D7.2 Scientific Quality Assurance Plan

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Project Consortium

Office International de l'Eau

easy global market

eurecat
Centre Tecnològic de Catalunya

University of Exeter

KWR

DVGW TZW Technologiezentrum Wasser

cnrs

ΕΥΔΑΠ

FIWARE FOUNDATION

waternet
regional public water authority
amstel gooi en vecht
city of amsterdam

suez

BDG
Business Development Group

South West Water

Executive Summary

This Deliverable (D7.2) is part of Work Package 7 (WP7). 'Scientific Quality Assurance' aims at defining, implementing and maintaining a set of management structures to scientifically coordinate and monitor all project management activities, but particularly the deliverables. In order to support that objective, WP7 puts in place the procedures and guidelines, to enable a coordinated action of consortium members to meet the necessary quality levels, as follows:

Steps are implemented to the assessment of the quality of the deliverables, which primarily is a responsibility of the WP leads and co-leads, with the cooperation of the Scientific Technical Manager (STM). In addition, the assessment of the quality of the deliverables, examining consistency and coherence across work-packages is carried out by the responsibility of the scientific co-ordinator of the project. In addition, procedures are provided on the list of Key Performance Indicators and the monitoring process, to be reported during the periodic reporting (M12, M24, M36). This is the main scope of Deliverable 7.2

This Deliverable D7.2 serves two purposes: (i) being a guidance for all members of the project consortium to conduct their contractual project activities with a high quality level, as well as easing their collaborative work and (ii) establishing a framework for the project coordination team (PCT) to monitor the progress of the project on a scientific level, to avoid current and future risks and negative effects.

Related Deliverables

The related Deliverables are:

D7.1 - Info-pack for internal communication, with tools/procedures

D7.3 – Data Management Plan (updated every 6 months)

D7.4 – Risk Management Plan (updated every 6 months)

Document Information

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List of Acronyms/Glossary

F4W	Fiware4Water project
EAB	External Advisory Board
ExB	Executive Board
F4W	Fiware4Water
GA	General Assembly
ICT	Information and Communication Technologies
STM	Scientific and Technical Manager
TL	Task Leader
WPL	Work Package Leader
KPI	Key Performance Indicator

Introduction

This Deliverable (D7.2) is part of Work Package 7 (WP7). 'Scientific Quality Assurance' aims at defining, implementing and maintaining a set of management structures to scientifically coordinate, monitor and ensure that all the activities (R&D activities, deliverable writing, etc.) are in conformance with the contract provisions and specifications.

In order to support that objective, WP7 puts in place the following elements, to enable a coordinated action of consortium members to meet the necessary quality levels:

- Collaboration and project management structure and procedures, which are detailed in D7.1.

- Internal communication, including the communication towards the whole consortium, communication targeted at specific work packages and communication with the EAB, as detailed in D7.1.

- Procedures and guidelines for what? Steps are implemented to assess the quality of the deliverables, which primarily is a responsibility of the WP leads and co-leads, with the cooperation of the Scientific Technical Manager (STM). The assessment of the quality of the deliverables, examining consistency and coherence across work-packages, is in another hand carried out by the responsibility of the scientific co-ordinator of the project. In addition, procedures are provided on the list of Key Performance Indicators and the monitoring process, to be reported during the periodic reporting. This is the main scope of this Deliverable (D7.2)

- Data Management Plan (updated every 6 months) detailed in D7.3

- Risks management plan (updated every 6 months) detailed in D7.4.

This deliverable D7.2 serves two purposes: (i) being a guidance for all members of the project consortium to conduct their contractual project activities with a high quality level, as well as easing their collaborative work and (ii) establishing a framework for the project Executive Board (ExB) to monitor the progress of the project on a scientific level, for current and future risks and avoid negative effects.

The document is structured in two sections:

1. Completion and quality assurance of Deliverables
2. Project KPIs: description and monitoring.

I. Completion and quality assurance of Deliverables

I.1. Style

In order to submit deliverables that meet high quality standards, a review process and quality check is introduced. It is of utmost importance that each deliverable contains:

- A clear Executive Summary.
- An introduction section which clearly outlines the purpose and scope of the deliverable.
- A conclusions section.
- References in a standard type (e.g. APA, Harvard, Oxford) for every Deliverable with scientific content. The main guidelines for referencing can be found here: https://libguides.reading.ac.uk/citing-references/referencingstyles#s-lg-box-9973348

A template for deliverables writing is available on Freedcamp and need to be used for all the project deliverables. This template will also be used for Milestones, which are conceived to be a short or intermediate report for specific purposes. Even if the Milestone is not a report per se (e.g. it is a software tool), a short report will always accompany it, in order to explain the nature and details of the Milestone.

I.2. Review process of deliverables

The objective of having an internal reviewing process is to ensure consistency and coherence across work-packages, as well as clarity and scientific review of the text and to ensure the quality in English, especially when the main author (s) is/are not native English speaker(s) for the duration of the project.

The entire review process of a deliverable could take a couple of weeks (depending on the length and complexity of the document), allowing for various feedback loops between the specific reviewers and the main author(s) of the deliverable (and contributors). The schedule presented below is recommended and the main author(s) of the deliverables are encouraged to adhere to it. However, the timing of the scientific review can be reduced (or extended) if previously agreed between the main author(s) and the corresponding reviewers.

Schedule for deliverable review:

- Nominate an internal reviewer. The author of a deliverable, with the support of the STM, should propose a reviewer, but it needs to be confirmed by the WP leader.

- Draft of the deliverable is sent to the internal reviewer. The review process starts **three weeks before submission date**.

- Approval of the draft of the deliverable, **one week before submission date**. Approval of the draft by the principal author of the deliverable and the internal reviewer.

- Quality check of the deliverable, during the **last week before submission date**. Approval by the STM, following the confirmation by the WP leader/co-leader that the deliverable does comply with the Grant Agreement.

I.3. Internal reviewers

The selection of internal reviewers needs to comply with the following three conditions:

a) They must not be a direct contributor to the deliverable under review, so as to spot any points that need clarification, inconsistencies etc. In fact, the internal reviewer will need to act as a peer reviewer in journals. They can be from the same organisation as the author(s)/co-author(s), but not involved in the writing of the Deliverable, nor named as co-authors.

b) They must have a special interest in the topic covered by the deliverable (e.g. a related WP/task/case study/deliverable author, or a track record of expertise related to the work presented in the deliverable).

c) The internal reviewer needs to be an experienced person, i.e. not an early carrier researcher or a PhD student, so as to have the necessary expertise in project reports and related scientific quality.

It is the responsibility of the main author of a deliverable to make sure the draft is ready for starting peer review process by the corresponding date and therefore, to plan the previous writing (and interim draft versions) accordingly.

It should be pointed out that, in exceptional circumstances, members of the EAB could act as internal reviewers for project deliverables, if the project Coordinator, the Scientific and Technical Manager and the related WP Leader agree. This could only occur in cases when a member of the consortium cannot be appointed for scientific reasons (e.g. lack of specialised expertise on specific themes, without being involved in the deliverable that is to be reviewed). Given the overlapping expertise within the consortium organisations and individual persons, this is not likely to happen. In any case the project STM will supervise the overall quality review process.

I.4. Verification process of Milestones.

Milestones will usually consist of short reports, submitted to the Coordinator and the ExB. In some cases, it will need to be accompanied by a demonstration (e.g. for a software tool).

Internal reviewers are not mandatory for these short reports, because they are not to be disseminated outside the consortium.

Milestones will be verified by the ExB, unless the GA explicitly states otherwise. Verification of any Milestone will need to be included in the minutes of the subsequent GA.

II. Key performance indicators (KPIs)

Key Performance Indicators (KPIs) enable to assess if the objectives and expected impacts of the project are reached. This is the initial table of KPIs as it is included in the Grant Agreement (Table 1). KPIs are linked to the project Objectives (O#) and the Expected Impacts (EI#) as follows:

Table 1 : List of KPIs

Description of Key Performance Indicator (KPI)	*Target*	*Related O# and EI#*
Interoperability /Connectors/ Links with Legacy Systems		
Water ontologies built on top of Industry Specification Group for cross-cutting ISG CIM information model	*≥ 1 deployed over all 4 Tier 1 Demo Cases(DCs)*	*O#1* *EI#1*
Across applications	*≥ 3 applications for all the DCs*	
Connectors to legacy systems	*≥ 2 for each Tier 1 DC*	
Integration target for legacy systems in the Demo Cases	*≥ 90% in one system*	*O#2* *EI#2, EI#3*
New applications/ services with data sharing	*≥ 3 for each Tier 1 DC* *≥ 15 in Total*	
Operational management (Demo Cases)		
Water losses in water conveyance (DC#1)	*Reduction ≥ 10%*	*O#3 , O#4* *EI#3,*
Energy requirements reduction at the end of the project	*≥ 15% for DC#1* *≥ 75kEuro/year for DC#3*	
Infrastructure surveillance from multiple low level sensors for DC#1-Integration of feeds	*≥ 60%*	
Water quality warnings/alerts correctly identified (DC#1 and DC#2)	*≥50% of events*	
Water Distribution Network (WDN) operational efficiency (pressure, flow) (DC#2 and DC#4)	*≥ 85%*	
WDN water losses (DC#2)	*≤ 12.0 m3/km*	
WDN detection time for leakage/bursts decrease (DC#2 and DC#4)	*≥30% on average*	
Reduction of N_2O emission (N_2O = 265 CO_2 equivalent): (DC#3)	*≥ 10% in DC#3*	
Increase of biogas production (DC#3)	*≥5%*	
Water quality sensor node (DC#2)		
Direct target analytes	*Direct monitoring of pH, chlorine, nitrate, chloride and calcium. Response time ≤ 5 min.*	*O#3* *EI#2, EI#4*
Indirect detection of network events	*100% detection of high impact (health or network threatening) events with ≤25% false positive; 75% detection of low impact events with ≤10% false positive.*	
Mode of operation	*Wireless via long range, low power protocol Energy: Battery operated with or without*	

	energy harvesting ;Housing & size: below 1.5 cm² and 15cm in length in a tubular packaging;Full compatibility with F4W system architecture	
Life time	*One year without maintenance*	
Contribution towards the Digital Water Single Market: The FIWARE ecosystem		
Number of discrete solutions demonstrated by new entrants	*≥5 in Total*	*O#6* *EI#1, EI#5, EI#6*
Number of underlying technologies used in solutions by new entrants	*≥10*	
Number of applications developed by new entrants	*≥5*	
Socio-political innovation		
Positive attitude towards smart meters at the end of the project (Customer behaviour) DC#4	*Increase by >8%*	*O#4, O#5* *EI#4*
Household water consumption decrease at the end of the project (DC#4)	*>5% on average*	
Number of previously non-informed citizens, including SMEs and professional stakeholders participating in the ConCensus Stakeholders Lab process	*>150 (ConCensus would consist of approximately 10-15 active citizens per municipality)*	*O#5* *EI#2 , EI#4*
Number of Local Councils for Citizen Engagement in Sustainable Urban Strategies (ConCensus) established or planned to be established in case study and follower cities	*>5 ConCensus established* *>10 ConCensus planned*	
Number of inter-municipal interactions between different administrations	*>50*	
Number of inter-municipal interactions between members of different ConCensus	*>50*	
Number of citizens officially designated as overseers of approved actions thus ensuring trans-mandate policy continuity	*>120*	
Number of interactions between engaged citizens and the funding authority (European Commission)	*>10*	
Number of follower cities involved in Fiware4Water;	*>5*	
Number of women involved in the process	*>500*	
Number of local policies created to augment citizen awareness regarding need for smart digital water actions	*>1000 aware; > 500 actively interested;* *>150 actively engaged*	
Number of citizens in involved municipalities who can be labelled as: i. Aware , ii. Actively interested, iii. Successfully engaged.	*>150 (ConCensus would consist of approximately 10-15 active citizens per municipality)*	

The project Objectives are:

Table 2 : List of Objectives

Objective #1: To build modular applications using FIWARE and open API architecture, for the real time management of water systems, integrating a semantic based context information layer within existing operational systems, ensuring interoperability. *Linked to EI #1*
Objective#2: To demonstrate the value of data sharing, standardisation of data exchange, including open data policies, across the whole value chain of water for improved decision making and operational management of water systems, while proposing context aware cybersecure mechanisms compliant with critical infrastructure protection. *Linked to EI #2 and #3*
Objective #3: To build upon distributed intelligence and low-level analytics (smart meters, advanced water quality sensor etc., paving the way for the sensors of the future) to increase the economic (improved performance) and societal (interaction with the users) efficiency of water systems. *Linked to EI #3, #4 and #6.*
Objective#4: To showcase the ***Fiware4Water*** solution and FIWARE compliant applications to selected demo cases, covering a wide range of challenges, as exemplary paradigms of its potential and the seamless integration with existing legacy systems. *Linked to EI #3 and #5.*
Objective#5: To demonstrate the socio-political value of FIWARE for Digital Water and the water sector and its capacity to support a full citizen engagement model known as the Council of Citizen Engagement in Sustainable Urban Strategies (ConCensus) whereby coherent long-term measures, water policy continuity and supranational strategy to local implementation links are fully established and further developed whilst inter-city relations and knowledge exchange are enhanced. *Linked to EI#2 and #4*
Objective#6: To develop a community of adopters, around water compliant interfaces and data models that will demonstrate the usefulness and commercial value of FIWARE as an **ecosystem** for the development of the **Next Generation Services for the water sector** (SMEs, developers and end-users/cities/water utilities) and thus contribute to the creation of EU wide environment allowing the deployment of smart water systems, in a standardised licence or open source/free mode, as part of the movement towards the smart city of the future. *Linked to EI#1, #5, #6.*

The Expected Impacts are listed in the Call as follows:

Table 3 : List of Expected Impacts

EI#1: The interoperability of decision support systems through the identification and use of ICT/water vocabularies and ontologies in view of developing or improving ICT/water standards
EI#2: Improved decision making on water management, related risks and resource efficiency through increased real-time accuracy of knowledge.
EI#3: Maximising return on investments through reduced operational costs for water utilities, including reduced costs for water monitoring, improved performance of water infrastructures, and enhanced access to and interoperability of data.
EI#4: Enhanced public awareness on water consumption and usage savings
EI#5: Market development of integrated and cyber-resilient ICT solutions and systems for smart water management, and opening up of a digital single market for water services

EI#6: The implementation of the objectives of the EIP Water, especially, reducing the environmental footprint of the main water-dependant activities and improve their resilience to climate changes and other environmental changes

Part of the Scientific Quality Assurance Plan is the monitoring of the KPIs throughout the project. This monitoring will be reported at each periodic report by the Scientific Technical Manager, in consultation with the Coordinator and the WP Leaders.

During the project it may be needed to modify/add/remove some KPIs, so at to better reflect certain aspects of the project. In this case, the Scientific Technical Manager or WP leaders may suggest necessary changes. These changes will be communicated to the Project coordinator who will add an item in the agenda of the next GA.

Conclusion and Perspectives

Deliverable D7.2 includes the procedures for reviewing and enduring the quality of the project Deliverables. It details the template to be followed and the procedure for internal reviewing.

The Deliverable also detailed the project KPIs and the procedure for monitoring and (if needed) modifying them.

So, this deliverable serves two purposes: (i) being a guidance for all members of the project consortium to conduct their contractual project activities with a high quality level, as well as easing their collaborative work and (ii) establishing a framework for the project coordination team (PCT) to monitor the progress of the project on a scientific level, for avoiding current and future risks and negative effects.