EU-CIRCLE

A pan-European framework for strengthening Critical Infrastructure resilience to climate change

D9.5 QA/QC Protocol	
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Public Deliverable

Statement
This deliverable describes the EU-CIRCLE Quality Assurance & Quality Control Protocol which includes the different Boards established to facilitate the smooth execution of the project and the Management Procedures, the Deliverables Reviewing process, the Internal Communication Tools and the Implementation Risk Analysis/Mitigation Steps

Preparation Slip			
	Name	Partner	Date
From	Aggeliki Demertzi	NCSRD	27/07/2015
Reviewer	Andreas Kuester , Stefan Tonjes	MRK	31/08/2015
Reviewer			
For delivery	Thanasis Sfetsos	NCSRD	1/9/2015

Document Log			
Issue	Date	Comment	Author / Organization
0.1	27/07/2015		Aggeliki Demertzi / NCSRD
1.0	31/8/2015	Introducing review comments	Thanasis Sfetsos, Aggeliki Demertzi / NCSRD

List here the changes and their rational
for each release

Executive Summary

The purpose of the Quality Assurance & Quality Control Protocol (QA/QC) is to provide a single point of reference on the quality that will be governed during the course of the EU-CIRCLE project. The deliverable defines the project organisational structure, roles and responsibilities with emphasis on the quality control and quality assurance activities that will be carried out. It describes how the project will execute its day-to-day activities from a quality perspective, and ensures that standards, processes, and procedures are defined and their execution is continuously monitored and improved. A reference to all the necessary mechanisms and structures for the management and administrative coordination of the project capitalising on the governance, change management, communication plan, stages, milestones, and reporting roles and responsibilities for all the partners is also made.

Contents

1   Introduction

The Quality Assurance & Quality Control (QA/QC) Protocol is the document setting out the project quality practices and is to provide assurance that the quality requirements are met in accordance with quality indicators and management procedures have been set in CA and GA.

The quality and risk management approach is pro-active in order to identify and manage potential sources of divergences at the very early stage. The quality assurance and risk management plan applies to every EU-CIRCLE partner. The compliance with (QA/QC) Protocol is a responsibility of Project Coordination Team that will address, monitor and periodically reassess risks in each work package. The Project Coordination Team is also responsible for the final decision on risk actions, in co-ordination with the Plenary Board.

This task includes:

– Monitoring of the project to identify any new or changing risks

– Planning and reassessment of assigned resources during various project phases

The objective of this deliverable is to ensure the quality of the project results. The document describes the general practices and management procedures that are been followed in the project to ensure that project objectives are met. These include such things as the management structure and control, decision making and communication procedures as well as providing useful project information. There is also a section dedicated to the risk management analysis and procedures of the project. This deliverable includes a set of guidelines and procedures to ensure the quality of the project's outputs of the project and support the project manager and the consortium in the assessment of the quality of the project results. It also helps to identify risks and relevant issues during the project life.

On the one hand, it will be the responsibility of the Project Coordination Team and Quality Manager, to keep these mechanisms in mind during the full project and to take necessary actions in case of an unsuitable status, and on the other, it will be the responsibility of the Work Package leaders to report any deviation on the work plan.

An important element of the management of any project is the analysis and management of risks. The critical implementation risks and their associated mitigation actions, before they occur can usually help to speed up any reaction if the risk does actually occur and can help mitigate the negative consequences of this occurrence.

During the project's kick-off meeting Mr. Andreas Kuester (MRK) was appointed as EU-CIRCLE Quality Manager. After university graduation in transportation information technology and engineering he has been employed at the Frauhofer-Gesellschaft since 1997, first as junior scientist, since 2000 as senior scientist and project manager. Mr. Kuester has experiences from several national and European projects on traffic information systems using mobile user interfaces and he is an expert in public traffic information systems and computerized traffic management systems. Since 1st October 2014, he has been engaged as leader of the MRK Management Consultants GmbH competence centre in Dresden .
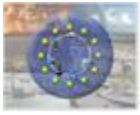
2   Management Procedures

2.1   Project Management

2.1.1   Organizational structure

General project management in EU-CIRCLE is based on and characterized by three major principles:

- **Principle of a large scale Project Structure**: that incorporates technical, scientific and partner coordination as well as issues of commonplace business operation.

- **Principle of leading edge Project Management Instruments**: based on international operated and state of the art management instruments in parallel to a strong and dedicated research commitment of the entire team. This will based on the methodology of the Project Management Institute (PMI).

- **Principle of binding decision provisions and agreements upon all partners**: Arrange spot of decision making close to responsible level of execution. Provide reliable and trusted agreements to protect intellectual properties of all partners.

Based on these three major principles the project management approach guarantees **_transparency_** and **_commitment_** to all engaged partners and thus facilitates an unobstructed and successful project evolution. It assures that EU-CIRCLE meets its entire objectives on time, on budget, and with supreme quality results.
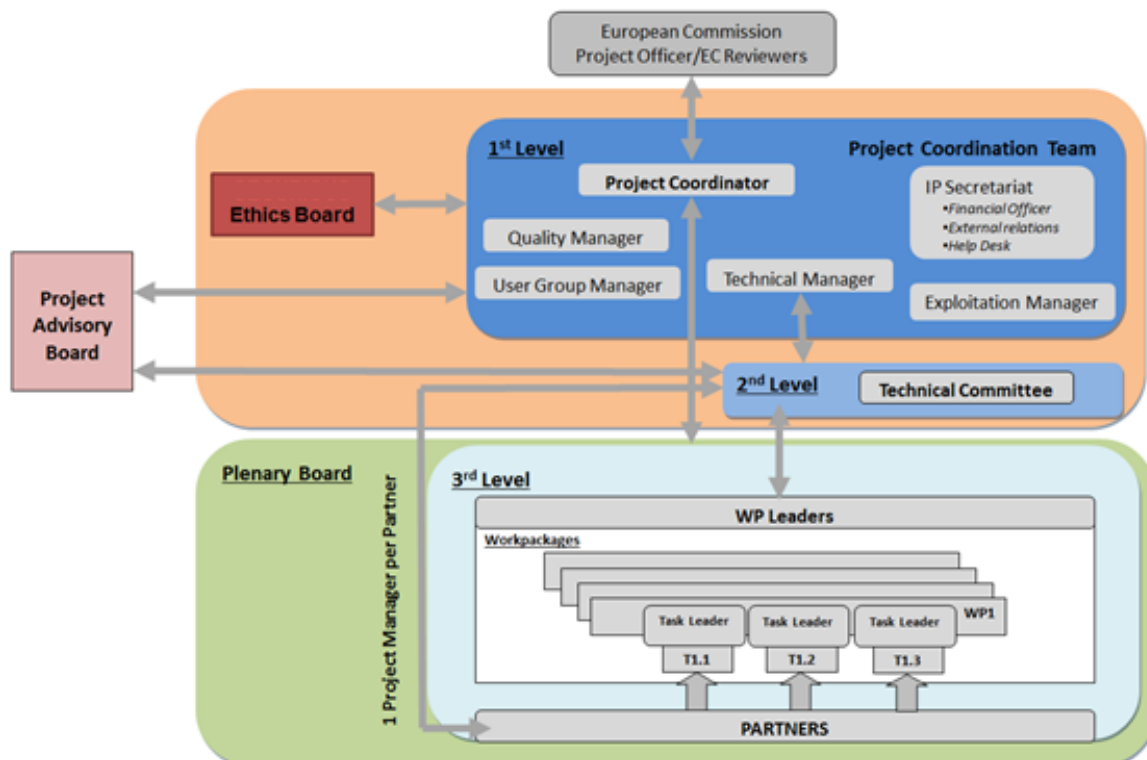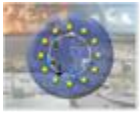

Figure 1. EU-CIRCLE Management Structure

EU-CIRCLE Management Structure

Project Coordination Team

The Project Coordination Team shall be responsible for the planning, execution and controlling of the project. More specifically the Project Coordination Team operates under the supervision of the Project Coordinator and encompasses the following activities:

- Administration and scientific coordination activities
- Implementation of all action plans
- Establishing a budget and schedule-controlling system
- Implementation of a quality assurance system
- Providing clear guidance on Intellectual Property issues
- Developing and maintaining a communication and reporting attitude
- Creation of efficient team structures to minimize the number of meetings while being flexible

In addition, Project Coordination Team is responsible for executive activities:

- Seeking a consensus among the Parties.
- Being responsible for the proper execution and implementation of the decisions of the Plenary Board
- Collecting information at least every 6 months on the progress of the Project, examine that information to assess the compliance of the Project with the DoA and, if necessary, propose modifications of the DoA to the Plenary Board.
- Supportin the Coordinator in preparing meetings with the Funding Authority and in preparing related data and deliverables
- Preparing the content and timing of press releases and joint publications by the consortium or proposed by the Funding Authority in respect of the procedures of the Grant Agreement Article 29.
- In the case of abolished tasks as a result of a decision of the Plenary Board, the Project Coordination Team shall advise the Plenary Board on ways to rearrange tasks and budgets of the Parties concerned. Such rearrangement shall take into consideration the legitimate commitments taken prior to the decisions, which cannot be cancelled.

The following key project persons constitute the **Project Coordination Team**:

Project Coordinator. The Project Coordinator is responsible for the overall management, communication, and coordination of the project. A special emphasis within its responsibilities is to assure in accordance with WP Leaders the overall integration of the single work packages and also to chair the two main project bodies, the Project Coordination Team and the Plenary Board. Additionally, the Coordinator is the intermediary between the Parties and the Funding Authority and performs all tasks assigned to it as described in the Grant Agreement and in this Consortium Agreement.

In particular, the Coordinator is responsible for:

- Monitoring compliance by the Parties with their obligations
- Keeping the address list of Members and other contact persons updated and available

- Collecting, reviewing to verify consistency and submitting reports, other deliverables (including financial statements and related certifications) and specific requested documents to the Funding Authority

- Transmitting documents and information connected with the Project to any other Parties concerned

- Administering the financial contribution of the Funding Authority and fulfilling the financial tasks described in Section 7.3 of CA

- Providing, upon request, the Parties with official copies or originals of documents which are in the sole possession of the Coordinator when such copies or originals are necessary for the Parties to present claims.

If one or more of the Parties is late in submission of any project deliverable, the Coordinator may nevertheless submit the other parties' project deliverables and all other documents required by the Grant Agreement to the Funding Authority in time.

Technical Manager. This role will ensure that the scientific and technological objectives of the project are met. The Technical Manager will cooperate closely with Work Package Leaders and deliver a really significant contribution to the scientific and technology coordination of the project. The Technical Manager will chair the Technical Committee.

During the kick-off meeting, Dr. Antonis Kostaridis from SATWAYS, was appointed as the project's technical manager.

Innovation / Exploitation Manager, will be is responsible to manage the knowledge produced during the project lifecycle and to assess the opportunity for future exploitation of the EU-CIRCLE generated knowledge and accessibility to the SimICI platform.

During the kick-off meeting, Dr. Clemente Fuggini from D'APPOLONIA, was appointed as the project's innovation / exploitation manager.

End-users Manager. The End-users Manager is responsible to manage, coordinate and support the end-users groups, towards their efficient collaboration and participation in EU-CIRCLE project.

During the kick-off meeting, Mr. George Eftychidis from KEMEA, was appointed as the project's innovation / exploitation manager.

Quality Manager. The Quality Manager is responsible for the implementation of the quality procedures determined in the Quality Plan and the verification of the project results. Main responsibilities are: the development of the Quality Plan of the project, the monitoring of the implementation of the quality procedures along the project duration, the quality review of the project deliverables to ensure their alignment with DoA and project's objectives and the initiation of actions, reporting to the project manager, when needed.

During the kick-off meeting, Mr. Andreas Kuester from MRK, was appointed as the project's innovation / exploitation manager.

Technical Committee (TC)

TC is the project's technology driving force and is led by the Technical manager, and are permanent for the project duration, except if they wish to leave the Committee themselves or because of EU intervention. TC shall be in charge of supervising the project technological progress/achievements and submitting proposals to the Coordinator and Plenary board upon all relevant technical issues such as: redirection of technical work in an Activity or WP, major transfer of resources across WPs or Partners (over 20%), technological choices, changes in time plans substitution or exclusion of an existing Partner, resolution of conflict between different technological WPs or Activities Lines. All TC Members will have a single vote. In case of equal votes, the vote of the Technical Manager shall be the decisive one. This committee will meet once every three months.

Plenary Board

The Plenary Board consists of the representatives of all Partners, each having one vote. It is led by the Coordinator. This Board will only meet at least once per year to review and plan project work. Any partner may raise issues. Minor issues (according to the Coordinator) may be discussed and decided within this Board. Major issues will be transferred to the Project Coordination Team level.

The following decisions shall be taken by the Plenary Board:

1. Content, finances and intellectual property rights

- Proposals for changes to Annexes 1 and 2 of the Grant Agreement to be agreed by the Funding Authority

- Changes to the Consortium Agreement

- Modifications to Attachment 1 of Consortium Agreement (Background – Access Rights)

- Additions to Attachment 3 of Consortium Agreement (List of Third Parties for simplified transfer of Results)

2. Evolution of the consortium

- Entry of a new Party to the consortium and approval of the settlement on the conditions of the accession of such a new Party

- Withdrawal of a Party from the consortium and the approval of the settlement on the conditions of the withdrawal

- Identification of a breach by a Party of its obligations under this Consortium Agreement or the Grant Agreement

- Declaration of a Party to be a Defaulting Party

- Remedies to be performed by a Defaulting Party

- Termination of a Defaulting Party's participation in the consortium and measures relating to

- Proposal to the Funding Authority for a change of the Coordinator

- Proposal to the Funding Authority for suspension of all or part of the Project

- Proposal to the Funding Authority for termination of the Project and the Consortium Agreement

Project Stakeholder's Advisory Group

In order to maximize user influence on project developments at all levels, an advisory board will be set up. The members of the Stakeholders Advisory Group (analytically presented in D9.3), have already committed through a Letter of Support to the project. The goal is for the members of the Advisory Board to participate during plenary meetings in order to be in contact and monitor the progress of the project.

Ethics Board

The creation of an ethical board aims at ensuring that all project activities comply with good practice as well as legal aspects of ethical, privacy and data protection issues. This includes obtaining consent for the participation of end users and persons involved in project trials and research activities and providing the opportunity to withdraw from such activities at any time without any risk for their dignity, privacy, social and professional standing. Therefore, the ethics board will help ensure that data gathering procedures is done on the basis of consent forms that follow the established Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data. The Ethics Advisory Board will also monitor compliance with the requirements regarding ethical, privacy and data protection issues throughout the project lifetime and will assess the sensitivity of all deliverables before any publication and will review progress regularly assuring constantly an appropriate classification level.

Security Assessment Committee. The responsibilities of the Security Assessment Committee are:

- Screen all deliverables and assess their sensitivity before their submission to the European Commission. Each deliverable cover page should contain an indication that it has passed the Security Assessment control and the result of this assessment

- Monitor and overview the use of security sensitive information within the project tasks;

- Overview the bilateral agreements on security related issues among the project partners;

- Safeguard the non-disclosure of security relevant information within the project interaction with third parties;

- Report to the Project Coordination Team regarding the dealing with security sensitive information, if the matter arises;

- Provide overall conclusions that will be included in a dedicated section, in the Periodic Reports and the interim management level progress reports

Work-package Leaders: Work Package Leaders are responsible for managing their WP as a self-contained entity. The scope of their responsibilities includes amongst other things coordinating, monitoring, and assessing the progress of the WP to ensure that output performance, costs and timelines are met. In cooperation with other related Work Package Leaders they are responsible for the integration of their results into succeeding work packages or tasks.

Work Plan Table

WP Number	WP Title	Lead Beneficiary	Start Month	End Month
WP1	Setting the Operational Environment	KEMEA	1	12
WP2	Climatic Data Capture and Processing	NCSRD	3	33
WP3	Critical Infrastructure Risk Model for Climate Hazards	FhG	6	35
WP4	CI Resilience and Adaptation to Climate Change	ARTELIA	3	35
WP5	Climate Infrastructure Resilience Platform	STWS	7	35
WP6	Case Studies and EU-CIRCLE Assessment	GMU	19	36
WP7	SimICI : Reference Simulated Network of Interconnected Critical Infrastructures	XUV	3	36
WP8	Dissemination and Exploitation	EUC	1	36
WP9	Management	NCSRD	1	36

2.1.2   Measurement of Project Progress

Six-monthly control reports should be submitted by each partner to the Coordinator by the 1st week of each seventh month. They should list all contributions, publications and meeting attendance details which can help in understanding the provided effort and cost figures. Any partner with no activities described in DoA during this period, should indicate this in a written email to the Coordintor and not return this form.

Annual periodic progress reports will be the main reporting tool to the Commission as specified by the specific Horizon 2020 guidelines.

Traceability: Requirements traceability is defined as the ability to describe and follow the life of a requirement, in both a forward and backward direction (i.e. from its origins, through its development and specification, to its subsequent deployment and use, and through periods of ongoing refinement and iteration in any of these phases). It can be achieved by using one or more of the following techniques:

- Cross-referencing. This involves embedding phrases like "see section x" throughout the project documentation (e.g., tagging, numbering, or indexing of requirements, and specialized tables or matrices that track the cross references).

- Specialized templates and integration or transformation documents. These are used to store links between documents created in different phases of development.

- Restructuring. The documentation is restructured in terms of an underlying network or graph to keep track of requirements changes (e.g., assumption-based truth maintenance networks, chaining mechanisms, constraint networks, and propagation).

Quality Assurance: Through QA/QC Protocol, it is ensured that:

- The project performs well in terms of project management, communication between the consortium, partners' engagement and commitment

- The project schedule is followed and that any modifications are justified and under control
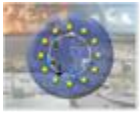
- Every deliverable (software, reports, or other) will fulfil the described requirements, is reviewed, and conforms to requirements and specifications

- All problems are detected in time and resolved effectively

- The project's expected impact for the stakeholders is achieved and confirmed by the stakeholders, if possible

The QA/QC Protocol describes specific Quality Assurance activities throughout the project's life cycle. These activities include:

- Periodic review of the project progress, regarding the conformance to schedules and plans

- Periodic review of the project plan

- Internal reviews of deliverables (not on technical content) so that they are aligned to the project's scope and objectives.

- Risk management on WP level, following the identified project's risks, and the process for risk management as described in section 5 of this Deliverable and any other surfacing in Project's meetings

- Initiation and follow-up of corrective actions for resolving non conformities, whenever deemed appropriate (i.e. event-driven)

- Documenting procedures, guidelines, roles and tasks

- Measurement of project performance

2.1.3   TC Meetings

The Technical Committee will meet every four months to monitor project progress. Plenary Board meetings will take place at least once a year. WP technical meetings will take place whenever required. All meeting arrangements will be communicated to the Project Secretariat, which will undertake to optimize the timing and location of meetings, by organizing more than one meeting in parallel, thus minimizing travel costs.

2.2   Decision making mechanisms

Decision Process

Decisions will normally be taken by the responsible team members and organization bodies based on the description of work to be performed, as stated in the Contract, the Consortium agreement, the Description of Work and the Quality Plan, as communicated regularly, and the individual Work Package or Task plans. In case there is a dispute between two or more team members, an escalation procedure must be followed, as presented in Conflict Resolution section.

Conflict Resolution

In the course of the project the consortium will have to agree on and develop technical, scientific and commercial ideas and specifications. Usually, agreement will be reached first by informal contact, followed by official confirmation via electronic mail, letter or agreed written minutes. For important issues, the agreement may take the form of a short report that needs to be signed by those responsible for decision-making. Non-technical factors such as resource allocation and contractual terms will also need to be agreed and documented in writing. Technical issues/conflicts within given contractual commitments that do not involve a change of contract, a change of budget and/ or a change of resources/ overall focus will be discussed/ solved on the WP level first. If the decision being taken is unacceptable to partners found in the minority positions, the resolution of the conflict will be escalated as summarized in the following steps:

- First, the implementation team will inform the WP leader for the conflict occurred.

- The WP leader will organize the WP team meeting and the issue will be discussed. In case of agreement the WP Leader will inform the Coordinator.

- If no decision is taken the WP leader will inform the Coordination Team. The latter will contact with the responsible persons and will try to resolve the conflict.

- In case of agreement the Coordination Team will inform the Coordinator. Otherwise the issue will be escalated to the Technical Committee.

- The Technical will meet with the relevant parties in order to discuss the conflict. The Technical Committee has the authority for the final decision. The final decision must be accepted by all parties.
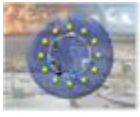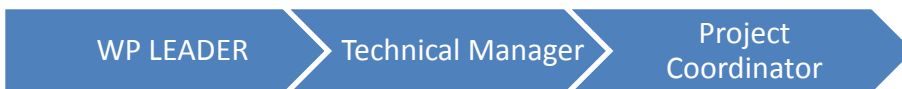
3   Deliverables

In this QA/QC Protocol, the certain procedures of producing a deliverable are described. Each WP Leader addresses the responsible persons that will figure out each deliverable following the hierarchy described above.

The following figure shows the different roles involve in the process of quality assurance of a deliverable.

The three levels of approval of a deliverable:

All deliverables have a predecided format. Relative templates have been already produced:

Figure 2. EU-CIRCLE Template format 1st page

Versioning

For most of the deliverables V1.0 is the final release after it has been quality controlled. Therefore, please use lower version numbers such as V0.1 … for preliminary versions.

V2.0 will be the first revision of a deliverable, usually following a request for modifications from the commission or the review team (V1.1... should be used for internal intermediate versions).

Numbering

The results delivered to the European Commission are referenced **D<w>.<d>**, where <w> stands for the work package number and <d> is a number identifying the deliverable within the work package. The contract lists the results to be delivered.
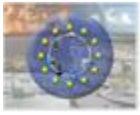
Other results that are kept internal to the consortium are referenced **I<w>.<d>**.

Logging

The **Preparation Slip** available in page 1 of this document records:

- The name of the author of the document
- The name of the quality controller or peer reviewer who approved the document
- The name of the manager who accepted its delivery

The **Document Log** table available in page 2 of this document records:

- The different versions of the document that have been released
- The different modifications that have been made to each version as well as their justifications. Please make this presentation as clear as possible so that external reviewers can track the history of the main modifications.

3.1 Internal Reviewing Process

Each project deliverable will be assigned to one leading responsible partner. This partner will assure that the content of the deliverable is consistent with the work performed, that the overall goals of the project are met, and that the document is of high quality and delivered on time according to the project schedule. Before submission, at least two Internal Reviewers, who are not members of the authoring team but have expertise in relation to the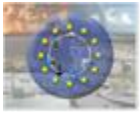 deliverable, will peer-review the deliverable under specific criteria. They will be responsible to approve or reject the deliverable. In case of rejection, the deliverable has to be updated by the leading partner and the peer-review procedure is repeated.

A deliverable checklist has been produced and will be used by reviewers.

Reviewer Details	[Name]	
Organization	[Organization]	
Date	[Date]	

Checklist for Internal Reviewers		
Description	**Check (Yes / No)**	**Comments (Free Text)**
Does the deliverable address explicitly and in sufficient depth the objectives as described in the Description of Work? If there are deviations, are they sufficiently motivated and explained?		
Does the deliverable point out and explain the importance of the work for the project?		
Is related work cited and discussed sufficiently?		
Are items referred to in other/later deliverables (e.g., requirements) traceable (e.g., by a numbering schema)?		
Is the deliverable consistent with previous deliverables?		
Is everything spell-checked?		
Please add a glossary of acronyms and main terms.		
When sending feedback to the task leader, please include the WP leader and coordinator in the cc.		

Free Comments Section

4   Communication and Information Flow

Information flow within the Project will be ensured by:
- The exchange of emails and technical and business documents.
- Notification of relevant new publications in the literature, or by the standard bodies.
- Reports from meetings, participation at events and external meetings.

All technical documentation generated by the Project should be exchangeable in electronic format, according to a set of guidelines. The Quality Manager will enforce adherence to these guidelines.

Exchange of information will mainly occur by e-mail and file transfer over Internet. The basis of the project communication lays upon the adoption of mailing lists mainly one for technical and business development matters and a closed one for administration and evaluation purposes. Sub lists will also be incorporated in the communication procedure to enhance WP operation and to address specific project related issues.

Telephone will be used for urgent needs only. Urgent correspondence over e-mail will be sent with a request for explicit acknowledgement. Ordinary mail will be used for strictly formal correspondence, i.e. when executive signatures are required. Adherence to the agreed communications standards will be enforced by the Project Coordinator and the Quality Manager.

A web project document repository it is available by the Coordinating Partner at **OWNCLOUD Platform (https://eucircle.ipta.demokritos.gr/owncloud/)**:
The Purpose is to create a web based tool in order to enhance collaboration and coordination between the partners. OwnCloud has some important properties such as:

- Provide security
- Internet access
- Cloud-based
- Desktop and mobile client apps

OwnCloud Functionalities
- File, tasks, calendar sharing between groups
- Implementation of Timetable and WorkPackages
- Communication platform between users
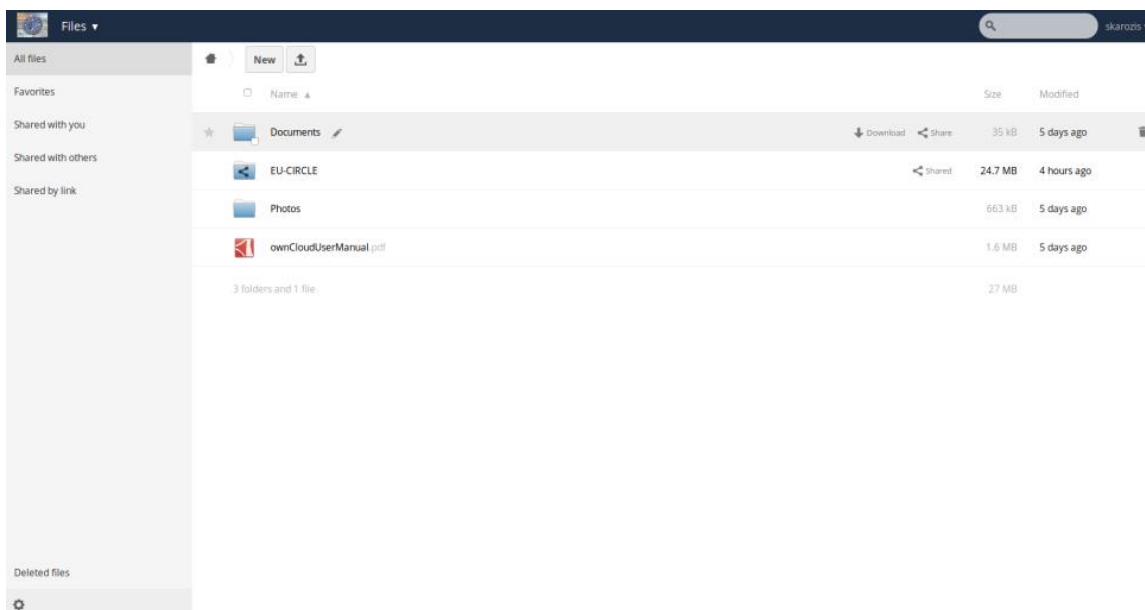
Through OwnCloud, EU-CIRCLE Members are able to:
- File sharing
- Contacts: Contacts or group of contacts of partners
- Calendar: Personal, project, important dates
- Chat: Conversation application between users or group of users
- Tasks: List of tasks per partner or group of partner

4.1 Project Meetings

Meeting Requests

Meetings will be organized using Doodle online service (http://www.doodle.com) or comparable services for determining the dates most partners are available. The m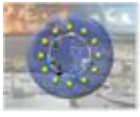eeting chair is responsible for initiating meeting organization. Meetings will be collocated when possible to minimize expenses and travel time of partners. For example, plenary and technical meeting are scheduled to occur together, on different schedules, so partners can attend. The strategy is to hold fewer but larger meetings in order to reduce costs.

The following table summarizes the planned timetable of the various project meetings:

MEETINGS TIMETABLE			
Project body	Participants	Possible Meeting Objectives	Meeting Frequency
Plenary Board	Representatives from all the partners	- Review and plan project work	At least once per year *[In cases of extraordinary meetings: At any time upon written request of the Technical Committee or 1/3 of the Members of the Plenary Board]*
Technical Committee	- Project Coordinator - Technical Manager - Innovation Manager - Exploitation Manager - Quality Manager - End-Users Manager - Ethics Manager	- Supervision of the project progress and time plans - Deciding upon all relevant technical and administrative issues - Conflict Resolution - Inclusion of a new Partner, substitution or exclusion of an existing Partner	Every four months [*In cases of extraordinary meetings: At any time upon written request of any Member of the Executive Board]*
Project Coordination Team	Coordination Team & other parties where necessary	- Review and plan project work - Conflict Resolution issues	Ad-Hoc
WP Technical Meetings	- WP Leader - Representatives from the partners technical teams	- Monitoring WP progress - Specific technical scopes and transfer of knowledge	Whenever required

The Coordinator shall chair all meetings of the General Assembly, unless decided otherwise in a meeting of the General Assembly.

The chairperson of a Project Body shall convene meetings of that Project Body.

Meeting Schedule

Meeting Schedule according to DoA		
Description	Time	Place
Kick off Meeting	M1	Greece
First Technical Project Meeting	M6	Cyprus
Consolidation Workshop	M12	Italy
Mid Term Meeting	M18	Germany
Annual Project Meeting	M24	Croatia
Case Study 1	M30	France
Case Study 2	M32	Poland
Case Study 3	M34	UK
Case Study 4	M36	Greece
Final Event	M36	Greece

Notice of a meeting:
The chairperson of a Project Body shall give notice in writing of a meeting to each Member of that Project Body as soon as possible and no later than the minimum number of days preceding the meeting as indicated below.

Notice of a meeting		
Body	Ordinary Meeting	Extraordinary Meeting
Plenary Board	30 calendar days	15 calendar days
Technical Committee	14 calendar days	7 calendar days

Sending the agenda:
The chairperson of a Project Body shall prepare and send each Member of that Project Body a written (original) agenda no later than the minimum number of days preceding the meeting as indicated below.
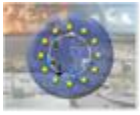
Sending Meeting Agenda	
Body	Ordinary Meeting
Plenary Board	30 calendar days
Technical Committee	14 calendar days

Adding agenda items:
Any agenda item requiring a decision by the Members of a Project Body must be identified as such on the agenda.
Any Member of a Project Body may add an item to the original agenda by written notification to all of the other Members of that Project Body up to the minimum number of days preceding the meeting as indicated below.

Adding Agenda Items	
Body	Ordinary Meeting
Plenary Board	14 calendar days, 7 calendar days for an extraordinary meeting
Technical Committee	2 calendar days

During a meeting the Members of a Project Body present or represented can unanimously agree to add a new item to the original agenda.

4.1.1 Minutes of meetings

The chairperson of a Project Body shall produce written minutes of each meeting which shall be the formal record of all decisions taken. He shall send the draft minutes to all Members within 10 calendar days of the meeting.

The minutes shall be considered as accepted if, within 15 calendar days from sending, no Member has sent an objection in writing to the chairperson with respect to the accuracy of the draft of the minutes.

The chairperson shall send the accepted minutes to all the Members of the Project Body and to the Coordinator, who shall safeguard them.
If requested the Coordinator shall provide authenticated duplicates to Parties.
Minutes of Technical Committee meetings, once accepted, shall be sent by the Coordinator to the Plenary Board Members for information. Minutes of the meetings will be written using the Internal Document template.

4.1.2 Meeting Requests

Meetings will be organized using Doodle online service (http://www.doodle.com) or similar service for determining the dates most partners are available. The meeting chair is responsible for initiating meeting organization. Meetings will be collocated when possible to minimize expenses and travel time of partners. For example, plenary and technical meeting are scheduled to occur together, on different schedules, so partners can attend. The strategy is to hold fewer but larger meetings in order to reduce costs.

Participants to Meetings

All partners are required to be present to meetings either themselves or through substitute or proxy. Additionally, they must participate in a cooperative manner.

5   Risk Management

EU-CIRCLE complexity of the problem at hand, the size of the consortium and the inherent distance between the partners, be that geographical or even cultural, add to the number of risky aspects that may potentially cause problems in the project execution lifecycle. However, all these issues are tackled a priori by firstly exploiting the accumulated project implementation experience of the involved partners and by applying a well laid-out project management scheme. The EU-CIRCLE project management team will pay particular attention to risk management in the execution of the project. The main reason for doing so is due to several but crucial factors: the financial issues at stake, the ambitious objectives of the project and the diverse range of RTD activities shared among a large number of partners. All the above call for continuous monitoring of risks (of both internal and external origin), and how they may affect the successful achievement of the project's objectives. Risk management will be viewed as a circular process in which risks are identified, analysed, managed and monitored.

The following scheme depicts the Risk Management Process:
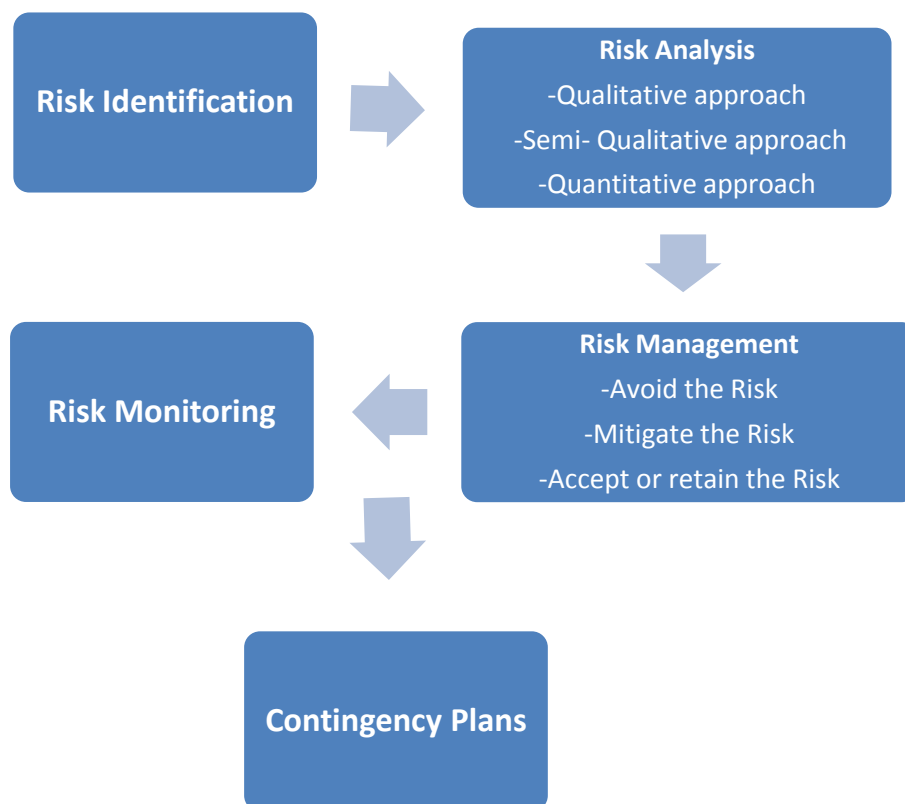

Figure 3. EU-CIRCLE Risk Management Process

5.1   Risk Identification

Risk identification is a creative process - where the unknown is considered and debated, enabling a decision to be reached on the best way forward. This creativity must be disciplined and rely on the talents, experiences and opinions of all relevant stakeholders. To achieve focus the EU-CIRCLE project will encourage participants to articulate barriers and constraints to the achievement of agreed objectives. Everyone involved in the project needs to be aware of their contribution to the project objectives and what might prevent them from delivering it. The risks will be reviewed at regular intervals to re-state current

priorities as project priorities may shift over time (deadlines, budget re-forecasts, and performance expectations) and unforeseen difficulties might arise.

5.2 Risk Analysis

One of the main practical difficulties of risk management lies in assessing how real the potential risks are and what their impact might be. Risks have to be assessed in terms of likelihood (how real the potential risks are) and impact (what their impact might be) by a qualitative, semi-qualitative or quantitative approach. The project will attempt to use best estimates of likelihood and impact against the key risks. Most often these estimates are by necessity based on semi-qualitative judgment rather than hard numbers. We will try to quantify risks wherever possible by using a scoring system to ensure comparison of risks across the different project work-streams. The quantification of project risks will be performed considering the most likely outcome scenario for all identified risks.

5.3 Risk Management

The aim of risk management is to convert risk analysis into specific actions to mitigate risk, to define appropriate ownership and to agree timescales. Risk management options are generally assessed in terms of feasibility, costs and benefits, with the aim of choosing the most practical way of reducing risk to a tolerable level. Risk responses under the project will fall under one of the types listed below:

- **Avoid the risk**: This can be done by avoiding use of a particular supplier or technologies feasible alternatives exist.

- **Mitigate the risk**: If a risk cannot be avoided the management will try to reduce the risk by making it either less likely or less consequential. This will include the development of contingency plans for those risks which cannot be avoided.

- **Accept or retain the risk**: Inevitably there will be some risks which are intrinsic in the nature of the work being undertaken and which it is not possible to mitigate, control or avoid because the time and cost involved is too high to justify the benefits.
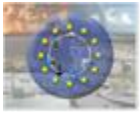
5.4 Risk Monitoring

Good project management requires effective monitoring systems to ensure that new risks are early detected and managed, that mitigation plans are being implemented and that project managers are kept informed. The project will run a well-maintained risk register for monitoring risk-management performance, defining mitigating actions for each, citing who will do what and by when, allowing the TC to drive activity effectively. Regular updating of the register will be part of the on-going management process.

5.5 Risk Contingency Plans

In order to monitor and minimize the project risks, the consortium will prepare a list of risks and propose contingency plans as early as possible. The following table proposes a first and rather comprehensive analysis of the main risks and the proposed risk mitigation measures to be taken.

Table Title		
Description of Risk	WPs	Proposed risk-mitigation Measures
Management Risks		
Partner underperforms or leaves the consortium	WP9	The Consortium Agreement will foresee such situations and will describe measures to be taken to prevent non-compliance to project activities
Project execution failure (key milestones or deliverables are delayed)	WP9	The Project Coordination Team will be aware in advance about delays or issues due to daily project monitoring, implemented tight working relationships and quality control. Milestones and deliverables with a critical path will be handled with a special attention.
Low quality of project results	WP9	The internal reviewing process for all project deliverables and reports, plus the contribution of the Advisory Board, will ensure high quality project results.
Data handling: risk to disclose personal and sensitive data	WP9	Legal and ethical procedures will be prepared including security measures.
Communication/ Dissemination activities raise little interest in the project	WP8	The communication plan will be updated every year according to the project needs. In case of low interest in the project, additional, more targeted communication channels will be used.
User – Related Risks		
Lack of active involvement of end users / User drop - out	WP6 WP9	The participation of eight dedicated user-related partners with long experience in the field and a track record of successful projects will ensure active user participation.To ensure that the final number of users involved will not be decreased, during the first phase of the project a higher number of users than planned will be recruited in each location and more potential users will be kept in touch with the project in case there is a need to include them in the future. This will create a pool of users to be contacted in case there are drop outs.
Misunderstanding of user needs	WP1 WP5	Having in the project end users who are experienced in R&D and working with IT developers as well as IT partners experienced in working with response organizations, will support the processes of "translating" requirements as presented by the users, into "requirements" usable by the developers.
End Users cannot agree on needs and requirements	WP9	It is the responsibility of the KEMEA to ensure converging into one set of requirements. The process is designed with adequate time in order to ensure that all necessary discussions and interactions among users take place.
Needs of CI operators from different sectors are too far apart	WP3 WP4	It is already agreed that EU-CIRCLE will reach towards harmonised resilience framework and not on "specific solutions".
Non acceptance of EU-CIRCLE by CI community	WP6	End users are involved in the development process throughout the project, not just at the beginning and the end, thus ensuring constant exchange of information,

		meeting the expressed needs of the users, and the acceptance of the results, designed for them. The presence and involvement of the Advisory Board is also expected to play a significant role in improving the overall user acceptance of EU-CIRCLE.
Validation results are not usable	WP5	A dedicated work package for designing and executing the evaluation / validation methodology will ensure that validation procedures will produce useful results for the further development / improvement of the proposed system.
	Exploitation / Commercialisation Risks	
The solutions developed are too country / domain specific	WP2 WP3 WP4	The variety of end users, country and domain wise, will ensure a wide view and pan-European adoption of the proposed platform. EU-CIRCLE will fully use existing EU and International generated knowledge
Market demand for the proposed technologies is lower than expected and the market is more difficult to penetrate than predicted	WP8	Initial desk-based research demonstrates that the value potential is very high and the solution addresses a pan European need and fully aligned with EU policy initiatives.
Stakeholders outside the project are not interested	WP2	Stakeholders will be contacted early in the project through the Advisory Board and through various communication activities in an effort to raise interest throughout the scientific and end user community.
SimICI testbed does not gather acceptance from community	WP7	SimICI is a unique testbed for CI in Europe. A more aggressive communication strategy could be applied.
	Research / Technology–related Risks	
Lack of interoperability and standardisation	WP2 WP3 WP4	The comprehensive list of standards that will be supported by EU-CIRCLE is a solid basis.
Development delays	WP5 WP7	An agile development method will be used to quickly detect any delays in the implementation of the different parts of the system. An early detection of delays is essential to avoid any overextension on the delivery time for each deliverable
The integration phase might be delayed due to development delays of individual components	WP5 WP7	The integration process will be progressive and step by step. As soon as an intermediary version of a component is ready, it will be tested in the integration platform. SimICI will offer an immediate testing environment
Loose integration of project results	WP5 WP7	Loose integration of the technical results is a serious source of failure for RTD projects. Here again, the continuous and iterative methodology associated with a well-planned framework preparing the integration is a key of success that demonstrated its effectiveness in the other research projects.
System failure during pilots	WP6 WP7	The system will be tested in SimICI testbed facility to ensure a minimal operation of the system at the start of each pilot phase.
Authoring tool too complicated for non-	WP6 WP7	The user-centred design approach as well as the focus on training experiences that can be extremely varied in their

programmers	form but not that much in their principles and technologies/interfaces (i.e. constrained by handheld devices)