

Interoperability of Heterogeneous IoT Platforms

D 1.1 Project Management Handbook

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Executive Summary

This Management Handbook is a practical guideline to facilitate the management of the project for all INTER-IoT participants. It sets down and explains all contractual rules and management procedures. It also provides useful advices and management tools, which will help project participants to do what is required in due form and in due time. It has been prepared by Universitat Politècnica de Valencia.

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Abbreviations

Abbreviation	Explanation
PC	Project Coordinator
D#.#	Deliverable number #.# (D2.1 deliverable 1 of work package 2)
DoA	Description of Action of the project
INTER-IOT	Interoperability of Heterogeneous IoT Platforms
EC	European Commission
EU	European Union
GA	Grant Agreement
H2020	Horizon 2020 Programme for Research and Innovation
IoT	Internet of Things
IPR	Intellectual Property Rights
M#	#th month of the project (M1=January 2016)
WP	Work Package
IPR	Intellectual Property Rights
PCC	Project Coordination Committee
PIC	Project Implementation Committee
STPM	Scientific and Technical Project Manager
TL	Task Leader
WPL	Workpackage Leader

1 INFORMATION REPOSITORY

1.1 HORDE

The project will setup a private collaborative workspace based on the HORDE project¹. It is an open-source groupware software including many features, though the File Manager will be the most relevant one. The link to the INTER-IoT document repository is <https://horde.inter-iot.eu>. The respective accounts for all partners are created and the participants received notifications e-mails from the system administrator. New accounts for the project partners will be created as needed, including re-arrangement of the existing users.

The manual for HORDE is available online and the entry point is visible at the home page of the repository (File Manager module). Furthermore, a Frequently Asked Questions (FAQ) section is available at the internal wiki of horde (<http://horde.inter-iot.eu/wicked/>). Finally, the user manual is distributed to all partners.

Anyone from partners' organisations who needs access to the management platform should send an e-mail to: coordinator@inter-iot.eu. Invitations to the HORDE workspace are issued by the INTER-IoT Project Coordinator organisation team – Universitat Politècnica de Valencia (UPVLC).

HORDE server structure: HORDE is used for internal access and document management:

- The HORDE groupware working space for the partners is only accessible with password.
- The working space will include the following sections:
 - Contractual documents – Grant Agreement, Consortium Agreement, etc.
 - Resources – actual information on usage of the resources.
 - Deliverables – completed, submitted, reviewed
 - WP and task work spaces – to share and work collaboratively on respective documents, draft deliverables, concept papers, etc.
 - Dissemination – to store and work together on dissemination items; e.g. papers, call for papers or workshops organisations
 - Templates – to include deliverable and presentation templates, project and partners' logos, etc.
 - Meetings – with agendas and minutes from physical meetings, notes from audio conferences, action points agreed, etc.
 - Coordination with standardization organizations
 - Coordination with ICT30-EPP projects.

The working space structure will be extended as needed by the project consortium and individual partners for their work in the project as well as to serve as file sharing platform among the consortium members. UPV research team will act as administering body of the server, however any partner can request resources on demand.

¹ <http://www.horde.org/>

1.2 Code Development

Rules for the development of code and software will be specified within WP3, WP4 and WP5. The groupware server will include links to SVN repositories for versioning management as required and defined by the WP.

2 INTER-IOT MANAGEMENT STRUCTURE AND PROCEDURES

The general purpose of the project management is strategic control of each WP, implying coordination of the different project activities and implementation of quality control mechanisms with appropriate project standards. Project management will cover financial, administrative, scientific and knowledge & innovation aspects.

The main goal is to ensure that the project will reach its objectives, in the scheduled time, and making use of the budgeted resources, while complying with EC regulations and procedures. Moreover, further goal of the project management is to achieve higher objectives than planned and/or reshape the work plan based on new future conditions today not predictable and set forth by major future changes in the technological domain. Above the technical management of individual WPs, an appropriate management framework linking together all project components and maintaining communication with the European Commission will be set up.

A collaborative project requires efficient and flexible management procedures as well as a well-structured project organisation, to ensure division of responsibilities among the partners as required by the project, precisely defined decision making and self-assessment processes, proper information flow within the consortium, and communication towards the EC and the wider public. Project management activities include:

- coordination of the technical activities of the project at consortium level.
- overall legal, contractual, ethical, financial and administrative management of the consortium.
- preparing, updating and managing the consortium agreement between the participants.
- set-up and maintenance of a Virtual Project Management Tool for structured document repository and project communication, linked to the project website, with restricted access for project partners.
- coordination of knowledge management and other innovation-related activities at consortium level.
- supervising the promotion of gender equality in the project.
- supervising science and society issues related to the research activities conducted within the project.

The project management structure and procedures, described in the following sections, will be implemented in the scope of WP1 and it is an extended version of the management procedures provided and included in section 3 of the Grant Agreement and in the Consortium Agreement. The partners participating in WP1 will provide necessary resources for all related activities.

2.1 Project organisation

The project Consortium Agreement (CA), signed by all project partners at the beginning of the project, formally defines the project governance, including rights and responsibilities of



consortium members, working procedures of the project bodies and responsible individuals, as well as the project management procedures.

In order to reduce unnecessary management overhead, the INTER-IoT project management implements a simple structure, where all discussions and related decisions are made at plenary level by achieving consensus among all project partners. However, for the cases where formal project decisions are necessary, in accordance with the Consortium Agreement and H2020 rules, the project established a Project Coordination Committee (PCC), as the highest decision making project body and a Project Implementation Committee (PIC), as sub-set of the PCC, which is responsible for implementing and overseeing the project plan, as well as coordinating the technical work among the work packages. Table 1 presents the main activities and responsibilities of the project bodies.

The main responsibilities in the execution of the project coordination and management activities as well as project representation at large will be assumed by the Project Coordinator (PC) and the Scientific and Technical Project Manager (STPM).

The PC is an intermediary between European Commission and the INTER-IoT project consortium, is in charge of general public project representation, and is responsible for project controlling; delivery of the project results, reporting, handling the payments and accounts, and correct application of EC rules; supported by the corresponding bodies of its organisation (i.e. UPVLC), that as a Spanish public university has to comply with Spanish laws. The PC is in charge of the overall coordination project activities, ensuring that appropriate technical project outputs are being generated, milestones reached, deliverables timely produced, and also monitors external activities and events, which may have impact on the project, providing respective information to the consortium for further discussion. Prof. Dr. Carlos E. Palau (UPVLC) will be PC in INTER-IoT.

The Scientific and Technical Project Manager (STPM), is responsible for the overall technical project management and coordination within and between work packages, and leads all related discussions and activities within the Project Implementation Committee, including overall scientific and technical quality assurance. The STPM is also first PC deputy for all non-administrative issues and project representation, including overseeing the overall project dissemination activities. Prof. Dr. Giancarlo Fortino (UniCAL) will be STPM for INTER-IoT.

Table 1: INTER-IoT project bodies

<p>Project Coordination Committee (PCC) Takes final decisions on the overall policy of the consortium, modifications or extensions of the Consortium Agreement or project objectives, and all project related financial issues. Meets annually or on request from its members and is chaired by Project Coordinator. Voting procedures have been specified in the Consortium agreement, although the main goal is that every decision is made by consensus.</p>
<p>Project Implementation Committee (PIC), composed by the PC, STPM and WPL, with typical working items, such as:</p> <ul style="list-style-type: none"> • Definition of a comprehensive and attainable strategy for completion of project objectives, • Approval of project deliverables, and implementation of peer-review procedures if required, • Assurance of technical consistency and maximum synergy between WP's, • Creation of ad-hoc projects working groups if necessary,

<ul style="list-style-type: none"> • Self-assessment and definition of corresponding corrective actions, and • First level of conflict resolution <p>Meets regularly 3-4 times per year and works continuously between the meetings. Co-chaired by Project Coordinator and Scientific and Technical Project Manager in accordance with their responsibilities, specified below. Decisions are taken by consensus or, if it is not possible, by qualified majority (two thirds), where all members have one vote. If the decision cannot be taken, the issue will be considered by the PCC.</p>
<p>IPR (Intellectual Property Rights) Board can be created by the PCC, if necessary, to assess all IPR relevant information that was brought or developed in the project and, based on the IPR ownership, gives recommendations on definition of access rights and use of results including licencing. Adequate reports on IPR issues will be provided in the Project Management Reports, although the consortium plans to work on an open source orientation, considering the background protected by the different partners in the Consortium Agreement.</p>
<p>Project work on the Work Package (WP) level will be done by all project partners involved in the WP and will be coordinated by respective WP leaders. Decisions on the WP level are made by consensus and if not possible by qualified majority principle (two thirds), where each WP partner has one vote.</p> <p>The INTER-IoT WP leaders have been identified during the Kick-off Meeting of the project:</p> <ul style="list-style-type: none"> • WP1 – Coordination and Management, Prof. Dr. Carlos E. Palau, UPV • WP2 – Requirements and Use Cases, Mr. Miguel Llop, VPF • WP3 – Layer Interoperability, Mr. Eneko Olivares, UPV • WP4 – Interoperability Framework API, Mr. Miguel Montesinos, PRO • WP5 – Methodology for the Integration of IoT Platforms, Prof. Dr. Giancarlo Fortino, UNICAL • WP6 – Integration and Pilot Deployment, Mr. Ron Schram, NEWAYS • WP7 – Evaluation and Assessment, Prof. Dr. Garyk Markarian, RINI • WP8 – Impact Creation, Mr. Alessandro Bassi, ABC. <p>However the responsible persons may change with time, and could be updated if requested by the different organisations</p>
<p>Work on the Task level is organised in the same way as at the WP level under coordination of respective Task leaders together with editors of particular project deliverables.</p>

A data base with detailed information from the partners:

- Names of PC and STPM, so as contact information.
- Representatives and their deputies in the project bodies (PCC, PIC), WP, task, and activity leaders.
- Organizations' responsible for administrative and financial issues (reporting) as well as a directory to include contacts and main responsibilities of all persons directly involved in the project work.
- Participation in the different mailing lists and programmed events

The information will be updated as appropriate during the project life time. The directory will be accessible only by a password and Data Protection directives will be applied at national (initially Spain will be the storage location of the server) and European level.

2.1.1 Project Management Office

The coordinator (UPVLC) will setup a Project Management Office in the beginning of the project. The Project Management Office will be headed by the Project Coordinator and shall

provide the necessary support for day-to-day project management. The day-to-day activities of the Project Management Office include the following:

- Project management procedure including project monitoring
- The Project Management Office will collect all the required by this manual reports by the partners.
- The Project Management Office will prepare all the report to the EC (based on the partner input).
- Support the Project Coordinator in the management of project activities.

A representative from a Project Management Office will attend the meetings of the Project Coordination Committee and the General Assembly and will issue the corresponding minutes.

2.1.2 Internal and External Information Flow

Information flows both vertically and horizontally within the project structure. The vertical flow of information to/from the Project Coordinator comprises mainly the administrative issues, such as:

- Progress reporting for the Quarterly Management Report from all partners to the Project Coordinator, and the distribution of the consolidated reports back from the Project Coordinator to all partners.
- Minutes of the meetings of the General Assembly for the contractual and administrative execution and monitoring of the project.
- Minutes of the meetings of the Project Coordination Committee for the technical execution and technical monitoring of the project.
- Financial information for the Financial Statements and Payments.

The flow of technical information is generally more appropriate to a less formal and horizontal process. Details are exchanged between partners working in the same area through regular e-mail contact and during project meetings. Details are exchanged between partners working in different Workpackages, again by e-mail, but also during the PCC/PIC Meetings. In all cases the relevant Task Leader and / or Workpackage Leader is informed of the exchanges.

The communication with the European Commission will be handled through the Project Coordinator. Progress reports regarding work performed are collected by the Project Coordinator and sent to the Project Officer. Deliverables are supplied to the Project Officer also via the Project Coordinator. The public deliverables are also published in the INTER-IoT web site. Any material of a confidential nature supplied to the project remains strictly for the information of project participants and the European Commission. Such information cannot be forwarded to any other parties without explicit authorisation from the information owner.

Confidentiality and IPR issues between partners and associate partners are explicitly addressed in the Consortium Agreement.

2.2 Project meetings

Project meetings will be mainly held as plenary meeting events. They will accommodate meetings of various project bodies at different levels, in order to efficiently use time and resources. Meeting will be organised three to four times per year in accordance with the actual project needs. If necessary, individual meetings of groups (e.g. WP meetings) will be

organised. INTER-IoT considers the possibility of organising specific task forces to contribute to the specific needs of the project, and accommodate meetings when needed.

These meetings are planned and scheduled in advance, mostly coinciding with crucial points within the project flow. These can be either at critical decision points in the project or preparation meetings in advance of the project review meetings. These meetings cover the whole consortium and the whole project and will provide time to exchange administrative information as well as inter- and intra- work package related technical issues.

A long term plan of plenary meetings will be made early in the project and communicated to all partners. For the first year of the project the project meetings will be associated with:

- M1 Kick-off meeting, start of the project and kick-off WP1, WP2 and WP8.
- M5 Plenary meeting to launch WP3 and WP4, and T1.5 associated with the open call of the project.
- M9 Plenary meeting to launch WP5 and also prepare the technical review to be held in M9/M10.
- M11 Plenary meeting to launch the open call and process feedback from the technical review.
- Y2 and Y3 meetings will be planned in accordance to the events and requirements of the project.

All partners are required to attend plenary meetings. Per partner one or more people can attend, depending on the involvement in the tasks and activities discussed at the meeting.

Minutes of the meeting are prepared within 15 days. Project Coordinator is responsible for compiling the entire meeting minutes and recording general, project level, discussions and decisions, including these from PCC and PIC (supported by STPM), whereas the WP leaders are responsible to provide minutes on the respective WP meetings. The minutes of the meetings will be distributed and made available on the INTER-IoT repository server.

To ensure continuity of the project activities, audio conferences will be organised at all levels as appropriate (suggested timing twice per month) depending on the current level of activities. PC is responsible of providing the audio gateway for the audioconference, although for specific events facilities provided by other partner will be used.

2.2.1 Preparation of project meeting

The participant that hosts each meeting is responsible for the organization and preparation of the meeting. This includes the arrangement of a suitable location and necessary equipment for the meeting and also providing information to the rest of the participating partners with regards to preferred accommodation.

The organising chairman has the following responsibilities:

- Preparation and submission of proposed agenda and meeting objectives.
- Keeping the topics of discussion within reasonable time margins.
- Accomplishing with reasonable accuracy the time schedule.
- Dealing with all the main topics included in the agenda.
- Moderating interventions and assuring that every participant has the chance to express his / her opinion, regardless of experience, role and language fluency.
- Proposing breaks (scheduled or improvised) as necessary.
- The chairman for all Consortium Meeting is the Project Coordinator.

- Meeting agenda will be sent to the concerned participants at least one week before the meeting date.

2.2.2 Preparation of meeting minutes

Draft of Minutes of meetings will be posted on the project document repository for contribution by the participants. At about 15 working days after the meeting the chairperson of the meeting will add his comments/changes and will save a final version on the project document repository. Comments to the final version of the minutes can be provided at most 5 working days since published. In case that no comment is received, it is considered automatically accepted.

2.3 Management Procedures

2.3.1 Conflict resolution

All participating project partners agreed on the following definition of a conflict: A conflict arises if the interests, opinions and the points of view of the single partners vary to such an extent that the contradictions cannot be solved by themselves. In this case it is important to solve the conflict rapidly and technically, as the fast resolution of conflicts and problems is crucial for efficient project progress.

The basic rule on making the project decisions is to achieve consensus among all involved project partners at all levels, where alternatively the defined voting principles can be applied if required. Nevertheless, it is possible that partners cannot always agree on particular matters, when a procedure for conflict resolution has to be applied. In principle, the conflict resolution will be carried out from lower to higher project levels (e.g. from task to WP level, from WP level to the project level – PIC and PCC), where the respective leading personalities will act as mediators. In the case of particular difficulties in solving a conflict, a dedicated working group will be set up by the PCC, in order to propose a solution. Any conflicts that cannot be resolved through these principles will be handled according to the dispute resolution defined in the Consortium Agreement.

Therefore, the procedure for conflict resolution to be used when a conflict arises is described below:

- **Extraordinary Task/Workpackage Meeting:** all persons involved in the task/workpackage have to take part in the extraordinary task meeting.
- **Extraordinary PCC Meeting:** persons from each partner being responsible for the project progress participate to that meeting. Generally, conflicts should be solved in this project management meeting at the latest.

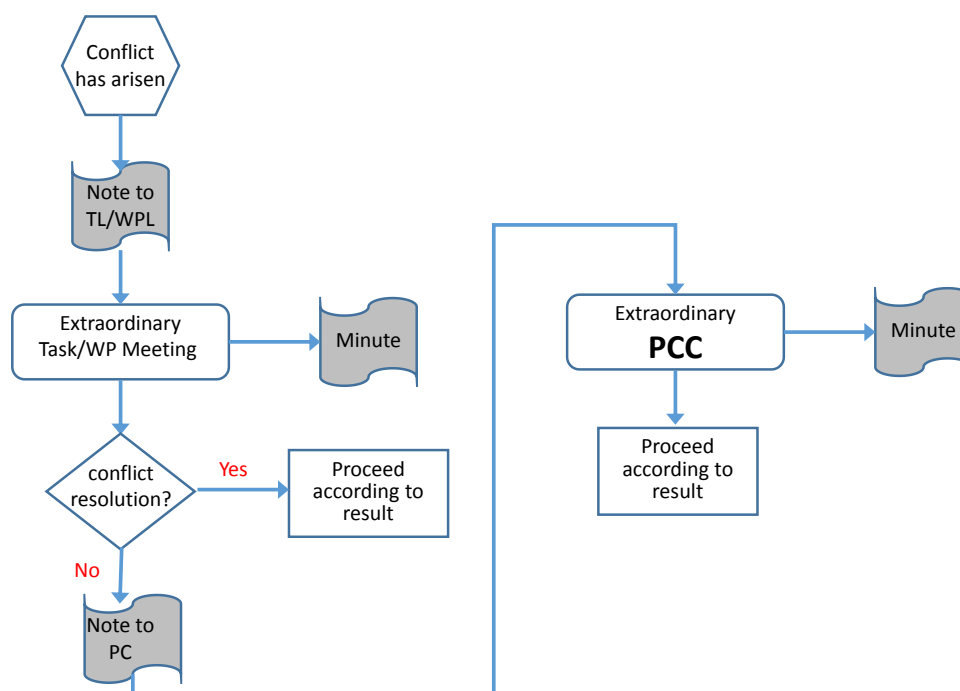


Figure 1: Conflict Resolution Process

2.3.2 Quality assurance

Quality assurance and control of INTER-IoT will be carried out through self-assessment and review of the project planning, including fine work plan for the upcoming six months, will be regularly carried out by the PIC and discussed at every plenary project meeting, starting from the project kick-off, with all consortium members. Schedule of the self-assessment cycles will be chosen in accordance with the project plan and timing of the main project milestones, but the assessments should be performed at least twice per year. Work done within WPs and tasks is continuously monitored and particularly checked during the self-assessment cycles by the PIC. If necessary, the PIC will act, usually in cooperation with the work packages and tasks, by proposing necessary corrective actions and implementing respective changes in the project plan. The PCC will be consulted or directly involved in these activities, depending on nature and level of the needed work plan corrections.

Monitoring of all project activities, as a base for the self-assessment, is carried out in accordance with widely adopted iterative PDCA (Plan-Do-Check-Act) principle by considering all relevant project specifics and particularities of collaborative EU projects (Figure 2) and that has been incorporated to different ISO management standards.

The project controlling is carried out by considering various internal project factors, such as status of particular project deliverables and milestones, work progress in general, status of the project resources. On the other hand, important impacts on the project could be caused by various external factors (e.g. changes in project relevant market and research areas), which will be also regularly observed by the Project Coordinator, and the PIC, in particular the Scientific and Technical Project Manager. If necessary, respective corrective actions can be proposed and implemented in accordance with the same principles.

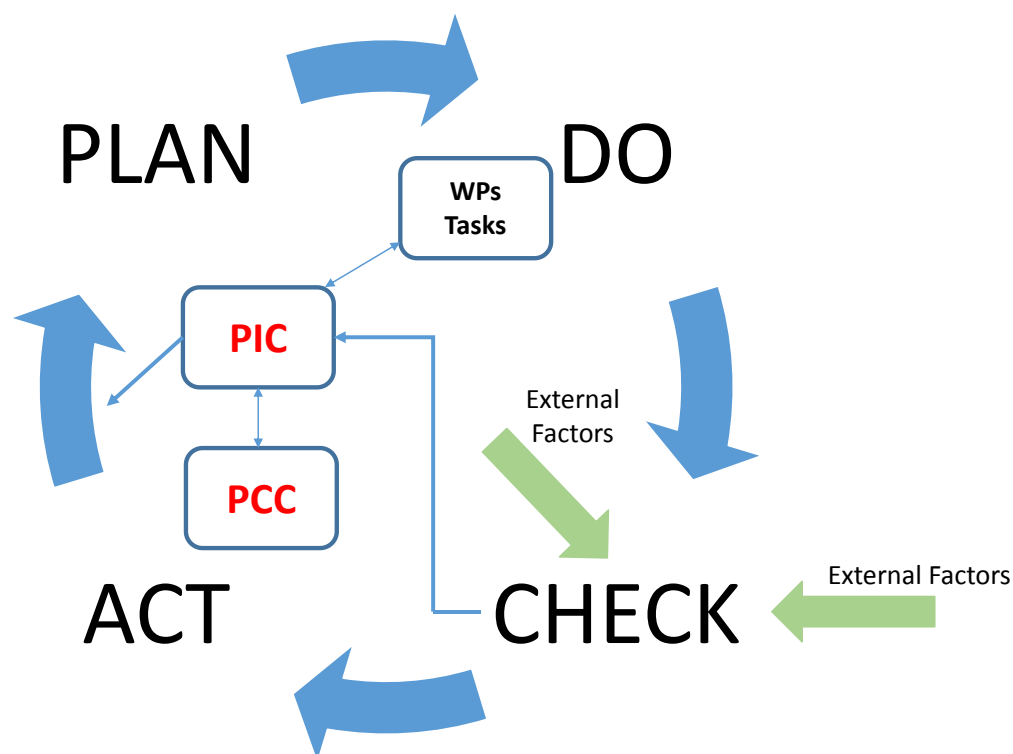


Figure 2: PDCA based project monitoring

2.3.3 Risk management

Risk management is a proactive process that is invoked to attempt to eliminate potential problems before they occur, and therefore increase the likelihood of success of the project. The goals of risk management are the following:

- Proactively assess what could go wrong with the project
- Determine which risks are important to deal with
- Implement strategies to deal with those risks

Dealing with risks is part of the management activities in the project. As for any innovative technology INTER-IoT is facing technical, organizational and business related risks. With the use of risk management procedures, the project team is able to mitigate risks, which means it can take steps to reduce risks to a level that is acceptable to the project consortium. These steps may take the form of technical measures to reduce the probability or impact of a risk occurring, or they may take the form of non-technical measures used to overcome technical limitations.

The project management approach presented, provides mechanisms to identify and resolve various potential project risks, which can be considered as particular internal or external factors, ensuring efficient implementation of needed corrective actions. Even it is not possible to predict all possible risks, it is advisable to identify and assess a set of potential risks (see table 2 related to the project, so that the consortium is ready to quickly react and immediately perform corrective activities if required. The identified risks will be regularly reviewed in the scope of the self-assessment activities and internal project reviews, described above. In this respect, the general INTER-IoT philosophy includes the following pillars:

- **Effective project management:** The management structures and procedures ensure that project management can closely supervise the delivery of the expected results.

The INTER-IoT Consortium is composed by organisations which have already successfully carried out several EU projects.

- **Contingency planning:** The work plan has been designed to allow for effective contingency planning in case of major risks. For every risk a strategy will be developed considering the possibility to avoid the risk, the plan for reducing the probability of occurrence and in the case of materialisation of the risk, the plan for minimizing the impact on the project overall objectives and compromises.
- **Multiple loosely coupled objectives:** Finally, even if the goal of the project is to demonstrate the full operation of the INTER-IoT framework, the remaining extensions and components can be decoupled and exploited independently.

The use of risk management procedures is very important. Without the use of risk management procedures, the project consortium can take insufficient steps to mitigate a risk and the consequences may include failure to meet the project objectives, commercial/financial harm to the project partners and project results users, loss of reputation and potential legal actions.

On the other hand, it is equally possible that the project consortium takes unnecessarily draconian steps to mitigate risks. The impact of such unnecessarily draconian steps may include incurring additional unnecessary management effort and from the technical point of view reducing system performance.

In order to ensure the success of the project, the consortium will pay special attention in identifying possible risks and preparing corresponding contingency plans. For this reason the INTER-IoT consortium will prepare the “Risk Management Plan/Report” (deliverable D1.4 due in month 12 of the project). The “Risk Management Plan/Report” will consist of well-defined steps which, when taken in sequence, will result to the confrontation of the risks. The “Risk Management Plan/Report” will support better decision making by contributing to a greater insight into risks and their impacts. With the “Risk Management Plan/Report” the consortium will improve the safety, quality and performance of the project.

Table 2: Critical risks for implementation

Management related risks	WP	Proposed risk-mitigation measures
Partners related risks – underperforming, leaving the project, key-personnel temporally not available	WP1	The flexible project management structure and project CA allow a quick shift of resources to alternative project partners and allows quick inclusion of new partners in the consortium if necessary. Consortium partners are involved in the related areas with more than one staff member, ensuring an immediate substitution.
Planning problems – resources underestimated, project timing not appropriate, deliverables/milestones delayed.	WP1	The potential solutions are: involvement of other partners with available resources, rearrangement of resources among partners, change of the project plan within the self-assessment activities and EC, and ensuring timely implementation of corrective actions.
Collaboration issues – consortium cannot agree, WP interaction not satisfactory, coordination not efficient	WP1	The project management provides appropriate decision making and conflict resolution procedures which should be applied. As last instance, managements of the affected organisations, including the coordinating organisation, will be involved in resolution.
External risks – change of the project requirements due to evolution to relevant technology and market landscape	WP1	The PIC will immediately analyse concrete impact on the project and propose corrective actions in the work plan.

Management related risks	WP	Proposed risk-mitigation measures
The market environment or the user views change making the results obsolete	WP2	The robust effort on market analysis in WP2 and the development of an appropriate exploitation plan in WP7 including a business analysis will make sure that users' needs and wishes as well as market trends are constantly taken into account.
Insufficient analysis of existing IoT platforms, leading to a poor design of interoperability and integration features, reducing INTER-IoT extendibility	WP3	Work hardily on the identification of successful IoT platforms and existing initiatives and related IoT standards to make a complete definition and analysis of the methods for layer interoperability and integration. Early evaluation of reference IoT platforms with expected contribution from the Advisory Board.
Limited resources to deliver reliable components while trying to support too many formats, standards and use-cases.	WP3/ WP4/ WP5	The consortium ought to focus firstly on the components necessary for the implementation of the pilots, and to support a minimum set of standards that maximize the coverage of the current market share.
The selected approach at a particular layer does not fulfil the requirements of the pilots.	WP2/ WP3	Special care must be placed to the evaluation of the requirements and the existing solutions for each layer. A proof of concept

		based on a technology can be created if its capacity is not fully understood.
Difficulty in the validation and adoption of the concept within the testing stakeholders	WP6	INTER-IoT strategy implements a permanent feedback loop in order to prevent misalignment between user needs and platform specifications.
Due to changes in the global technical development, or to unexpectedly technical problems, delays in the development could make it impossible to keep the timeline of evaluation activities.	WP6/ WP7	The project will ensure sufficient communication between the partners involved in development and evaluation. In this way delays can be recognized in an early stage and timing of evaluation activities can be adjusted. Process evaluation will be an appropriate means to assess occurring barriers of the development process.
Failed or insufficient exploitation of results by partners	WP8	INTER-IoT has been thought to keep it as low as possible. The Exploitation Plan will identify an exhaustive list of reasonable exploitation opportunities for INTER-IoT results, some of them exploitable on an individual partner basis.

2.3.4 Handling of deliverables

Project deliverables will provide the main results of the project and are a mean of technical and activity communication between the consortium and the European Commission and between the consortium and the general public. Deliverables may require an adequate handling in terms of quality and schedule. The deliverable is the official document containing the results of the respective activities and tasks in the project. This document, or whatever the required format will be, is to be submitted to the EC and to the reviewers. A template for the deliverables is provided on the INTER-IoT internal repository server. The use of this template is mandatory for any Deliverable of type “Report”.

Project deliverables will be first agreed on respective task and WP levels and afterwards approved by the PIC and/or PCC, which could involve further internal deliverable reviewers if appropriate, before submission to the EC. Respective task and WP leaders including deliverable editors are responsible for quality and completeness of the deliverables.

Other project publications (e.g. papers for conferences) can be initiated by any consortium member. After agreement by the PIC or PCC a respective Task Group (e.g. group of authors), can be created to finalise the publication, which should be then approved in accordance with the rules defined in the Consortium Agreement.

The detailed deliverable review process is presented in Figure 3. Accordingly, the review process will start latest three weeks before submission deadline of the respective deliverable. However, in order to ensure more efficient review process and correction of the deliverables in early stage of their creation, the reviewers will be continuously informed about status of the deliverables they are responsible for, so that related principle comments can already be made at this stage and corresponding corrective actions can be performed.

In the INTER-IoT document repository, a list of agreed deliverable reviewers will be stored and, of course, updated later on as appropriate.

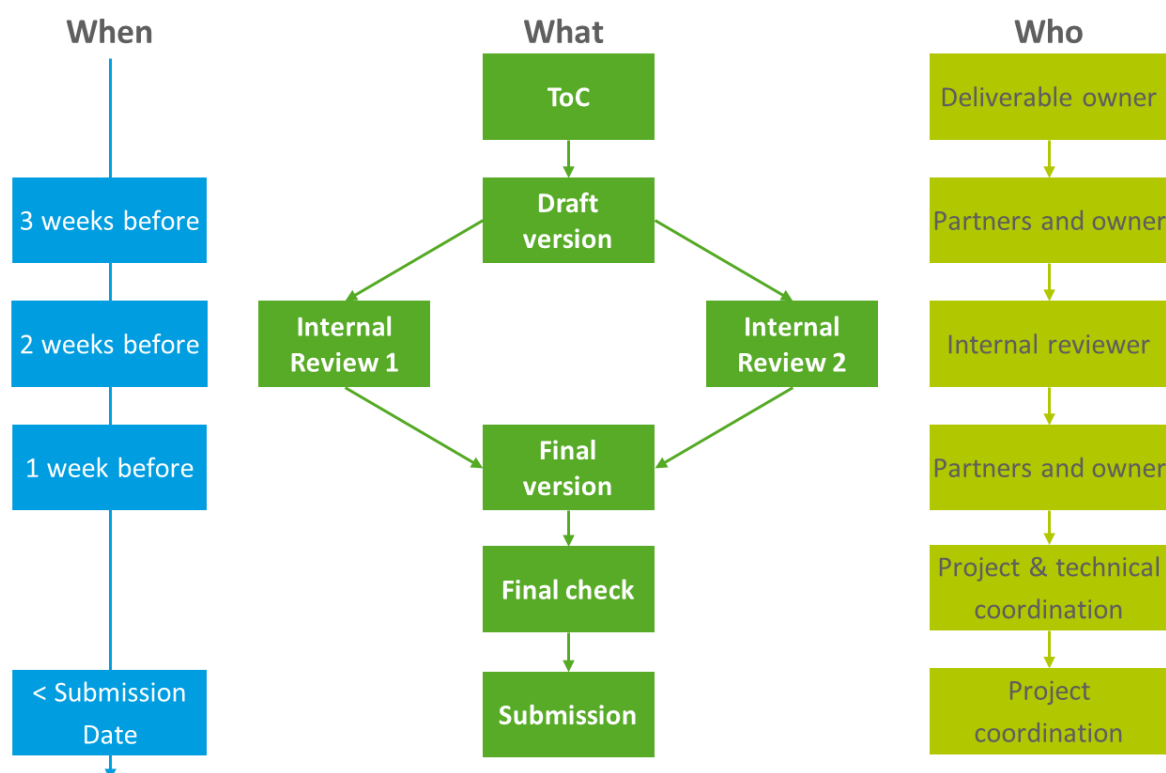


Figure 3: Deliverable review process

The key participants in the deliverable writing procedure and their tasks are the following:

- **Contributing partners:** are expected to provide their contributions in the agreed format with the agreed content by the agreed deadline. In case they experience a delay, or cannot provide the expected and agreed content, they should flag this to the responsible editor immediately. The contributing partners are also in charge of revising their contributions according to the comments made in the project-internal review.
- **Responsible partner:** should appoint a responsible person as editor of the deliverable within their organisation. The responsible editor should organise the deliverable production process. The editor should propose an initial table of content and suggest distribution of contributions among partners, organise the discussion and agreement process concerning the overall scope of the document and its structure, the scope of the individual contributions expected and their schedule. The editor is responsible for keeping the timeline of the production. If there is any delay, the editor should immediately notify the respective WP leader and project coordinator. The editor is also responsible to ensure that the deliverable is produced in the agreed format adhering to the template specified by the project. In particular, the editor is responsible to ensure that the list of authors correctly captures all partners and individuals who contributed to the deliverable. Having the deliverable completed the responsible editor releases the deliverable to the WP leader.
- **WP leader:** is responsible for monitoring and ensuring that the deliverable production process gets started, and overseeing its production. In case a deliverable needs to be co-ordinated with other deliverables (within the same WP or across different WPs) the WP leader should take an active role in ensuring the necessary coordination. In case of

delays the WP leader is responsible to co-ordinate a re-schedule in agreement with the editor, the co-ordinator and project management board. Having received the deliverable from the responsible editor the WP leader checks its quality and that it meets the expectations and contractual commitments.

- **Deliverable reviewer:** serves as the ultimate, final checkpoint of the deliverable, both content wise and also regarding its format. The reviewer should be available for a limited short time, just before the actual submission to check and review the deliverable. The reviewer should review the deliverable without delay. The reviewer(s) should check that the deliverable meets all contractual obligations and technical expectations, also in the context of the project as a whole. In case the review discovers any formal, or editorial issues or deficiencies regarding the content, it should immediately notify both the WP leader and the responsible editor to seek an improvement, fixing.
- **Project Coordinator:** verifies the format of the deliverable and submits it to EC. The coordinator is the only contact with the EC regarding the submission of deliverables. All deliverables pass through the coordinator.

3 COMMUNICATION

3.1 Coordinator address for mail delivery

Prof. Carlos E. Palau
INTER-IoT Project Coordinator
D. Comunicaciones
ETSI Telecomunicación
Universitat Politècnica de Valencia
Camino de Vera S/N
Valencia 46022
Spain

All communications with the European Commission should be carried out through the Project Coordinator. The communication can be confidential or not confidential. When a partner wants to contact the European Commission for a non-confidential communication, this communication is made through the Project Coordinator and all other partners are informed. When a partner wants to contact the European Commission for a confidential communication, he must inform the Project Coordinator accordingly and the communication will not be mentioned to the other partners.

The INTER-IoT repository contains detailed information about every partner in the project.

3.2 Mailing lists

All INTER-IoT mailing lists are established in the “inter-iot.eu” domain. For the time being, there are the following lists established:

- all-inter-iot-eu@inter-iot.eu – where all persons involved in the project work are included and where further persons will be included on request from the respective project partners’ organisations – for the time being, it is the main project communication channel.
- coordinator-inter-iot-eu@inter-iot.eu – the list includes staff from UPVLC (the Project Coordinator organisation) directly involved in the project and should be used for all kind of request to the coordinator by project partners, in order to ensure as fast as possible response and feedback
- LegalGroup-inter-iot-eu@inter-iot.eu – used for negotiations linked with the Consortium Agreement with partners legal representatives included.
- management-inter-iot-eu@inter-iot.eu – includes organisations’ representatives responsible for administrative and financial issues as well as the project reporting
- pcc-inter-iot-eu@inter-iot.eu, mailing list for all the PCC members
- pic-inter-iot-eu@inter-iot.eu, mailing list including all WP leaders the PC and the STPC, who are members of the PIC.
- WP1-inter-iot-eu@inter-iot.eu – WP1 mailing list, to include consortium members involved in the WP1 work. In the same way, mailing lists for other WPs will be created as required as well as for other task, activity, and ad hoc working groups.

- For dissemination purposes, a contact@inter-iot.eu list will be established as first project contact point for wide public and linked on the project website.

The mailing lists will be updated regularly, including creation of new lists as required.

The mailing lists are maintained within UPVLC server infrastructure. Request for subscription to e- mail lists and their creation should be sent at coordinator@inter-iot.eu.

3.3 Audio bridge

INTER-IoT consortium will use teleconferences in order to keep communication and avoid face-to-face meetings when possible. The audio-conferencing system used will be fixed and will depend on the amount of partners to be connected. The connection details to the audio bridge will be communicated prior audio meetings.

Detailed information about the audio-conferencing tool will be distributed to the consortium.

4 REPORTING

Besides the project periodic reports to the EC, as defined in WP1, the project will provide quarterly activity reports to the Project Officer. The activity reports will not include information on resources and expenditures, if not formally requested by EC. However an approximate summary of the use of resources will be provided.

4.1 Partner reporting

The reporting will be organised through a detailed document that will be submitted monthly to the repository server. See annex A for the format to be completed by the consortium.

The reporting will be required on monthly base – one week after the end of the month. The Work Summary Form, corresponding to a monthly report is divided in four parts:

- **Part I:** In this part the performed activities and produced results shall be listed as short text statements for each WP the reporting organisation is involved. The information will be provided on a task basis. For each involved WP the worked effort in person months (PM) shall be indicated as total figures of all people working in that WP. Additionally a specification of the people and individual efforts shall be given, if appropriate.
- **Part II:** A detailed information about the meetings attended, specified costs and people attending.
- **Part III:** Information about other costs, e.g. equipment; direct costs only (without overhead – indirect costs)
- **Part IV:** Information about the dissemination actions made by the partner.

After completing the form it will be uploaded in the repository.

Each document should identify the month and year of the report, and the number and short name of the partner. The files should be stored in the repository in the corresponding directory. Each file should be stored with the corresponding name. Structure of the names of the files is: INTER-IoT_MR0116_01_UPVLC.doc which indicates it is the monthly report (MR) for January (01) 2016 (16) for partner P01 (01), Universitat Politècnica de Valencia (UPVLC).

This documents will be used to create the QMR to be submitted to EC, and additionally to follow up the execution of the project.

4.2 Periodic reporting to the EC

The INTER-IoT Grant Agreement defines the following two reporting periods to the EC:

- After project month 18 (M18) and
- After project end (M36)

The periodic reports will be prepared by the Project Coordinator in accordance with corresponding EC rules/templates and requirements from the Project Officer. Mandatory contributions to the periodic reports are expected from all partners, in particular from WP and Task leaders.

The periodic reports also include costs statements (C forms) from all partners for the reporting period, which are prepared and submitted individually by the consortium members through the respective EC submission system.

The periodic report include project review meeting, for the corresponding period, organised by EC, where all project partners are expected to attend and contribute.

Additionally on request by the EC the consortium may have different technical reviews to monitor the execution of the project and control the activities performed.

4.3 Reporting on Milestones

Milestones are checkpoints during the course of the project and they have been introduced to check the status of progress of the project. In some cases these milestones also define crucial decision points in the project activities.

For each milestone, PC/STPM have to write a short report to describe the explanation of requirements, challenges, solutions to reach the milestone and decisions taken. When the milestone is reached, the PIC confirms it and the Project Coordinator submits the milestone report to the European Commission as proof of the milestone achievement.

The complete list of milestones, WP associated, month of achievement and information associated to consider them accomplished is included in the Grant Agreement.

4.4 Corrective actions

Each Workpackage Leader is responsible for monitoring the progress of the assigned Workpackage. The Project Coordinator is responsible for monitoring the overall progress of the project, and together with the partners working on the Workpackage; he is responsible of achieving the goals defined in the Work plan. Corrective Actions should be taken in a bottom-up approach, and should primarily be adopted within a Task or Workpackage. Only problems that affect the interdependence of the Workpackages, or could affect the overall success of the project, should be dealt with on a project management basis.

The main concern of corrective actions on a project management basis is the quality and timeliness of milestones and project Deliverables.

- **Quality:** As a result of a review, a Deliverable can be classified as “no conform”. Non-conformity is a non-fulfilment of the requirements defined in the project. If only one WP is affected by the non-conformity, the WP Leader identifies all the items affected and the changes to be performed. The WP Leader also updates the workplan according to new activities needed for committing the changes required. If the non-conformity is beyond the scope of a unique WP, non-conformity management (items & changes identification, plan update) is the Project Coordination Committee’s responsibility.
- **Timeliness:** Deviations from plan of formal project output are documented by the Project Coordinator. Based on each monitoring report the Project Coordinator decides whether an issue can be settled within a WP or whether interdependencies with other WPs are concerned. If only one WP is concerned, the WP Leader supplies an updated workplan for the WP, which substitutes the original plan. If the work of other WPs or the success of the whole project is endangered because of late or poor performance of a WP, the Project Coordinator immediately informs the General Assembly

Committee. The General Assembly elaborates an updated project-plan. Only in severe occasions the decision is transferred to the General Assembly. This is the case if changes are contentious, when no consensus can be reached or when they involve major changes in the directions of the project.

ANNEX A REPORTING TEMPLATE

INTER-IoT Monthly Report

 Month **<month year>**

 Partner : **Number-short name**

 (Please insert spent *estimation* of P-M + one line per *active task* (where you have effort planned), and *estimation* of amount of "other expenses") - do not forget to update the file name in footer

Workpackage / Task	P-M	Work performed
WP1- Project Management		
T1.1-Project planning and management		
T1.2-Administrative and financial management		
T1.3-Advisory Board Coordinator		
T1.4- Risk Management		
T1.5- Open Call Management		
WP2-Requirements and use cases		
T2.1-Stakeholders and Market Analysis		
T2.2-Business Model Design		
T2.3- Requirements and Business Analysis		
T2.4-Use Cases and Scenarios Definition		
T2.5-Legal and Regulatory Requirement Analysis and Specification		
WP3- Layer Interoperability		
T3.1-Definition of Analysis and Methods for Device Layer Interoperability and Integration		
T3.2- Definition of Analysis and Methods for Network Layer Interoperability and Integration		
T3.3- Definition of Analysis and Methods for Middleware Layer Interoperability and Integration		
T3.4- Definition of Analysis and Methods for App. Service Layer Interoperability and Integration		
T3.5- Definition of Analysis and Methods for Data and Semantics Layer Interoperability and Integration		
T3.6- Definition of Analysis and Methods for Cross-Layer Interoperability and Integration		
WP4- Interoperability Framework API		
T4.1-Design of a Reference Meta-Architecture for IoT Platforms		
T4.2- Design of a Reference Meta-Model for IoT Platforms		
T4.3- Design of an Interoperable Framework (Inter-FW) for IoT Platforms		
T4.4-Implementation of the IoT Interoperable Framework Engine		
T4.5-Design and Implementation of the IoT Interoperable Framework APIs and Tools for Programming and Managing Interoperable IoT Platforms		
WP5- Inter Methodology (from Analysis to Deployment)		
T5.1- Definition of Design Patterns for Interoperable IoT Systems		
T5.2- Definition of a Full-fledged Methodology for IoT Platforms Integration (INTER-METH)		
T5.3- Implementation of a CASE tool for supporting the Automated Application of the Methodology		
WP6-Integration and Pilot Deployment		
T6.1- Integration		
T6.2-Transportation Pilot		
T6.3- Mobile Health Pilot		
T6.4- Cross-domain Pilot		
WP7- Evaluation and Assessment		
T7.1- Evaluation plan		
T7.2- Technical Evaluation and Assessment		
T7.3- Evaluation of results from Large Scale Trials		
T7.4- Process Evaluation		
WP8- Impact Creation		
T8.1- Communication		
T8.2- Dissemination and project results		
T8.3- Business and marketing operations		
T8.4- Exploitation		
Total effort (P-M)		

Meetings attended			
Date (Start/End)	Meeting place	Persons attending	WP/Task/expected results/details

Other costs	(k€)	Other costs details
Travels (k€)		
Equipment, material, others (k€)		
Total "other costs" (k€)		

|

Dissemination	
Articles published, presentations at conferences, TV broadcasts etc.	
Web Sites	
Other important information: Patent applications, guidelines standards, PhDs....	