



Wf4Ever: Advanced Workflow Preservation Technologies for Enhanced Science

STREP FP7-ICT-2007-6 270192

Objective: ICT-2009.4.1b — “Advanced preservation scenarios”

D7.1 Quality and Risk Contingency Plan

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This deliverable describes the activities for maintaining the quality and the risk management plan.

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Wf4Ever Consortium

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Work package participants

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Change Log

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Executive Summary

This deliverable is the key document describing the activities for the achievement of quality and risk management tasks in the Wf4Ever project. Responsibilities for quality assurance and risk management are shared between all partners.

The project aims at obtaining a high degree of quality, where outcomes are achieved in terms of the efficacy and efficiency of working practices, as well as software products, and standards of project deliverables and outputs. This plan seeks to establish the procedures and standards to be employed in the project, and to allocate responsibility for ensuring that these procedures and standards are followed. The plan is effective throughout the lifetime of the project, but is open to revision if necessary.

Note on Sources and Original Contributions

The Wf4Ever consortium is an inter-disciplinary team, including members with long experience in different national and European-wide projects. Based on those experiences, the deliverables produced in Wf4Ever are intended to be self-contained and comprehensible to all partners, and thus some deliverables include state-of-the-art surveys and associated critical assessment. We take a practical approach and where there is no advantage to recreating such materials from first principles, partners follow standard scientific practice and occasionally make use of their own pre-existing intellectual property in such sections. In the interests of transparency, we here identify the main sources of such pre-existing materials in this deliverable:

- Section 1 contains material from the description of work of Wf4Ever, updated with the latest information of the project
- Section 2 contains material from the description of work of Wf4Ever (where an initial list of risks and contingency plans were provided) and from deliverable D8.3 (SWOT analysis).

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1 Quality Assurance Plan

1.1 Responsibilities for Quality Assurance

As described in the description of work for Wf4Ever, management activities of the project are conducted within the scope of WP7, which covers management, co-ordination and different support activities. This section describes the project management structure, including the main responsibilities identified and the quality control mechanisms.

The project has a project coordinator and vicecoordinator, a project administrator, a scientific manager, a collaboration and dissemination manager, and several boards with different responsibilities. The management structure is shown in Figure 1.

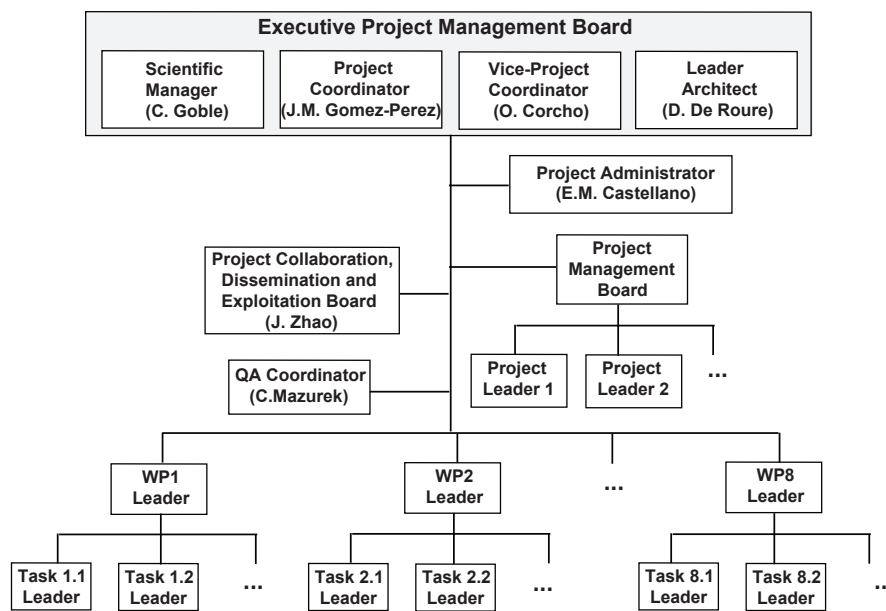


Figure 1: Wf4Ever Organization Chart

Project management takes place by assigning management roles and decision-making responsibilities to the different partners. The following roles and responsibilities are identified, with corresponding Quality Assurance roles:

- **Project Coordinator (PC).** Dr. José Manuel Gómez Pérez (iSOCO). The PC acts as liaison with FP7 IST Project Officers, and other EU bodies, as necessary. He also acts as interface between the consortium and the financial departments of the coordinating partners in order to ensure that all the payments are properly done, that the appropriate amounts were received, etc. He coordinates the yearly reports for year 1 and 2, and the final report in year 3. *QA Role:* Ensuring adherence to contractual obligations; ensuring that the Quality Assurance and Risk Contingency Plan is delivered and implemented; monitoring, reviewing and revising to the Quality Assurance and Risk Contingency Plan (including deadlines dates, procedures etc); monitoring the attainment of Total Quality (TQ) at a strategic and project level.
- **Viceproject Coordinator (VC).** Dr. Oscar Corcho (UPM). The VC assists the PC in this multidisciplinary project, based on his ample academic, technical and management experience and a long record of participation as a member or principal investigator in EU-funded projects (MKBEEM, OntoWeb, Knowledge Web, Esperonto, OntoGrid, SemsorGrid4Env, PlanetData).
- **Scientific Manager (SM).** Prof. Carole Goble (UNIMAN). She provides scientific and technological

leadership for the duration of the project, working closely together with the Project Coordinator. She has the following responsibilities: managing the technical dependencies between WPs, monitoring the research and scientific progress of the project, and managing the scientific collaboration with other IST related projects. *QA Role:* Monitoring and acting upon the analysis submitted by WP leaders on a quarterly basis; reviewing quality issues reported by the quality assessors (of deliverables); monitoring activities against work package and task descriptions; reviewing and suggesting revision to processes where required; monitoring the attainment of TQ at a project level.

- Leader Architect (LA). Dr. David de Roure (OXF). He leverages his expertise as director of the myExperiment project to conduct the design and implementation of Wf4Ever's architecture. *QA Role:* Use lessons learnt from myExperiment to enable a quick and safe development of architectural tasks; guarantee maximum uptake of Wf4Ever's results by the myExperiment user community.
- Executive Project Management Board (EPMB). Taking into account the interactions between the activities to be carried out, an intermediate management body exists between the EC representatives and the PMB. The members of the EPMB are the Project Coordinator, the Vice-Project coordinator, the Scientific Manager and the Leader Architect. The main function is to implement the decisions made by the PMB, to supervise and monitor the coherence and integration of project activities and to solve conflicts between partners. The EPMB will meet twice per year, physically or remotely. *QA Role:* Ensuring adherence to contractual obligations; ensuring that the Quality Assurance and Risk Contingency Plan is delivered and implemented; monitoring, reviewing and revising the Quality Assurance and Risk Contingency Plan; reviewing and assessing the project at large, including the adherence to major project-wide milestones, strengths, weaknesses, arising opportunities and risks; monitoring and acting upon the analysis submitted by WP leaders on a quarterly basis; monitoring the attainment of TQ (i.e. against this plan) at a strategic and project level.
- Project Leaders (PL). Each partner has a project leader who will be the contact person for that partner. *QA Role:* The project leader is responsible for ensuring the quality and timeliness of deliverables from their organization. They also liaise with the project coordinator for the day-to-day running of the project.
- Project Management Board (PMB). This board comprises the project leaders and the project coordinator. It meets at least four times a year and is responsible for running the project, formulating and revising its strategic objectives, decision making and for conflict resolution. Special attention is paid to the analysis of the outputs produced by the internal assessment produced by the Impact Assessment WP. The PMB outlines corrective actions in case of negative deviations. The PMB meets three times per year physically or by phone conference. *QA Role:* Ensuring adherence to contractual obligations; ensuring the quality and timeliness of deliverables; monitoring activities against work package and task descriptions; reviewing quality issues raised by the EPMB and others; monitoring the attainment of TQ at a project level.
- Workpackage Leaders (WPL). Each workpackage will have a designated leader from the organization leading the workpackage. The WP leader is responsible for the effective and efficient execution of the tasks enumerated for the workpackage he or she leads. *QA Role:* Nominating Quality Assessors; monitoring the Quality Assessment process and deadlines; monitoring the attainment of TQ at a work package level.
- Task Leaders (TL). Each task has a designated leader from the organization managing the task, responsible for producing the task deliverable on time and to the specified quality. *QA Role:* Monitoring the attainment of TQ at a task level.
- Project Administrator (PA). Eva Castellano (iSOCO). The PA takes care of day-to-day management issues. Her primary responsibility is to coordinate the timely production of project deliverables, collate inputs from the Project Leaders to support the EPMB and PMB as well as the yearly and final

reports, and to manage financial accounts and budgets for the Project. The PA reports to the Project Coordinator.

- Quality assurance coordinator (QAC). Dr. Cezary Mazurek (PSNC). The QAC monitors that at the beginning of each task, the Task Leader will specify quality criteria which the task deliverable will be benchmarked against. Once the task is completed the QAC will assure that the deliverables to be submitted have the appropriate level of quality. *QA Role:* Responsibility for delivering the Quality Assurance and Risk Contingency Plan; devising and implementing quality assurance procedures; ensuring adoption of the Quality Assurance and Risk Contingency Plan; ensuring masters of key documentation are stored in the appropriate repositories; carrying out Quality Coordination, i.e., ensuring that QA procedures are in place for all outputs (e.g., deliverables, reports, public website etc.) and that they are carried out; conducting final QA checks on an outputs, i.e., ensuring that the correct templates were used, that QA documentation rules are followed, that the content, style, spelling & grammar have all been signed off by Quality Controllers, ensuring documents are submitted in the required format and number of copies to the EC; monitoring the attainment of TQ at a project level.
- Project Collaboration, Dissemination and Exploitation Board (PCD&EB). Dr. Jun Zhao (OXF) chairs this board, which comprises the project leaders and the Project Coordinator. It meets at least two times a year and is responsible for creating, running and supervising the collaboration, dissemination and exploitation plans. *QA Role:* Monitoring the quality of market intelligence gathering; responsible for the quality of the Exploitation Plan; monitoring the attainment of TQ at a strategic and project level.

There is also a Scientific Advisory Board (SAB) with members drawn from outside the project. The SAB provides independent scientific advice to help guide the overall scientific direction of the project from a broad range of perspectives corresponding to the main scientific and technical dimensions relevant to the project. The SAB also aims to be user-driven, providing input to the consortium that considers the needs of potential users of Wf4Ever's results. The SAB meets annually, chaired by the Project Coordinator.

1.2 Management Procedures for Overall Project Quality

They include activities related to the following areas of management:

1. Operational Management. It includes:

- Reporting the EC services and contacting them for administrative purposes.
- Coordinating the periodic activity report.
- Coordination of the final report.
- Resolution of conflicts – conflicts will be addressed by the PMB. If necessary, input from the EC Project Officer will be sought.

2. Financial Management. The project Coordinator will be in charge of the project financial management, receive and transfer all payments by the EC to the partners. It includes:

- Collecting all costs incurred during the period, broken down by type of activity
- Reporting costs to the EC: summary of the cost statements, cost certificate, person-month level justification, and summary financial report by the coordinator.
- Obtaining certificates on financial statements whenever they are needed.
- Transferring budget to the partners after the payment by the EC.

3. Technical Management. It concerns the monitoring of the research and scientific progress of the project. Technical management will be achieved by means of: At least three plenary meetings each year, technical meetings, bilateral meetings, Phone calls, etc. It includes:

- Organization of technical meetings
- Definition of a quality assurance plan for deliverables and software
- Monitoring the research and scientific progress of the project
- Establish active collaboration with other projects of the same areas

4. Legal and Knowledge Management. It includes the legal aspects of the project:

- Negotiation and monitoring the consortium agreement.
- Definition of the Intellectual Property Right regime, which will be described below.

1.3 Task Forces

The project decided the best way forward to monitor the overall project quality as well as to integrate resources and promote collaboration between project partners was to create a task force organization, breaking the boundary between WPs, for each focused research and technical area.

The project established the following four task forces (TF) in the first instance, and TF leaders in charge of championing them:

- ARCH - Architecture (David De Roure (OXF), Raúl Palma (PSNC), Stian Soiland-Reyes (UNIMAN)), focused on designing the Wf4Ever architecture and producing technological guidelines.
- RO - Research Object, Provenance, and Collaboration (Sean Bechhofer (UNIMAN), Jun Zhao (OXF), Oscar Corcho (UPM)), focused on the analysis and definition of Research Object modelling and management, with Provenance as a vertebrating technology for decay analysis, workflow abstraction, and integrity and authenticity maintenance in a collaboration-intensive scenario of RO share and reuse amongst (and across) scientific communities.
- USER - User (Jose Enrique Ruiz (IAA), Marco Roos (LUMC), Kristina Hettne (LUMC)), focused on extracting requirements from the two case studies for the technological components. During the first stage of the project, this TF was focused on defining use cases and develop mockups that illustrate users' needs and provide guidelines for research.
- IMPACT - Impact (Carole Goble (UNIMAN), José Manuel Gómez Pérez (ISOCO), Lourdes Verdes-Montenegro (IAA)), focused both on scientific but also industrial impact through dissemination and exploitation. Identification of target communities (evangelization and conversion into Wf4Everism), early adopters, and beachheads for Wf4Ever's results. Definition of impact strategy and coordination of its implementation.

TF champions are responsible for coordinating their respective TF and ensuring its success, but everyone is welcome to participate and share ideas, comments, and criticism.

1.4 Tools and other means to be used for monitoring and managing the project

The Wf4Ever consortium has established formal procedures to stimulate co-operation through meetings. We have at least three plenary meetings per year, face-to-face architecture meetings, and we have planned also hackathon meetings, i.e., events where programmers meet to do collaborative computer programming, for integration and use cases delivery purposes if needed. Virtual meetings, for each task force, are held every two weeks to monitor project progress.

The daily cooperation between partners is facilitated through the following mailing lists hosted by iSOCO:

- Wf4Ever@isoco.com (for all members).

- Wf4Ever-pmb@isoco.com (for the PMB).
- Wf4Ever-dev@isoco.com (for developers and architecture related members).

The following software is also used:

- A project portal¹, to maintain up to date information about the project team, news, achievements, etc.
- A wiki², to (a) upload and download WP information and their associated documents, public and restricted, (b) write documents collaboratively, (c) share ideas and any other relevant information for the project, and (c) hold information about meetings. Information is maintained by the project team in a distributed manner.
- A shared Dropbox folder³, for internal documents, and for sharing document among team members.
- A public document repository based on dLibra⁴, for public documents, including deliverables, papers and any other dissemination material.
- A version control system (Git)⁵ to give support to the distributed development of software and to make releases available for internal and external purposes.
- A sandbox⁶, which constitutes a testing environment, a sort of playground, for users and developers so that they can experience and interact with Wf4Ever technologies and related software as early as possible during the development process. Moreover, it is the infrastructure that will be used to integrate existing technologies so that the rest of WPs can perform tests, and where the final reference implementation will be deployed.
- A collaborative web tool for the management of progress reports for FP7 EU R&D projects (⁷). It provides a number of functionalities for the dissemination of the result from the project and for the daily communication between the partners in a project, including summaries of deadlines to be followed for reporting and current status of reporting, edition functions for the progress report information for the workpackages that the member leads and for the individual progress report information of the workpackages that the member is involved in, progress reports, customised reports (e.g., gender issues, dissemination and impact metrics), etc.

1.5 Contracts and Management Documentation

The standard contractual documentation related to the project consists of the EC Contract plus Annexes (including Annex 1) and the Consortium Agreement. Additionally, there may be other contractual documents, such as, software licence agreements, other legal agreements between partners, or between the Consortium and external bodies (e.g. liaison agreements with collaborators).

The original signed paper versions of all documents must be kept according to the institutional rules and regulations of the partner organizations. Electronic masters of contractual documents and version tracking and updating for amendments, are the responsibility of the Project Administrator. Quality Assurance of amended versions are responsibility of the PMB (initially) and the EPMB (finally).

Maintaining repositories of Key Management Documentation (e.g., EPMB and PMB minutes, correspondence with the EC) is the responsibility of the Project Administrator. Electronic Masters of Contracts and Management documents will be stored on the Management Portal.

¹<http://www.wf4ever-project.org/>

²<http://www.wf4ever-project.org/wiki/>

³<https://www.dropbox.com/home/Wf4Ever>

⁴<http://repo.wf4ever-project.org/dlibra>

⁵<https://github.com/wf4ever/>

⁶<http://sandbox.wf4ever-project.org/>

⁷<http://oeg-lia3.dia.fi.upm.es/wf4ever/>

Deliverable No	Authoring Partner	Quality Controller	Deliverable No	Authoring Partner	Quality Controller
D1.1	PSNC	iSOCO	D5.1	IAA	iSOCO
D1.2	PSNC	UNIMAN	D5.2	IAA	LUMC
D1.3	OXF	UPM	D5.3	IAA	LUMC
D1.4	PSNC	OXF	D6.1	LUMC	OXF
D1.5	OXF	iSOCO	D6.2	LUMC	IAA
D2.1	UNIMAN	OXF	D6.3	LUMC	IAA
D2.2	UNIMAN	OXF	D7.1	PSNC	UNIMAN
D2.3	iSOCO	UNIMAN	D7.2	iSOCO	OXF
D3.1	UPM	UNIMAN	D7.3	iSOCO	OXF
D3.2	UPM	UNIMAN	D8.1	OXF	iSOCO
D3.3	UPM	UNIMAN	D8.2	OXF	UNIMAN
D4.1	OXF	PSNC	D8.3	iSOCO	UPM
D4.2	iSOCO	PSNC	D8.4	OXF	UNIMAN
D4.3	OXF	PSNC	D8.5	iSOCO	UPM

Table 1: Quality Assurance Partners

1.6 Deliverables

There are 40 deliverables planned in the course of Wf4Ever project life. In order to guarantee the quality of those deliverables, a peer review process is installed before submitting any document to the EC. Table 1 details for each deliverable (except for some of the management and dissemination deliverables), the institution responsible of editing and the quality controller. The assignment of roles is based on expertise of the quality controller in the area of the deliverable and balanced workload in the project. Nevertheless, each partner has the right and is stimulated to comment on and provide suggestions for the improvement of the deliverables. All deliverables will be written with the same template. Deliverables must include explicit mention to pre-existing sources. Each deliverable must introduce into the pre-amble a section specifically addressing the issue of pre-existing and original contributions, clarifying exactly which parts of a deliverable are presented as original materials developed with Wf4Ever funding, and which are part of the partner's pre-existing IP. Most deliverables are public.

The QA procedure has the following main steps:

- Month 1: The deliverable leader sends the Table of Contents of the deliverable to the WP leader, the Quality Controller and the Quality Assurance coordinator.
- Month2: Quality controllers responsible for performing the QA specify key quality criteria, which the task deliverable will be matched against. The criteria are based on the contents of the deliverable, the yardsticks/quantitative measures of progress and risk analysis, and contingency plan columns of the work plan. The deliverable leader must agree with the QA criteria. Otherwise, a redefinition of the QA criteria must be made by Quality controllers. In case of discrepancy, the Quality Assurance Coordinator decides.
- 2 weeks before the deliverable deadline: Quality Controllers receive the deliverable from the deliverable leader. Quality Controllers review and modify the deliverable according to the QA criteria. If a deliverable fails to match the criteria, the project management board will set out the steps to be taken to improve the deliverable's quality. Quality Controllers submit the modified deliverable to the Quality Assurance Coordinator.
- At the deliverable deadline: The Quality Assurance Coordinator receives the deliverable from Quality

Controllers. The Quality Assurance Coordinator checks that the last version of the deliverable meets the QA criteria. If a deliverable fails to match the criteria, the EPMB will set out the steps to be taken to improve the deliverable's quality. The Project Coordinator must submit the final version of the deliverable to the Project Officer on the deadline.

The document with the QA criteria established at the beginning of the QA procedure is depicted in Figure 2.

Deliverable name		Deliverable number	
Month Deliverable Due			
Lead participant <i>(institution short name)</i>		Other participants <i>(institution short names)</i>	
Responsible Person			
Quality Controller			
Deliverable status (Public, Restricted, Confidential)			
Comments			
Point No:	QA Criteria	(C)ompulsory (A)dvisable (O)ptional	
Follow-up Actions			
Point No:	Action taken <i>[add rows as necessary]</i>	Date	Name
1			
2			
Final version accepted by:			
	Name	Date	
WP Leader			
QA Coordinator	Cezary Mazurek		

Figure 2: Wf4Ever - Deliverable Review Form

The QA criteria and the documents generated during the QA procedure must be uploaded in the Wf4Ever shared Dropbox folder.

1.7 Publications

In addition to contractual deliverables, a major part of the output from Wf4Ever will take form of other publications. These include academic outputs such as journal articles, conference and workshop papers, and other academic/scientific publications. Additionally, Wf4Ever outputs include electronic material such as demo versions of software and technical manuals, and other dissemination materials.

Hence, for each type of publication we have identified the agent(s) responsible for QA as well as the associated QA procedure. In particular, submissions to journals, conferences and workshops, are peer-reviewed, so the key QA procedure in Wf4Ever relates to facilitating the interaction, e.g., for an internal pre-review of a submission. The ongoing status of such publications is monitored by WP9. Also for presentations in conferences and workshops, templates of presentations have been prepared by the project coordinator. For Web-based news, the Project Collaboration, Dissemination and Exploitation Board (PCD&EB) coordinates this type of publishing and commissions news items from site journalists. Finally, regarding the software, the responsible agents are the authors and the WP leader where the product was produced.

Moreover, two rules have to be applied for publication in order to ensure high quality:

- Publication must reflect the image that Wf4Ever has or intends to acquire in a particular community, which typically means that it would be related to the work carried out in the scope of the project.
- Wf4Ever support in developing or producing a particular publication needs to be explicitly and visibly acknowledged (even in the contribution from Wf4Ever was only partial). This has to be done in the following form (or a similar one): "This research has been [partially] supported by Wf4Ever, a STREP project funded by the European Commission". Any substantially different wording shall seek approval from the QA Coordinator and/or Project Administrator.

Finally, all the standard publications shall follow the rules set by the respective publishers and/or conference organizer with respect to the length, style and graphical appearance.

1.8 Documentation procedures and standards

In this section we describe some of the key procedures contributing to assuring the quality of interaction and documentation in the project work, in order to improve efficiency and effectiveness of both project management and research work. Since Wf4Ever is a project involving multiple partners and significant parts of its outcomes are based on the collaborative work, we start with stating a few simple principles for facilitating seamless and friction-free interaction among partners, and which have an impact in the quality of such outcomes. Since most of the interaction will take place in a written or oral form, we shall address both of these. The submission of a written deliverable, deliverable draft or any other draft document (e.g. draft model or definition) should adhere to the following guidelines in order to reach a good quality level:

- As far as possible all physical documents that are used in the collaborative work should be (also) based on the deliverable document templates, which are available at the project wiki for different editors⁸.
- We strongly recommend not only basing the shared files on a set of templates, but also physically sharing them using the wiki, which provides a set of file libraries and folders for a variety of purposes, enabling the collaborative revision and improvement of the document quality.
- Once the files have been uploaded to a proper section of the wiki (either as a new submission or as a revision of a previous one), the submitting partner should send a notification email to the appropriate mailing list (see next section). The mail should contain the location and file details, a document development timetable, a list of feedback targets, and a feedback deadline. The general idea is to improve the document based on the feedback received.

⁸<http://www.wf4ever-project.org/wiki/display/docs/Templates>

- In case the interaction does not warrant the formal style of a deliverable templates and its purpose is more to develop ideas, to facilitate brainstorming or similarly, we recommend using directly the functionality of the Wiki that enables the collaborative discussion and refinement of those ideas.
- Alternatively (or in addition to the text-centric interaction), mailing lists can be used to facilitate debate and discussion - both on the level of the project as well as individual work packages. In every case, the goal of such discussions will be to improve the quality of the project outcomes.

2 Risk contingency in Wf4Ever

2.1 Contingency planning

Contingency planning is the process of identifying potential risks in a project ahead of time and determining in advance actions that will overcome those risks should they occur. As the Wf4Ever project has a number of partners across Europe and is concerned primarily with software research and development, steps have been taken to address the major risk areas:

- Resources. The project has world-class researchers and technologists in a well-balanced consortium.
- Appropriate management structure. The project has a management structure appropriate to a project of this size and complexity.
- Technology and Standards. The project researchers are involved in a number of standards bodies worldwide (W3C) and technology tracking is a key part of our exploitation activity.
- Estimation of required resources. Quarterly Technical Management Board meetings will proactively monitor effort expended on the various tasks and adjust and re-plan as necessary.
- Changes in market conditions. The project technology may be overtaken by technology developments elsewhere; either because similar technology is developed outside the consortium, or else because products become available based on alternative technologies but satisfying the same user requirements.
- Multidisciplinary natures of the consortium. Effort has been redistributed between partners on the consortium in order to maximize the collaboration and minimize the risk of lack of integrating the results produced.

2.2 Contingency matrix

The project consortium is aware of these risk areas and provides a management process able to perform risk management within the project scope. Table 2 shows the contingency strategy matrix that was established at the outset of the project.

2.3 Availability of Resources for Use Cases

The required data and workflows to be used for evaluation and community building purposes in Wf4Ever have been identified and guaranteed to be available by case study partners as follows:

Astronomy data and workflows

- Public data: Due to the public access nature of the sky, most astrophysical data sources, such as VizieR, NED, or the SDSS imaging and spectroscopic surveys, provide public data. Most, if not all, of the inputs for workflows in the Astronomy case study will be public data.

Risk	Probability	Impact	Contingency Strategy
Partner leaves consortium	Low	Medium	Consortium is of sufficient strength and diversity for other partners to replace if required. This situation does not include where key people move to another organization, and substitute their old organization for the new one)
Staffing & Recruitment Problems	Medium	Low	Wf4Ever has a strategy of technical excellence in given disciplines spread across the partners, which can be seen as risk balancing to avoid excessive dependency on any one partner.
Key staff illness during critical project phase	Medium	Medium	Critical parts of project executed by more than one partner.
Research or software components fail or deliver limited functionality	Medium	Medium	The multidisciplinary nature of the project offers a degree of independence from the success of any one technological approach. The architecture allows the publication of available services as a placeholder where new research or development does not deliver as anticipated.
Technology changes require redesign	High	High	Technology watch is a key project activity. The Technical Management Board will continuously monitor external developments and use them to re-plan if necessary.
Time for development is underestimated	Medium	Low	Project checkpoints will monitor, detect problems early and take corrective actions. Case studies can be re-timed and rescoped to mitigate delayed delivery of software.
Tools cannot inter-operate	Medium	High	Integration work package set up with specific responsibility in this area.
Application of Wf4Ever technology is not accepted by users	Medium	High	Efforts will be set up to define a user and customer driven exploitation strategy. These activities will be informed by ongoing market and technology watch initiatives.
Changes in market conditions	High	High	There will be market and competitor watch activities, which will provide early awareness of any significant changes and enable any necessary re-planning of the project.
Multi-disciplinary nature of the consortium may lead to disciplines working too separately	Medium	Medium	Effort has been distributed in a balanced way between partners. This ensures that partners from different disciplines will collaborate (it is hard wired in the project organization structure).

Table 2: Risk Management and Contingency Strategy

- Workflows: The availability of workflows and associated data will adopt the sharing model of myExperiment.
- Sources under the control of consortium partners: WP6 leader IAA has its own catalogues (both in public access and under proprietary period) that will be used for the workflows in the case study,

and which will fall into the public source classification after publication. In addition, IAA is creating a repository of 3D datacubes, BODEGA, to be also put in the public domain after the development of Wf4Ever's astronomic workflows.

Genomics data and workflows

- Public data on Genomics freely available from many resources on the Web, like PubMed⁹, UCSC Genome Bioinformatics¹⁰, and genome databases like Oxford journals¹¹.
- Data produced by the Human Genetics Department at LUMC outside of Wf4Ever or by its associated PALs can be used in Wf4Ever with permission of the producer of the data. This is typically granted on the basis of an agreement about the publication of any results based on the data, including timing of publications and authorship.
- Workflows. The availability of workflows and associated data will adopt the sharing model of myExperiment, successfully applied by the existing community.

Additionally, myExperiment, represented by scientific directors Carole Goble and David De Roure from UNIMAN and OXF, respectively Scientific Manager and Leader Architect of Wf4Ever, agrees to support Wf4Ever in the following ways:

- myExperiment will provide access to public content (workflows and packs) and public social network data, either programmatically or through data dumps, including access to historical information.
- myExperiment will make modifications to the myExperiment main public server or test servers in order to trial features in support of wf4ever with a view to operational improvements to myExperiment.
- If appropriate, myExperiment will provide an "opt-in" mechanism for myExperiment users to participate in trials so that additional usage information may be obtained.
- myExperiment will support developers accessing myExperiment programmatically or through Linked Data in order to create co-operating services.
- myExperiment will facilitate the use of online questionnaires and follow-up interviews with myExperiment users.
- myExperiment will provide input to wf4ever based on their record of use case discussions and feature requests.
- myExperiment will allow Wf4Ever project staff to work directly with the myExperiment team and will facilitate their engagement in design discussions and routine meetings.

Finally, there are a number of critical relationships between tasks and deliverables in the project. Project progress will be closely monitored and reported formally to the Commission at the end of each year. There will also be more frequent informal contacts between the coordinator and the Commission, as required by either party. In this way any problems will be identified at an early stage and remedial action will be taken and reported to the Commission.

⁹<http://www.ncbi.nlm.nih.gov/pubmed>

¹⁰<http://genome.ucsc.edu/>

¹¹<http://www.oxfordjournals.org/nar/database/c/>

2.4 Intellectual Property Regime

In order to avoid any risk with respect to the intellectual property rights of the resources produced within Wf4Ever, we have defined an intellectual property regime that ensures:

- Research publication rights will be owned by those who produce them (either employers or employees depending on their country's regime), distribution within the project should be granted for free (decision of non-disclosure should be taken by the Project Management Board with adequate compensation to the partners).
- Software produced for the project will be the property of their producers. In order to foster impact outside the Wf4Ever consortium, the partners have decided to provide public access to the components of the different applications under LGPL/BSD software license or alike. In addition to these measures applying to project members, favourable rules should apply for spin-off of the project so that their launching is viable. We think that the Open Source approach will allow SMEs and other organisations to start using the Wf4Ever infrastructure without a major up-front investment.
- Research Objects (including workflows) and ontologies, produced for the project will be the property of their producers. In order to foster impact outside the Wf4Ever consortium, the partners have decided to provide public access to the workflows, Research Objects and ontologies under a Creative Commons software license¹², more specifically the Creative Commons Attribution-Share Alike.

Along these lines, the PMB will take appropriate action for protecting, sharing and developing patents, know how, the intellectual property rights of the project. This will have to be achieved in compliance with the FP7 rules and regulations on knowledge and intellectual property rights.

2.5 Risk analysis from project-wide SWOT

After conducting a global project SWOT analysis, a number of risks have been identified in addition to those identified in section 2.2, and they have been taken on board in the QA process. The SWOT analysis is presented in detail in Deliverable 8.3 [GP11] and the risks identified (not considered above) along with the countermeasures are summarized below in Table 3. Similarly, Table 4 summarizes the identified opportunities from SWOT analysis along with the corresponding actions to exploit them and avoid potential risks.

¹²<http://www.creativecommons.org/>

Risk	Countermeasure
Underlying models, e.g., Research Object model or provenance vocabularies, are under definition	Take a pragmatic approach than allows progressive refinement.
Over-elaboration and over-scoping may hinder practical results	Delimit the scope of the project, avoiding endless involvement in interesting research
Other notions of Research Objects being developed and adopted	Be agile in order to boost the uptake of the research object concept through practical results
Vocabularies and standards change	Need to keep up to date while avoiding moving targets
Results may become domain-specific	Onboard knowledge from specific domains must not constrain flexibility for application in additional domains
Entry barriers for the adoption of Wf4Ever technologies	Entry barriers need to be lowered through high usability and utility, and users incentivated for take up of Wf4Ever technologies.
Priorities in case study domains might move elsewhere, neglecting adoption of workflows and ROs	Incentivate user through practical results offering benefits in their day-to-day work

Table 3: Risk analysis from global SWOT analysis (Risk-Countermeasure)

Opportunity	Action
Become the reference infrastructure for workflow preservation in the scientific domain	Try to work on the desired direction to spread the technology developed and the techniques used
Existing contacts within the relevant communities	Maximize chances to influence on and benefit from technological and user developments
Achieve a good degree of collaboration with the relevant communities	Promote information exchange and collaboration with scientific communities, particularly astronomy and bioinformatics communities, including the engagement with other projects and external contacts
The RO notion is required for the new publication paradigm	Be agile in order to boost the uptake of the research object concept through practical results
A large user base already exists, which is available to Wf4Ever through myExperiment	Engage scientific communities, through those users, in the uptake of Wf4Ever technologies
" Wf4Ever is in the position to have a strong impact in several standardization bodies	Exploit position in bodies like the Concept Web Alliance and the W3C, for the workflow and the more general scientific knowledge preservation problem
Potential impact in the education of new researchers	Act agile and show practical results offering benefits in their day-to-day work

Table 4: Risk analysis from global SWOT analysis (Opportunity-Action)

References

[GP11] José Manuel Gómez-Pérez. D8.3 SWOT Analysis, November 2011. ISOCO; Wf4Ever Deliverable.