preferring centrally located meeting venues in order to avoid full days of travel.

APPENDIX A. RISK ANALYSIS METHODOLOGY

A.1 Risk Management Methodology Principles

D4Science-II plans to implement a series of software components, integrated into a system, i.e. the gCube System, and subsequently deploy a production infrastructure on top of which services will be provided. The aforementioned tasks are based on a number of requirements and technological assumptions as well as on existing software basis provided by its predecessor projects and other developments. Furthermore, the project develops knowledge and technological expertises that are direct benefits for its participating members.

Due to the vast scope, it becomes natural that there are a great number of “goods” (to be called “commodities” from this point forward) that are directly or indirectly affected and produced by D4Science-II. These commodities are the ones that are menaced by threats that need to be identified along with the potential damage that can be caused, as well as the countermeasures to be taken for minimizing the occurrence of an “incident” or recovering from damages caused by a threat are the fundamental tasks of risk analysis. A number of frameworks (i.e. rules and tools) need to be identified as part of the analysis, while in order to be applied constant monitoring and action activities have to be performed. Monitoring is the constantly running activity after the initial analysis is performed and can lead to either reconsideration of the analysis or to particular actions that will confront a risk of rising damage or a damage occurrence itself.

The following diagram depicts the rough steps and elements of the risk management activity that will be detailed in DNA1.3:

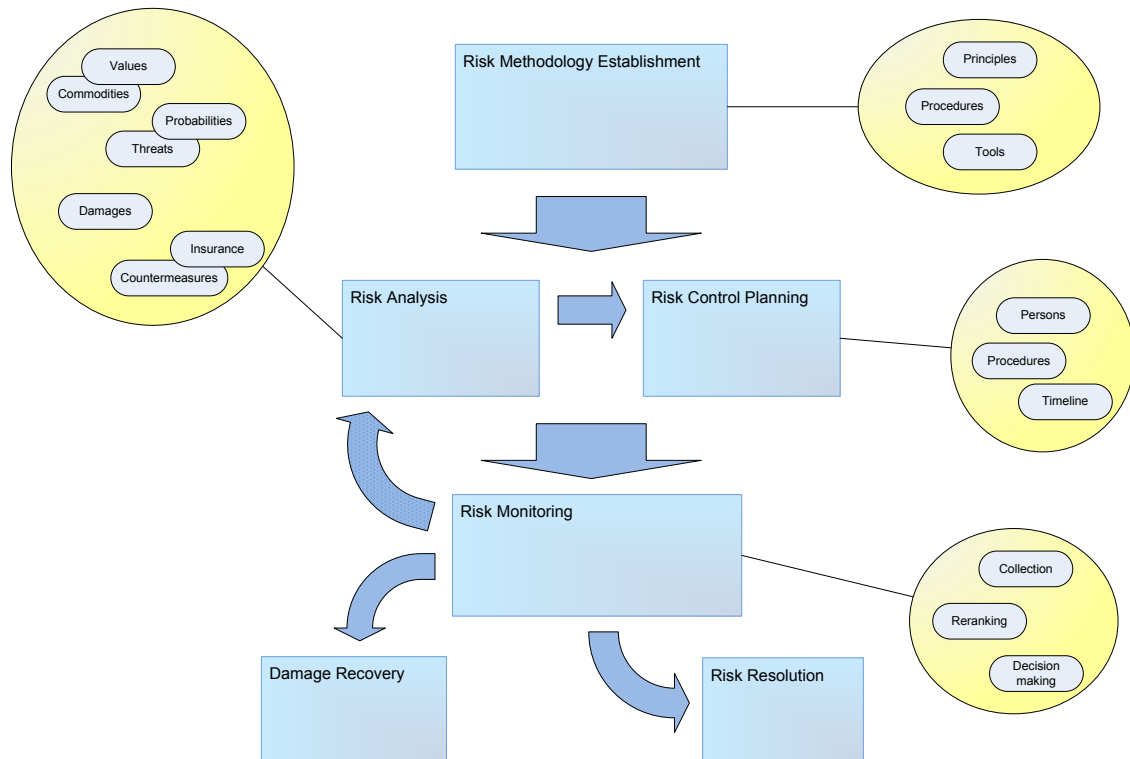


Figure 4 – Overall Risk Management Activities

A.2 Risk Analysis

In the project's areas of activity, there are several well-known threats that can compromise its success. Among the most important ones, the following can be identified:

- Inadequacy of infrastructural resources;
- Faulty (intentional or unintentional) estimation of the project technical aspects:
 - Features
 - Technology applicability
 - Technology adequacy
 - Timeline
- Requirements instability (expected up to a certain degree in the many projects);
- Inadequacy of project undertakers (units, work teams, or single persons);
- Communication, coordination, and collaboration problems;
- Misbehaving dependencies:
 - Technologies
 - Third parties

The above-mentioned list of threats can be examined from different points of view: the high-level view of a project manager or the low-level perspective of a particular component that depends on reusable elements. Although the big picture is built on the details, enumerating all low-level risks and their impact becomes unmanageable, a case often observed in complex systems that tend to adopt a more "statistical" oriented approach. As such higher-level risks are identified, quantified and managed more easily. A fundamental rule for facilitating the monitoring and the quick identification of risk rising is that the relationship of high-level to low level risks is maintained at least as a rule-based linking.

The aforementioned threats can impact any of the commodities of the project:

- Knowledge
- Software
- Services
- Reputation of partners and project
- Economics

Moreover, D4Science-II as a research project suffers from another group of risks:

- The application area does not sufficiently drive interesting scientific results;
- The communities do not trust the novelties introduced by the scientists;
- The competitors reach objectives faster.

The Risk Analysis methodology to be adopted should foresee three main steps presented in sections **Error! Reference source not found.**, **Error! Reference source not found.**, and **Error! Reference source not found.**. The results of the Risk Analysis activity will be reported in project deliverable DNA1.3 entitled "Risk analysis and risk response". This deliverable will be constantly revised so as to contain the consequent updates of the initial report, as these will emerge by the monitoring activity.

Risk Identification

Risk Identification locates, enumerates, and describes the risks that the different parts of the system developed or deployed by the project are exposed to and all their related entities (e.g. commodities and threats). Aspects of risk identification are the source/problem which can be external or internal to the project, and the target/impact, which is always an internal to the project concept or item that is affected by the source/problem upon its occurrence. Not all of these are necessary for the description of a risk, while an approximation of the likelihood of the risk is quite important for the evaluation step that follows.

For determining the procedures of risk management it is important to locate the main sources for obtaining risks:

- Evaluation of the applicability of common risks proposed by various methodologies and performance of a fine-grained extension of the common risks to the elements of the project that comply with the risk definition;
- Analysis of the methodology commonly used by the target communities and evaluation of the distance among their approaches and the ones proposed by the project;
- Enumeration of all the dependencies of software components and work plans at the task level and enhancement of the information with the effects caused by the event of failure, delay, misbehaviour (lack of features, performance, etc.).

After the identification of the risks, a number of additional steps are recommended:

- Identification and removal of duplicated risks;
- Homogenisation of the terminology;
- Sorting of risks according to the source/problem. Multiple effect source/problem can be grouped in one element with multiple targets/impacts;

Risk Evaluation

Risk Evaluation attaches qualitative and quantitative attributes to the risk, leading to subsequent quantification of the impact that the risk will have in the “value” of the commodities. It is based on the findings of Risk Identification, as all risks identified have to be evaluated. The evaluation of a risk is performed by identifying the probability of occurrence and the impact via estimations (e.g. probability rank and impact rank), that simplify the procedure and allow obtaining the main benefits of risk management, i.e. the identification of the initial and rising risks of the project.

Risk Classification

Risk Classification identifies the most important risks and promotes in subsequent steps the actions to be taken to safeguard the commodities. The prioritization of risks attempts to focus on handling the risks with greatest loss and greatest probability of occurrence.

Two approaches are recommended to sort the classified risks:

- Sort the risks by ranking of their probability to appear. This allows focusing on the risks most likely to happen and then investigate the chains as they are taking place;
- Sort the risks by a combined rank (taking into account the aforementioned metrics) that captures most serious problems that can affect the commodity and then investigate the related events.

Top-N ranked risks are identified as major risks and their environment is described in detail, with respect to, triggering of the risk and impact (qualitative and quantitative).

The result of risk classification produces a full risk list that has to be periodically updated and published.

Risk Analysis Plan

Effective Risk Analysis can be accomplished only by collecting “expert” opinions on the various and diverse commodities of the project and their threats. As such the initial collection of the risks and their attributes should be fanned out to activity managers and to task leaders that should provide their perspective on low/mid or even high level risks of the project. In essence, each task leader of the project will have the opportunity and responsibility to identify the risks that the commodities they are expected to deliver or consume are exposed to. Quality Assurance Task Force will organize the procedure, contribute and extend these and deliver the results as an instrument to the monitoring activity.

A.3 Risk Control

The Risk Control should foresee three main tasks: Planning, Monitoring and Resolution.

Risk Control Plan

Risk Planning identifies the procedures and responsibilities to monitor the risks according to the priorities identified in the Risk Classification phase. It is not a procedure executed only once. Rather it is a task that has to be constantly active. A consistent plan has to be adopted and strictly followed by the assigned persons throughout the duration of the project. This plan involves:

- Setting responsibilities for managing the plan itself;
- Periodical updates of the plan;
- Definition of risk monitoring procedures;
- Definition of risk resolution actions.

The Risk Control activity operates on an enriched set of information already gathered as part of Risk Analysis. In particular, for each risk the following information should be recorded during its analysis, so that Risk Planning is effective:

- Description of the risk;
- The situation under which it might occur.

As a consequence the Risk Plan has to identify:

- Ways to monitor the appearance and evolution of the risk;
- Ways to handle the risk upon its appearance;
- The responsible for monitoring and handling the risk.

This list is created upon identification of the major risks, as provided by the Risk Classification process.

As such Risk Planning is an activity tightly coupled with Risk Analysis.

Risk Monitoring

Risk Monitoring is a continuous activity to monitor the evolution of risks throughout the project's lifetime and the triggering of actions for confronting either their probability rising or their impact before or after their occurrence. The Risk Monitoring procedure is defined by the Risk Management methodology as part of the Risk Control Plan.

An effective monitoring procedure can be the continuous update of the top-ranked risks of the project. This requires the update of all the relevant contributions and evaluations so that the obtained rank is meaningful.

Among the top-ranked risks it is important to implement the actions specified in the Risk Plan on the risks that emerge into the list, while the relaxation of countermeasures for very low ranked risks is also a policy that can be considered for effective resource management. This implies that the status of all risks has to be evaluated.

The list of the risks, along with their (initial) ranking emerges from the Risk Analysis procedure, and one of the main activities of Risk Monitoring is the update of this list so that new ranking is calculated. It is essential though that the history of the updates is maintained so that changes can be easily tracked, and rising/dropping risks are easily identified.

Risk Resolution

Risk Resolution is about undertaking actions to either reduce the probability of occurrence of a risk or the countermeasure needed to limit its effects or the recovery of damage. These actions can target completely different objectives, depending on the evaluation and the status of a particular risk:

- Avoid the occurrence of the risk by reducing/removing the probability of its triggering events;
- Nullify the associated threat by removing its connection with project activities;
- Removal of the threatened commodities;
- Transfer of the potential damage to another party or commodity with the aim of reducing the probability of occurrence or minimise the impact;
- Acceptance of the risk and implementation of an escalated range of its countermeasures;

- Acceptance of the risk with a damage-recovery policy that can even employ the risk side-effects themselves.

It is made obvious by the previous actions that “resolution” does not always imply “nullification” of a risk. Rather, depending on the ranking performed, risks of severe impact have to be carefully examined and the countermeasures have to be deeply analysed to ensure that they are capable to limit the effects on the project.