

# HEART D1.1 Project Management and quality Plan

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## HISTORY OF CHANGES

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0.2	17/01/2018	Revision of first draft, technical integrations	C. Del Pero (POLIMI)
0.3	22/01/2018	Second draft including figures and tables	A. Vallan (FPM)
0.4	24/01/2018	Final revision and submission to quality review	C. Del Pero (POLIMI)
0.5	29/01/2018	Quality review	M. El Mankibi (ENTPE)
1.0	30/01/2018	Final Version integrating quality check recommendations	C. Del Pero (POLIMI)



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## EXECUTIVE SUMMARY

D.1.1 Project management and quality Plan aims, as explained in the Grant Agreement Annex 1, at presenting the project coordination aspects and the project supporting procedures.

A project overview is provided, then the project structure is presented. Subsequently, the quality assurance procedures are described and the document templates are described.

The document includes also the project management manual and the description of the procedures for the risk management.



# 1 PROJECT OVERVIEW AND WORKFLOW

## 1.1 Project Overview

HEART is a multifunctional retrofit toolkit within which different subcomponents - ICT, BEMS, HVAC, BIPV and Envelope Technologies - cooperate synergistically to retrofit an existing building while transforming it into a Smart Building.

Based on a whole-building performance approach, the toolkit is conceived to achieve extremely high levels of energy efficiency in the existing residential building stock, with particular reference to Central and Southern Europe, where climate change and energy transition have boosted electricity consumption peaks both during summer and winter seasons. However, it may be extended equally well to new residential and commercial buildings.

The toolkit's central core consists of a cloud-based computing platform that concentrates managing and operational logic to support decision-making in planning and construction as well as energy performance enhancement and monitoring during operation. The Toolkit provide energy saving, energy fluxes optimization, data exchange, stakeholders' active involvement and Smart Grid interactivity.

Interoperable building technologies and installations are also integrated in the toolkit: envelope solutions (thermal insulation and windows) ensure a reduction of thermal loads, while technical systems (BEMS, BIPV, heat pump, fancoils, power controller, storage systems) ensure energy efficiency and RES exploitation.

All technical systems and building components are structured as a function of their affordability, interactivity, practicality, reduced installation time and non-invasiveness.

## 1.2 Project Structure

To achieve its objectives, HEART project is structured in 11 work packages spanning 48 months and focused around the integrated optimization of the whole system. HEART is a multifunctional retrofit toolkit including different components (ICT, BEMS, HVAC, BIPV and Envelope Technologies) that cooperate to transform an existing building into a smart building.

A brief Work Package description follows:

WP1 "Scientific and project management" aims at enabling the trans-disciplinary project team to work synergistically, to adapt and improve the different technologies and methodologies included in the project. It will also ensure project's administrative management.

WP2 "Continuous update of the intervention context, constraints and opportunities" aims at updating the features of HEART application context and of all its boundary conditions, thus adapting to new technologies, policies and standards.

WP3 "Integrated optimization of the whole system" aims at implementing the optimization and pre-construction development of HEART, ensuring the integration among all the subcomponents.



WP4 “Cloud-based DSS and BEMS” aims at optimizing, prototyping and testing the cloud-based DSS and BEMS, the related hardware and the customized UI.

WP5 “Multi-input and multi-output power controller (MIMO)” aims at prototyping and testing the MIMO power controller integrating in a single component all the needed functions of power regulation and control.

WP6 “Components for heat generation, emission and storage” aims at optimizing, prototyping and testing the DC electric heat pump unit, the thermal storage system and the smart fan coil.

WP7 “Energy efficient envelope technologies” aims at optimizing, prototyping and testing the external thermal insulation system, the specific components to increase the performance of existing windows and the universal PV tiles.

WP8 “Exploitation of the project results” aims at defining detailed and targeted business models for each application country, exploiting HEART features.

WP9 “Demonstration activities” is focused on the on-field demonstration of HEART technologies.

WP10 “Communication and dissemination of project results” aims at disseminating the value of methods and tools developed in the project and ensuring the impact of the HEART results on the key target audience.

WP11 “Ethics Requirements” aims at ensuring compliance with the ethics requirements.

In Figure 1 WP interactions and dependencies are graphically represented.





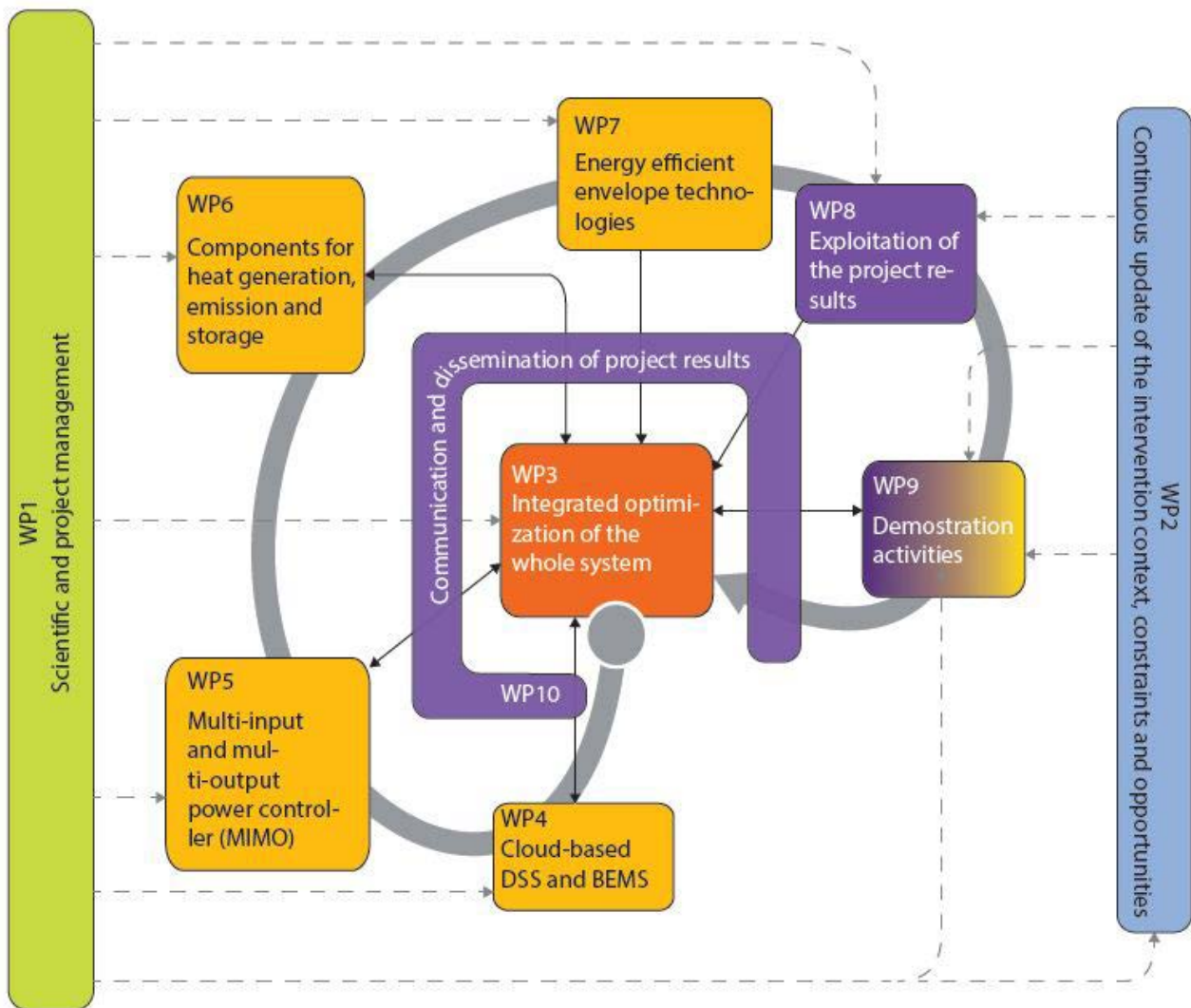


Figure 1: overall structure of the HEART work plan.

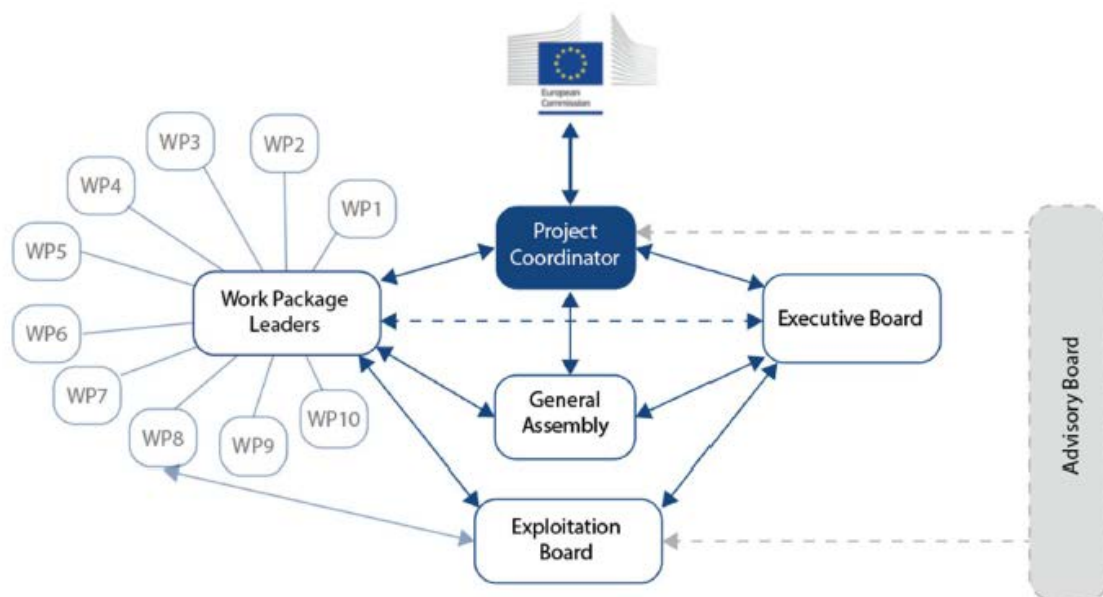
## 2 PROJECT ORGANIZATION STRUCTURE

### 2.1 Project Management Structure

Given the complex structure and interdependencies of WPs and related tasks, the project governance structure has been studied in order to achieve an efficient coordination of activities and minimize the effort in managing the project. Key figures and roles are provided to guarantee the high quality and timely tasks implementation.



The general overview of the project governance is represented in Figure 2.



*HEART project management structure*

Figure 2: HEART management structure.

Several project bodies are crucial for project management and for its smooth implementation. Each of them has specific roles and competences.

**Project Coordinator:** the project coordination is led by POLIMI and includes the following functions: financial supervision, progress report preparation and submission, formal revision and submission of official communications/documents to be produced within the project, final approval of project deliverables, organization and supervision of project meetings as well as liaison with project governing bodies.

The Project Coordinator of HEART project is Prof. Niccolò Aste of POLIMI. In all these activities of project and consortium management, the Project Coordinator will be supported by a project officer of FPM (POLIMI's linked third party) for the day-by-day management.

**General Assembly:** composed of one representative per beneficiary, this body has competences and responsibility in taking the main decisions affecting the implementation and success of the project, namely:

- monitoring and reviewing the overall technical, management and financial progress of the project.
- ensuring that milestones are met and deliverables are completed.
- ensuring the quality of the data coming from the WPs, the reports and the deliverables.
- monitoring and ensuring efficient communication and co-ordination between partners, WPs and tasks.

During the project kick off meeting, held in Milan (Italy) on 5th October 2017, the General Assembly members have been appointed as follows:



Partner	Representative
1 - POLIMI	Niccolò Aste
2 - ENTPE	Mohamed El Mankibi
3 - UL	Uroš Stritih
4 - EURAC	Petra Scudo, Roberto Fedrizzi in case of absence
5 - TPS	Nigel Jakeman
6 - HELIO	Alexander Stops
7 - ZH	Michela Buzzetti
8 - VYZ	Robert Spicer
9 - STI	Giovanni Manfroi
10 - REV	Savina Cenuse
11 - QUA	Arnaud Dauriat
12 - GAR	Ángela Llamas
13 - HE	Sebastian Garnier
14 - ACER RE	Marco Corradi
15 - EST	Paul Sachot
16 - CTIC	Pablo Coca

**Executive Board:** it consists of the different directors responsible for monitoring the implementation of all project tasks: Project Coordinator, Scientific Director, Integration Director, Pilot Director, Communication & Impact Director and the Data Protection Officer. Their roles are well defined as summarized in the following table:

Person	Partner	Role	Responsibility
N. Aste	POLIMI	Project Coordinator	Overall project management, interface with EU.
M. El Mankibi	ENTPE	Scientific Director	Supervision of scientific development and quality management (QM).
F. Butera	ZH	Integration Director	Supervision on the integration of different components and on the toolkit realization.
P. Sachot / M. Corradi	EST / ACER	Pilot Managers	Coordination of pilot activities and validation activities
P. Scudo	EURAC	Impact Director	Project uptake and impact
S. Reigeluth	REV	Communication and Dissemination Director	Coordination of all activities for project visibility
U. Stritih	UL	Data Protection Director	Data protection management

The Executive Board is chaired by the Project Coordinator and is responsible for monitoring the day-by-day management of the technical WPs, taking technical actions to ensure WP goals are met on time and within the budget limits. The Executive Board reports periodically to the General Assembly.

**Work Package Leaders:** they are responsible for coordinating the activities within each WP. Their duties include the coordination and implementation of each WP within the foreseen timeframe and budget, proposition of orientation of work to reach project objectives (including task and contractors reallocation), deliverables preparation supervision, risk monitoring and liaison with the different Directors.



The list of WP Leaders was provided at proposal stage and confirmed at the beginning of the project:

WP No.	Work package title	Resp.	Name
WP1	Scientific and project management	POLIMI	N. Aste
WP2	Continuous update of the intervention context, constraints and opportunities	ENTPE	M. El Mankibi
WP3	Integrated optimization of the whole system	POLIMI	C. Del Pero
WP4	Cloud-based DSS and BEMS	VYZ	G. Loffet
WP5	Multi-input and multi-output power controller (MIMO)	TPS	F. Hassan
WP6	Components for heat generation, emission and storage	HELIO	A. Stops
WP7	Energy efficient envelope technologies	ZH	M. Buzzetti
WP8	Exploitation of the project results	POLIMI	D. Chiaroni
WP9	Demonstration activities	ZH	F. Butera
WP10	Communication and dissemination of project results	REV	S. Reigeluth
WP11	Ethic Requirements	POLIMI	N. Aste

**Exploitation Board:** chaired by HE, it is composed by ZH, TPS, HE, VYZ, STI, QUA and GAR. Its main function is that of constantly monitoring the business trends to adapt HEART business plan to real market needs. The Exploitation Board is also involved in the management of intellectual property.

Parallel the above governing bodies, HEART project has also set up an **External Advisory Board**, an independent body made up of a group of high profile stakeholders who will provide the consortium with feedbacks and advices on technical and impact aspects. Upon request, experts will be asked to give opinions on selected papers and deliverables during the tasks implementation. Experts have been chosen considering their different backgrounds and provide their expertise on a voluntary basis. The External Advisory Board is composed as follows:

Expert	Institution
Francesco La Camera	Italian Ministry of Environment, Land and Sea
Virginio Trivella	Rete IRENE
Simone Alessandri	European Building Automation and Controls Association
Daniele Testa	ENI SpA
Lola Gonzalez	ICUBE Engineering
Francesca Tilli	GSE

## 2.2 Decision Making Processes And Conflict Resolutions

As a general rule, decision making processes are aimed at minimizing the possible generation of conflicts. In case of conflicts, they will be solved, first of all, amicably, under the rules set out in the Consortium Agreement.

Conflicts may arise at different project levels and consequently specific solutions will be identified to solve the conflicts promptly. At Work Package level, the WP leader will set the dispute internally with a possible



Executive Board support, if needed. In case not all partners share the decision, then the discussion can be taken at Executive Board level and the Project Coordinator will also be involved. All changes needed for settling a dispute must be minor to ensure that integrity and coherence among WPs are maintained.



## 3 QUALITY ASSURANCE PROCEDURES

### 3.1 Quality Control Procedures For Communication Tools

A complex international project such as HEART requires precise and transparent communication between all partners for its smooth implementation. Day-by-day communication and achievements distribution will be carried out mainly by e-mail and file sharing via the project Intranet.

#### 3.1.1 Public Website

Public information about HEART, aiming at external communication and dissemination purposes and targeted to the greater public, is available at the following URL: <http://www.heartproject.eu>

This site will be kept updated and improved along and beyond the project lifetime, adding new content and functionality, under the responsibility of WP10.

#### 3.1.2 Intranet

The Intranet for internal use is hosted within Dropbox. It contains all the technical information about the project, designed to support online cooperation. Partners should use the Intranet to share information, upload intermediate versions of deliverables, and all the intermediate reports/roadmaps.

The Intranet also contains a structured repository of officially released documents, together with all contractual information, templates and so on.

#### 3.1.3 Content of the project intranet

The Project intranet contains the following information that can be accessed and downloaded:

Administrative Documents	This folder contains all administrative documents, templates and guidelines, crucial to keep under control the project implementation.
Case Studies	All information related to the 2 case-studies in Italy and France are stored in this folder.
Consortium Agreement	Folder dedicated to the CA.
Grant Agreement	Folder dedicated to the GA.
Meetings	Minutes of virtual and in presence meetings, with all other related info.
Project Progress Report	This folder contains all internal interim reports produced to monitor the implementation of project activities, as well as the official project progress report documentation.



Visual Identity	Logos, images, flyers, document and presentation templates.
WPs	Breakdown of HEART WPs, each folder contains working documents and official documents produced under each WP.
Contacts	List of all contact persons involved in HEART, with indication of email, telephone, mobile and skype id.

A snapshot of the HEART Intranet is shown in Figure 3.

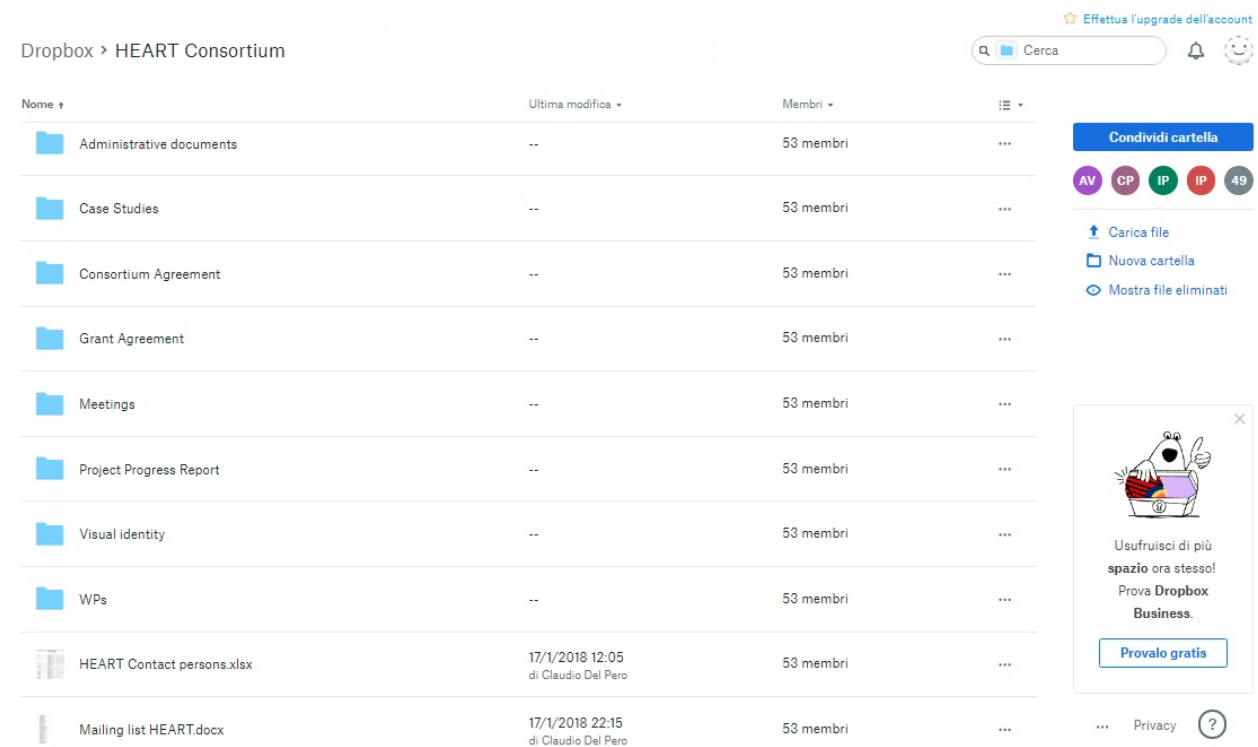


Figure 3: Home page of the HEART intranet.

### 3.1.4 Electronic Mail

Electronic Mail will be one of the major means used in HEART project to exchange information, while the main exchange of documents in electronic form over the Internet will be accomplished using the intranet.

A HEART specific mailing list has been setup to advise the partners of the availability of new information, circulate agendas of meetings and events related to the project, and notify the presence of new documents on the intranet of the project. Usage of mailing lists is strongly recommended. The usage of person-to-person private emailing should be limited, to privilege visibility within the project to all people working in the project.

It is recommended not to send e-mails with attached documents to mailing lists. It is more effective to post them on the Intranet and allow each participant to download them including a document link in the email.



### 3.1.5 Skype

It is recommended that each participant use the Skype service for voice communications. This will allow the other project participants to “see” when a colleague is on-line and a quick check can be made to determine whether he/she is available for discussions, document exchange etc. Skype allows free VoIP talk, and if a webcam is available, to also do a free videoconference. Multi-conference audio calls can also easily be made.

### 3.1.6 Phone Conference Calls

Telephone conference calls are useful for organising short meetings. They can be set up with short notice, participants only need a plain telephone set to participate and do not need to spend time travelling.

The following general principles should be respected for a successful teleconference meeting:

- the meeting should not exceed 10 to 15 participants,
- in the same way for a physical meeting, the date, time, expected duration, agenda and name of participants should be communicated in advance, together with all required documents,
- the meeting agenda will be distributed prior to the meeting with a clear indication of the topics to be covered during the conference call and the partners responsible for them,
- all participants must make sure that they will not be disturbed during the teleconference meeting and that they join the meeting (i.e. dial the phone number) on time,
- participants should start a spoken contribution by telling their name, the other participants cannot see the others and could have a doubt about who is speaking. As with all other meetings, minutes must be produced by the meeting chairperson, and circulated to the other participants.

A minute of each conference call has to be recorded and shared with the project leader according to the format uploaded in the DropBox folder.

## 3.2 Quality control procedures for meetings

Whether virtual or physical, a meeting is convened by the chairperson, who also determines the location in accordance with the foreseen attendees. For major meetings, POLIMI will provide support and keep track of the action items. If POLIMI is not present, it is the responsibility of the chairperson to prepare and distribute the action items.

Regular meetings should be convened with at least twenty (20) calendar days (45 days for the project General Assembly meeting) prior notice and be accompanied by an agenda proposed by the meeting convenor. The agenda will be considered accepted unless one of the partners notifies the Project Coordinator and the other partners in writing of additional points to add, at the latest two working days before the date of the meeting (14 days for the General Assembly meetings). Partners may also participate to physical meetings by teleconference, if the facilities are available.





Please note that it is good practice to publish action items or minutes of every meeting, this can help support any audit checks the Commission may carry out concerning claimed travel expenses. The format for the meeting minutes is shared in the Dropbox folder.

### 3.2.1 Project General Assembly and Executive Board Meetings

The project **kick-off meeting** was the first plenary meeting and marked the effective launch of the project. It reinforced the sense of common goal of all partners, and identified the responsibility of each one. Open technical issues were identified and debated; co-operation between work packages was initiated. Specific thematic tables were organized to start identifying potential risks and actions to be undertaken. The project management team exposed what is expected of each in terms of results, performance and reporting. The detailed course for the whole duration of the project was confirmed and fine-tuned.

Other **project plenary meetings** will take place approximately every 6 months (or earlier if required). They will involve all the participants. They will be complemented and prepared by Executive Board meetings to be held in the same time frame. Additional Executive Board meetings will be convened as required. Specific intra or cross WP meetings will be organised by the work package leaders as needed for the progress of their tasks.

In addition to the planned plenary meetings, “Virtual Meetings” may be held by e-mail or teleconference if necessary. All General Assembly meetings, whether virtual or physical, are convened by the chairperson, who also determines the location in consultation with the Executive Board.

Any decision requiring a vote at a General Assembly and Executive Board meeting must be identified as such on the pre-meeting agenda, unless there is a unanimous agreement to vote on a decision at that meeting. In the case of “virtual” meetings, decisions may be taken by e-mail using suitable tools for authentication of sender, such as certified e-mail.

Each Consortium Body shall not deliberate and decide validly unless a majority of two-thirds (2/3) of its voting members are present or represented, including those participating by teleconference. Where decisions are to be taken unanimously, all members must be present or represented at the meeting.

Decisions by the General Assembly and Executive Board require a majority of 2/3 of the partners present or represented. Full details can be found in the Consortium Agreement.

### 3.2.2 Workpackage meetings

#### General

Technical meetings or video/audio conferences can be held as necessary. A Workpackage Chairperson can convene meetings of the Workpackage whenever required, giving members at least seven (7) calendar days notice and providing an agenda.

#### Decisions



For major decisions, the Workpackage Chairperson should consult with the Executive Board for final approval.

### 3.3 Quality control procedures for project reviews

#### 3.3.1 General

The European Commission controls the progress of the project by essentially three means:

- Periodic Reports;
- Deliverables;
- Project Reviews.

Project Reviews are normally one or two-day meetings held in a specific period of time defined by the European Commission where the participants illustrate the status to the Project Officer and a number of independent Project Reviewers nominated by the Commission.

These meetings are the most important events in the project's life, for the following reasons:

- The Project Officer and the Project Reviewers usually do not have much time to dedicate to the project. For them, Project Reviews are the main events to evaluate the project.
- Project Reviews are the only occasion to present to the Project Officer and Reviewers results of the project and to discuss its progress.
- Project Reviews are real opportunities to demonstrate the cohesion of the consortium and the commitment of the partners to achieve project objectives.

As a consequence, Project Reviews should be paid special attention by all the partners.

#### 3.3.2 Preparation

The following procedure is recommended for the preparation of Project Reviews:

- Approximately one to two months before the Review, the Project Coordinator in consultation with the General Assembly will define the main objectives to be accomplished during the Review, and consequently assign roles to the partners, prepare a detailed agenda and ask partners to prepare their contributions.
- Once agreed, the agenda will be sent to the Project Officer and agreed with him / her.
- Approximately two weeks before the Review, all project deliverables for the time period concerned must be made available to the Reviewers. This will be done by granting them access to the HEART Administrative Intranet site.
- Also two weeks before the Review, all presentation material must be ready internally, so that everybody can check its consistency and the quality of the presentations, and choose the best approach. The Project Coordinator will ensure the necessary quality checks are carried out.



- The day before the Review, a final rehearsal will be held for fine-tuning. Rules among the attending partners will be agreed (e.g. order of presentations, signals to warn that time is almost finished, etc.).

### 3.3.3 Logistics

In case that the review meeting is not held on EC premises, a detailed description of travel details (not just the address - but details of train, metro, taxi, schematic map of the meeting location, telephone number of someone in contact with the meeting coordinator) must be made available to the reviewers at least two weeks before the Review.

The location should be easy to access - DO NOT have Reviews in places that imply long and complicated travel arrangements. Too much time is lost and the Project Officer and the Project Reviewers will not appreciate it.

Ensure that the meeting has internet access, printing services and photocopy equipment available at the Review location.

The Project Coordinator must liaise with the Project Officer for logistics information, checking that all the necessary information has been supplied.

### 3.3.4 Agenda of Review

The objective of a Project Review is to:

- demonstrate project progress to the Project Officer and the Project Reviewers;
- demonstrate achievements through presentations, demonstrations, etc.;
- explain modifications to initial project objectives or planning to the Project Officer and the Project Reviewers.

The agenda should be organised accordingly, and have the following contents:

- Welcome,
- Introduction (by Project Coordinator):
  - Presentation of the partners,
  - Presentation of project objectives,
  - Presentation of project organisation.
- Management summary:
  - Activities performed since previous Review,
  - Dissemination and exploitation efforts
- Technical summary:
  - Major results achieved since last Review,
  - Modifications to the Workplan.



- Answer to questions, comments made by the Project Officer or Project Reviewers since last Review (when appropriate);
- Technical presentation of major results (presentation documents, demos, visit of laboratories, etc.);
- Conclusions and plans for the next period.



## 4 DOCUMENTS TEMPLATES

### 4.1 Documents Features

Most documents in a collaborative project are written with contributions from several partners. In order to minimise the effort for handling such documents, it is important for all participants to follow agreed standards for formats and tools to be used in document editing and exchange.

This chapter specifically deals with the procedures for the release of official documents.

#### 4.1.1 Standards

Tool :	Name :	Publisher :
Word Processing	MS Word	Microsoft
Spreadsheet	MS Excel	Microsoft
Overhead slides	MS Power Point	Microsoft
Web publication	MS Webmatrix	Microsoft
File compression	WinRAR	RARLab
Documents for the Intranet	MS Word / Acrobat PDF	
Intranet Cloud Folders	DropBox "HEART Consortium"	

#### 4.1.2 Document codes

All document codes are assigned and maintained by the Project Coordinator. Each document will be filed with a unique code, as follows:

YYYYMM\_HEART\_(code)\_(Short title)\_(Author)\_Vx.x

Where:

-the code is identified as follow

IR	Document/Spreadsheet/presentation for internal use
D	Project Deliverable
MM	Meeting minute
CM	Conference call minute
TM	Travel minute
CU	Continuous update form

- YYYYMM is the year and month in which de document is delivered.

- Short title identifies the content of the document;



- Author is the short name of the partner/s responsible of the document;
- The version is explained in the following paragraph.

Example: 201711\_HEART\_IR\_WP3 Detailed Roadmap\_POLIMI\_V1.0

The Project Coordinator will keep an up-to-date list of the documents produced.

The aim of this precise coding in filenames is to give clear access to the project documentation, both for internal purposes but also for external references.

The only exception to this rule is represented by the Deliverables uploaded on the Participant Portal. To ease the recognition of documents uploaded, and only for uploading purposes, the filename will be simplified as follows: Dx.x - TITLE.

Only PDF format is allowed.

Example: D1.1 - Project management and quality plan.pdf

### 4.1.3 Document versions

When a document is issued for the first time, it should be defined as a draft (version 0.x). Usually, the approval process requires that a document is circulated for comments among the interested partners. Upon receiving the comments by the specified deadline, the author will make the proper modifications, therefore changing the version sub-number, without affecting the main number.

Normally, the first official release of a document will be called V1.0 and this number will be assigned by the Project coordinator when he has approved the document. The main version number (the first figure before the ".") is increased by one unit only if a different version of the document is delivered to the Commission, or if major modifications have significantly altered the contents of the document. The editor must not forget to update the version number in all its occurrences in the document (File Properties and cover pages). Clearly, every care should be taken to avoid distributing different documents with the same version number.

Every time that modifications are made to a document, the new version must contain a clear indication of what has been added, modified or removed.

## 4.2 Editing Guidelines

### 4.2.1 Logo

The logo of the HEART project is shown on the first page of this document and is available for downloading from the intranet of the project, under "Visual Identity" folder, and is also included in all document templates.



## 4.2.2 Page formats

The following rules should be followed in the production of all official HEART documents (Deliverables, Reports, etc.), and have also been used in the present document:

Document size and orientation	A4 Vertical orientation
Margins	20mm vertical, 40mm horizontal
Normal Font (for text)	10p Trebuchet MS

## 4.2.3 Templates

Basic models for the production of official project documentation are available on the intranet. They are Microsoft Word Templates:

**HEART.doc(x)** All HEART deliverables must use this standard template. This will ensure that the look of all deliverables follows the HEART model. To create a new document, use right mouse and select "new", then "save as" "name.doc(x)"

**HEART.continuous\_update.doc(x)** For Continuous Update Reports

**HEART.minutes.doc(x)** For minutes of meetings.

## 4.2.4 Styles

A few basic styles have been defined in the editing of the present document. The different versions of Word in the different languages should automatically translate the basic styles (such as Normal, Heading 1 ..., etc.). Extra styles include styles for use in figure captions, table text and table titles, bullet lists and a few others. Specific styles are used in the cover sheet. In order to keep consistency across documents, the number of newly defined styles should be minimised.

Every time that part of a document is pasted into a second one, all the styles defined in the first document are automatically transferred into the second one. To avoid this (which results in an exponential growth of styles) this kind of operation should be carried out with care. In particular:

1. Create new documents using the "HEART.doc(x)" template rather than modifying an existing document;
2. When possible, use the command *Edit-Paste Special* to paste text from an another file as non-formatted text;
3. Do not modify styles in a document.



#### 4.2.5 PowerPoint presentations

A template for overhead slideshows has been defined in **HEART.ppt(x)**

As a general rule, presentations should not be long, each page should contain only a few items summarizing one idea (avoiding verbose descriptions that can be made by the speaker). The fonts used in both text and graphics should be large enough for the audience to read, cryptic abbreviations should be avoided, the use of colour can improve readability.





## 5 PROJECT MANAGEMENT MANUAL

### 5.1 Project monitoring

The Gantt chart of Figure 4 (following page) summarizes the project activities and their expected start and end dates. The project progress will be monitored by the Project Coordinator through regular WPs, Tasks and Deliverable reporting prior to every GA/EB meeting on a fixed basis.





GANTT chart

Figure 4. HEART Gantt chart.



## 5.2 Project reporting

### 5.2.1 Deliverables

#### Overview

Each deliverable has to be submitted to the EC, before obtaining approval by the Project Officer. Final acceptance of deliverables can only happen in a review. If deliverables are not accepted, then payment of Financial Statements could be delayed. It is thus in the interests of all partners that deliverables are produced in high quality and in the required format.

The HEART 93 Deliverables are strictly tied to the breakdown into Work Packages that defines the structure of the project. Deliverables are generally technical documents and have an essential importance for the Commission's appraisal of how the project is evolving, since they are written reports in which results produced during the project are collected and analysed.

#### Deliverable production

Each deliverable tackles a specific subject, and has a "Deliverable Manager" who will coordinate the production of the document, interacting as necessary with the other partners involved. Unless agreed otherwise among the partners involved, the Deliverable Manager is normally a person working for the consortium partner that is responsible for the deliverable according to the DoA.

The Deliverable Manager will define the document structure and the contributions expected from each partner in a preliminary document named **DDP (Deliverable Development Plan)** and will propose the calendar for the meetings he/she may consider necessary for the development of the deliverable. The Deliverable Manager, in accordance with the Project Coordinator, will also appoint 1-2 reviewers, chosen among project partners, who will be responsible for ensuring the high quality level of the deliverable. The contents of the DDP must be finalised at least 45 days before the contractual date of the deliverable.

Then the deliverable will be produced. The Deliverable Manager will merge all contributions into a single document following as much as possible the structure defined in the DDP. This first draft will then be circulated and asked for comments. Each partner will check its consistency with the plans and give their feedback and approval.

This iterative procedure will be repeated as necessary, until all involved partners give approval. The Deliverable Manager will then prepare a final draft, which will be sent to the reviewers at least 15 days before the contractual date. The reviewers will normally not enter into the technical merits of the deliverable, but will essentially ensure that it is of sufficient quality to be sent to the Commission. They will also format it correctly and make sure all the naming conventions have been followed. The Coordinator will finally send the requested number of copies to the Commission.

The diagram in Figure 5 summarizes the procedure to be followed for the preparation of deliverables.



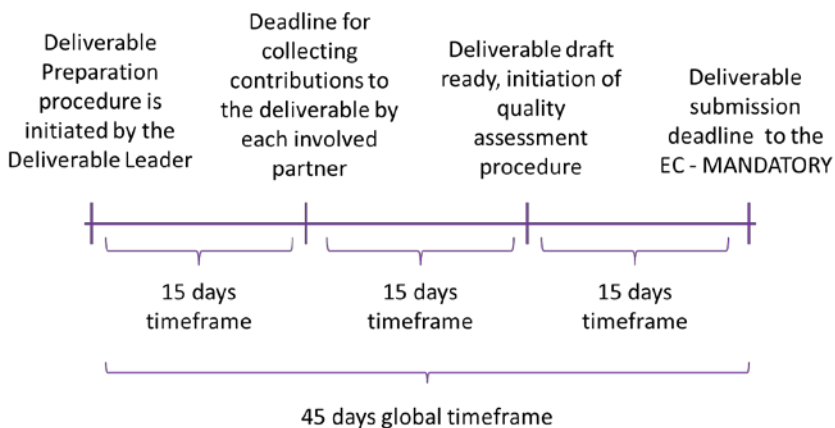


Figure 5: The deliverable preparation process.

### Deliverable Development Plan (DDP)

The DDP is issued by the Deliverable Manager in order to clarify the main objectives of the Deliverable and to assign the different contributors with specific tasks in the report. It should be agreed with the Project Coordinator at least 45 days before the due contractual date of the deliverable. The DDP must sketch the structure of the future Deliverable, and therefore contain a clear indication of:

- person responsible for the deliverable (Deliverable Manager);
- table of contents;
- persons in charge of each chapter/section;
- a timetable for the deliverable development, setting deadlines at least for:
  1. submission of contributions;
  2. production of the first draft (version 0.1);
  3. internal review (partners' comments);
  4. production of further versions of the draft (versions 0.x);
  5. delivery to the Quality Manager.

All reports (scientific and financial) have to be submitted via the Participant Portal: <http://ec.europa.eu/research/participants/portal/>.

The Project Coordinator keeps tracks of the deliverable advancements by filling in a table which summarizes the most important information about the deliverable and specifically its level of development. The screenshot below shows how this table is summarized and gives evidence of the information needed (by the Deliverable leader):



n.	Deliv. (number)	Deliverable Name	WP number	Lead	Type	Dissem. Level	Month of delivery	DDP (Deliverable Development Plan)	Quality assessment date	Delivery Date	Status	Internal reviewer
1	D10.1	Dissemination and communication strategy and plan - I	10	REV	R	CO	3	16/11/2017	16/12/2017	31/12/2017	Deliverable waiting for EC approval	POLIMI, EURAC
2	D10.3	Project website - I	10	REV	WEB	PU	3	16/11/2017	16/12/2017	31/12/2017	Deliverable waiting for EC approval	POLIMI
3	D1.1	Project management and quality Plan	1	POLIMI	R	PU	4	17/12/2017	16/01/2018	31/01/2018	Draft ready for review	ENTPE, EURAC
4	D1.2	First Data Management Plan	1	UL	ORDP	CO	6	14/02/2018	16/03/2018	31/03/2018	Not started	
5	D1.3	Short Interim Management Report I	1	POLIMI	R	CO	6	14/02/2018	16/03/2018	31/03/2018	Not started	
6	D2.1	Application context periodic update - I	2	ENTPE	R	PU	6	14/02/2018	16/03/2018	31/03/2018	Not started	
7	D3.1	Optimized technical specifications of each component I	3	POLIMI	R	CO	6	14/02/2018	16/03/2018	31/03/2018	Not started	
8	D3.4	Life cycle inventory models I	3	QUA	R	CO	6	14/02/2018	16/03/2018	31/03/2018	Not started	
9	D11.1	NEC - Requirement No. 1	11	POLIMI	ETH	CO	6	14/02/2018	16/03/2018	31/03/2018	Not started	
10	D11.2	POPD - Requirement No. 2	11	POLIMI	ETH	CO	6	14/02/2018	16/03/2018	31/03/2018	Not started	
11	D4.1	DSS and BEMS logics	4	ENTPE	R	CO	9	16/05/2018	15/06/2018	30/06/2018	Not started	
12	D4.2	Technical configuration of the BEMS hardware	4	CTIC	R	CO	9	16/05/2018	15/06/2018	30/06/2018	Not started	
13	D4.3	Simplified dynamic building energy model	4	POLIMI	R	CO	9	16/05/2018	15/06/2018	30/06/2018	Not started	
14	D4.4	Short Interim Management Report II	1	POLIMI	R	CO	12	16/08/2018	15/09/2018	30/09/2018	Not started	
15	D3.7	Verification of the final configuration of the system I	3	EURAC	R	CO	12	16/08/2018	15/09/2018	30/09/2018	Not started	
16	D10.5	Leaflets/Brochure - I	10	REV	WEB	PU	12	16/08/2018	15/09/2018	30/09/2018	Not started	
17	D10.13	Demonstration activities I	10	EURAC	DEM	PU	12	16/08/2018	15/09/2018	30/09/2018	Not started	
18	D10.19	Knowledge transfer conferences I	10	EURAC	WEB	PU	14	16/10/2018	15/11/2018	30/11/2018	Not started	
19	D9.2	First design of the renovation intervention	9	ZH	R	PU	16	17/12/2018	16/01/2019	31/01/2019	Not started	
20	D5.1	Manufacturing design of the MIMO - I	5	POLIMI	R	CO	17	14/01/2019	13/02/2019	28/02/2019	Not started	
21	D6.1	Manufacturing design of the DC-HP, thermal storage and smart fancoil - I	6	HELIO	R	CO	17	14/01/2019	13/02/2019	28/02/2019	Not started	
22	D7.1	Manufacturing design of the modular façade thermal-insulation - I	7	GAR	R	CO	17	14/01/2019	13/02/2019	28/02/2019	Not started	
23	D7.4	Manufacturing design of the PV-tiles - I	7	ZH	R	CO	17	14/01/2019	13/02/2019	28/02/2019	Not started	

Figure 6: Deliverable monitoring.

## 5.2.2 Periodic reports

The HEART project is organized in 3 Reporting Periods:

Reporting Period 1	From M1 to M18
Reporting Period 2	From M19 to M36
Reporting Period 3	From M37 to M48

Contractual obligations imply that within 60 days of the end of each reporting period (including the last reporting period) a **periodic report** should be submitted to the Commission, organised by sections as follows:

An **overview**, including a publishable summary of the progress of work towards the objectives of the project, including achievements and attainment of any milestones and deliverables identified in Annex I. This technical report should include the differences between work expected to be carried out in accordance with Annex I and that actually carried out.

An explanation of the **use of the resources**.

A **Financial Statement** from each beneficiary and each linked third party, if applicable, together with a summary financial report consolidating the claimed European contribution of all the beneficiaries (and third parties) in an aggregate form.

Financial statements should be accompanied by **certificates**, when this is appropriate (see Article 20.4 of the Grant Agreement).

### Technical Report

At the end of every reporting period, POLIMI will prepare the project Periodic Report. It will contain the following summary information:



- Major achievements during the reporting period.
- Major problems identified.
- Deviations from the project plan.
- Resources used during the period.

POLIMI will be in charge of preparing this report with the support of all partners for additional contributions. This report will summarise the major achievements to date, any critical issues, the expected organisation for the remaining months of the project. It will include also a critical self-evaluation.

### Financial Report

At the end of every reporting period, POLIMI will prepare a consolidated overview of the budgetary situation of the project, on the basis of the cost statements he has received from the partners. This report will be submitted to the Commission. The payments that have been made will also be reported. The budgetary situation will be compared with the original annual budget plan.

### 5.2.3 Internal management report

To support the efficiency and quality of this Periodic reporting process, an internal reporting procedure is set up in HEART on a fixed calendar basis.

Every first Monday of each month, the partners are requested to send to POLIMI a “continuous update form” related to the previous month, according to the format shared in the Dropbox folder.

Prerequisites for easing the reporting procedure are:

- All participants to keep timesheet records of who is involved in the HEART project. These can follow the normal practice of each partner, but must track, month for month, who worked on what part of the project. The information stored should be at workpackage level for every person concerned.
- For travel costs, again the normal practices of the organisation concerned can be used. Thus, if itemised travel costs are normally kept, then the total cost of the travel for each person involved should be reported in the management reports. If, on the other hand, a default daily reimbursement is used (irrespective of the real costs involved), then these default values can be reported again for every person involved. Please note that all travel costs must be specified per partner for every person who travelled. Please do not group travel costs together - they must be specific costs per person. Also, receipts must be kept, as the EC may want to see them.



## 5.3 Financial Management

### 5.3.1 Coordinator Responsibility

Overall financial management of the project is under the responsibility of the Coordinator, who shall distribute the financial contribution of the Funding Authority according to the Consortium Plan and the approval of reports by the Funding Authority. Parties shall be found only for their tasks carried out in accordance with the Contract.

### 5.3.2 Management of funding contribution from the Commission

Pre-financing payments are received by the project coordinator and distributed to the partners considering their share of the project budget.

The interim payment and the balance payment will be received by the project coordinator according to the rules set in the Grant Agreement with the Commission upon submission of the interim and final reports.

### 5.3.3 Audit Certificates

In line with the rules set by the European Commission, an audit certificate is required when the actual costs (personnel costs, other direct costs and subcontracting) are above 325.000 euros. The audit certificate will be requested once only during the project life time at the end of the action.



## 6 RISK MANAGEMENT

### 6.1 Risk classification

As defined in the Description of the Action, the Consortium has conducted analysis of the risks that may compromise the achievement of the project's objectives. Corrective actions have been defined on the basis of the Work Plan, with the aim of mitigating or eliminating the most probable risks, and risks with the largest negative potential impact on the project's success. Risks that could not be completely eliminated have been studied in detail in order to prepare a reasonable backup plan in case they occur (see Table 1).

Description of risks		Impact/ Probability	WP	Proposed risk-mitigation measures
Management	Consortium is too big for an effective management	Medium/ Low	All	Partners have been selected for their experience in research projects. A dedicate project manager is hired by POLIMI to continuously check the project progress.
	Lack of timely decisions	High/Low	1,2	The Management Structure and internal communication flows allow for an agile management of the consortium and fast decision making processes. Periodic working groups' meetings are foreseen. Gantt chart and detailed milestones draw the timeframe for the developments.
	Delay and poor quality of the deliverables	High/Low	All	The continuous cross-communication ensured by WP3 will ensure the timely delivery. Draft versions of most of the Reports are foreseen. All partners are responsible for reviewing the deliverables. Constant monitoring of delivery timetable will be fundamental to avoid risks.
Innovation	Disputes over ownership of IP amongst partners	Medium/ Low	4,5,6 ,7	Responsibilities for any single result have been already clarified among partners. IPR issues will be tackled all along the project elaboration.
	Results do not reach the market	Low/High	4,5,6 ,7,8	Industrial partners are strongly committed to innovate and bring their products on the markets. The financials have been explored showing the proximity to the market. A number of activities are foreseen to disseminate and communicate the results. Support measures are also provided by the business models.
	Dissemination and Communication Plan is not effective	Medium/ High	10	A partner skilled in dissemination/communication activities have been involved and clear strategies defined. The communication objectives and messages will be adapted to the target groups and continuously updated.
Technological	Objectives are too challenging	Medium/ High	1, 2,3	The project progress will be continuously assessed and, at specific points in time, decisions will be taken on potential fall-back strategies. The management structures will enable partners to follow





				the progress in the achievement of the challenging objectives.
	Technology, environment, and regulation changes	Low/ Medium	1, 2, 3	The continuous update of the application context and the open-architecture approach prevent these problems.
	Unforeseen technical or integration issues discovered during the coupling of the different components/ technologies	Medium/ High	3-7	Iterative development and validation are planned already on design, thanks also to the support of advanced simulation tools, so that technical and integration problems can be faced timely and adequately. This will allow time for alternative technology developments and relevant remedial actions.
	Frequent malfunctions or faults of single subcomponents during operation	Low/ Medium	4-7	Proven commercial products are used as a basis. The partners involved in this development have sound experience in the field. Backup measures will be implemented at the demo cases to avoid loss of data.
	Retrofit of case-studies is not cost-effective	Low/ Medium	9	Simulations for the demo cases have been performed and verified showing the feasibility of the actions. In case of underestimations, corrective measures will be taken to readdress the extent of the intervention.
	Time needed for retrofit is too short	Medium/ High	9	The planned development entails sufficient time for implementing innovative designs within the first 22 months. The buildings' retrofit is also carried out in two different phases in order to put in action corrective measures. Eventual short delays will not significantly influence the project, due to 48 months duration.

Table 1: Risk management table.

The risk management of the project is based on the coexistence of two elements classifying the risks: the probability of the risks and the impact of the risks on project's results. Probability is classified according to the chance of the risk to come true and the impact is calculated on the how much it effects project's results.

Therefore, probability is classified as follows:

- Low: Very unlikely/low probability to occur
- Medium: May occur
- High: Very likely to occur / expected to occur

On the other hand, impact classification follows these criteria:

- Low: No effect or very limited effect on the project, without changing its achievements.
- Medium: Moderate impact but important project outcomes and main goals are met
- High: Severe consequences on project achievements and, in the worst case, project fail.



## 6.2 Risk process management

For technical problems related to a specific workpackage, the procedure to be adopted is to highlight the problem to the WP Leader. Depending on the seriousness of the situation, the WP leader may also decide to involve the appropriate Director and should the situation be particularly critical also the rest of the Executive Board, who could as necessary raise the matter at the General Assembly meeting.

The General Assembly has the ultimate authority to solve the problem.

## 6.3 Specific management risks

### 6.3.1 Problems concerning partners' performance

Partners might not perform technical tasks satisfactorily. This will most likely first be raised by the Workpackage Leader involved, and reported to the Executive Board who may raise the issue with the General Assembly.

The first actions to be taken will be direct discussions with the partner concerned to correct the inadequacies. If these do not lead to a satisfactory conclusion, the General Assembly will meet to decide on action. Possible sanctions are:

- Sending a formal warning to the partner, addressing the possible negative consequences of the inadequacies;
- Allocation of part of the work to be performed from the partner concerned to another partner in the same WP, with a subsequent transfer of budget.
- Identifying an alternative partner/subject to support the activities, to be funded with the budget assigned to the partner that is not performing properly.

Similar actions could also result if the reporting provided by the partner is considered unsatisfactory. A short time to correct the reporting will be allowed, before more severe sanctions are considered by the General Assembly.

### 6.3.2 Problems concerning the financial stability of a partner

The consortium has joint technical and financial liability concerning the project. If serious concerns regarding the financial soundness of a partner exist, or a partner is increasingly going into debt, or if the financial situation of the partner changes in a substantially negative way, there is an obligation on the partner to report this to the Project Coordinator.

The Project Coordinator will liaise with the Executive Board to prepare an assessment of the risk to the project, which will then be discussed with the full General Assembly. First, a complete assessment of the work satisfactorily completed by the partner will be carried out, and, based on the progress reports to date and the advance payments received by the partner, a calculation will be made of the credit or debit of the



partner to the EC. Then a direct discussion with the partner concerned will determine the capacity of the partner to carry out the contractual work in the next period.

This will allow the General Assembly to evaluate the risk to the project, both financial and technical. Concerning the financial risk, an evaluation will be made of the risk of providing the next advance payment to the partner. In any case, at this stage an audit certificate for the work done to the date will most likely be requested of the partner.

### **6.3.3 Change Management**

Any modifications that may be required in the work plan must be promptly reported to the Project Management. Requests for modification could come from a particular WP: in this case the WP Leader should report the situation to the Project Coordinator, who will discuss the issue with the General Assembly.

Other instances of change could occur based on general project assessments, carried out as part of the normal management. If the work plan needs to be changed, the Project Coordinator will need to discuss this with the EC. If a Review is imminent, it may be more practical to present the revised situation to the Reviewers, who can then recommend the change as an outcome of the Review.

