EUROPEAN COMMISSION
Directorate-General for Communications Networks, Content and Technology

Digital Society, Trust and Cybersecurity
Director

AMENDMENT Reference No AMD-731996-14

Grant Agreement number: 731996 — PCP for Water Smart Metering (SMART.MET)

The parties agree to amend the Grant Agreement as follows ('**Amendment**'):

1. Change of Annex 1 (description of the action)

Annex 1 is changed and replaced by the Annex 1 attached to this Amendment.

2. Change of the action's duration

The duration of the action in **Article 3** is changed to 61 months.

3. Change of the reporting periods

The reporting periods are changed.

This implies the **following changes** to the Grant Agreement:

- The reporting periods in **Article 20.2** are replaced by:

  - RP1: from month 1 to month 12
  - RP2: from month 13 to month 61

4 . Changes of Annex 2 (estimated budget)

Annex 2 and **2a** are changed and replaced by the Annex 2 and 2a attached to this Amendment.

All other provisions of the Grant Agreement and its Annexes remain unchanged.

This Amendment **enters into force** on the day of the last signature.

This Amendment **takes effect** on the date on which the amendment enters into force, except where a different date has been agreed by the parties (for one or more changes).

Please inform the other members of the consortium of the Amendment.

SIGNATURES

For the coordinator

Gilles NEVEU with ECAS id nneveugi signed in the Participant Portal on 22/09/2020 at 08:03:11 (transaction id SigId-5248-SKKn0R8HfeT8CvzmwX2F37hbfNL9lGgZagZJzzbkkOV3gLK5dOzlJ6O0d9lRReFEGNs6CX2OWPw4HgvnuvmHq5C-jpJZscgsw0KTYOtYN5vSZe-bW2VpzpFBN5jSUpdInzM12Eu7Ib2rszxfio4Csjbj9mvKbxx0QgCnFMsA2RYb2ch9783c5I0jc5gOb30OpXzjui). Timestamp by third party at 2020.09.22 09:03:42 CEST

For the Commission

Signed by Marc VAN ACHTER with ECAS id achtemc as an authorised representative on 08-10-2020 17:39:58 (transaction id SigId-85463-ireRA2KS2KzNj86FD8cizd70Y7l1ZqX4I3fxQAIOfe9zM0h3RGfqmZzqCGAu0YY5ZzSAYlxzY6W52yhJLSfyNraW-jpJZscgsw0KMrmTjsfkHMi-cGEpm79zrWHtTKLZH7KyGggF7gcgpGctpOzkDRS73h4DRtl4ThmvBHSSjvxShugkw6te2ZCM3azGXAI5zOrzIOS)
2020.10.08 17:40:01 CEST

Enclosures:

Annex 2
Annex 2a
Annex 1

EUROPEAN COMMISSION
Directorate-General for Communications Networks, Content and Technology

CNECT.H – Digital Society, Trust and Cybersecurity
H.5 – Smart Mobility and Living

ANNEX 1 (part A)

Pre-Commercial Procurement

NUMBER — 731996 — SMART.MET

Table of Contents

1.1. The project summary

Project Number [1]	731996	Project Acronym [2]	SMART.MET

One form per project

General information	
Project title [3]	PCP for Water Smart Metering
Starting date [4]	The first day of the month after the signature by the Commission
Duration in months [5]	61
Call (part) identifier [6]	H2020-ICT-2016-1
Topic	ICT-34-2016 Pre-Commercial Procurement open
Fixed EC Keywords	Demand driven innovation, Public sector innovation, Innovative procurement
Free keywords	Smart water metering, public water utilities

Abstract [7]

European Water utilities environment is embedded in a context dealing with global issues such as water scarcity and technical-economic issues such as infrastructure aging. Management of drinking water supply is facing key challenges partly related to traditional water meter, such as managing capital and operational costs; water loss (also known as non-revenue water) due to leaks and other system failures; and water scarcity/conservation.
The core of the solution lies in the renewed access and use of accurate data that Smart Water Metering can provide to decrease operating costs, identify performance issues, improve customer service and better prioritize infrastructure investments.
SMART.MET strongly paves the way to a more efficient management providing for example automatic reading of the household meters and billing, real time assessment of water balance for leak detection, identification of abnormal behaviors and awareness-raising, ability to identify user-meters defaults.
However, the lack of common European standards and lack of “open technological platforms” combined to the high transaction cost on the demand side create a lock-in situation in the market and determine a situation of long-term dependency of water operators on technology providers. This determines high average operating costs for water operators and users, as well as collective inefficiency related to the multiplication of different proprietary solutions on the offer side.
The objective of the proposal is thus to drive the development of new technologies to manage smart metering data collection and management, driven by a group of 7 water utilities through a joint Pre Commercial Procurement (PCP). They are supported by 6 expert organizations for assessing the technologies, implement the new procurement procedures and disseminate the outcomes of the project to other utilities and solutions suppliers.
The duration of the project is 48 months.

1.2. List of Beneficiaries

Project Number [1]	731996	Project Acronym [2]	SMART.MET

List of Beneficiaries

No	Name	Short name	Country	Project entry date[8]	Project exit date
1	OFFICE INTERNATIONAL DE L'EAU	OIEAU	France		
2	VIVERACQUA SCARL	VIVERACQUA	Italy		
3	CONSORCIO PARA LA GESTION DE SERVICIOS MEDIOAMBIENTALES DE LA PROVINCIA DE BADAJOZ	PROMEDIO	Spain		
4	EAU DE PARIS	EAU DE PARIS	France		
5	SYNDICAT DES EAUX ET DE L'ASSAINISSEMENT ALSACE MOSELLE	SDEA	France		
6	COMPAGNIE INTERCOMMUNALE LIEGEOISE DES EAUX	CILE	Belgium		
7	VIVAQUA SCRL	VIVAQUA	Belgium		
8	FOVAROSI VIZMUVEK ZARTKORUEN MUKODORESZVENYTARSASAG	WATER-BUDAPEST	Hungary		
9	ARAGON PARTNERS SRL	ARAGON	Italy		
10	UNIVERSITE DE LIMOGES	UNILIM	France		
11	FUNDACION NUEVA CULTURA DEL AGUA	FNCA	Spain		
12	AQUA PUBLICA EUROPEA	APE	Belgium		
13	BEDIN SARA	SARA BEDIN	Italy		

1.3. Workplan Tables - Detailed implementation

1.3.1. WT1 List of work packages

WP Number[9]	WP Title	Lead beneficiary[10]	Person-months[11]	Start month[12]	End month[13]
WP1	Project coordination and management	1 - OIEAU	14.90	1	54
WP2	PCP preparation and design	9 - ARAGON	39.90	1	14
WP3	PCP execution	2 - VIVERACQUA	29.40	13	54
WP4	PCP evaluation	1 - OIEAU	16.50	17	54
WP5	Buyer group networking, awareness building and project results dissemination	12 - APE	17.40	1	54
WP6	Ethics requirements	1 - OIEAU	N/A	1	61
		Total	118.10		

1.3.2. WT2 list of deliverables

Deliverable Number[14]	Deliverable Title	WP number[9]	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D1.1	Project Management Handbook	WP1	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	3
D1.2	1st period Project Report	WP1	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D1.3	2nd period Project Report	WP1	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	26
D1.4	3rd period Project Report	WP1	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	37
D1.5	Final Project Report	WP1	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	54
D2.1	Needs elicitation and assessment through WIBGIs events with end users	WP2	13 - SARA BEDIN	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D2.2	Challenge brief and description of uncovered functionalities	WP2	9 - ARAGON	Report	Public	7
D2.3	Definition of the Contract/Prior Information Notice	WP2	2 - VIVERACQUA	Report	Public	6
D2.4	Open market consultations and EU-level meet-the-market events report	WP2	9 - ARAGON	Report	Public	9

Deliverable Number[14]	Deliverable Title	WP number[9]	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D2.5	Comprehensive study of the state of the art technologies - preparation of the tender	WP2	9 - ARAGON	Report	Confidential, only for members of the consortium (including the Commission Services)	10
D3.1	Invitation To Tender notice and Q&A publication	WP3	2 - VIVERACQUA	Report	Public	17
D3.2	Phase 1 Evaluation of submissions and contracts award	WP3	2 - VIVERACQUA	Report	Public	24
D3.3	Phase 1 Assessment of successful completion	WP3	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	29
D3.4	Phase 2 Evaluation of submissions and contracts award	WP3	2 - VIVERACQUA	Report	Public	32
D3.5	Phase 2 Assessment of successful completion	WP3	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	39
D3.6	Phase 3 Evaluation of submissions and contracts award	WP3	2 - VIVERACQUA	Report	Public	41
D3.7	Phase 3 Assessment of successful completion	WP3	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	52
D3.8	Recommendations on Interoperability	WP3	1 - OIEAU	Report	Public	40
D3.9	Recommendations on standardisation	WP3	1 - OIEAU	Report	Public	50
D3.10	Tender package for EC review 2	WP3	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	27
D3.11	Tender package for EC review 3	WP3	2 - VIVERACQUA	Report	Confidential, only for members	39

Deliverable Number[14]	Deliverable Title	WP number[9]	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
					of the consortium (including the Commission Services)	
D3.12	Recommendations on Interoperability and standardisation - intermediaite report	WP3	1 - OIEAU	Report	Public	41
D4.1	Monitoring outcome Report	WP4	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	20
D4.2	Final Evaluation Report	WP4	1 - OIEAU	Report	Public	54
D5.1	Dissemination strategy and communication plan	WP5	12 - APE	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D5.2	Web page	WP5	1 - OIEAU	Websites, patents filling, etc.	Public	5
D5.3	Communication material (brochure, roll-up, leaflet, poster…)	WP5	12 - APE	Websites, patents filling, etc.	Public	9
D5.4	Final report: dissemination activities, capacity building & web maintenance	WP5	13 - SARA BEDIN	Report	Public	54
D5.5	Final conference	WP5	12 - APE	ORDP: Open Research Data Pilot	Public	54
D6.1	GEN - Requirement No. 1	WP6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.2	POPD - Requirement No. 2	WP6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	1

Deliverable Number[14]	Deliverable Title	WP number[9]	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D6.3	GEN - Requirement No. 3	WP6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.4	GEN - Requirement No. 4	WP6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.5	GEN - Requirement No. 5	WP6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.6	POPD - Requirement No. 6	WP6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	1
D6.7	POPD - Requirement No. 7	WP6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	1

1.3.3. WT3 Work package descriptions

Work package number [9]	WP1	**Lead beneficiary** [10]	1 - OIEAU
Work package title	Project coordination and management		
Start month	1	**End month**	54

Objectives

The objective is to provide project management for the whole project. OIEau, coordinator (WP-leader) will guide all the project partners to ensure that the tasks will be carried out according to time schedule, budget, and resources. During the course of the PCP project, OIEau will ensure that all project management activities will be planned, coordinated, administered, monitored and managed.

Description of work and role of partners

WP1 - Project coordination and management [Months: 1-54]
OIEAU, VIVERACQUA, PROMEDIO, EAU DE PARIS, SDEA, CILE, VIVAQUA, WATER-BUDAPEST, ARAGON, UNILIM, FNCA, APE , SARA BEDIN
To achieve these goals the project management has to:
• monitor efficiently and effectively the project progress and status,
• define the project planning and reporting,
• ensure effective communication within the consortium and with the EC.

Efficient management will be delivered by (1) providing technical support to all members of the consortium to guarantee an efficient achievement of SMARTMET project objectives, (2) providing administrative and legal support to all members of the consortium to ensure all contractual obligations are met, (3) providing appropriate procedures to ensure effective and timely communication within the consortium and an efficient day-to-day management. All tasks will be led by the project coordinator and will consist of the following:

T1.1 Governance procedures and tools – [OIEau and all partners (M1-M3)]
This task sets a working and decision-making framework. The Executive Board (ExB) will gather all the contractors (partners), be chaired by OIEau as project coordinator and will meet face-to-face once a year. In addition to these meetings, web meetings will be organised at least every 6 months to ensure the continuity of the project management. A consortium agreement, signed by all contractors (partners), will describe the modus operandi. A repository will allow sharing documents.

The ExB will use a Quality assurance Scheme to follow the progress of the project according to its objectives. A Project Management Handbook will be elaborated, defining the:

• project plan
• project governance and partners role and responsibility
• communication and dissemination plan
• project meetings
• project reporting
• conflict resolution.

T1.2 Project management (coordination and monitoring) [OIEau and all partners (M1-M48)]
OIEau, as project coordinator, will be in charge of the administration of the project, the periodic administrative and financial reporting to EC and partners, and the resources allocation according to the rolling plan agreed by the partners in the Consortium Agreement..

Participation per Partner

Partner number and short name	WP1 effort
1 - OIEAU	4.00

Partner number and short name	WP1 effort
2 - VIVERACQUA	2.00
3 - PROMEDIO	0.50
4 - EAU DE PARIS	0.50
5 - SDEA	0.50
6 - CILE	0.50
7 - VIVAQUA	0.50
8 - WATER-BUDAPEST	0.50
9 - ARAGON	0.50
10 - UNILIM	0.50
11 - FNCA	1.50
12 - APE	0.50
13 - SARA BEDIN	2.90
Total	14.90

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D1.1	Project Management Handbook	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	3
D1.2	1st period Project Report	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D1.3	2nd period Project Report	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	26
D1.4	3rd period Project Report	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	37
D1.5	Final Project Report	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	54

Description of deliverables

D1.1: Project Management Handbook ; OIEau
D1.2: 1st period Project report ; OIEau
D1.3: 2nd period Project report ; OIEau
D1.4: 3rd period Project report ; OIEau
D1.5: Final Project report ; OIEau

D1.1 : Project Management Handbook [3]

List of procedures to be implemented by the coordinator and the beneficiaries during the project Organisation of the governance of the project

D1.2 : 1st period Project Report [12]

Description of the activities performed during the first year of the project Comparison with the initial planning and remediation measures if needed

D1.3 : 2nd period Project Report [26]

Description of the activities performed during the second year of the project Comparison with the initial planning and remediation measures if needed

D1.4 : 3rd period Project Report [37]

Description of the activities performed during the third year of the project Comparison with the initial planning and remediation measures if needed

D1.5 : Final Project Report [54]

Description of the activities performed during the whole project Assessment of the results

Schedule of relevant Milestones

Milestone number[18]	**Milestone title**	**Lead beneficiary**	**Due Date (in months)**	**Means of verification**
MS1	Project Management Handbook available	1 - OIEAU	3	Document approved and delivered

Work package number [9]	WP2	Lead beneficiary [10]	9 - ARAGON
Work package title	PCP preparation and design		
Start month	1	End month	14

Objectives

• Conducting an in-depth analysis of the water utilities needs to be shared with the industry and research sector, via open and advertised technical dialogue and market consultation.
• Listing a minimum aspirational set of functionalities needed by the users, ex: the innovative solutions and (desired) solution imagined by the users considering the life cycle impact and performance.
• Assuring that the challenge statement follows naturally and authentically the analysis of the problems faced by the public service providers and that the need description is detailed enough to enable a comparability of the (prototypal) solutions, but avoiding to formulate a prescriptive and technically described demand.
• Cross-checking the needs with the state-of-the-art of industrial development, aimed to confirm the existence of a market gap (actual needs versus solution currently available on the market) and the need for significant improvements (as opposed to incremental adaptations).
• Confirming the stakeholder and end-users to be involved in the testing phase;
• Defining the extreme or typical environments to use the new (desired) solutions, as well as sectorial regulations, certification requirements and standardization processes in which the innovation procurement will need to take place.

Description of work and role of partners

WP2 - PCP preparation and design [Months: 1-14]
ARAGON, OIEAU, VIVERACQUA, PROMEDIO, EAU DE PARIS, SDEA, CILE, VIVAQUA, WATER-BUDAPEST, UNILIM, FNCA, APE , SARA BEDIN
T.2.1. Needs assessment and description [SB and all (M1-M9)]
The method adopted to investigate innovation needs is called WIBGI , being a collective exercise to complete the sentence “Wouldn’t be great/good if….”.
As innovation procurement is about the total cost of ownership and not the lowest price per piece, it will be extremely crucial to direct innovation towards the entire life-cycle of the solution. In this regards, the method LT-TLC (long-term and total life-cycle performance description) will create associations between descriptive functions and quantified performance targets and will classify functions and related performances along the solution life-cycle phases: production, delivery, installation, use, management, maintenance and disposal in order to address high long-term performance and (total life-cycle) costs as low as possible.
The tools, the guidelines and briefing will be developed by the SMARTMET-TAC group. The Consortium has already organized a preparatory WIBGI session and has planned to organize another one in Verona.
T2.2 OJEU Contract / Prior Information Notice publication [Viveracqua (M8)]
A Contractual/Prior Information Notice (PIN) will be published at the Official journal of the European Union (OJEU) to pre-inform suppliers about the planned procurement and to invite them to open market consultation (described in WP2), at least 30 days before publishing the invitation to tender notice, in order to involve suppliers from throughout the EU and associated countries of H2020 programme to compete and win contracts to deliver R&D of a technology that will meet the requirements. The PIN will describe how the market consultation sessions are conceived and organized with due regard to the principles of openness, transparency, non-discrimination and equal treatment, in line with European procurement law.
T2.3. Comprehensive technological state-of-the-art analysis, open market consultations and early market engagement [ARAGON and all (M4-M10)]
The consortium will adopt two (main) approaches to cross-check and finally validate the identified need with the state-of-the art of industrial development: i) performing a prior patent search, ii) activating open and advertised market consultations and sharing the identified needs with industry and research sector with the purpose of validating that the innovation need is suitable to be tackled with a PCP and to design properly the procurement model.
In the area concerned on the supply side and to complete a rigorous state of the art analysis, we will carry out a prior patent search. The patent information is an key source (but not sufficient) in order to investigate both the information technology and the data available in patent law relating to the selected patents. The patent analysis and the consultation of literature of scientific and technical publications will be conducted in order to establish a list of technologies, classified

in terms of different solutions answering to the identified needs: degree of innovation/market readiness (TRL level), cost-effectiveness, barriers to be deployed (if existing), etc.
An open dialogue makes it possible to broach the views of the market before starting the tendering process. For that reason, this should be done under the condition that the seeking or accepting of advice does not have the effect of precluding or distorting competition.
The open consultation will be organized and regulated keeping in mind the following:
• participants and prospective contractors are not expected to submit tenders or proposals at the stage of market consultations;
• the market consultation does not lead to any obligations on the part of the contracting authorities involved or to any rights or privileges for the participants;
• no advantage or disadvantage will be given to any supplier / group of suppliers to the detriment of others during the market consultation and sub-sequent competitive procedure for the award of contracts procurement;
• during and for the purpose of the early market engagement processes, legal assurances is put in place that suppliers' intellectual property rights (IPRs), communicated in written form, will be protected;
• any early market engagement will be undertaken with due regard to the principles of openness, transparency, non-discrimination and equal treatment, in line with European procurement law;
• it is paramount that suppliers understand that the competitive phase of the public procurement procedure will be conducted separately and all supplier will be treated equally;
• the contracting authority will take the necessary steps to ensure that the participation of a previously consulted company does not affect competition within the tender procedure concerned;
• any information to which the company may be party as a result of its prior involvement will be transparently published or sent to the other participating companies.
The Workshop will be organised on Month 9.

Participation per Partner

Partner number and short name	WP2 effort
1 - OIEAU	1.00
2 - VIVERACQUA	3.00
3 - PROMEDIO	3.00
4 - EAU DE PARIS	3.00
5 - SDEA	3.00
6 - CILE	3.00
7 - VIVAQUA	3.00
8 - WATER-BUDAPEST	3.00
9 - ARAGON	6.00
10 - UNILIM	1.00
11 - FNCA	3.00
12 - APE	2.00
13 - SARA BEDIN	5.90
Total	39.90

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D2.1	Needs elicitation and assessment through WIBGIs events with end users	13 - SARA BEDIN	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D2.2	Challenge brief and description of uncovered functionalities	9 - ARAGON	Report	Public	7
D2.3	Definition of the Contract/Prior Information Notice	2 - VIVERACQUA	Report	Public	6
D2.4	Open market consultations and EU-level meet-the-market events report	9 - ARAGON	Report	Public	9
D2.5	Comprehensive study of the state of the art technologies - preparation of the tender	9 - ARAGON	Report	Confidential, only for members of the consortium (including the Commission Services)	10

Description of deliverables

D2.1: Needs elicitation and assessment through WIBGIs events with end users ; SB
D2.2: Challenge brief and description of uncovered functionalities ; ARAGON
D2.3: Definition of the Contract/Prior Information Notice ; ARAGON
D2.4: Open market consultations and EU-level event report ; ARAGON
D2.5: Comprehensive study of the state of the art technologies, including patent search results, technical surveillance ; ARAGON

D2.1 : Needs elicitation and assessment through WIBGIs events with end users [6]

Proceedings of the WIBGI sessions, being a collective exercise to complete the sentence “Would It not Be Great/ Good If….” and starting with brainstorming sessions.

D2.2 : Challenge brief and description of uncovered functionalities [7]

Report on the smart metering needs by the utilities, and the uncovered technological solutions, thanks to the brainstorming sessions and a prior patent search

D2.3 : Definition of the Contract/Prior Information Notice [6]

A Contractual/Prior Information Notice (PIN) will be published at the Official journal of the European Union (OJEU) to pre-inform suppliers about the planned procurement and to invite them to open market consultation, at least 30 days before publishing the invitation to tender notice

D2.4 : Open market consultations and EU-level meet-the-market events report [9]

proceedings of the Open Market Consultation events

D2.5 : Comprehensive study of the state of the art technologies - preparation of the tender [10]

Final report on the utilities needs and the state-of-the-art - description of the functionalities requested Common tender specifications, Joint procurement agreement, Commitment on availability of resources

Schedule of relevant Milestones

Milestone number[18]	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS2	Common challenge and innovation need confirmed	9 - ARAGON	14	Challenge brief updated and approved

Work package number [9]	WP3	Lead beneficiary [10]	2 - VIVERACQUA
Work package title	PCP execution		
Start month	13	End month	54

Objectives

This WP is aimed to ensure that the tendering process is appropriately processed, considering i) the public procurement principles, ii) the phases articulation and budget allocation, iii) the main procedural/contractual mechanism to reduce the opportunistic behaviour and to enable the participation of SMEs, iv) the IPRs allocation/sharing model that is best suited for the subject matter.

Description of work and role of partners

WP3 - PCP execution [Months: 13-54]
VIVERACQUA, OIEAU, PROMEDIO, EAU DE PARIS, SDEA, CILE, VIVAQUA, WATER-BUDAPEST, ARAGON, UNILIM, FNCA, SARA BEDIN
T3.1. Design of the PCP tender documentation [Viveracqua and all (M12-M13)]
The task is aimed to define the tender package for the start of a PCP procurement, that includes several key documents:
• PCP Contract Notice
• PCP Call for tenders (also called Invitation to Tender or Tender Regulation) & need specification
• PCP Framework Agreement and Annexes
• PCP Phase 1 Specific Contract
• The PCP Tender template
The call-off packages for phase 2 and 3 of a PCP procurement includes several key documents:
• PCP Request for offers/Invitation to tender for the call-off for Phase 2 respectively Phase 3
• PCP Phase 2/3 Specific Contract
• PCP Phase 2/3 Tender templates.

T3.2 Publication of PCP tender [Viveracqua. (M14)]
The publication of the Contract Notice marks the start of the tendering procedure. The PCP Contract Notice thus contain a clear description of the nature, scope and estimated value of the contract(s) and of how economic operators can apply to participate in the procedure. More specifically, the following information will be supplied through a contract notice: i) basic information about the public procurer; ii) description of the type of contract, iii) the envisaged duration of the contract, iv) description of the exclusion and selection criteria or reference to the tender documents for those, v) description of the procedure: open, minimum number of economic operators expected to be awarded a contract; vi) description of the award criteria and method of evaluation (most economically advantageous tender); vii) indication of the time limits: e.g. for receipt of tenders or of requests to participate, for opening the opening of tenders.
The standard form for a Contract Notice will be used, and be published in the Official Journal of the EU. In addition, in order to raise awareness of as many relevant economic operators as possible, the procurers will advertise the launch of the PCP call for tender via the project website and their own channels.
Bidders will have at least 60 days to submit their proposals since the issue of the Call for Tender / Invitation To Tender (ITT).
T3.3 Phase 1 Solution design and feasibility study: Evaluation of submissions and framework contracts award [Viveracqua. and all partners (M18-M20)]
All valid tender submissions will be evaluated by the SMARTMET-TAC against the criteria stated in the Call for Tender. The evaluation criteria will be based on the most economically advantageous offer criteria.
The awarded suppliers will be requested to provide all the administrative documents necessary to sign a contract with Italian public administration. Once all the documents are provided Phase 1 framework contract will be signed. Once the contracts are awarded one month of stand&still period will be left prior to their signature.
During Phase 1 the R&D providers will start solution design and verify the technical, economic and organizational feasibility of its solution approach to address the PCP challenge.
T3.4 Phase 1 feasibility study and solution design: Assessment of successful completion [Viveracqua and all partners (M23-M25)]
This task will be carried out by the SMARTMET-TAC.
A technical End Phase Report shall be submitted by the suppliers, which shall contain the detailed description of the performed activities and the obtained Phase 1 results, with reference to the solution design of the innovative solution

concept proposed in the original bid, as well as a business/commercialization plan. The SMARTMET-TAC will be requested to determine whether the suppliers have complied with their obligations under the Framework Agreement, the Phase 1 Contract and the Tender Documents, as well as the results delivered by the R&D providers are satisfactory. The Lead procurer will release a statement based on the assessment and will proceed to the complete payment owed to the suppliers for the correct execution of Phase 1.
The Phase 1 R&D providers who successfully completed Phase 1 are invited to bid for Phase 2.
T3.5 Phase 2 Prototyping: Evaluation of submissions and contracts award [Viveracqua and all partners (M27-M28)]
This task will be carried out by the SMARTMET-TAC. All valid tender submissions will be evaluated against the criteria stated in the Invitation to Tender. The best scoring Phase 2 offers are awarded a Phase 2 contract. Once the contracts are awarded one month of stand & still period will be left prior to their signature. Each contract will state the terms and conditions of the work, including the deliverables, milestones, and financial payment schedule.
During Phase 2, the winning R&D providers will develop a prototype and will test this in lab conditions (lab of the R&D provider or procurer, as chosen by the procurer).
T3.6 Phase 2 Prototyping: Assessment of successful completion [Viveracqua.and all partners (M35-M37)]
This task will be carried out by the SMARTMET-TAC.
An End of Phase 2 Report shall be submitted by the suppliers, which shall contain the description of the prototype developed in Phase 2, with the additional details and deliverables set forth in the Phase Contract. The SMARTMET-TAC will be requested to determine whether the suppliers have complied with their obligations under the Framework Agreement, the Phase 2 Contract and the Tender Documents.
The phase 2 includes a first testing in lab, as well as in relevant environments and operational context provided by the buyers.
The Lead procurer will release a statement based on the assessment and will proceed to the complete payment owed to the suppliers for the correct execution of Phase 2.
The Phase 2 R&D providers who successfully completed Phase 2 are invited to bid for Phase 3.
T3.7 Phase 3 Solution test: Evaluation of submissions and contracts award [Viveracqua (M39-M40)]
This task will be carried out by the SMARTMET-TAC.
All valid tender submissions received will be evaluated by each member of the Committee against the criteria stated in the Invitation to Tender. The evaluation will be based on the best value for money criteria. Once the contracts are awarded one month of stand & still period will be left prior to their signature.
Each contract will state the terms and conditions of the work, including the deliverables, milestones, and financial payment schedule.
During Phase 3, the successful R&D providers will produce a first limited set of products/services and after testing by the procurer in relevant environments/real-life operational conditions, will subsequently incorporate the results of the field testing in a final limited set of products/services that demonstrate suitability for proceeding after the PCP to large scale production.
On completion of Phase 3, the economic operators will deliver an End of Phase 3 report, describing the undertaken activities and the obtained Phase 3 results (e.g. final product specifications, tested products/services, refined production and commercialisation/business plan).
T3.8 Phase 3 Solution test: Assessment of successful completion [Viveracqua and all partners (M44-M47)]
This task will be carried out by the SMARTMET-TAC. An End of Phase Report shall be submitted by the suppliers, which shall contain an analysis of the outcome of the product testing, providing the additional details and deliverables set forth in the Phase 3. The Performance Assessment will be requested to determine whether the suppliers have complied with their obligations under the Framework Agreement, the Phase 3 Contract and the Tender Documents. The Lead procurer will release a statement based on the assessment and will proceed to the complete payment owed to the suppliers for the correct execution of Phase 3.
T3.9 Interoperability working group [Unilim and all partners (M27-M37)]
During phase 2, the R&D Providers will be requested to actively participate at the Interoperability Working Group (SMARTMET-IWG), together with a selection of TAC members and possible guests (experts from EU research), for examining interoperability and pre-standardization issues. This IWG will release recommendations for the developments; these recommendations will be published under a Creative Commons licence, allowing their reuse and further improvements.
The SMARTMET-IWG will work at a distance, and its Secretariat will be managed by UniLim.

Participation per Partner

Partner number and short name	WP3 effort
1 - OIEAU	3.00
2 - VIVERACQUA	3.00
3 - PROMEDIO	2.00
4 - EAU DE PARIS	2.00
5 - SDEA	2.00
6 - CILE	2.00
7 - VIVAQUA	2.00
8 - WATER-BUDAPEST	2.00
9 - ARAGON	3.00
10 - UNILIM	2.00
11 - FNCA	3.00
12 - APE	0.00
13 - SARA BEDIN	3.40
Total	29.40

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D3.1	Invitation To Tender notice and Q&A publication	2 - VIVERACQUA	Report	Public	17
D3.2	Phase 1 Evaluation of submissions and contracts award	2 - VIVERACQUA	Report	Public	24
D3.3	Phase 1 Assessment of successful completion	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	29
D3.4	Phase 2 Evaluation of submissions and contracts award	2 - VIVERACQUA	Report	Public	32
D3.5	Phase 2 Assessment of successful completion	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	39
D3.6	Phase 3 Evaluation of submissions and contracts award	2 - VIVERACQUA	Report	Public	41

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D3.7	Phase 3 Assessment of successful completion	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	52
D3.8	Recommendations on Interoperability	1 - OIEAU	Report	Public	40
D3.9	Recommendations on standardisation	1 - OIEAU	Report	Public	50
D3.10	Tender package for EC review 2	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	27
D3.11	Tender package for EC review 3	2 - VIVERACQUA	Report	Confidential, only for members of the consortium (including the Commission Services)	39
D3.12	Recommendations on Interoperability and standardisation - intermediaite report	1 - OIEAU	Report	Public	41

Description of deliverables

D3.1: Invitation To Tender notice and Q&A publication ; Viveracqua
D3.2: Phase 1 Evaluation of submissions and contracts award ; Viveracqua
D3.3: Phase 1 Assessment of successful completion ; Viveracqua
D3.4: Phase 2 Evaluation of submissions and contracts award ; Viveracqua
D3.5: Phase 2 Assessment of successful completion ; Viveracqua
D3.6: Phase 3 Evaluation of submissions and contracts award ; Viveracqua
D3.7: Phase 3 Assessment of successful completion (M48); Viveracqua
D3.8: Standardisation Working Group – Recommendations on Interoperability (M37); OIEau
D3.9: Standardisation Working Group – Recommendations on Standardisation (M47); OIEau

D3.1 : Invitation To Tender notice and Q&A publication [17]

Pack of tender documents • PCP Contract Notice • PCP Call for tenders (also called Invitation to Tender or Tender Regulation) & need specification • PCP Framework Agreement and Annexes • PCP Phase 1 Specific Contract • The PCP Tender template The call-off packages for phase 2 and 3 of a PCP procurement includes several key documents: • PCP Request for offers/Invitation to tender for the call-off for Phase 2 respectively Phase 3 • PCP Phase 2/3 Specific Contract • PCP Phase 2/3 Tender templates.

D3.2 : Phase 1 Evaluation of submissions and contracts award [24]

report on the Phase 1 tendering process : * Final ranking list of the selected projects, final scores and qualitative assessment per evaluation criterion for each received bid, minutes of evaluation meeting * Information on the total number of bids received, in particular the data on the winning tenderer(s) and abstracts of the winning tenders, in a format specified by the EC, for publication and evaluation purposes

D3.3 : Phase 1 Assessment of successful completion [29]

Report by the SMARTMET-TAC on the technical End Phase 1 Reports submitted by the suppliers, which shall contain the detailed description of the performed activities and the obtained Phase 1 results. Assessment by buyers group of the results achieved by each participating tenderer in the PCP phase 1

D3.4 : Phase 2 Evaluation of submissions and contracts award [32]

report on the Phase 2 tendering process : * Final ranking list of the selected projects, final scores and qualitative assessment per evaluation criterion for each received bid, minutes of evaluation meeting * Information on the total number of bids received, in particular the data on the winning tenderer(s) and abstracts of the winning tenders, in a format specified by the EC, for publication and evaluation purposes - Info on results achieved in previous PCP phase: * Assessment by buyers group of the results achieved by each participating tenderer in the previous PCP phase

D3.5 : Phase 2 Assessment of successful completion [39]

Report by the SMARTMET-TAC on the technical End Phase 2 Reports submitted by the suppliers, which shall contain the detailed description of the performed activities and the obtained Phase 2 results. Assessment by buyers group of the results achieved by each participating tenderer in the PCP phase 2

D3.6 : Phase 3 Evaluation of submissions and contracts award [41]

report on the Phase 3 tendering process : * Final ranking list of the selected projects, final scores and qualitative assessment per evaluation criterion for each received bid, minutes of evaluation meeting * Information on the total number of bids received, in particular the data on the winning tenderer(s) and abstracts of the winning tenders, in a format specified by the EC, for publication and evaluation purposes - Info on results achieved in previous PCP phase: * Assessment by buyers group of the results achieved by each participating tenderer in the PCP phase 2

D3.7 : Phase 3 Assessment of successful completion [52]

Report by the SMARTMET-TAC on the technical End Phase 3 Reports submitted by the suppliers, which shall contain the detailed description of the performed activities and the obtained Phase 3 results. Assessment by buyers group of the results achieved by each participating tenderer in the PCP phase 3

D3.8 : Recommendations on Interoperability [40]

Report by the Standardisation Working Group (SMARTMET-SWG), together with a selection of TAC members and possible guests (experts from EU research), for examining interoperability issues

D3.9 : Recommendations on standardisation [50]

Report by the Standardisation Working Group (SMARTMET-SWG), together with a selection of TAC members and possible guests (experts from EU research), for examining standardisation issues

D3.10 : Tender package for EC review 2 [27]

Phase 2 tender documentation for review

D3.11 : Tender package for EC review 3 [39]

Phase 3 tender documentation for reviex by EC

D3.12 : Recommendations on Interoperability and standardisation - intermediaite report [41]

Draft recommendations after the prototyping phase

Schedule of relevant Milestones

Milestone number[18]	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS3	PIN issued	2 - VIVERACQUA	6	Publication through OJEU
MS4	Call for tender issued	2 - VIVERACQUA	18	Publication through OJEU

Work package number [9]	WP4	Lead beneficiary [10]	1 - OIEAU
Work package title	PCP evaluation		
Start month	17	End month	54

Objectives

This work package's main objectives are:
• design a framework for the evaluation of the received bids.
• generate, for each Phase of the PCP, an evaluation standard reports, aimed at presenting the evaluation of related activities conducted and the results obtained;
• provide the information needed to perform a global impact evaluation analysis at the end of the PCP, aimed at identifying the potential impact that the project can have.

Description of work and role of partners

WP4 - PCP evaluation [Months: 17-54]
OIEAU, VIVERACQUA, PROMEDIO, EAU DE PARIS, SDEA, CILE, VIVAQUA, WATER-BUDAPEST, ARAGON, UNILIM, FNCA, SARA BEDIN
T4.1 Evaluation Programme definition [OIEau and all (M14-M18)]
A general framework for the project evaluation will be designed, in order to identify the evaluation steps and task throughout the whole PCP. The following assessment streams of work will be considered and developed:
• Process and implementation evaluation, with particular reference to competition and contract management issues, like plan schedule versus planned programme schedule and plan costs versus planned programme costs, risk emerged or unidentified and impacts (across all PCP phases: Phase 1, Phase 2 and Phase 3).
• Technical Evaluation (across all PCP phases: Phase 1, Phase 2 and Phase 3).

T4.2: Monitoring outcome Report definition [OIEau, Aragon, Unilim, FNCA (M20-M48)]
The WSM-TAC will then generate a Monitoring Outcome Report with recommendations for the contractors, including those extracted from user satisfaction/ease of use assessment. At the end of the phases the contractors will be requested to submit an End of Phase Report that takes into account the recommendations coming from the Monitoring Outcome Report. The End of Phase Report will be assessed together with the results of the phase and considered successfully completed only if given criteria are met as described in WP3.
T4.3 Final Evaluation Report definition [OIEau and all partners(M32-M48)]
This will include extracting feedback from buyers and end user on proposals throughout the PCP process through ad-hoc testing sessions.
Secondary, this task will consist also in vendors evaluation under the technical and commercial perspectives, including the following criteria, among others:
• suppliers information (numbers of bids received, data on the winning tenderers, international coverage, etc)
• Technical review (including an abstract of the winning tenders)
• Tenders review (ranking list and final scores, cost and time deviations.…)
A third part will concern the comparative assessment and validation of pros and cons, as well as of performances of the innovative solutions resulting from PCP by the beneficiaries, under the selected evaluation criteria. This document will also constitute a demonstration to the Commission of the test products resulting from the procured R&D services.

Participation per Partner

Partner number and short name	WP4 effort
1 - OIEAU	2.00
2 - VIVERACQUA	1.00
3 - PROMEDIO	1.00
4 - EAU DE PARIS	1.00

Partner number and short name	WP4 effort
5 - SDEA	1.00
6 - CILE	1.00
7 - VIVAQUA	1.00
8 - WATER-BUDAPEST	1.00
9 - ARAGON	2.00
10 - UNILIM	2.00
11 - FNCA	1.50
12 - APE	0.00
13 - SARA BEDIN	2.00
Total	16.50

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D4.1	Monitoring outcome Report	1 - OIEAU	Report	Confidential, only for members of the consortium (including the Commission Services)	20
D4.2	Final Evaluation Report	1 - OIEAU	Report	Public	54

Description of deliverables

D4.1:. Monitoring outcome Report ; OIEau
D4.2: Final Assessment and Evaluation Report ; OIEau

D4.1 : Monitoring outcome Report [20]

Report issued by the SmartMet-TAC with recommendations for the contractors, to submit appropriate End of Phase Reports

D4.2 : Final Evaluation Report [54]

This report will include extracting feedback from buyers and end user on proposals throughout the PCP process through ad-hoc testing sessions. Secondary, this task will gather also in vendors evaluation A third part will concern the comparative assessment and validation of pros and cons, as well as of performances of the innovative solutions resulting from PCP by the beneficiaries This includes : - From suppliers: info on each project and contractor financed by the procurement and its achievements, in a format specified by the EC, for publication and evaluation purposes - From buyers: an assessment by the buyers group, based on the validation of solutions by the buyers group, of the final results of each participating tenderer in terms of achieving the performance and functionality requirements of the initial tender specifications - Demonstration to the EC (and project review team) of the test products resulting from the R&D

Schedule of relevant Milestones

Milestone number[18]	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS5	Comparative analysis of different solutions	1 - OIEAU	54	Monitoring Outcome Report

Work package number [9]	WP5	Lead beneficiary [10]	12 - APE
Work package title	Buyer group networking, awareness building and project results dissemination		
Start month	1	End month	54

Objectives

The main objectives of this work package are:
• to create awareness in the utilities, research and business communities dealing with smart metering
• to ensure the communication and information dissemination with the stakeholders in order to obtain their support in achieving the project's outcomes;
• to stimulate the diffusion and increase awareness regarding Pre-Commercial Procurement and its use
• to convince individual end-users to adopt and/or apply the results, also after the project and support by the project partnership has ended.

Description of work and role of partners

WP5 - Buyer group networking, awareness building and project results dissemination [Months: 1-54]
APE , OIEAU, VIVERACQUA, PROMEDIO, EAU DE PARIS, SDEA, CILE, VIVAQUA, WATER-BUDAPEST, ARAGON, UNILIM, FNCA, SARA BEDIN
T5.1 Definition of dissemination strategy [APE and all partners, (M1-M3)]
The initial work to be done consist in the elaboration of project dissemination and exploitation strategy, aimed to provide detailed guidelines for the consortium members.
This task consists in the definition of communication plan, where the consortium will be provided with dissemination materials, channels and tools to disseminate the project general goals and specific activities.
The dissemination plan will define the editorial policy for the website and all the information documents, including the leaflet. It will provide guidelines for the structure of the website as well as the branding of the project, i.e. its logo, the design and layout of the website, the PowerPoint template and any other project communication tools.

T5.2 Communication and dissemination materials [APE and all partners (M1-M48)]
Together with the website, the project brochures will be one of the main promotional materials.
The idea of the brochures is to provide interested stakeholders and key actors with a snapshot of the project, facilitating a fast understanding of the project. The digital format will be made available at the project website for download as well. The brochures will be accompanied with leaflets when suitable during the project. These leaflets can be developed about specific aspects or activities of the project for special occasions or in a particular European language, for instance project and non-project events with content tailored to a target group category.
Different poster or roll-up will be also produced for internal and external events according to the target audience of events and the need within the project phases. For the market consultation phase a supplier poster template will be produced and sent to all partners as well as to conference organizers in order to include it in the conference material for participants.

T5.3 Capacity building, training and coaching activities [SB (M4-M40)]
The task is aimed to enable stakeholder community knowledgeable about innovative procurement and determine the public procurer more confident in undertaking PCP&PPI initiatives, to support procurers and stakeholders in their practical understanding of the phases, rational and drivers of PCP implementation, to stimulate networking and create synergies and strengthen the relations between public procurers with view of transnational cooperative PPI potentially resulting from SMART.MET PCP, to help practitioners to establish and foster a sectorial PCP &PPI adoption in regional public policy priorities and an alignment of public procurements needs with policy objectives and with R&D&I support programs. The capacity building session will be held in Veneto Region.

T5.4 Project results dissemination and exploitation [APE and all partners (M1-M48)]
The consortium will take every opportunity to disseminate the project's results and activities in all dissemination channels they find suitable. With the support of the project website and communication materials, the partners. The dissemination strategy
(T5.1) will be the project's roadmap for all dissemination activities. As part of it, a contact database will be set up, covering organisations that could benefit either from the PCP experience in the project or from the solutions developed.

Participation per Partner

Partner number and short name	WP5 effort
1 - OIEAU	2.50
2 - VIVERACQUA	1.00
3 - PROMEDIO	1.00
4 - EAU DE PARIS	1.00
5 - SDEA	1.00
6 - CILE	1.00
7 - VIVAQUA	1.00
8 - WATER-BUDAPEST	1.00
9 - ARAGON	0.50
10 - UNILIM	0.50
11 - FNCA	1.50
12 - APE	3.00
13 - SARA BEDIN	2.40
Total	17.40

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D5.1	Dissemination strategy and communication plan	12 - APE	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D5.2	Web page	1 - OIEAU	Websites, patents filling, etc.	Public	5
D5.3	Communication material (brochure, roll-up, leaflet, poster…)	12 - APE	Websites, patents filling, etc.	Public	9
D5.4	Final report: dissemination activities, capacity building & web maintenance	13 - SARA BEDIN	Report	Public	54
D5.5	Final conference	12 - APE	ORDP: Open Research Data Pilot	Public	54

Description of deliverables

D5.1: Dissemination strategy and communication plan ; APE
D5.2: Web site development and maintenance ; OIEau

D5.3: Communication material (brochure, roll-up, leaflet, poster…) ; APE, SB and all
D5.4: Final report: dissemination and capacity building report ; SB
D5.5: Final conference ; APE, Viveracqua, SB

D5.1 : Dissemination strategy and communication plan [4]

Description of the project dissemination and exploitation strategy, aimed to provide detailed guidelines for the consortium members Definition of the communication plan, with dissemination materials, channels and tools to disseminate the project general goals and specific activities

D5.2 : Web page [5]

The website is aimed at presenting the project, but also at communicating with technology suppliers, vendors and other utilities (information on the Open Market Consultation and the tenders)

D5.3 : Communication material (brochure, roll-up, leaflet, poster…) [9]

The brochures will provide interested stakeholders and key actors with a snapshot of the project, facilitating a fast understanding of the project. The digital format will be made available at the project website for download as well. The brochures will be accompanied with leaflets when suitable during the project. Different poster or roll-up will be also produced for internal and external events

D5.4 : Final report: dissemination activities, capacity building & web maintenance [54]

Final report on dissemination activities - description of training activities performed during the project

D5.5 : Final conference [54]

Proceedings of the final event of the project Recommendations to develop PCP in the water sector

Schedule of relevant Milestones

Milestone number[18]	**Milestone title**	**Lead beneficiary**	**Due Date (in months)**	**Means of verification**
MS6	Project result dissemination	13 - SARA BEDIN	54	Final report delivered

Work package number [9]	WP6	Lead beneficiary [10]	1 - OIEAU
Work package title	Ethics requirements		
Start month	1	End month	61

Objectives

The objective is to ensure compliance with the 'ethics requirements' set out in this work package.

Description of work and role of partners

WP6 - Ethics requirements [Months: 1-61]
OIEAU
This work package sets out the 'ethics requirements' that the project must comply with.

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D6.1	GEN - Requirement No. 1	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.2	POPD - Requirement No. 2	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	1
D6.3	GEN - Requirement No. 3	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.4	GEN - Requirement No. 4	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.5	GEN - Requirement No. 5	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3
D6.6	POPD - Requirement No. 6	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	1

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D6.7	POPD - Requirement No. 7	1 - OIEAU	Ethics	Confidential, only for members of the consortium (including the Commission Services)	1

Description of deliverables

The 'ethics requirements' that the project must comply with are included as deliverables in this work package.

D6.1 : GEN - Requirement No. 1 [3]

11.2. The applicant must provide a thorough analysis of the ethics issues raised by this project and the measures that will be taken to ensure compliance with the ethical standards of H2020.

D6.2 : POPD - Requirement No. 2 [1]

1.1. Copies of opinion or confirmation by the competent Institutional Data Protection Officer and/or authorization or notification by the National Data Protection Authority must be submitted (which ever applies according to the Data Protection Directive (EC Directive 95/46, currently under revision, and the national law).

D6.3 : GEN - Requirement No. 3 [3]

1.1. Copies of opinion or confirmation by the competent Institutional Data Protection Officer and/or authorization or notification by the National Data Protection Authority must be submitted (which ever applies according to the Data Protection Directive (EC Directive 95/46, currently under revision, and the national law).

D6.4 : GEN - Requirement No. 4 [3]

1.2. Detailed information must be provided on the procedures that will be implemented for data collection, storage, protection, retention and destruction and confirmation that they comply with national and EU legislation.

D6.5 : GEN - Requirement No. 5 [3]

1.3. A full ethical section on privacy and protection of data must be added by proposers.

D6.6 : POPD - Requirement No. 6 [1]

1.2. Detailed information must be provided on the procedures that will be implemented for data collection, storage, protection, retention and destruction and confirmation that they comply with national and EU legislation.

D6.7 : POPD - Requirement No. 7 [1]

1.3. A full ethical section on privacy and protection of data must be added by proposers.

Schedule of relevant Milestones

Milestone number[18]	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification

1.3.4. WT4 List of milestones

Milestone number[18]	Milestone title	WP number[9]	Lead beneficiary	Due Date (in months)[17]	Means of verification
MS1	Project Management Handbook available	WP1	1 - OIEAU	3	Document approved and delivered
MS2	Common challenge and innovation need confirmed	WP2	9 - ARAGON	14	Challenge brief updated and approved
MS3	PIN issued	WP3	2 - VIVERACQUA	6	Publication through OJEU
MS4	Call for tender issued	WP3	2 - VIVERACQUA	18	Publication through OJEU
MS5	Comparative analysis of different solutions	WP4	1 - OIEAU	54	Monitoring Outcome Report
MS6	Project result dissemination	WP5	13 - SARA BEDIN	54	Final report delivered

1.3.5. WT5 Critical Implementation risks and mitigation actions

Risk number	Description of risk	WP Number	Proposed risk-mitigation measures
1	The beneficiaries do not have a common understanding of PCP	WP2	Internal Training workshop to reach a consensual definition / Training on-the-job. Involvement of all procurers on procedure design
2	Insufficient collaboration in developing the project activities from members of the consortium	WP1, WP5	A distribution of roles and responsibility, starting from task leaders for a follow-up to ensure activities will make part of the project quality standards. At the same time the Coordination will recommend and implement the necessary measures to restate a fluid communication and effort allocation based on analysis of the specific situations.
3	Low engagement of European technological suppliers	WP2, WP3	Dissemination plan to reach out to SMEs in a direct and efficient way and based on multi-channel advertisement (web portal, local meet-the-market event, advertised explorative call)
4	Suppliers do not have a clear understanding of innovative procurement processes	WP2, WP3	Consortium's experts organising market consultations and workshop with suppliers
5	Disagreement between procurers and end-users on the functionalities needed	WP2	The methodology is based on end-users real needs collection
6	Low market potentiality detected during state of the art analysis	WP2	The ranking criteria and method are comprehensive (multi-criteria), objective and but not limited to evaluate just one dimension
7	Off-the-shelf solutions available, making a procurement of innovation obsolete	WP2	reiteration of need assessment and focalization on a sub-challenge aimed to go beyond existing solutions
8	Communication problems between partners and/or work packages Leaders	WP1	The Coordination will recommend and implement the necessary measures to restate a fluid communication based on analysis of the specific situations; more meetings will be organized at a distance or face-to-face.
9	Analysis paralysis	WP2	"collaborative filtering" approach to extract valuable information from the overwhelming amount of data collected. votes system adopted
10	Delay in the launching of the technical dialogue or in another milestone in time	WP2	The Coordinator and the Executive Board will take the necessary measures to reallocate activities according to the difficulties encountered

1.3.6. WT6 Summary of project effort in person-months

	WP1	WP2	WP3	WP4	WP5	WP6	Total Person/Months per Participant
1 - OIEAU	4	1	3	2	2.50	✓	12.50
2 - VIVERACQUA	2	3	3	1	1		10
3 - PROMEDIO	0.50	3	2	1	1		7.50
4 - EAU DE PARIS	0.50	3	2	1	1		7.50
5 - SDEA	0.50	3	2	1	1		7.50
6 - CILE	0.50	3	2	1	1		7.50
7 - VIVAQUA	0.50	3	2	1	1		7.50
8 - WATER-BUDAPEST	0.50	3	2	1	1		7.50
9 - ARAGON	0.50	6	3	2	0.50		12
10 - UNILIM	0.50	1	2	2	0.50		6
11 - FNCA	1.50	3	3	1.50	1.50		10.50
12 - APE	0.50	2	0	0	3		5.50
13 - SARA BEDIN	2.90	5.90	3.40	2	2.40		16.60
Total Person/Months	14.90	39.90	29.40	16.50	17.40		118.10

1.3.7. WT7 Tentative schedule of project reviews

Review number [19]	**Tentative timing**	**Planned venue of review**	**Comments, if any**
RV1	10	Belgium - Brussels	
RV2	27	Belgium - Brussels	
RV3	39	Belgium - Brussels	
RV4	54	Italy	

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

2. Project acronym

Use the project acronym as given in the submitted proposal. It can generally not be changed. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry into force of the Grant Agreement (NB : entry into force = signature by the Commission). Please note that if a fixed starting date is used, you will be required to provide a written justification.

5. Duration

Insert the duration of the project in full months.

6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

7. Abstract

8. Project Entry Month

The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

9. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

10. Lead beneficiary

This must be one of the beneficiaries in the grant (not a third party) - Number of the beneficiary leading the work in this work package

11. Person-months per work package

The total number of person-months allocated to each work package.

12. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

13. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

14. Deliverable number

Deliverable numbers: D1 - Dn

15. Type

Please indicate the type of the deliverable using one of the following codes:

R	Document, report
DEM	Demonstrator, pilot, prototype
DEC	Websites, patent fillings, videos, etc.
OTHER	
ETHICS	Ethics requirement
ORDP	Open Research Data Pilot
DATA	data sets, microdata, etc.

16. Dissemination level

Please indicate the dissemination level using one of the following codes:

PU	Public
CO	Confidential, only for members of the consortium (including the Commission Services)
EU-RES	Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)
EU-CON	Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)
EU-SEC	Classified Information: SECRET UE (Commission Decision 2005/444/EC)

17. Delivery date for Deliverable

Month in which the deliverables will be available, month 1 marking the start date of the project, and all delivery dates being relative to this start date.

18. Milestone number

Milestone number:MS1, MS2, ..., MSn

19. Review number

Review number: RV1, RV2, ..., RVn

20. Installation Number

Number progressively the installations of a same infrastructure. An installation is a part of an infrastructure that could be used independently from the rest.

21. Installation country

Code of the country where the installation is located or IO if the access provider (the beneficiary or linked third party) is an international organization, an ERIC or a similar legal entity.

22. Type of access

VA	if virtual access,
TA-uc	if trans-national access with access costs declared on the basis of unit cost,
TA-ac	if trans-national access with access costs declared as actual costs, and
TA-cb	if trans-national access with access costs declared as a combination of actual costs and costs on the basis of unit cost.

23. Access costs

Cost of the access provided under the project. For virtual access fill only the second column. For trans-national access fill one of the two columns or both according to the way access costs are declared. Trans-national access costs on the basis of unit cost will result from the unit cost by the quantity of access to be provided.

History of changes

Date	Section	Change
07/04/2020	1.4; 3.1; 3.4	First draft amendment 2
21/04/2020	1.4 page 25	Installation / uninstallation of the meters by the buyers / phase 3
	3.1 page 39	Planning of the project and the PCP phase 3
	3.4 page 48	Revision of the budget
19/05/2020	3.1 page 42	Update of the Phase 3 call launch date
01/09/2020	3.4 page 48	Revision of the budget

Table of Contents

1. Excellence

European Water utilities environment is embedded in a context dealing with global issues such as water scarcity and technical-economic issues such as infrastructure aging. Management of drinking water supply is facing key challenges partly related to traditional water meter, such as managing capital and operational costs; water loss (also known as non-revenue water) due to leaks and other system failures; and water scarcity/conservation.

The core of the solution lies in the renewed access and use of accurate data that Smart Water Metering can provide to decrease operating costs, identify performance issues, improve customer service and better prioritize infrastructure investments.

SMART.MET strongly paves the way to a more efficient management providing for example automatic reading of the household meters and billing, real time assessment of water balance for leak detection, identification of abnormal behaviours and awareness-raising, ability to identify user-meters defaults. It is also one element of the wider picture of Advance Metering Infrastructure (AMI).

However, the lack of common European standards and lack of "open technological platforms" combined to the high transaction cost on the demand side create a lock-in situation in the market and determine a situation of long-term dependency of water operators on technology providers.

This determines high average operating costs for water operators and users, as well as collective inefficiency related to the multiplication of different proprietary solutions on the offer side.

The objective of the proposal is thus to drive the development of new technologies to manage smart metering data collection and management, driven by a group of water utilities through a joint Pre Commercial Procurement (PCP).

1.1 State-of-the art

On the supply side
Today, smart meter systems are mainly channelled through two kinds of mass market solutions that can be considered "traditional".

- The first and simplest one is the drive-by-meter (or walk-by) category of solutions. In this case there is no need of a complicated local telecommunication network. The meters are equipped with a radio transmitter module and are enabled to transmit the readings to a portable device radio receiver held by the operator who is walking-by or is sitting in a vehicle driving-by around in the district. The distances are of the order of hundreds meters. The operating performances are about thousands readings per hour.
  The same solution is wide-spread for thermal energy meters. The battery consumption is not an issue since the meters transmit their messages with the readings in just some time-windows established and configured by the water company. So the water company operator goes around the right day, and at the right time when the meters in that area are expected to transmit. This makes the meter battery lifetime very long.
  There are several examples of this technology currently in use in Europe and abroad (See READy solution of Kamstrup, Arad Group Solution et al.). Obviously the communication is one way, from the meters to the data collector. It means more

simplicity in term of installation and commissioning procedures, but less functionalities as to real-time or near real time events detection, software maintenance, future evolutions towards Internet of Things (IoT) development and applications.

- The other common solution that is gaining more and more momentum thanks to the clear synergies with other utilities networks, whose Automatic Meter Reading (AMR) solutions have been already deployed, is point-multi-point (PMP) architecture. In this case a local yet simple communication network is required. The meters fleet is grouped and each group is clustered around a concentrator. The concentrator, on its turn, has its up-link to a Central Data Acquisition System by mobile network or by common wired technology (ADSL, fibre, etc.). In this case we have a two-ways communication allowing all the benefits that were not possible with the previous solution.

  This becomes a compelling choice if there is a wireless network for AMR purposes already deployed for other services (gas distribution, electricity, thermal, public lighting, etc.). The only requirement is the water meter compliant with the current AMR solution and the central software able to manage also water readings data. In this case the greater complexity of a local network to manage and control is largely compensated by a cost sharing for network initial investment as well as cost sharing for day by day operations. Since, for instance, in gas distribution there has been a strong emphasis on open standard solutions for AMR, this could be a positive side effect of sharing the same infrastructure to benefit of this aspect.

  In low density or rural areas, where the deployment of a wireless local network could be expensive, a common solution is a point-to-point (P2P) communication through a GPRS module mounted on each meter. Both architectures (PMP, P2P) can converge onto a unifying management platform and so being considered one solution.

Regarding the new protocols inspired by the Internet of Things deployment, there are still issues to be dealt with (see later).

Lack of standards for smart water meters :

The mandate M441 for standardisation was issued by the European Commission in 2009, whose main aim was to enable the creation of standards that would ensure the interoperability of utility meters[1]. A European standard comprising a software and hardware open architecture for utility meters should have been presented 9 months later. However[2], it looks like the standardization organizations did not want to create a single standard : the technical report that can be found on that page notes that “no single standard can cover all aspects for the full application range of smart metering systems”. That report also lists existing standards and standards to be developed.

However, to date, there are no commonly accepted standards for water meters. Although some standards exist, such as EN 13757 on remote reading of meters (M-Bus), they do not seem to respond to the needs of operators, including interoperability, as different standards are applied by different companies.

Unfortunately, we were not able to find any updated information on the current development of standards under M441 ; in any case, as stated in the report on standardization of the

[1] The mandate can be found here: http://ec.europa.eu/growth/tools-databases/mandates/index.cfm?fuseaction=search.detail&id=421

[2] http://www.cencenelec.eu/standards/Sectors/SustainableEnergy/SmartMeters/Pages/default.aspx

ICT4Water cluster[3], there is today still an "absence of standards" regarding smart water meters.

On the demand side
Most of the public procurers still rely on traditional metering systems with manual readings. Today adopting advanced solutions implies walk-by or drive-by proprietary technology. As already seen, such a technology implements a one-way communication, do not solve the functional limitations already mentioned and two well-known drawbacks:

- Proprietary technology: there have been no regulation imposing open standards so far and each solution provider has developed its own technical requirements delivering a de-facto technology lock-in for public procurers adopting their solutions.
- Security of the signal and network density: reach of radio signal coverage can be an issue when the meters are located in the basement or in old city centres where historical buildings have very thick walls

Most European countries have a national Authority regulating public services sector. The regulatory harmonisation in Europe is in an advanced phase. Electricity and gas distribution markets benefit from unified European standards (e.g. MID directives, technical guides, certifications, DLMS protocol for gas remote metering, etc.).

On the other side water management and distribution market has been left somehow behind. But it seems to catch up fast to fill the gap. In this sense, leveraging on the infrastructures whose deployment is in progress or just completed to support the other services (electricity and gas) is a key factor to give a fundamental impulse for the modernisation of water distribution network.

1.2 Clarity and pertinence of the objective of the PCP – The challenge to be shared

The 'shared need' that the SMART.MET PCP will focus on concerns the development of a new cost effective, efficient, interoperable, based on open standard (drinking) Water Smart Metering by public water utilities capable to identify performance issues, improve customer service, optimize the supply of water to the consumption, working both way, (i) reduction of consumption decided by the consumer (receiving real time data) and (ii) by the suppliers adapting the network to real time demand, in order to decrease operating costs and better prioritize and plan infrastructure investments, preventing vendor and technology lock-in situation in the market and long-term dependency of water operators on technology providers.

An unmet need that will be addressed by the 'common challenge' is to offer innovative services to understand consumption to utility and end-user. The potential availability of daily water consumption data will give the possibility to improve awareness of usage.

The utility will be informed of water consumption data. They can compare data among different meters: water pumped into the main pipes and water used by customers. Total amount of water flowing in should be equal to the total amount of water flowing out. With an appropriate number of intermediate meters it will be possible to find leakage in pipes. To detect a leakage by the

[3] first publication here: http://www.i-widget.eu/publications.html

final user household, new meters have very often a special detection algorithm based on the sensing of a continuous water flow for long periods and an alerting system to notify the problem.

It will be possible for the procurer to foreseen possible seasonal consumption peak, creating a relationship within consumption, weather condition or with any other external cause. The procurer can improve its efficiency in procuring, stocking, delivering and disposing water.

The availability of daily consumption data will help in understanding how water is used in households or industrial plants and so having a positive impact on the behaviour of the users.

Another desired yet complex requirement is a functionality to remotely operate a partial closure of the meter as a method to manage defaulting users. This would have a deep impact to the choice to make about the solution that would go from Automated Meter Reading to Automated Meter Management system. This implies the need of a two-way communication to send operating commands from the control centre to the specific meter to close the meter valve. Also in this case there are some useful experiences acquired in gas market.

To face the common challenge, through innovation procurement, key steps will be:

- confirm and detail a common sets of functional and performance requirements shared with the European Commission in order to obtain a potential European market for the suppliers. They will be able to produce and sell meters that fit European needs and not only single country needs, solving the demand fragmentation that characterize this sector. Part of these requirements (e.g. communication method, communication protocol) should be the same for electricity, gas. This will help suppliers in developing technologies that will be adopted in meters of all the services (electricity, gas, public lighting); nevertheless multi-service procurers will be able to reduce costs of data gathering because with one concentrator the can obtain various services data;
- defining an European and innovative communications protocols in order to have a common standard between meters/concentrators and between concentrators/central system in order to allow interoperability, market competition and vendor independence, as well as preventing single vendor lock-in;
- defining an innovative way of communications between meters/concentrators in order to resolve the issue of communication and between meters/concentrators especially when meters are installed below the manhole cover, within concrete walls, sewage galleries or in rural low density areas.
- exploring the security options in AMR: security and privacy are a couple of sensitive topics that have been largely addressed for electricity and gas market with successful experiences that must be considered also for water AMR solutions. A proper security implementation encompasses and addresses also the privacy issue. Security in AMR is about encrypted consumption data transmission and anti-tampering countermeasures. The solution can be usefully borrowed from gas and electricity best practices.
- coming up with an acceptable cost based on to the procurers' willingness to pay: about the operating costs there is a strict will of all the participating public procurers to not to exceed much the costs currently sustained with the traditional meter system. An acceptable figure is considered to be around 5€ per meter per year.

1.3 Progress beyond the state-of-the art

Following the active discussion within the consortium, especially the buyers group involved, water meter advanced technology have to tackle the following shortcomings:

- Battery lifetime – for each public utility it is highly relevant that on-site visits be minimized as much as possible. The cost of personnel activity (field operators) is very high if compared to the cost of premises. So a very strong requirement of a public procurer running a water distribution network is that a battery replacement would be done at the same time of the meter replacement. Hence the battery life should be as long as the meter lifecycle: 15 years. This is not what has been experienced so far. A new valid solution should absolutely address this issue.
- Radio signal coverage of the affected area – some of the most glamorous solutions as to functionalities enabled by the wide bandwidth like ZigBee protocol compliant devices but also 868 MHz Wireless M-Bus, have a real hurdle in terms of operating distance when the placement is under the ground level or is sheltered and shielded by a thick wall or a metallic cage. When a meter is unreachable it requires a manual on-site reading.
- The lack of regulated open technology standards bring to proprietary solutions that tie the public procurer to both economic and technology constraints of solution providers. This situation establishes a natural monopoly or a very complex, uncomfortable management of multiple “silos solutions”.
- People acceptance of local wireless network emission is not to take for granted. There are evidence of actions promoted by local politicians or consumer associations (Italy – Gas AMR solution deployment in Lecce) to stop meter and local wireless network installations invoking investigations and controls on Electro Magnetic Field Pollution (EMF Pollution) in the involved area. To gain the favour of the public opinion, it is important to emphasize (i) the benefits for the user by the adoption of the new remote reading system on the one hand and (ii) clearly communicate that the EMF emissions due to network devices stay always below the permitted levels with no harm for people health.

In the table below we provide a synthesis of the preliminary analysis emerged from the buyers group involved in SMART.MET during the preparation of this project in order to ensure a substantial alignment of objectives and vision concerning the problems to be faced and the need to be addressed.

Questions/ Answers	SDEA	VÍZMŰVEK (HU)	Promedio	Viveracqua	EAU DE PARIS	VIVAQUA
What kind of systems do you currently use / test in your company?	70% of meters are currently using AMR technology (raised one time per year). In discussion with a meter manufacturer to deploy a technology based on 433MHz frequency (ITRON), on a test package of 300 meters.	The meters installed are mechanical meters with Reed-contact with GPRS communication The signal goes to the data centre operated by third party which processes data directly to the ERP system for invoicing.	Not using any Automated Remote Metering system at present. Solid experience in AMR/AMM used for other facilities: deployed an extensive telecommunications network in 22k km^2 range, both licensed and no licensed radio, GSM, GPRS, Wi-Fi, ADSL broadband. Coverage close to 100%	Multi-utility experimental project sharing network infrastructure based on 169MHz (gas standard) as primary network and 868MHz as a nested subnet. Services managed: gas, water, electricity, gas, heating, smart city services, fire hydrants pressure monitoring, public lighting Water meters are connected with 868MHz	Using two different proprietary smart metering systems working on 868 Mhz and 169 Mhz, in production. Furthermore testing alternative technologies in 868 MHz (Sigfox, LoRa WAN) and a mixed technology in 169 MHz (wMbus/LoRa)	Not using any Automated Remote Metering system at present.
What are the negative aspects you are facing?	• Proprietary technology lock-in • lack of Interoperability • battery lifetime • global costs of technology solutions • No data standardization for communication	• cost of installation • cost of operations • wet environment damaging the electronics devices • weak radio signal coverage (concrete shafts, walls, etc.) or jamming interference	• fund raising for new R&D development • global cost of technology	• Proprietary technology lock-in • lack of interoperability • initial investment costs • cost of operations • absence of specific regulations on communication standards	• Proprietary technology lock-in • lack of interoperability • weak radio signal coverage (concrete shafts, walls, etc.) or jamming interference issue on the 868 MHz band	• Proprietary technology lock-in • global cost of technology solutions • Radio Frequency communication scarce effectiveness • Expensive and un-optimised maintenance activity • Meaningless continuous data flow transmission
What are the negative aspects you need to solve primarily?	• Global costs	• malicious water use discovering • outstanding debts and defaulting customers management by flow	• Service efficiency in rural regions	• Global costs • Regulatory standardization	• Proprietary technology lock-in • weak radio signal coverage (concrete shafts, walls, etc.) or jamming interference	weak radio signal coverage (concrete shafts, walls, etc.) or jamming interference Global cost reduction through cost sharing with other public

		reduction through remotely operated meter valve.				services (i.e. electricity, gas)
What are the parts of the telemetry system you think it is necessary to improve through research and development?	A better communication technology between meters and Central Access System with an acceptable cost	Radio frequency communication increased effectiveness	Reliable and low lost working solution Battery lifetime duration Meter anti tampering prevention systems	Radio frequency communication increased effectiveness Solution standardisation and interoperability	Battery lifetime duration Radio frequency communication increased effectiveness Technology obsolescence during the substitution plan lifetime Solution standardisation and interoperability	Radio frequency communication increased effectiveness Solution standardisation and interoperability
How many measuring points are (in your company) potentially affected by the new system?	180.000 meters No smart meter in use at this point in time.	Traditional Main meters (base of invoicing): 250.000 pcs Sub-meters: 1.000.000 pcs (customers ownership), 15.000 sub-meter thereof are under AMR system.	It would propose to implement from 500 to 1,100 meters pilot. The aim Is to extend to 41,000 meters	500 smart meters under AMR system. Potentially over 1M.	Eau de Paris has 93.000 smart meters under AMR system.	340.000 traditional meters No smart meter in use
How much should be the initial implementation and the annual management of the system cost when using the technology we know today?	An internal analysis (2009) concluded that the opex cost of this smart technology (based on 433 MHz) was 30 €/year per meter. We think the acceptable limit of opex is around 5 €/year per meter.	Meter costs ca. 30 EUR	The implementation would cost around 90€ each meter plus operating costs, that would be mainly determined by the GSM or GPRS transmissions.	multi-utility experimental projects cost analysis not yet available	A reasonable price seems to be bellow 3-4 € per device and per year	Meter costs limit is ca. 70 EUR Acceptable limit of opex is around 7 €/year per meter.

The desirable technology/ies should encompass all the above shortcomings, when needed with R&D activities and/or with a strong regulatory action. No one of them is beyond the current technological or regulatory possibility of European countries.

One strong financial criteria is the annual costs of the new solution. In terms of capex, it should not exceed the current annual costs faced for new meter installation or old meter replacement no matter as an integrated new generation meter or an add on device to mount onto an old generation ordinary meter.

To give a first rough evaluation of such a cost, we go from 4€ of annual depreciation charge (case of Vizmuvek – HU) to 4,50€ (according to VIVAQUA – BE internal evaluations) per serviced meter including purchase and installation costs.

Also the costs of communication have to be kept low : SDEA and Eau de Paris are looking for a maximum annual cost lower than 4€ per year per device (a study conducted in 2009 by SDEA showed a communication cost close to 30 € per year per meter).

Perspectives are provided by (i) the concurrency of gas and electricity infrastructure solutions (Wireless M-Bus 169 MHz or PLC up-link), (ii) the new upcoming opportunity set by Narrow Band LTE. The latter based on mobile operating offers promising superior coverage and reach meters even through thick walls. This is breakthrough scenario that the PCP of the project will benefit from. The first solution is already operating in several countries and can be practically proven. The second one promises astonishing functionalities on the wake of IoT paradigm versus marginal costs with, actually no required infrastructure installation and management but the meter itself.

We provide below the drafted list of common and minimum functional requirements preliminary discussed by the buyers' group aimed to achieve substantial improvements with the PCP compared to the state-of-the-art, providing also a contribution to standardization based on interoperability and open standards in water metering.

In conducting the preliminary brainstorming session, we have already experimented that it's important to involve together similar staff groups from multiple locations affected by the same problem, in order to avoid that a perceived inefficiency or need can be related to local customs and practices and in this way could adversely affect the economies of scale that are the basis of the innovation procurement.

During the first phase of the project (see T 2.1), the challenge description will be finalized and detailed to ensure, when published, a full understanding and comparability of the competing solutions proposed by the market in view of potential conversion into permanent services. The description of the need will involve, again, those who are daily involved within the public service delivery chain and, ultimately, the final users of the innovation.

The (preliminary) brainstorming and focus group session conducted has been effective to stimulate procurers to define their needs for innovation in terms of functional and performance requirements, without identifying a specific solution, to be able, in a second step, to encourage the market to the active generation of application ideas and technological choices, including divergent and alternative ones, though equivalent from the point of view of performance.

The opportunity to do not pre-define the technical solution and to open to alternative technical ways to address the needs expressed in functional and performance based requirements, doesn't mean to define the need in general and short terms. This will be a crucial point, as the only way in which solutions will meet their performance targets and expected behaviours is for them to be specified upfront, clearly and unambiguously.

Following our experience, it is a simple fact that if functions and performances are not a stated criterion of the solution requirements then the product designers will generally not consider (strictly) performance issues.

At the same time, in order to pre-determine a wide potential market (public and private) for the new solutions developed or acquired, enabling the desired economies of scale and cost savings, it will be extremely important not to fall into the hyper-description of the desired solution, avoiding customization and personalization and preferring the standardization of solutions, through requests for interoperability and scalability.

To describe a need in functional and performance terms, we have combined multiple and already tested methodologies and approaches. The synthesis proposed is the LT-TLC method, which has been developed by Sara Bedin and implemented in Lombardy Region to conduct the PCP pilot.

As innovation procurement is about the total cost of ownership and not the lowest price per piece, it will be extremely crucial to direct innovation towards the entire life-cycle of the solution. In this regards, the method LT-TLC[4] (long-term and total life-cycle performance description) will create associations between descriptive functions and quantified performance targets and will classify functions and related performances along the solution life-cycle phases: production, delivery, installation, use, management, maintenance and disposal in order to address high long-term performance and (total life-cycle) costs as low as possible.

Requirements	**Functional Requirements**	**Performance Requirements**
Life-cycle Phases:		
Installation / Replacement	Meter replacement Process – the meter must be initialized after the installation keeping the PoD uncoupled from the meter id number until the end of the installation. This simplifies logistics and planning procedures.	40 minutes for the whole replacement procedure, 30 minutes for a new installation.
	Meter replacement Process – commissioning function remotely operated	Commissioning activity delivered in a day and possibly repeated the day after
	The system dimension must allow easy installation with little or no masonry works	
Management/Operations	The system must assure interoperability between the meter and the gateway, as	

[4] Sara Bedin, 2012, method designed for and implemented in Lombardy Region PCP first pilot.

Requirements	Functional Requirements	Performance Requirements
	well as the diagnostic and management systems	
	The meter must provide a heartbeat to the central system	
	Control Room Process – the meter must implement an alarm function for leakage detection through an algorithm evaluating daily high frequency readings	96 quarter hour readings logged in a day locally at meter level
	Control Room Process – the Central Access System must implement an alarm management Process for non-revenue leakage detection alerts	The alert message from the meter must reach the Central Access System in a day
	Customer Management Process – The meter must be provided with a remotely controlled valve flow reduction to be used against defaulting customers as a coercive method.	Flow reduction command from Central Access System to the involved meter to be received in a day
	Control Room Process – the meter must implement an alarm management function for tampering detection.	The alarm message must reach the Central Access System in a day
	Customer Management Process – The meter must be provided with a remotely controlled valve for flow to be closed in case of service contract cancellation	Valve closure command from Central Access System to the involved meter to be received in a day
	Customer Management Process – daily high frequency reading for statistical customer behaviour detection in an IoT paradigm.	96 quarter hour readings logged in a day locally at meter level
	The meter must have a synchronisation function for the internal clock time to match with Central Access System clock.	
	The meter must have a consumption totalised by time slot, days of the month, holiday calendar	3 timeslots totalised x days of the month x 12 months inclusive of holidays calendar
	the meter must have a pressure sensor for network management purposes	
	The meter must have a display with the following information: -date/time -pod number -real time - grand total counter -real time timeslot counter -last sent and recorded counter values (grand total and per timeslot) - firmware version -state *> to be solved the trade-off with dimension requirement*	
	Device protection standard	At least IP68
	The meter must have an alarm detection register with alarm code and date/time associated of the event	One year time-lapse alarm record
	The system must have a self-diagnostic function in case of lack of water pressure, water leaks and reading errors	

Requirements	Functional Requirements	Performance Requirements
	The meter should be remotely and periodically calibrated	
Maintenance	Network Maintenance Process - the meter must allow OTA firmware update from the Central Access System	Upgrade procedure to be completed in a day
	The meter must have a battery lifecycle duration equal to meter lifecycle duration. This will minimize maintenance activities. Display meter with separate access to a removable battery without opening the meter	(not less than) 15 years
	The substitution of a single meter should not influence the correct working of others meters	
	The system must minimize the costs related to consumables (example batteries)	
Disposal	Minimal environmental impact of meter and network devices through components and modules separability and recycling	Distinction of recyclable modules and unrecyclable parts.

Preliminary implementation of the method LT-TLC[5]
(Long-Term and total life-cycle performance description)

Focus on transmission technologies
In the first context of **star networks**, several transmit techniques have recently appeared in the field of IoT, among them we have selected some key technologies.

We will examine first the case of **UNB** « Ultra narrow band » system (like Sigfox) that achieves long range communication by relying on a very low data rate of 100 bps which is 100 to 1000 times less than the other current technologies. Such a low data rate results in a good sensitivity, which allows for long range communication of multiple kilometers provided that there is no interference at all. In fact, a single Sigfox device could already interfere with any wideband system particularly since it does not use collision avoidance and listen before talk mechanisms (ALOHA technique).
To improve the system reliability, we propose the use of simple short erasure codes instead of repetition code, which may improve greatly the resistance against interferers together with the use of some techniques to mitigate interference such as PIC (Parallel Interference Canceller) or SIC (Serial Interference Canceler) receivers at the gateway for highly loaded systems (dense urban areas). Sigfox system uses frequency hoping to protect the transmit data by frequency diversity, one simple idea to enhance the capacity would consist in transmitting combination of former transmitted packets on different frequency bandwidths just as it is done for erasure codes. We think that the use of simple erasure codes would considerably improve the capacity of the system and particularly its resistance against interferences.

Another recent long range system in the IoT field appeared recently and is named **LoRa** (Low Range WAN). The LoRa wireless system makes use of unlicensed frequencies that are

[5] Sara Bedin, 2012, method developed and implemented in Lombardy Region

available worldwide. The most widely used frequencies/bands are: 868 MHz for Europe, 915 MHz for North America and 433 MHz band for Asia. Using lower frequencies than those of the 2.4 or 5.8 GHz ISM bands enables much better coverage to be achieved especially when the nodes are within buildings. Although the sub-1GHz ISM bands are normally used, the technology is essentially frequency agnostic and can be used on most frequencies without fundamental adjustment.

The technical characteristics of LoRa and particularly the use of spread spectrum technique make it more resistant than Sigfox against interferers. However we believe that in the case of highly loaded systems like those which will be installed in dense urban environments the use of erasure code combined with advanced receiver (such as PIC (Parallel Interference Canceller) or SIC (Serial Interference Canceler)) designs to mitigate interference could drastically increase the capacity of such system.

Another interesting way of investigation we identified is the **LTE-M** network extension. The LTE-M extension aims to fulfil the specific energy, spectrum, cost, efficiency constraints of M2M communications whilst not hindering current LTE to operate on the LTE network. Concerning the MAC-sublayer of LTE-M, some particular access methods have already been proposed in former scientific projects like EXALTED which enabled a high random access success rate even if a high number of devices compete for the Random Access Channel (RACH) resources. The possibility to use network coding for the transmission of short messages has been investigated too. These particular features clearly show the importance of the chosen protocols for the access techniques and the key role of network coding in MAC sublayer for M2M communications.

Some important actors such as ITRON in the field of smart metering have chosen the LTE-M technology for its new products. The smart cellular metering technology is a part of Itron's OpenWay smart grid solution, providing utilities with the option to deploy any combination of cellular and RF mesh communications, including 4G LTE, all under the same network management system. 4G LTE communication is particularly useful for hard-to-reach locations or territories or for opt-in scenarios. Due to the low latency of the 4G LTE network, the new solution is also a good option for utilizing smart meters as grid sensors to monitor distribution system conditions.

In the case of a **meshed network**, the range of the nodes is limited and therefore the power consumption due to the transmission is reduced considerably. However it is recognized that it is difficult to maintain a high QoS level due to the difficulty to manage some network layer tasks such as the routing. This is clearly the case of the **ZigBee** system. Furthermore, these additional tasks are also energy consuming, therefore a trade-off must be consider between mesh and star networks. Hybrid (clustered) topology seems to be a good trade-off and is considered as a promising solution. For example in OpenWay protocol, all the appliances in a building and the meters can be connected by ZigBee mesh network to a gateway, which itself can be connected by another way (star network for example) to the utility company to form smart grid.

A recent technique called network coding appeared quite recently and is now recognized as a major solution for secure efficient data transmission over meshed networks. By using network coding techniques, some intermediate nodes mix the incoming packets and encode them using a Galois field before retransmitting. The drawback of this method is the amount of memory required in the node level. Concerning network coding technique, one important weakness is the propagation error phenomenon when an intermediate node adds errors on the transmission.

1.4 Credibility of the proposed concept and methodology

a) Proposed concept and methodology

The consortium will stick to the classic PCP project methodology in compliance with the specific requirements for the implementation of Horizon 2020 cofunded PCPs in Annex E of the work programme and in the Grant Agreement for PCP actions.

Pre-commercial procurement (PCP) is a competitive multiple-sourcing procedure for procuring research and development services. It involves different suppliers competing in parallel through different phases of development. Pre-Commercial Procurement (PCP) is defined in the Communication COM/2007/799 and the associated staff working document SEC/2007/1668. PCP enables the public demand side to identify the best value for money solutions on the market to address a specific procurement need, by making use of competitive development in phases, risk-benefit sharing under market conditions, and a clear separation with the subsequent (possible) Public Procurements of Innovative solutions (PPI[6]) focusing on deployment of commercial volumes of end-products.

The PCP communication COM (2007) 799 has set three constituent elements that characterize PCP and distinguish it from other procurement approaches:

- separation between the R&D phase and the deployment of commercial volumes of end-products: PCP is a preparation exercise to de-risk potential future follow-up large deployment contracts as it compares the pros and cons of (unknown) alternative solutions in order to filter out technological R&D risk before (and without) committing to procure a large scale commercial volume of end-products;
- risk-benefit sharing according to market conditions: the PCP selection procedure must be open, transparent, non-discriminatory and unconditional and based on objective selection and award criteria specified in advance of the bidding procedure, ensuring that all potential bidders (in particular also smaller new players like SMEs) have equal chances to bid. The division of risks (e.g. those risks related to the technological development of the proposed solution or to its subsequent commercialization) and of benefits (e.g. IPRs allocation) must be specified beforehand in the tender documents. The procurement is awarded on the basis of criteria that select the most economically advantageous offers. As in pre-commercial procurement the procurer assigns to (or shares with) the participating companies the IPRs on their developed solutions, leaving companies the opportunity to resell to other markets afterwards, the public procurer obtains a financial compensation that brings the overall cost of the PCP development below the higher prices for exclusive development contracts (contracts in which procurers reserve all benefits including IPRs/commercialisation rights from the procurement for themselves). The price paid (that has to represent the market price, due to the competition) contains a financial compensation compared to exclusive development price that reflects the market value of the benefits received and the risks taken by the participating R&D service provider;
- competitive development in phases: the PCP awards multiple public procurement contracts to several providers (multiple-sourcing) for R&D services undertaken in

[6] Public procurement of innovative solutions (PPI) refers to a public procurement implemented according to the applicable EU and national Legislations, in which public procurers act as early adopters, by procuring innovative solutions that are new arrivals on the market but not yet available on a large-scale commercial basis.

phases over a period of time. To help ensure a future competitive market where the competition between providers creates a range of options the PCP has to be designed in advance so that it is able to retain (procure the R&D from) at least two competing providers until the last PCP phase.

In particular, the procurement framework for the SMART.MET project will ensure compliance with the procurement principles, will define the subject matter of the contract in functional terms and setting clear targets requirements, will articulate phased R&D services and budget allocation that are best suited for the subject matter of the envisaged contract, will define the main contractual aspects and procedural/contractual mechanism to reduce the opportunistic behaviour and to enable the participation of SMEs, will choose the IPRs allocation/sharing model that is best suited for the subject matter of the envisaged contract and provide a life-cycle/whole life costing conceptualization and implementation in R&D process.

An outline of the meaning of each relevant and considered procurement principles follows below:

i) Value-for-money

Obtaining best value for money does not mean opting for the lowest price offer, but rather selecting services that meet the requirements in the most cost-effective way or obtaining maximum benefits from the acquired services, within the resources available. In this respect, the New Procurement Directive promotes as sole awarding criteria the "most economically advantageous offer" in an attempt to promote the best value for money approach. In PCP we have a double action level: a) the maximization of the value for money of R&D services acquired that are functional to find a new fit-for-purpose solution and b) the stimulation to orientate innovation for the maximization of the quality-price ratio of the future commercial products when they will be introduced on the market. This entails a correct and smart balancing of requirements and market capabilities in order to meet to a large extent and mid-to-long term the technical and economic goals of the procurer.

ii) Openness, transparency, fair competition, non-discrimination, equal treatment and proportionality

All these principles are specifically provided for both under the Old Procurement Directive and the New Procurement Directive.

The reason for excluding pre-commercial procurement from the rules governing public contracts therefore lies in the need to guarantee flexibility to act on the part of the commissioning body, required by the particular nature of the object of the contract. This flexibility of action offered to the contracting entities is well bounded, because the contractual activity of a public administration remains subject to compliance with the general principles of the Treaty, specifically with the principles regarding the free circulation of goods, right of establishment, freedom to provide services, non-discrimination, equal treatment, mutual recognition, proportionality regarding the applicability of said general principles also to tenders that do not fall within the scope of application of the EU Public Procurement Directives.

In this regard, it should be noted that open tender procedures are more necessary with reference to pre-commercial procurement tenders, in the light of the fact that, in this specific case, there is no market offer available to be taken as a reference and the range of subjects potentially interested in undertaking the R&D activity is normally very wide[7].

[7] Sara BEDIN, extract from the speech during the EU high-level event on Innovation Procurement in Milan, 2014

Competition between potential suppliers is the best way to achieve cost-efficiency and avoid single supplier lock-in. Competition provides important incentives to suppliers to innovate and improve performance (increase quality and lower prices). Fair competition entails that all suppliers will be given the same opportunities, and an equal amount of information, knowledge and support. In order to safeguard fair competition, the procurement process will be transparent and fair in providing and allowing access to information, in defining and applying criteria, in providing reasoning for each procurement decision.

Moreover, accountability for complying with the policies and rules for procurement will be embedded. A pre-condition for accountability is to keep records of the procurement activities.

Contracting authorities will ensure equal access to the tender documentation and the contract by operators from all EU Member States.

Moreover, all interested bidders will be provided the same information and offered the same deadlines for meeting specific requirements. Proportionality will also be ensured, meaning that measures adopted throughout a procurement process will be appropriate and proportionate with the procurement objectives and will not go beyond what is reasonably necessary for the attainment thereof. In this regard, for example, also for "ordinary" procurement of supply, the New Procurement Directive provides that contracting authorities should accept all bidders with an adequate financial status for the contract.

More so in the (exempted) R&D services procurement it will be avoided to set stringent and "backward-looking" qualification requirements such as financial capacity (e.g. minimum turnover) and technical capacity (e.g. prior customer references), that obstacle SMEs to successfully participate in public procurement[8].

iii) Ethics

Ethics are the moral boundaries or values within which officials work. The ethical behavior of procurement officials has an important impact on relations with suppliers, internal clients and stakeholders.

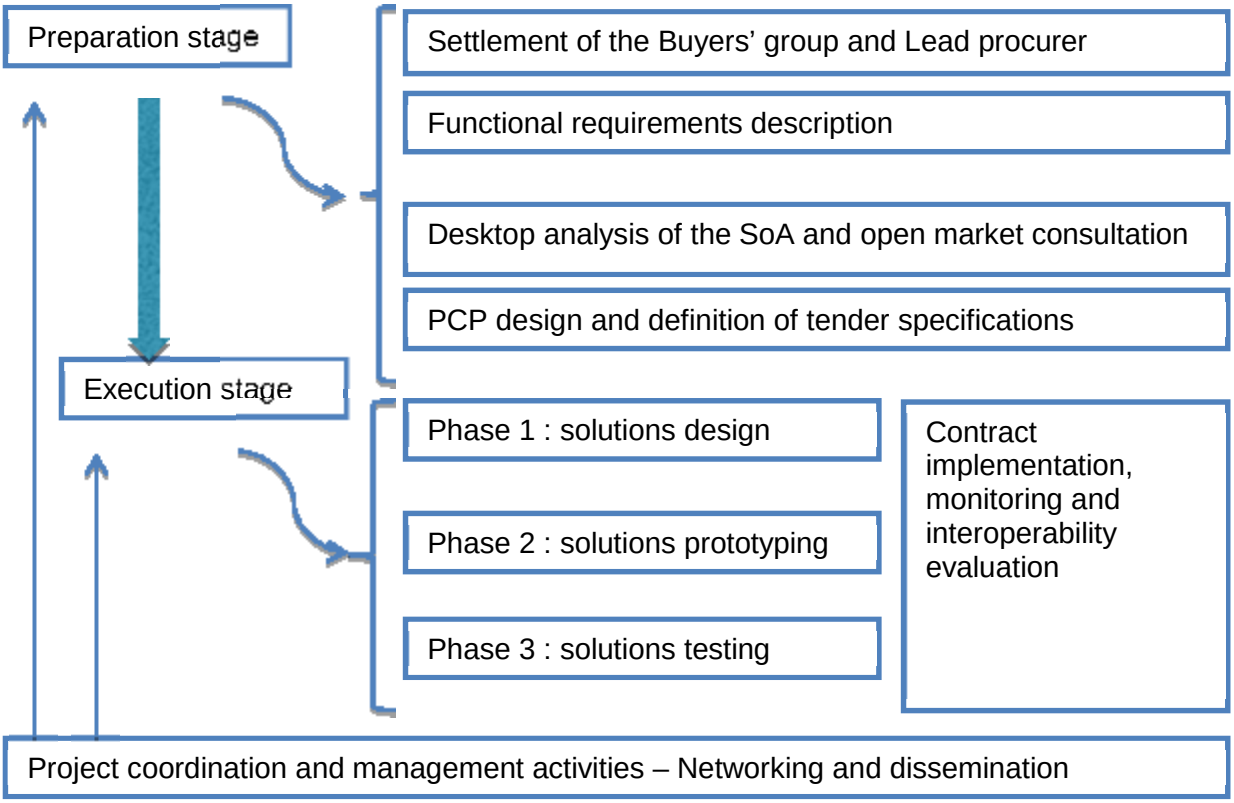
The following forms of unethical behaviour should be avoided:

- Unequal treatment of suppliers;
- Conflicts of interest;
- Corruption (accepting gifts or hospitality).

[8] Sara BEDIN, extract from Italian Guideline for PCP implementation, 2012

Project concept :

The proposed project concept is articulated as follow.



To be sure of that compliance, the consortium embeds a **PCP Quality Manager**, in the person of Sara Bedin, a renowned European PCP expert. The PCP Quality Manager will be involved in the decision making board of the project, as well as the technical body. In addition, since the staffs of the water utilities (both procurers and engineers) are new to R&D and procurement of innovation, PCP Quality Manager will keep PCP procedures and requirements high on the project implementation agenda and train all parties.

The **Lead procurer** will be **Viveracqua**, the water public utility supplying the Veneto Region in Italy, and the buyers' group will gather:

- **Promedio** (SP) : public utility supplying Badaroz in Spain
- **Eau de Paris** (FR) : public utility supplying Paris in France
- **SDEA** (FR) : public utility supplying Bas-Rhin County in France
- **CILE** (BE) : public utility supplying Liege in Belgium
- **Vizmuvek** (HU) : public utility supplying Budapest in Hungary
- **VIVAQUA** (BE) : public utility supplying Brussels in Belgium

A formal **Buyers' Group Board** (SMARTMET-BGB) will gather high-level decision-makers (management or procurers) designated by the utilities chaired by the Lead procurer representative. The SMARTMET-BGB will be the decision-making body of the procurement.

The SMARTMET-BGB will be managed by the project coordinator (OIEau). OIEau has a good experience of R&D projects coordination, the procurement of innovation, as the coordinator of the FP7 project WaterPiPP (a CSA on public procurement of innovation), and water utilities management, as the main utilities training body in France – this know-how will

help to keep the project on track, both in terms of content and timeline. FNCA will support the project coordinator by providing the Secretariat of the SMARTMET-BGB

The PCP Quality Manager will be a member of SMARTMET-BGB with a consultative voice in order to keep the PCP procedures at the heart of the project.

It is also anticipated that Viveracqua will subcontract external assistance by a legal advisor.

Preparation stage

The consortium will set up a Technical Assessment Committee (SMARTMET-TAC), gathering one technical representative of each of the utilities involved in the buyers' group, plus a group of scientific experts from Office International de l'Eau (OIEau - FR), University of Limoges (UniLim - FR), Fundación Nueva Cultura del Agua (FNCA – SP) and ARAGON (IT).

The SMARTMET-TAC will be chaired by the Lead procurer's representative and its Secretariat managed by FNCA. The PCP Quality Manager will attend the SMARTMET-TAC meetings.

The SMARTMET-TAC will detail the needs of the utilities, realise a desktop analysis of the market, and launch the Open Market Consultation (OMC).

Utilities staff training

Because –as emerged during the preparation of this project - water utilities staff are new to PCP, training will be organised to enable SMARTMET-TAC members to understand innovative procurement, and make public procurers more confident in undertaking PCP initiatives, by better understanding the rationale, phases, and drivers of PCP implementation.

Utilities needs assessment

To assess needs, the partners will use a very effective method adopted to investigate innovation needs called WIBGI, being a collective exercise to complete the sentence "Would It not Be Great/Good If…." and starting with brainstorming sessions.

In conducting brainstorming sessions, involving staff groups from multiple locations affected by the same problem, avoid that a perceived inefficiency or need can be related to local customs and practices, which could adversely affect the economies of scale that are the basis of the innovation procurement.

Based on the extensive experience on board, brainstorming sessions will represent effective ways to define needs for innovation in terms of functional and performance requirements, without identifying a specific solution, to encourage then market to actively generate ideas and technological choices, including divergent and alternative ones, though equivalent from the point of view of performance.

The sessions will be conducted by an experienced facilitator (SB), to draw out the issues and ideas, as well as subject domain experts (OIEau, ARAGON, UniLim, FNCA) who can guide the facilitator with respect to the specialist technicalities.

At the same time, in order to pre-determine a wide potential market (public and private) for the new solutions developed or acquired, enabling the desired economies of scale and cost savings, it will be extremely important not to fall into the hyper-description of the desired solutions, preferring the standardization of solutions, through requests for interoperability and scalability.

To describe a need in functional and performance terms, the SMARTMET-TAC will use the LT-TLC (Long-Term and Total Life-Cycle performance description)[9] method already tested and implemented in Lombardy Region to conduct a PCP pilot.

Technology scanning and analysis of the state-of-the-art

The project will benefit from an analysis of the state-of-the-art conducted by the partners in early 2016 aiming at detecting innovation gaps. The study will be the starting point of the technology scanning and analysis of the state-of-the-art that will be open to industrial development by (i) performing a prior patent search (ii) activating the Open Market Consultation. The latter will consist in sharing the identified needs with industry and research sector with the purpose of validating that the innovation needs are suitable to be tackled with a PCP.

Patent search

The consortium will outsource a prior patent search. The patent information is a key source (but not sufficient) in order to investigate the technology. The source of information envisaged are the following databases: Espacenet (80 million patent documents worldwide), Thomson Innovation (that enables IP search with the most trusted global patent data, scientific literature and business information, integrated with powerful analytics), WIPO (global forum for intellectual property services, policy, information and cooperation), ResearchGate (network dedicated to science and research), USPTO.gov (United States patent and trademark office's main web site) Google Scholar (that provides a search of scholarly literature across many disciplines and sources), UIBM (Italian patent and trademark office's main web site), INPI (French patents), etc.

The analysis of patents and the scientific and technical publications will be conducted in order. to assess in how far the defined need could yet been satisfied by currently available technologies on the market or close to market.

Open Market Consultation

The open market consultation will allow public procurers to have a two-way dialogue with the solution providers, necessary to verify the viability of a PCP, to assess the risks associated with this specific procedure before launching it and to provide suppliers with an opportunity to help shape and validate plans and requirements.

The dialogue with the market will be conceived with the following objectives and in a manner to produce benefits for the procurers:

- raise the profile of the procurement opportunity to a more diverse and a broad range of tech supplier base, including SMEs and larger established suppliers,
- help to understand if actors on the supply side of market are interested to contribute to solutions, and where are the opportunities to exploit innovation,
- provide early visibility of operational risks: deployment barriers and constraints to be managed and well addressed where designing the PCP and preparing the tender documents.
- provide early insight into business opportunities and the strategic drivers behind them,

[9] the method LT-TLC create associations between descriptive functions and quantified performance targets and classify functions and related performances along the solution life-cycle phases: production, delivery, installation, use, management, maintenance and disposal in order to address high long-term performance and (total life-cycle) costs as low as possible, developed by Sara Bedin

- provide a discussion space on innovation and associated risks allowing suppliers to assess risks and related options

The dialogue will be determined to produce also benefits for suppliers (without precluding or distorting competition):

- issues or concerns can be raised without companies feeling their position in the procurement is threatened,
- suppliers can decide at an early stage whether to bid for work, saving significant time and financial resources,
- allows suppliers to interact with potential supply chain or consortia partners.

The open market consultation will be advertised through the Official Journal of the European Union using the TED website at least in English and in the other languages of partners for the purpose of complying with the EC Treaty principles including those of transparency, non-discrimination and equal treatment.

To encourage industrial interest and involvement in the PCP, APE will ask to all its members not involved as partners in the project to describe their own practices and current investigations and to help promoting SMART.MET PCP towards potential suppliers.

According to the deliverables "D2.1-Analysis of proven technologies in Automatic Meter Reading (AMR), Water Distribution Network (WDN) and Water Reservoirs (WR) – WP2", issued by the FP7 project URBANWATER in March 2014, there are 18 (smart) meter suppliers on the European market (not all are European).

A survey made by OIEau in France (2016) list 9 suppliers active on the French market.

We know how PCP fosters the emergence of new players on the market.

The relevant literature and the outcome of EU innovation procurement funding measure demonstrate how the phased PCP approach with gradually growing contract sizes that follow the natural growth path of innovative start-up, micro and small companies can facilitate their access to the (procurement) market. This is also evidenced by PCP-like R&D procurements in the US that have nurtured small companies into major market leaders across different industry sectors such as computing, telecommunications, aviation and bio/nano technology. Companies like IBM, HP, Dell, Cray, Intel, Qualcomm all developed their first block buster products in R&D procurements.

In Europe, SMEs are also very active in PCPs both at national[10] and European[11] level. In the EU funded PCPs[12] so far 75,5 % of PCP contracts were won by SMEs (SME bidding alone or SME as lead bidder together with other partners). When comparing to 29% of public procurement contracts that are typically won by SMEs in Europe, it's clear that the PCPs funded by the EU FP7 program are facilitating the access of SMEs to the European procurement market. Interestingly, the type of SMEs in the EU funded PCPs are mostly small young SMEs: 34,5% below 10 people, 81% below 50 people, 56% less than 10 years old.

[10] **http://ec.europa.eu/digital-agenda/en/news/innovation-procurement-initiatives-around-europe**

[11] **http://ec.europa.eu/digital-agenda/eu-funded-projects**

[12] **Overview results first EU funded PCPs: https://ec.europa.eu/digital-agenda/news-redirect/21250**

OMC Workshop

The OMC will be organised with the support of Aqua Publica Europea (APE – BE), the European Association of Public Utilities. It will consist in 4 1-day Market Consultation Workshop (Madrid, Livorno, Brussels Budapest) to launch the Open Dialogue with potential tenderers (free access) and end-users (open to public utilities not involved in the PCP, but interested by either the topic or the procedure)

Relevant European project coordinators, like the cluster ICT4Water or the Action Group " Ctrl+Swan" of the Water European Innovation Partnership (Water EIP), will be invited at the workshop.

The Workshop will be organised in month 9, and be first announced in mid-month 6 by a Prior Information Notice (PIN) to be published in TED (in English), the project website (in English), the websites of the partners (in the local languages), and Horizon 2020 Internet sites and National Contact Points.

The workshop will be the occasion 1) to meet potential tenderers, present the users' needs, and update the market analysis, and 2) to publicise the PCP process and expectations, not well known in the water sector.

A questionnaire will be developed by the SMART.MET TAC and published on the project website.
The questionnaire ask for contact information, company information, product information and offered the current list of functional requirements, asking compilers to assess in how far their currently (or shortly) available solutions matched the SMART.MET functional requirements. Following the analyses of the technical information provided by participants to the OMCs, also through questionnaire, if necessary, a follow-up market survey and interviews will be organised to obtain more technical information on several aspects of the performance of presented solutions. The technical in-depth survey will be sent to all participants who had registered during the OMC events.

The main information given in answers to questions from participants in the dialogue will be documented, published on the project website (in English) and disseminated to the EoI list.

OMC results

For the identified need, the open technical dialogue exercise might result in three possible alternatives:

(i) There is technology already available in the market that can meet the needs. This scenario has been already excluded, as traditional off-the-shelf procurement shouldn't be used to solve the need.

(ii) There is no technology available yet in the market that can meet the needs. But the procurers' horizon scanning activities generates evidence that with the good signals sent to industrials (requirement, substantial public sector customer), a PPI could then be implemented, out of the scope of the project.

(iii) There is no technology available yet in the market that can meet the needs and the procurers' horizon scanning activities do not generate any evidence to indicate that there will be soon. But it indicates there is still R&D needed to define/experiment the technological and financial viability of various solution approaches that could potentially be used to address the need.

Only the latter (iii) gives room to engage in a PCP competition.

Based on the technical assessment done by the consortium, there are evidences to exclude the scenario (i). Under the case (ii) we will reiterate the process in order to focalize the scope of the R&D, identifying a sub-challenge more difficult to accomplish with and with an inherent level of technological risks.

The materials and information collected will be used by the SMARTMET-TAC to fine-tune the tender specifications and the evaluation criteria, to be then formally endorsed by the SMARTMET-BGB.

Buyers group and Lead procurer agreement
In the meantime the SMARTMET-BGB will negotiate the joint procurement agreement confirming the final collaboration modus including the financial commitment of the buyers group to pool resources for the PCP and the lead procurer, to be then signed by the Buyers' group members.

Execution stage

During the execution stage of the PCP, the SMARTMET-TAC will be in charge of evaluating the bids and then the R&D works done.

The internal SMARTMET-TAC experts group will do the analysis of bids, and issue an internal evaluation report, to be then discussed by the TAC members; the SMARTMET-TAC will rank the bids according to the criteria defined in the specifications, and propose to the SMARTMET-BGB what they recommend to do in the following phase. The final selection and the awarding of contracts will be the duty of the SMARTMET-BGB.

The same process will be repeated during the different phases of the PCP, e.g. the credibility of the solutions proposed, the progress reports during the prototyping phase, and the testing reporting will be assessed by the experts' group, reviewed by the SMARTMET-TAC, and endorsed by the SMARTMET-BGB.

It is not anticipated to hire external experts for supporting the SMARTMET-TAC, and the experts' group members will sign a non-conflict of interest statement within the consortium agreement.

PCP execution phases
The PCP will be organised in 3 phases: 1) solution exploration and design, 2) prototyping, and 3) field testing.

The initial plan will have to be confirmed during the PCP design phase:

- if the market consultation shows that the technical challenge is feasible but more difficult to accomplish and the risks of R&D failure are higher than expected, working with a higher minimum number of bidders for Phase 1 and increasing the duration for each Phase could mitigate the risk and ensure a competitive process throughout the entire PCP.
- If the market consultation shows that the technical challenge is easier to accomplish than expected, the length of the Phases could be reduced.

	DURATION	BUDGET*	EXPECTED MAX R&D PROVIDERS	MIN INDIVIDUAL BUDGET*
SOLUTION DESIGN	3 months	240,000€	8	30,000€

PROTOTYPING	6 months	1,500,000€	4	250,000€
FIELD TESTING	12 months	1,500,000€	2	500,000€

*including Italian VAT rate (22%)

Publication of PCP tender

The publication of the Contract Notice marks the start of the tendering procedure. The PCP Contract Notice will contain a clear description of the nature, scope and estimated value of the contract(s) and of how economic operators can apply to participate in the procedure.

The consortium will use the standard form for a Contract Notice and to publish it voluntarily in the Official Journal of the EU. In addition, in order to raise awareness of as many relevant economic operators as possible, the procurers will advertise the launch of the PCP call for tender via the project website and their own websites.

Bidders will have at least 60 days to submit their proposals since the issue of the Call for Tender / Invitation To Tender (ITT).

The distribution of rights and obligations between public procurers and R&D providers, including the allocation of IPRs, will be published beforehand in the PCP call for tender and framework agreement documents.

Up to the submission deadline the PCP consortium will make public all the answers to all the questions received by interested potential bidders, no discriminating in this way any supplier and offering to all of them equal opportunities.

Phase 1

All valid tender submissions will be evaluated by the SMARTMET-TAC against the criteria stated in the Call for Tender. The evaluation criteria will be based on the most economically advantageous offer criteria.

The awarded suppliers will be requested to provide all the administrative documents necessary to sign a contract with the lead procurer (Italian) public administration. Once all the documents are provided, the Phase 1 framework contract will be signed. Once the contracts are awarded one month of stand & still period will be left prior to their signature.

After the selection of 8-10 bidders, the R&D providers will be first (phase 1) requested to describe in details their foreseen solution, how it fits with the user's needs, and to demonstrate the credibility of their approach (background knowledge, further R&D needed, prototype development steps, planning of activities, budget); a template for describing their solution will be provided by the SMARTMET-TAC (max. 50 pages).

At the end of Phase 1, the SMARTMET-TAC will analyse the files describing the solutions, and issue a list of 6 most-rated solutions, plus a reserve list of 2 solutions; based on this list, the BGB and the Lead-procurer will negotiate the participation in the phase 2 with 6 R&D providers for prototyping their solution.

Each contract will state the terms and conditions of the work, including the deliverables, milestones, and financial payment schedule.

Phase 2

The (up to 6) R&D providers selected for phase 2 will develop an operational prototype of their solution, to demonstrate its capacity to answer to the users' needs.

During the phase 2, the R&D Providers will issue a progress report after 3 months to the SMARTMET-TAC (1 progress report + 1 final report), describing their results ; at the end of phase 2, a 1-day demo-meeting will be organized between each R&D Provider and the SMARTMET-TAC to showcase their outputs.

The SMARTMET-TAC will issue a list of 3 most-rated prototypes, plus a reserve list of 1; based on this list, the BGB and the Lead procurer will negotiate the participation in the phase 3 with up to 3 R&D providers for testing their solution.

Each contract will state the terms and conditions of the work, including the deliverables, milestones, and financial payment schedule.

Phase 3

During phase 3, tests for each solution will take place simultaneously in 5 testing sites (urban, rural, mixed sites), shared by the 3 solutions, to test their robustness in different contexts, and their interoperability. The testing sites will be identified by the SMARTMET-BGB, and the local hosting utilities will facilitate the implementation of the tests.

For most utilities, it is not possible to assign the installation / uninstallation of the prototyped meters and valves resulting from Smart.MET R&D services, to the contractors: for security (no third-party intervention) or privacy (many meters are inside private properties, or even home) reasons, the works have to done by the buyers' technical staff, under the guidance and supervision of the contractors. In Spain, interventions by the contractors are authorized, but under a strict supervision of the utility's staff.

The sample size for the testing should be about 300 meters each.
During the phase 3, the R&D Providers will issue a progress report after 3 months to the SMARTMET-TAC (1 progress report), describing their results and the difficulties encountered; the final report will describe the way of up scaling the number of connected meters and a business case of the solution.

The experts group and the host utility will evaluate the results of the local test, and issue a report for the SMARTMET-TAC, which will then release recommendations for the future deployment of the solutions, through PPI or normal procurement.

Purchase of R&D products:

The buyers' group doesn't intend to purchase the R&D products.

Should new meters be installed, the baseline scenario is that the suppliers recollect their meters – a bilateral negotiation between each supplier and the host utility is however allowed to leave the meters in place against compensation, if both parties find it interesting.

Standardisation and Interoperability features:

During phase 2, the R&D Providers will be requested to actively participate at the Standardisation Working Group (SMARTMET-SWG), together with a selection of TAC members and possible guests (experts from EU research), for examining interoperability and pre-standardization issues. This SWG will release recommendations for the developments, and recommendations for the standardisation of most-wanted features; these recommendations will be published under a Creative Commons licence, allowing their reuse and further improvements.
The SWG will link with CEN CENELEC, to see which approach is the best suitable : to get connected to a specific or ad'hoc Technical Committee, to draft Technical Specifications, or a Technical Report, or to organise a Workshop Agreement.

The SMARTMET-SWG will work at a distance, and its Secretariat will be managed by OIEau.

Dissemination
After their endorsement by the SMARTMET-BGB, the recommendations will be publicly disseminated during a final conference to be organized before the end of the project, back-to-back with another event in the water sector, to discuss the interest of PCP in the water sector, and the lessons learnt.

b) Performance indicators for measuring progress of the concept and methodology to achieve the objectives

The objective of the project is to support the development of drinking water smart metering by public water utilities, by overriding identified barriers thanks to new developments.

Indicators related to the added value of the advanced technology

Traditional water meter	Advanced water metering	Indicators of the value added of the advanced technology on supply drinking water management
Manual reading of the households meters	Automatic reading	The two way communication gives real time information and data to - Reduce operating cost : ex: streamline the billing process - Capture non-revenue water - detect leaks (increase water reaching the consumer): saved litres - better assess management: decision on investment to renew or fixing ageing infrastructure: better planning of investment and cost spreading - better adapt the supply of water to the consumption working both way, (i) reduction of consumption decided by the consumer (receiving real time data) and (ii) by the suppliers adapting the network to real time demand
Desk billing	Automatic billing	
Radio signals (low range)	Advanced metering (GSM, Internet of Things)	
Batteries lifetime <15 years for 1 data transmission per year	>15 years for a daily transmission of data	- lifecycle duration equal to meter lifecycle duration. This will minimize maintenance activities. - Display meter with separate access to a removable battery without opening the meter

Specific objectives of the PCP

- Bring radical improvements to the quality and efficiency of the EU public services provisioning and investments in water management.
- Enable the interoperability conditions, avoiding vendor lock-in and fragmentation on the market: the project will come up with recommendations on harmonised and interoperable smart water metering.
- Foster the necessary degree of standardisation amongst suppliers to guarantee economies of scale and interoperability, streamlining desired product specifications amongst suppliers and procurers at the stage when products are still under development empowers the public sector to reach de facto standardisation in a fragmented sector.

- Address issues of common European interest together, reducing the costs of challenging the market to develop new ICT based solutions: SMART.MET PCP enables the public procurers from 5 countries with critical and similar needs to collectively implement R&D activities in areas which due to their nature and potential diffusion are better addressed jointly and that would not have been able to tackle independently.
- Organise the demand side (water utilities) of the market to send the good signal to industrials, fostering the competition and increasing opportunities for the supply side for wide market uptake.
- Provide economy of scale on the investment required to get necessary equipment (meters, sensors and radio modules) and information technology/data analytics solutions.
- Provide an integrated method dealing both with the technology and organisational aspects by outsourcing expertise and part of the costs required to move to advanced water meter.
- Work on the willingness from citizens to welcome such technology: dissemination campaign.

Unlocking opportunities for industry and researchers

For public water utilities, smart metering of the water consumption of the domestic and business clients is probably one of the most promising uses of ICT in their sector, thanks to a lot of potential benefits, like automatic billing, permanent leaks detection, demand-management by the users, etc.

However the current level of the technology doesn't fit the needs of the utilities, having most often being developed by private operators, using proprietary technologies.

The consortium of European procurers wants to support the development of ICT solutions fitting their needs, on an open basis, to modernise their practices without jeopardizing their future with proprietary technologies : if successful, the size of the European market is very huge for those smart meters (hundreds of thousands of units in a medium-sized city), and unlocking it will create (very) large opportunities for the European industry : utilities change those meters every 15 years on average.

As well, smart water meters in the U.S.A. account for less than 20 percent of the approximately 100 million water meters nationwide, according to the smart-utilities research firm IHS Inc – there will then be room for European champions to develop their activities there, as well as at international level.

Performance indicators to measure progress

PROGRESS	KEY PERFORMANCE INDICATORS
OPEN MARKET CONSULTATION	Attract 50 participants at the Market Consultation Workshop Organise at least 8 individual meetings with potential suppliers
PREPARATION STAGE	Attract between 10 and 15 solution providers to bid - either meters suppliers or communication services providers
EXECUTION – PHASE 1	Support up to 10 R&D providers (consortiums) in phase 1
EXECUTION – PHASE 2	Support up to 6 prototypes in phase 2
EXECUTION – PHASE 3	Support up to 3 field tests in phase 3 (5 pilot sites)
NETWORKING	Organize 1 final conference, to present the recommendations of the project, gathering 100 participants
NETWORKING	Website availability
NETWORKING	Dissemination of Interoperability and Standardisation recommendations – 150 downloads

NETWORKING	Dissemination of PCP in the water sector recommendations – 150 downloads
NETWORKING	Dissemination of Smart Metering recommendations – 150 downloads

2. Impact

2.1 Expected impacts

By demanding the development of not yet existent solutions through pre-commercial procurement, the public procurer can trigger several important direct and indirect impacts, both on the demand and supply side.

As an introductory reference, we mention the evidences obtained from a research commissioned by DG Connect and conducted during 2014-2015[13], aimed to quantify the economic impact of PCP using a sample of PCP and non-PCP cases implemented in Europe, showing that the PCP is having the following impacts:

- Increase in the quality of public services achieved by deploying the innovative solutions developed as a result of the PCP.
- Increase in the efficiency of R&D expenditures.
- Reduction in the risk of failure in large scale follow-up PPI procurements.
- Reduction of supplier lock-in.
- Speeding up time-to-market for firms and positive impact on competition structure in the market in terms of access facilitation for SMEs to the procurement market.
- Increased exploitation of IPRs and R&D results.

Reflecting on these empirical In particular, the consortium expects to determine the following impacts (see also references in section 1.3).

At European level

As described above, the installation of smart meters enables water operators and water managing authorities to have a more accurate and timely information of water consumption by households and economic sectors. Smart meters can therefore significantly improve water efficiency in many regards: more precise planning of water resources use (production, stocking and provision); easier and quicker detection of leakages; more accurate and reliable water billing (which may possibly lead to a modification of consumption patterns).

In this sense, a wider diffusion of smart meters can contribute to better achieving the strategic objectives set by the EU in the fields of water and environmental policies :

- First, smart meters facilitate the implementation of art. 9 of the Water Framework Directive (2000/60/EC), which requires the implementation of pricing policies as an incentive to use water efficiently.
- And, as highlighted by the European Commission's Communication "A Blueprint to Safeguard Water Resources", "metering is a pre-condition for any incentive pricing policy" (COM 2012/673).

The need for "allocating water more efficiently" and "fostering water efficient technologies" is then stressed also by the EC Communication Water Scarcity and Droughts (COM 2007/414), and responds to the objective set in the EC Communication on Roadmap to a Resource Efficient Europe (COM 2011/571).

With regard to the problem of leakages, the Blueprint then recalls that, in some countries, leakage rates can reach 50%, and that the Commission will cooperate with the water industry to accelerate the spread of best practices. Finally, as a tool of water resource and water demand management, smart meters play a useful function also in the framework of a

[13] Sara Bedin, Francesco De Carolis and TOV University, 2015, Research "Quantifying the impact of PCP across EU" commissioned by DG Connect.

risk-based approach formally introduced in the EU legislation with recent revision of Annex II-III of the Drinking Water Directive (2015/1787).

Despite the stated benefits of smart meters, their market uptake is still lagging behind, mirroring the slow uptake of «smart water» technologies in general. Thus, while the electricity and gas sectors are entering a digitalization and "smart market" era in a fast pace, much still needs to be done in the water sector. Being aware of this fact, the European Commission launched initiatives and actions such as the ICT for Water Management strategy in 2012[14], the ICT4WATER cluster[15] or the EIPs on Water and on Smart Cities in order to foster innovation in the water sector.

The last 2015 ICT for Water Management Roadmap[16] describes the main gaps and challenges to be addressed. These include:

- Understanding the cost-benefit ratio of applying ICT solutions to the water sector
- Building a comprehensive set of indicators on the uptake of ICT solutions
- Identifying synergies across sectors
- Implementing data-sharing policies so as to increase interoperability, proposing and making use of standards

Different EU projects (namely some of the ICT4Water cluster) have already dealt with these issues. This project will contribute to all these challenges identified by specifically introducing the needs of the demand-side (that is, water operators) into research activities on ICT for water management.

By launching this PCP, the consortium intends to drive innovation on smart meters that meet all the current needs and expectations of the demand side. These include: the provision of meters that respect the business plans of utilities and do not exceed the cost of current meters; that are interoperable (namely through the use of common standards) and do not link the utility to a single provider, and provide data that helps the procurer to better understand the water consumption of end-users and tackle network losses; all this possibly building on the experiences of the energy sector.

Thus, the consortium partners intend not only to solve the most common challenges linked to water metering (such as battery lifetime or communication issues between meters and concentrators) but also contribute to filling the remaining gaps and challenges to reach a broad implementation of "smart water" technologies. By procuring for innovative solutions directed towards (all) their needs, the consortium hopes to pave the way for the application of commonly accepted standards and the marketing of a smart meter that effectively meets utilities' cost-benefit needs.

A greater uptake of smart meter technologies and, the creation of a single European market for this technology, will not only contribute to better planning by utilities and to a more efficient use of water, but also reinforce Europe's industrial leadership and thus create jobs and growth.

ICT and research can –and, in some cases, are already ready to– solve some of the major issues utilities are facing with regards to (smart) metering. Thus, EU projects have already shown that open technical standards for an advanced metering infrastructure and data

[14] https://ec.europa.eu/digital-single-market/en/news/ict-water-management-roadmap-2015

[15] http://www.ict4water.eu

[16] https://ec.europa.eu/digital-single-market/en/news/ict-water-management-roadmap-2015

transfer technology, fostering interoperability, can be specified (« Open Meter » project[17], iWidget project[18]) and that research and technology is capable of catering to operator's needs, such as an automatic, remote water meter reading solution (WiMBex project[19]).

These encouraging developments are however often made in silos and remain un-integrated and unable to fulfil all the market's needs. Thus, despite promising advances, standardisation and cost issues continue to be seen as two major barriers for the uptake of smart meters by operators, as also recognised in the last 2015 ICT for Water Management Roadmap[20].

At local/Utility level

Widespread implementation of smart meters allows a nuanced and detailed knowledge of customers' consumption patterns. Specific advantages include:

- Leakage alert
- Benchmarking within street/neighbourhood and with similar demographic households
- Development of personalized consumption budgets and water consumption goals, thus increasing water use and financial savings.
- Detect not-allowed water uses and excessive water consumption by specific users.

In terms of environmental impacts, the project will help to a more sustainable supply system in environmental terms, by promoting water savings and the general efficiency of the supply system. Specifically, the project will allow:

- Reduced overall water demand as a result of improved information and disaggregated information to customers, reduced leakage, and improved information on potential savings from appliance upgrade to more water efficient units.
- Improved water demand monitoring and predictions, thus reducing requirements for new water sources.

The project will also have positive social impacts, as the following ones:

- A more efficient management of the service limitation regarding the delivery of the limited guaranteed amounts of urban water supply in the concerned cases, in application of the human right to water.
- The design and application of smart water tariffs, with an adaptation of tariff structure to customer's demand patterns and taking into account social equity and sustainable management issues. The Smart Meter solution will provide a better characterization of effective consumption patterns and will facilitate the definition and implementation of better water tariffs taking into account affordability issues and water accessibility of specific citizens and population sectors, the discouragement of excessive water consumptions and the economic sustainability of the overall urban water supply system. This will also lead to a better application of article 9 of the Water Framework Directive (WFD) regarding cost recovery.

[17] http://cordis.europa.eu/project/rcn/101038_en.html

[18] http://cordis.europa.eu/project/rcn/105822_en.html

[19] http://cordis.europa.eu/result/rcn/153786_en.html

[20] https://ec.europa.eu/digital-single-market/en/news/ict-water-management-roadmap-2015

A better characterization and disaggregation of demand patterns will help to:

- Design and implement demand-driven measures. Among them, the proposed solution will provide more precise information, which can be used to carry out better communication strategies and raise-awareness campaigns to the public. This communication strategy can be much more specific and focused on the key relevant issues for the right target citizens and population sectors.
- The participatory definition and implementation of improved water indicators in the urban water cycle. These indicators are increasingly required to monitor and assess a number of environmental, social and institutional issues. This need is also increasingly acknowledged in the context of the ongoing Drinking Water Directive (DWD) review process and its connections with the WFD. Specifically, in the context of the process for the DWD review, the DWD Expert Group Meeting held on 21-22 January 2016 emphasised the need to pay attention to the performance, transparency and access to water in the supply system. Such indicators will be better defined, measured and applied using the disaggregated data and information provided by the Smart Meter solution.

As pointed out in the context of the DWD review process (Study supporting the revision of the EU Drinking Water Directive, December 2015), it will be of increasing importance the enhanced transparency and consumer involvement. The Smart Meter device will improve the access to information on drinking water by citizens in terms of efficiency, consumption, tariffs and other issues.

Supply side

Today public buyers are reluctant to invest in proprietary-locked technologies, hardly interoperable, with difficulties to connect the collected data with their CRM (customer relationship management) software, costly in terms of communication, not reliable, etc. opening the market means great opportunity of growth for solutions suppliers and communications services : the over cost of the smart part of the meter is estimated at 40€ per unit, and the telecom cost target at 4€ per meter per year, and the number of meters per utilities is in hundreds of thousands (e.g. in France only, it is estimated a total number of 24 million meters).

- Attract new investments. As pre-commercial procurement may reduce market failures due to shortages of capital for early stage technologies, tender awards to the firms involved in the PCP process may represent an incentive for private investors to direct their capital to those small firms most capable of using it.
- Speed up time-to-market for innovative solutions/providers that address concrete public sector needs. The PCP will determine opportunities for wide market uptake and economies of scale for the supply side through the use of joint standardized requirements specifications, wide publication of results and the relevant contribution to standardisation, in order to remove barriers for introduction of PCP resulting innovations into the market.
- Create competitiveness and growth of companies as well as jobs and support R&D in Europe. The PCP will open opportunities for industry & researchers to take international leadership in new global markets, contributing to increase economic outputs and subsequent benefits for the European consumers.
- Facilitate the access of SMEs to the procurement market. Participation in PCP approaches may also enhance the capabilities of small firms, leaving them more able to innovate and grow in the future.
- Increase in the efficiency/intensity of R&D expenditures by firms. There is a positive effect of PCP on increased R&D expenditure by participating firms after the PCP tender.

- Attracting financial investors to Europe, due to the interesting dimension of the market created.
- Foster interoperability / impact on standardization / reduction of supplier and technology lock-in.

2.2 Measures to maximise impact

Based on the lessons learnt from the impact analysis and the extensive experience in the field of public procurement implementation, a series of drivers will be considered to assure the extensive exploitation of aforementioned impacts for SMART.MET action.

a) Demand side measures to encourage wide deployment of solutions

The members of the buyers' group intend to use the best features demonstrated by the tested solutions to design the specifications of their own tenders when renewing their meters; **for example Eau de Paris have to quickly change 90,000 smart meters installed by the previous private operators, and which are not compliant with their actual information management system**.

The opportunity of launching a PPI after this PCP has not been yet discussed among the partners: they need first to see how this transnational call will work, which results can be expected, and then to see how their deployment pace will be compatible.

The consortium intends to **encourage other public water utilities procurers to be involved in the project**, by disseminating widely the lessons learnt and the knowledge, particularly **to the other members of APE (53 members from Italy, France, Spain, Portugal, Scotland, Switzerland, Germany)**:

- During the Open Market Consultation (OPC), APE will ask to its members not yet involved in the project to describe their own practices and current investigations, and to help identify potential suppliers;
- These external procurers will be invited to participate at the Market Consultation Workshops.
- After each milestone (preparation stage – execution phases), an e-letter will be disseminated to the external procurers to present the progress of the project and the R&D (within the limits of the IPR of the solutions providers)
- The recommendations of the SMARTMET-SWG will be sent for consultation to the external procurers, to get their feedbacks.
- And finally they will be invited to attend the final conference of the project to exchange on its outputs, in terms of smart metering and of PCP. This meeting will also be the occasion to discuss the future of the initiative, like the launch of a PPI with volunteer-utilities, and the setting-up of permanent working groups on these matters (interoperability, PCP) inside APE.

The consortium and the procurer networks represent a significant market potential of early adopters, enabling successful route to market. This is a strong incentive to take the last development and certification steps after phase three. Demonstrating a relevant portion of future customers and a relevant market potential allow mass production after the PCP and offers first commercial products at low prices.

The main barriers for the further market introduction of the innovative solutions will be addressed within the tender specifications and then the R&D activities to be performed (low-

cost, interoperability, reliability of communication, security of transactions, data management, battery lifetime, etc.).

The interoperability of the different solutions is embedded in the project, and will be the topic of a deliverable, which will be disseminated widely, on one hand to the utilities, for further use in their tender specifications, and solutions suppliers, and on the other hand to standardisation bodies, either national (via the utilities) or European (via APE).

To encourage wide deployment of solutions and to optimise the use of results, the following measures are planned by the consortium:

- end-user participation in the need assessment phase,
- selection of solutions with adequate TRL in Phase 1,
- award criteria demonstrating wide acceptance by users,
- addressing interoperable solution avoiding market fragmentation,
- selection of tenderers with clear improvement of TRL,
- awarding to tenderers offering best value for money,
- pre-series solution in the procurer's operational context serve as early available demonstrators.

b) Measures to encourage wide exploitation of results generated by the supply side

Different measures to encourage wide exploitation of results by the supply side will be undertaken and are described below:

- organization of open market consultation,
- procurers leave IPR ownership rights on results generated by providers participating in the procurement (and the associated responsibility to commercialise the innovative solutions covered by the procurement) with the providers,
- clear focus on SMEs in the selection process of tenderers,
- solutions validation and test in real procurers' sites, providing a first customer reference to the suppliers participating in the PCP, in particular the solutions are planned to be tested and validated **in at least 5 different procurers' sites.**
- dissemination and publication of the evidences of the improvements achieved,
- perceived risk of new solution is reduced (based on demand from PCP process);
- supplier reputation will be increased by participation in PCP awards;
- suppliers offering prototype phase models have a basis which can be further developed, even if they did not get awarded to the next level.

With particular reference to the first issue listed, the open market consultation is a powerful instrument that helps bridging the gap between supply and demand and is vital, firstly, as means to create and increase awareness of the market relating to the needs of public authorities, providing the market with a congruous and large time to prepare itself for the tender.

The dialogue will be determined to produce also benefits for suppliers:

- Provides early insight into business opportunities and the strategic drivers behind them,
- Issues or concerns can be raised without companies feeling their position in the procurement is threatened,

- Innovation and associated risks can be discussed frankly, allowing suppliers to manage expectations,
- Suppliers can decide at an early stage whether to bid for work, saving significant time and financial resources,
- Allows suppliers to interact with potential supply chain or consortia partners.

Concerning the second measure, there is no other project specificities regarding IPR provisions, and the consortium want to stick to the Annex E of the work programme and the PCP actions grant agreement, because the buyers want the participating providers to purse wide exploitation of results.

The procurers confirm they will leave IPR ownership rights on results generated by providers participating in the procurement (and the associated responsibility to commercialise the innovative solutions covered by the procurement) with the providers.

Each of the 2-3 solutions to be field-tested will be deployed in 5 diverse sites, with different typologies (urban, rural, mixed), and different data management conditions ; the number of smart meters implemented in each cases (either new meters or refitted ones) will be high enough (around 300) to do a real-sized test, with the host utilities playing their role of day-to-day users.

The assessment of the testing will be then very practical, which should give the solutions providers “a first customer reference”, provided the feedbacks are positive : at this stage of the project, solutions tested have demonstrated their potential (end of phase 2), but their usability, scalability, interoperability, cost efficiency, etc. are factors to be still demonstrated during the phase 3, with a risk of non-full compliance at the end.

The “first customer reference” is something that solutions providers will have to determine themselves, either because the assessment report is positive, or because they know how to deal with the potential weaknesses raised by this report.

c) Communication activities and dissemination of results

The consortium members will take every opportunity to disseminate the project’s results and activities by all dissemination channels they find suitable.

Firstly the partners will elaborate the project dissemination and communication strategy, aiming to provide detailed guidelines for the consortium members in order to:

- understand the scope and objectives of dissemination and exploitation within the project, as well as their responsibilities in this regard;
- understand the importance of interaction between partners to implement well-coordinated, effective and timely dissemination and exploitation activities in the project;
- have access to an organised and harmonised set of communication channels and tools that can be used for dissemination and exploitation purposes;
- have a clear idea of the different types of activities that will be implemented, the timings, the target groups and the expected impact;
- have an action plan for the implementation of activities, its reporting, documentation and update.

The dissemination plan will define the editorial policy for the website and all the information documents, including a leaflet. It will provide guidelines for the structure of the website as

well as the branding of the project, i.e. its logo, the design and layout of the website, the PowerPoint template and any other project communication tools. Special care will also be dedicated to ensure dissemination materials are well tuned to their targeted audiences (water utilities, meters industry and suppliers, researchers).

Project website

A project website will be developed to provide resources and information on the project progress. It will also encourage organisations working in the field to participate by either attending the OMC workshop or the final conference.

OIEau will create a visual identity for the project including a website design. After the end of the project, the website will be up-to-date with all related resources and outcomes of the project. Then the website will remain online for at least three years after the end of the project. Links to the project website will be placed on the websites of project partners where appropriate.

A subscription box on the website will encourage visitors to subscribe to the project mailing list. An e-newsletter will be sent to the group of subscribers via an online e-mail marketing service (Vertical Response) that ensures emails are properly laid-out, has sophisticated spam prevention provisions and provides metrics for the monitoring and evaluation of mass mailings (including statistics on the number of recipients who opened the email and how many of them clicked on links).

Media

The launch of the Open Market Consultation, the call for tender and the final conference will be occasions of issuing press releases at European level and in each country where a partner is installed; that will be good opportunities to promote the project and its outcomes in national journals targeted at water technicians and/or decision-makers in public bodies.

Indicators for dissemination actions

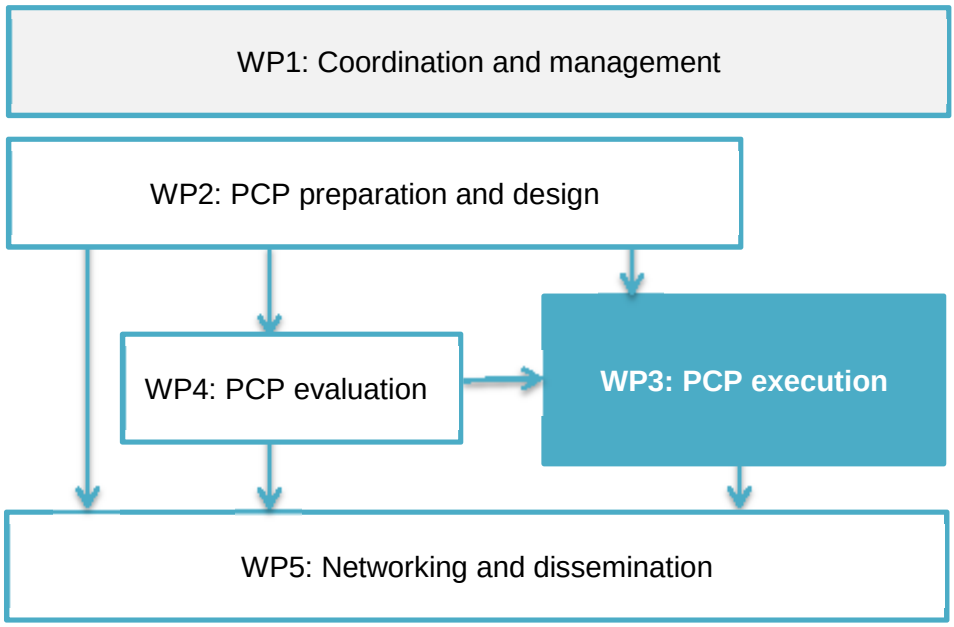
- Each dissemination actions is related to a specific media materials targeting specific audiences
- A website, with an average 500 visitors per year
- 30 public procurers within / outside consortium reached by the OMC
- 5 Electronic newsletters to minimum 150 stakeholders European-wide
- 1 final conference with approx. 100 people attending.

3. Implementation

3.1 Work plan — Work packages and deliverables

The project is divided in five Work Packages (WPs).

Graphical presentation of the components showing how they inter-relate



WP1: Coordination and management
This WP aims at delivering the project expected outputs within the agreed time scale and resources, and to ensure the quality of work, progress, results and impact of the project. WP1 will be the link with the European Commission, organising and providing the information for the management and activity reports. All the partners will contribute this task and benefit from procedures and tools proposed by OIEau.

WP2: PCP preparation and design
This WP aims at undertaking / elaborating the following points, that then will represent a check list to ensure that the procurement is well addressed,

- confirming the stakeholder and end-users to be involved in the testing phase;
- assuring that the challenge statement follows naturally and authentically the analysis of the problems faced by the public service providers and that the need description is detailed enough to enable a comparability of the (prototypal) solutions, but avoiding to formulate a prescriptive and technically described demand;
- listing a minimum aspirational set of functionalities needed by the users, ex: the innovative solutions and (desired) solution imagined by the users considering the life cycle impact and performance;
- defining the extreme or typical environments to use the new (desired) solutions, as well as sectorial regulations, certification requirements and standardization processes in which the innovation procurement will need to take place;
- sharing the identified needs with industry and research sector and cross-checking them with the state-of-the-art of industrial development, activating an open and advertised technical dialogue/market consultation and performing a prior patent search;
- confirming the existence of a market gap (actual need versus solution currently

available on the market), that clearly address the need for radical improvements (as opposed to incremental adaptations).

WP3: PCP execution
This WP aims at launching the tendering process and R&D activities, considering i) the public procurement principles, ii) the phases articulation and budget allocation that are best suited for the subject matter, iii) the main procedural/contractual mechanism to reduce the opportunistic behaviour and to enable the participation of SMEs, iv) the IPRs allocation/sharing model that is best suited for the subject matter.

WP4: PCP evaluation
This work package's main objectives are:

- design a framework for the evaluation of the received bids.
- generate, for each Phase of the PCP, an evaluation standard report, aimed at presenting the evaluation-related activities conducted and the results obtained;
- provide the information needed to perform a global impact evaluation analysis at the end of the PCP, aimed at identifying the potential impact that the project can have.

WP5: Networking and Dissemination
This work package aims at raising awareness in the public utilities, research and business community dealing with water smart metering in order to obtain their support in achieving the project's outcomes, and to convince individual end-users to adopt and/or apply the results of the project. Dissemination will also help to increase awareness of water utilities regarding Pre-Commercial Procurement and its use as a support for technology development.

Each WP will provide milestone and deliverables in order to be transparent towards the stakeholders and the European Commission regarding progress in terms of development, the time schedule as well as the financial matter.

Timing of the different work packages and their components

	2017				2018				2019				2020				2021				2022
Activities	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**
	M1-M3	**M4-M6**	**M7-M9**	**M10-M12**	**M13-M15**	**M16-M18**	**M19-M21**	**M22-M24**	**M25-M27**	**M28-M30**	**M31-M33**	**M34-36**	**M37-39**	**M40-M42**	**M43-M45**	**M46-M48**	**M49-M51**	**M52-M54**	**M55-M57**	**M58-M60**	**M61**
WP1: Project management and coordination																					
WP2: PCP preparation and design																					
D2.1: Needs assessment and description																					
D2.3: PIN publication		M6																			
PCP definition and execution (see détails Below)					M15																
Draft Tender specifications for EC review 1					M15																
EC review					M16																
Draft Tender specifications for EC review 2									M26 - M27												
EC review																					
Draft Tender specifications for EC review 3										M28			M37 - M39								
EC review														M40							
Final assessment																				M58 – M60	
Final report																					M61
WP4: Contract evaluation and monitoring						M17														M60	
Comparative analysis of different solutions																				M60	
WP5: Buyer group networking, awareness building and project results																					

dissemination																					
T5.1 : Dissemination strategy						M18				M30					M43						
T5.4 : Dissemination activities																					
Final conférence																				M58	

PCP – Time Schedule

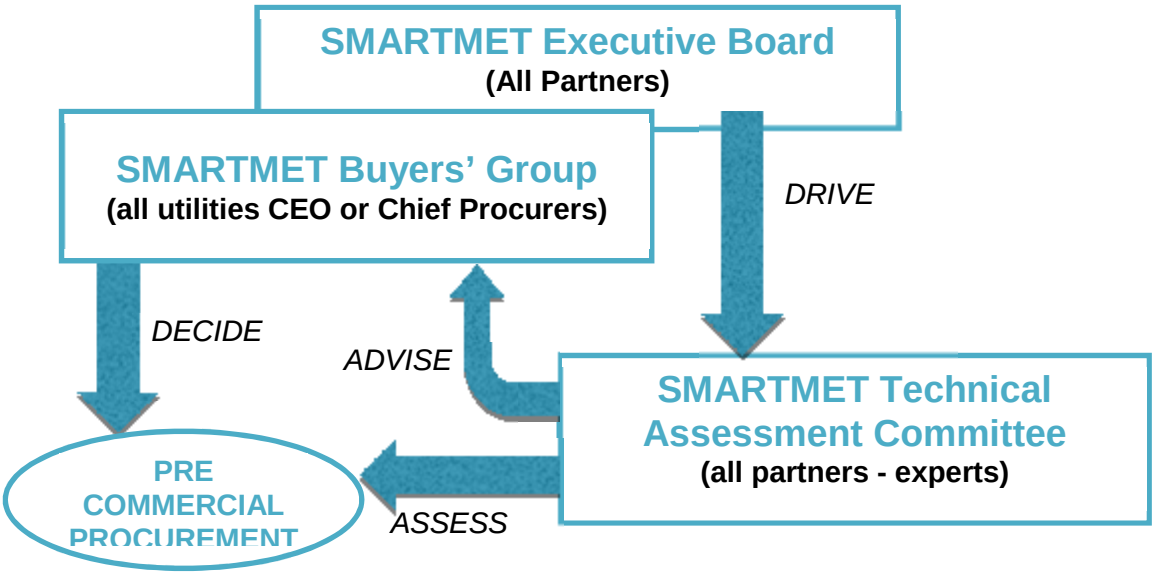
M18	**20/06/2018**	**Publication of contract notice in TED - M18**
	18/09/2018	Deadline for requesting tender documents
	12/09/2018	Deadline for submitting questions about tender documents and for requiring technical inspection
	14/09/2018	Technical inspections in the 5 sites, under approval
	18/09/2018	Deadline for lead procurer to publish replies to questions (Q&A document)
M21	**28/09/2018**	**Deadline for submission of tenders for the framework agreement and phase 1 - M21**
	01/10/2018	Opening of tenders
	31/10/2018	Tenderers notified of decision on awarding contracts
	05/12/2018	Stand & still period
	17/12/2018	Signing of framework agreements and phase 1 specific contracts
	21/12/2018	Publication of contract award notice in TED
M24	**17/12/2018**	**Start of phase 1 - M24**
	30/12/2019	Names of winning phase 1 contractors and their project abstracts sent to EU and published on SMART.MET PCP project website
	08/01/2019	remote KOM and/or visit of phase 1 contractors to the premises(s) of the procurer(s) to learn about the operational boundary conditions governing the design of targeted solutions
	07/02/2019	Deadline for phase 1 interim milestone(s)/interim deliverable(s)
	22/02/2019	Feedback from phase 1 supervisor/monitoring team on phase 1 interim milestone(s)/interim deliverable(s)
M28	**15/04/2019**	**Deadline for phase 1 final milestone(s)/final report/deliverable(s) - M28**
	30/04/2019	Assessment of phase 1 final milestone(s)/final report/deliverable(s)

	02/05/2019	Phase 1 contractors notified as to whether they have completed this phase satisfactorily and successfully
M29	**06/05/2019**	**End of phase 1 - M29**
	06/05/2019	Payment of balance for phase 1 to contractors that completed this phase satisfactorily
M29	**13/05/2019**	**Launch call-off for phase 2 (only offers from contractors that successfully completed phase 1 are eligible) - M29**
	03/06/2019	Deadline for submitting questions on phase 2 call-off documents
	10/05/2019	Deadline for lead procurer to circulate replies to questions to phase 2 bidders
M30	**17/06/2019**	**Deadline for submitting phase 2 offers - M30**
	19/06/2019	Opening of phase 2 offers
	24/07/2019	Contractors notified of decision on awarding phase 2 contracts
	05/08/2019	Stand & still period
	12/08/2019	Signing of phase 2 specific contracts
M32	**12/08/2019**	**Start of phase 2 - M32**
	20/08/2019	Names of winning phase 2 contractors and their project abstracts published on Smart.Met PCP project website and sent to EU
	03/09/2019	Remote KOM and /or visits of phase 2 contractors to the premises(s) of the procurer(s), where applicable
	02/12/2019	Deadline for phase 2 interim milestone(s)/deliverable(s)
	09/12/2019	Visit(s) of the phase 2 supervisor/monitoring team to the contractor's premises to check completion of interim milestone(s)/deliverable(s)
	30/12/2019	Feedback from phase 2 supervisor/monitoring team on phase 2 interim milestone(s)/deliverable(s)
	05/01/2020	Interim payments (if applicable)
	19/03/2020	Lab testing of the prototype developed during phase 2
	03/04/2020	Feedback from phase 2 supervisor/monitoring team on field-testing of the products/services
M40	**17/04/2020**	**Deadline for submission of phase 2 final milestone(s)/final report /deliverable(s) - M40**
M40	**24/04/2020**	**Demonstration of prototype for the EU technical review of phase 2 -M40**
	04/05/2020	Assessment of phase 2 final milestone(s)/final report/deliverable(s)
	11/05/2020	Phase 2 contractors notified as to whether they have completed this phase satisfactorily and successfully

M41	14/05/2020	**End of phase 2 - M41**
	19/05/2020	Payment of balance for phase 2 to contractors that completed this phase satisfactorily
M41	**By end of May 2020**	**Launch call-off for phase 3 (only offers from contractors that successfully completed phase 2 are eligible) - M41**
		Deadline for submitting questions about phase 3 call-off documents
		Deadline for lead procurer to circulate replies to questions to phase 3 bidders
M46	**11/09/2020**	**Deadline for submitting phase 3 offers - M46**
	16/09/2020	Opening of phase 3 offers
	03/10/2020	Contractors notified of decision to award phase 3 contracts
	18/10/20200	Stand & still period
	25/10/2020	Signing of phase 3 specific contracts
M47	**25/10/2020**	**Start of phase 3 - M47**
	30/10/2020	Names of winning phase 3 contractors and their project abstracts published on Smart.Met PCP project website and sent to EU
	03/11/2020	Remote KOM and/or Visit of phase 3 contractors to premises(s) of procurer(s), where applicable
	15/01/2021	1st Deadline for phase 3 interim milestone(s)/deliverable(s)
	01/03/2021	2nd Deadline for phase 3 interim milestone(s)/deliverable(s)
	28/06/2021	Deadline for starting the Field-testing
	05/09/2021	3rd Deadline for phase 3 interim milestone(s)/deliverable(s)
M59	**20/10/2021**	**Deadline for submission of phase 3 final milestone(s)/final report/ deliverable(s) - M50**
M60	**03/12/2021**	**Phase 3 contractors notified as to whether they have completed this phase satisfactorily and successfully - M60**
M61	**16/01/2022**	**End of phase 3 - M61**
	16/12/2021	Summary of the lessons learnt and the results achieved by each contractor during the PCP sent to EU for publication purposes.
	20/01/2022	Payment of balance for phase 3 to contractors that completed this phase satisfactorily
	31/03/2022	SMART MET final periodic report (+2Months after the end)

3.2 Management structure and procedures

The management of the project will be the duty of OFFICE INTERNATIONAL DE L'EAU, the project coordinator; OIEau is well experienced in the management of complex international projects. Both as a coordinator and also as contractor, it has been, and is, involved in a number of such projects including several ones funded within the commission framework programme.



All decisions of importance (except the launch of the procurement itself) will be taken by an Executive Board (ExB), which will gather all contractors, with full voting rights (one partner, one voice) ; the representatives of each partner will have to be from its top management : the SMARTMET-BGB is a sub-group of the ExB, and take the decisions regarding the procurement.

The role of the ExB will include:

- approving strategic planning and direction of the project,
- approving the commitments and rights of the partners
- review and resolve any difficulties in the project
- build confidence and trust between the participating organisations
- ensuring that high standards of technical and administrative excellence are maintained throughout the activities of the project
- reviewing progress against objectives and timetable to ensure successful delivery of the project outputs
- developing close links with the working environment of the project.
- approve the project outputs before their official release

The ExB will meet physically at least 5 times during the project : inception within the first month, one after 12 months (end of preparation stage), one at 24 months (end of phase 1), one at month 36 (end of phase 2), and the later at the end of the project ; the coordinator will develop an IT infrastructure allowing direct exchanges between ExB members, for exchanges of information, and the organisation of "virtual" meetings (shared web repository and web-conferencing facility).

It is anticipated that the decisions of the ExB will normally be unanimous, however, the quorum and voting rights (should any matter prove contentious) will be set out in a Consortium Agreement signed by all contractors. The Partners intend to base this upon a model agreement used in other EC projects.

OIEau, as the coordinator of the project, in charge of the day-to-day operation of the project, will chair the ExB.

After the first review (6 November 2017) it has been decided that the project coordination and management is strengthened, for improving the communication among partners, through a greater involvement of FNCA as "Partnership Facilitator", in support to the Coordinator (OIEau) and the Lead Procurer (Viveracqua).

OIEau will name a project manager, and provide the staff supporting the administration of the project, under the control and direction of this project manager.

The Co-ordinator will be responsible for:

- regular communication with the project partners
- distribution of EC funds to the Partners
- regular communication with the EC Project Officer
- preparation of periodic financial and administrative reports to the EC
- collation of project Audit certificates and their transmission to the EC
- organisation of the project meetings
- preparation and maintenance of the Consortium Agreement
- preparation of the final project outputs
- establishing and maintaining the project web site, including knowledge management and open communications facilities.

The coordinator will be in charge of the quality policy definition and the internal auditing of the project, and will report to the ExB.

In case of durable conflict among partners, after co-ordinator's resolution efforts have failed, and in the unexpected case that the ExB cannot find agreement regarding a particular matter, OIEau, together with the Lead procurer, will at the end decide in order to avoid a standstill of the project.

The co-ordinator will issue short 6-month interim progress reports, which will present the state-of-work of every component of the project, against the agreed planning ; these reports will have to be formally approved by the Executive Board, before to be displayed, with the corrective actions to be taken if needed. They will also include a list of all the deliverables and milestones and their status.

Progress indicators, and milestones, will be detailed by the Coordinator within the first month of the project, and be formally approved at the first ExB meeting.

Reporting:

Notwithstanding any terms and conditions of the contract, the following reports are due:

- Months 12, 24, 36, 48 : short interim activity report (2-3 pages) detailing progress at the management level
- Month 12, 26 and 38: reporting to EC on the state of progress of the PCP Phases
- Month 54: publishable final report

The Partnership Facilitator (FNCA) will:

- Support the Coordinator in monitoring the progress of the different WPs (WP3, WP4 and WP5) and their corresponding deliverables;
- Support the Coordinator in the preparation and organisation of the Executive Board meetings;
- Support the Coordinator in the preparation of the Buyer's group Board meetings and provide the secretariat of Buyer's group Board meetings;
- Support the Lead Procurer by providing the secretariat of the SMARTMET-TAC;
- Support the Coordinator in the Deliverables Quality assessment process;

Each work package is assigned a WP-Leader, reflecting the partners' expertise and complementarities, as well as maintaining a balance between partners, who:

- Takes the technical control of and responsibility for the proper execution of the tasks related to their WP.
- Organizes a detailed schedule of their WP, monitors the work in progress and identifies possible risks.
- Appoints Task leaders, who are responsible for managing a Task and all work conducted by participants in this Task.
- Reports to the Project Manager and the ExB on the progress and possible deviations from the work plan.
- Chairs the meetings among the partners participating to their WP and communicate continuously with all partners involved in their WP.
- Ensures extensive exchange of knowledge and expertise between the different WP.

For doing the work, each WP-Leader will rely on their own resources and the resources of the other partners involved in the WP, as detailed in the consortium agreement.

The consortium confirms its commitment to establish a consortium agreement after approval of the project to clarify the above mentioned consortium governance structure, project decision making procedures, the procedures for handling of financial transactions where appropriate between partners to finance the joint procurement and the procedures for the handling of IPR related rights among consortium members resulting from the procurement.

Intellectual Property Rights

The knowledge accumulated during the project will divided in 2 types:

- classified as "access restricted" because own by a third-party : this is the case of the knowledge owned by the R&D providers, collected either during the Open Dialogue – if said confidential, or through the bids, and then the results of the 3 phases of the PCP execution stage,
- classified a "open access", because the knowledge has being created by the consortium (patent analysis, desktop study of the state-of-the-art), or because the consortium has been granted rights to disseminate knowledge, like the knowledge accumulated during the PCP execution phase after negotiation with the solutions providers.

The non-confidential knowledge will be published under the Creative Commons license "Attribution-Non-Commercial-ShareAlike" – like e.g. the recommendations for interoperability.

3.3 Consortium as a whole

The consortium gathers 7 public water utilities, all procurers of technological solutions, from 5 European Member-States :

- **Viveracqua** (IT), the water public utility supplying the Veneto Region in Italy,
- **Promedio** (SP) : public utility supplying Badaroz in Spain
- **Eau de Paris** (FR) : public utility supplying Paris in France
- **SDEA** (FR) : public utility supplying Bas-Rhin County in France
- **CILE** (BE) : public utility supplying Liege in Belgium
- **VIVAQUA** (BE) : public utility supplying Brussels in Belgium
- **Vizmuvek** (HU) : public utility supplying Budapest in Hungary

The SMART.MET buyers have been intentionally selected with a proactive action started in 2015, aimed to assure the full homogeneity of roles involved and of the area of public intervention in order to assure the generation of expected impacts. Indeed all the public procurers involved have/are:

- clear responsibilities in the delivery of the relevant water services;
- budget control in the domain addressed;
- final users of the resulting innovation.

The 7 utilities will form the Buyers' Group, and Viveracqua will be the Lead Procurer.

They represent different contexts, either delivering water to an Urban area, or to an Urban centre and its Rural neighbourhood; their size (number of clients) vary from 40,000 connections to more than 1 million.

	Viveracqua	Promedio	Eau de Paris	SDEA	CILE	VIVAQUA	Vizmuvek
Size (N° of meters)	1 million	41,000		180,000	250,000	340,000	250,000
Typology	Mixed	Mixed	Urban	Mixed	Urban	Urban	Urban
Previous experience N° smart meters	Yes 500 (multi-utilities experiment)	No	Yes 93,000 (proprietary tech)	No 70% of meters read by radio	Yes Pilot tests	No	Yes 700 (GPRS link)

Their experience of smart metering is also diverse:

- utilities (SDEA, Promedio, VIVAQUA) new to smart metering, but with the willingness to implement it in a close future, provided that barriers could be removed – e.g. SDEA did a feasibility study in 2009, that showed an excessive operation cost.
- utilities testing existing solutions (Viveracqua, Vizmuvek),
- utility using smart metering (Eau de Paris), however with a proprietary and obsolete technology, with on-going tests for replacing it in the short term.

This diversity will help to build robust functionalities for the R&D, allowing then to open a wide market to the solutions providers – of course there is poor chance that "on-size-fits-all" solutions could be designed, but the market is very well represented by the partners : a mix of urban (highly populated, short distances, high communication traffic) and rural areas (low density, long distances, lower information traffic), with transitions zones.

The diversity is also real in the coverage by communication networks operators, which will have an impact on the available solutions :

- GSM (3G) is almost complete in Europe, although some rural areas could benefit of a low level of service,
- new M2M (Machine to Machine) communication networks, like the ones used in the Internet of Things (IoT), are not fully deployed in Europe (e.g. Sigfox covers mostly Western Europe)

The consortium comprises also supporting organisations:

Partner	Country	Area of expertise
Office International de l'Eau (OIEau),	FR	Coordination of the project, Procurement of Innovation, water utilities management, training, science-policy interfacing
University of Limoges (UniLim)	FR	ICT science and research
Fundación Nueva Cultura del Agua (FNCA)	SP	water governance, citizen participation and cross-collaboration among researchers, and stakeholders, partnership facilitation
ARAGON	IT	Smart metering consultancy
Sara Bedin	IT	PCP implementation, training
Aqua Publica Europea (APE)	BE	the European Association of Public Utilities, dissemination

These partners are here to bring to the Buyers' Group the expertise they miss:

- regarding the state-of-the-art of technologies, the knowledge of emerging solutions, and the feasibility of new concepts and research (OIEau, UniLim, ARAGON);
- regarding the implementation of the Pre Commercial Procurement procedures (OIEau, Sara Bedin);
- regarding the acceptability of new solutions, and their environmental and social impacts (FNCA);
- regarding the dissemination issues, and the ability to communicate widely with solution suppliers and other end-users, like public and/or private water utilities (OIEau, APE).

3.4 Resources to be committed

The total cost of the project is estimated at EUR 4,437,938.
Most of the budget of the project (EUR 3,240,000 – 73% of the budget) will be dedicated to subcontracting the R&D activities.

	Budget* (max)	%
PCP execution Phase 1 - Solution design	240,000€	7.4
PCP execution Phase 2 - Prototyping	1,500,000€	46.3
PCP execution Phase 3 - Field testing	1,500,000€	46.3

*including Italian VAT rate (22%)

The PCP Project will run a joint procurement. All public purchasing authorities of SMART.MET Consortium will collaborate through their existing purchasing departments in such a way that VIVERACQUA is designated as the lead authority to take responsibility for tendering and arranging contractual documentation for specific procurements, all in consultation with the other purchasing authorities involved in this joint procurement.

Each procurer in the buyers group intends to contribute its individual financial contribution to the total budget necessary to jointly finance the PCP, the total jointly committed budget for the PCP, as this enables the procurers to share the costs of procuring R&D services from a number of providers and compare together the merits of alternative solutions paths to address the common challenge.

The choice of the consortium (Buyers' Group) is to have all selected PCP tenderers paid by the lead procurer; each procurer in the buyers group intends to contribute its individual financial contribution to the total budget necessary to jointly finance the PCP (see info on the table 3.4a) - the resources that will complement the EC contribution will be shared equally among all members of the Buyers' Group.

PCP phases	Solution design	Prototype development	Testing	TOTAL
Anticipated Unit support (max)	30,000	250,000	500,000	
Target MAX Number of R&D projects	8	4	3	
Total Phases	240,000	1,500,000	1,500,000	3,240,000

The budget for Networking and Coordination activities amounts at EUR 1,331,381.34 :

	Budget*	%
Personnel	859 090.97 €	67
Meetings – travels and accomodation	144 314.10 €	9
Subcontracting (non R&D)	77 125.00 €	4
Indirect costs	250 851.27 €	
Total	**1 331 381,34 €**	

* excluding VAT

It is estimated that 178.1 person-months are needed to complete the different tasks to be performed: preparation stage (39%), monitoring and evaluation during the execution phase (39%), dissemination and management of the project.
It is anticipated that 10 consortium meetings will be organised during the project:

- Inception ExB meeting
- OMC Workshop,
- WIBGI meeting
- 2nd ExB meeting
- Mid Phase 2 meeting
- 3rd ExB meeting
- End of phase 2 meeting
- 4th ExB meeting
- Mid Phase 3 meeting

- Final conference, combined with the final ExB meeting

Additional meetings (2) are anticipated for SB, ARAGON and UniLim for accompanying the testing phase.

Non-R&D subcontracting costs are foreseen for Viveracqua (legal advisor), ARAGON (Patent Search), and APE (outsourcing the organisation of events) – the tenders will follow normal procurement procedures.

We provide tables, showing the direct costs of PCP subcontracting as well the costs of coordination and networking activities, complemented by the numeric evidences of person/months related to the 'direct personnel costs' required by the participants to carry out the coordination and networking activities for the preparation, management and follow-up of the PCP procurement and for other additional coordination and networking activities proposed.

Table 3.4a: Direct 'costs of PCP subcontracting' – Total jointly committed budget for the PCP

Participant Number / Short Name	Country	(a) Participant's own resources (for the Horizon 2020 grant [€] (min d*10%)	(b) EU Contribution from Horizon 2020 [€] (max d*90%)	(c) Possible additional ESIF grant (including participant's own resources for that grant) (optional) [€]	(d) Total budget for the PCP subcontracts (excluding ESIF grants) = Maximum amount that can be eligible for cofunding by Horizon 2020 [€] (a + b)	(e) Total budget for the PCP subcontracts (including ESIF grants) [€] (a + b + c)
2 - Viveracqua	IT	44 379.38	399 414.40	-	443 793.78	443 793.78
3 - Promedio	SP	44 379.38	399 414.40	-	443 793.78	443 793.78
4 – Eau de Paris	FR	44 379.38	399 414.40	-	443 793.78	443 793.78
5 - SDEA	FR	44 379.38	399 414.40	-	443 793.78	443 793.78
6 - CILE	BE	44 379.38	399 414.40	-	443 793.78	443 793.78
7 – VIVAQUA	BE	44 379.38	399 414.40	-	443 793.78	443 793.78
8 - Vizmuvek	HU	44 379.38	399 414.40	-	443 793.78	443 793.78
Total		310 655.66	2 795 900.81	-	3 106 556.47	3 106 556.47

Table 3.4c: Direct costs of 'subcontracting of related additional coordination and networking activities'

2 - Viveracqua	Cost (€)	Justification
Legal advisor	60,000	The Procurement department of Viveracqua needs the support of a Legal Advisor. The subcontracting will be related to: legal services for the revision of tender documentation and during the execution of the PCP procedure, project audit, translation service.
Total	60,000	

9 - Aragon	Cost (€)	Justification
Prior patent search	8,125	As none of the beneficiaries is competent in the performance of the required patent search, Aragon sub-contracts this activity to a specialized company.
Total	8,125	

12 - APE	Cost (€)	Justification
Organisation of OMC workshop and final conference	9,000	APE will outsource the organisation of the events (renting of location, coffee breaks, dissemination materials, etc.)
Total	9,000	

Table 3.4d: 'Other direct cost' items (travel, equipment, large research infrastructure, goods and services) of related additional coordination and networking activities
The following participants have other direct costs exceeding 15% of the personnel costs:

Participants	Ratio other costs / personnel costs
OIEau	18%
Promedio	53%
Eau de Paris	18%
SDEA	18%
CILE	18%
VIVAQUA	18%
Vizmuvek	18%
Aragon	14%
UniLim	17%
FNCA	17%
APE	22%

The reason of this high share is the same for all participants: 10 meetings are foreseen to manage the PCP (with an average cost for travel and accommodation of EUR 900), and their personnel costs are relatively low.

Any saved resources initially allocated to travels may be converted into personnel costs, under the agreement of EC.

1 - OIEau	Cost (€)	Justification
Travel	15,060	The preparation phase needs many face-to-face meetings, particularly the Buyers'group Board, with then an important involvement of the coordinator and many travels.
Total	15,060	

3 - PROMEDIO	Cost (€)	Justification
Travel	22,747.22	10 meetings are foreseen – travel costs are higher than for the other partners, given the remote location of Badaroz from airports. +2 000 euros for the supervision of meters inst./uninst.
Total	22,747.22	

4 – EAU DE PARIS	Cost (€)	Justification
Travel	9,000	10 meetings are foreseen
Total	9,000	

5 - SDEA	Cost (€)	Justification

Travel	11 151.98	10 meetings are foreseen +5 760 euros for the supervision of meters inst./uninst.
Total	11 151.98	

6 - CILE	**Cost (€)**	**Justification**
Travel	12 227.98	10 meetings are foreseen +8 640 euros for the supervision of meters inst./uninst.
Total	12 227.98	

7 - VIVAQUA	**Cost (€)**	**Justification**
Travel	9,000	10 meetings are foreseen
Total	9,000	

8 - VIZMUVEK	**Cost (€)**	**Justification**
Travel	9,000	10 meetings are foreseen
Total	9,000	

9 - ARAGON	**Cost (€)**	**Justification**
Travel	10,800	12 meetings are foreseen
Total	10,800	

10 - UNILIM	**Cost (€)**	**Justification**
Travel	10,800	12 meetings are foreseen
Total	10,800	

11 - FNCA	**Cost (€)**	**Justification**
Travel	9,000	10 meetings are foreseen
Total	9,000	

12 - APE	**Cost (€)**	**Justification**
Travel	3,000	10 meetings are foreseen, most of them in Brussels
Communication	6,000	Publishing, communication costs
Total	9,000	

4. Members of the consortium

4.1. Participants (applicants)

PARTNER Nº 1 (Coordinator): Office International de l'Eau – OIEau (France)

Office International de l'Eau (OIEau) is an independent non-profit-making organization whose principal aim is to develop skills for improving water and river management.

OIEau's main areas of activity are:

- Continuous Education and Training of water utilities and administration staff (>5,000 trainees – professionals, supervisors, operators, decision-makers – par year)
- Documentation and information concerning water, including through Coordination and Support Actions in France and in Europe.
- Facilitation of networks of water stakeholders
- Institutional development for water management (e.g. European twinnings with candidate or neighbouring countries, support to Basin Organisations worldwide)
- Management of water data (SANDRE, the French water data standardization and interoperability structure)

OIEau is supported by 149 partner organisations (administrations, catchment organisations, municipalities, universities, professional associations, water utilities, NGOs, ...), including 32 foreign.

It has a total workforce of 113 persons, and can mobilise 250 external experts.

Its annual turn-over is 13.5 MEuros (2015).

Previous experience relevant to the attributed tasks

- Support to ONEMA (National Water Authority - FR) for the WFD-Common Implementation Strategy (CIS) activity regarding Science-Policy interface
- Coordinator of WaterDiss2.0 (FP7 – n° 265167) Dissemination and uptake of FP water research results
- Coordinator of WaterRtoM (LIFE+ 2009) Water Research to Market, to speed-up the transfer of water related research outputs to better implement the Water directives
- Coordinator of WaterPiPP (FP7 – n° 619069), a CSA about Public innovative Procurement Policies
- Permanent Secretariat of INBO, the International Network of Basin Organisations : 160 members from 65 countries worldwide.

Short Profile Staff Members:

Gilles Neveu (M), Director for Innovation at OIEau, is the coordinator of the project : he is in charge of the creation of new opportunities, in the field of water related training, information management, capacity building and expertise, in France and abroad. These activities are related to elearning, web-based information services, transfer of knowledge from research and others' experiences to practitioners, tools for monitoring water management.

Dr Natacha Amorsi (F), in charge of the coordination of European, holds a PhD on economics of environment, specialised in water and public participation. She has been working on science policy interface and uptake of research over the last 10 years at the French and European levels in the context of the European Water Framework Directive

implementation. She has coordinated and been involved in European projects at the different steps of the research cycle: from the research programming (IWRM-Net ERA-Net), the scientific coordination of research projects (IWRM-Net SCP) to the dissemination and uptake of research outputs (WaterDiss), As well with project dealing with water and climate change (Afri-Alliance). She has significant experience in the coordination, liaison, dissemination and facilitation activities.

François Touchais *(M) was legal officer at International Office for Water since 2007. He was in charge of water innovation-oriented public procurement, local administration and environmental issues.*
Today and since 2014, he holds the position of project coordinator contact for the ref. 619069 WaterPiPP project (01/2014 - 12/2016, FP7 998 845 €). WaterPiPP is about exploring new public innovation procurement methodologies and testing it in water sector (PCP/PPI). The project has successfully prepared ready to be launched joint procurement initiatives in water sector corresponding to real challenges and needs, giving support and training to the pilot procurers. He is also involved as short-term expert in several EU funded projects in Tunisia, Ukraine, Turkey, Lebanon, Morocco, Algeria and Jordan.

François Touchais was in charge of the coordination of Smart.Met from from January 1, 2017 to June 30, 2017, the date he left International Office of Water. He has been replaced byHe has been replaced by Gilles Neveu as the new coordinator, and Dr (PhD) Jean-Marc BERLAND

Jean-Marc BERLAND (52) holds a doctorate from Ecole Nationale des Ponts et Chaussées (French higher education establishment that trains engineers specialized on civil engineering and spatial planning) His specialization is science and environmental technology. The theme was a comparative analysis of policies on sanitation and wastewater treatment equipment. He works at the International Office of water since July 1997. He is project manager at the French Water Information Center (OIEau), specialized in the techniques of treatment and distribution of drinking water and sanitation / wastewater treatment.

He also works on international projects (EU, IDB...) relating to the integrated water resources management.

Furthermore he intervenes on projects addressing economic approaches and pricing of water and sanitation services, as well as in the areas of governance of services. He works also on decision-making processes and the technical and economic assessment methodologies.

Pierre-Henri Bouhet (M) is a mechatronics engineer, graduated from National Higher Engineering School of Limoges (ENSIL) and working for OIEau since 2011. His main tasks are 1) to train people on smart components, automatism and SCADA systems, remote control, sensors, electronic engineering, maintenance and pumping, with a focus on applications from the field of water treatment and delivery; and 2) to design and deploy electronics and automatism on various project, including: choice, setting up and programming of various PLC and remote terminal units, design of the networks for data communication between appliances, implementation and configuration of SCADA systems, process control loops, sensors networks…

PARTNER Nº 2 (Lead procurer) : VIVERACQUA (Italy)	
Legal Name	**VIVERACQUA s.c.a.r.l.**
Short Name	**VIVERACQUA**
VAT No	**04042120230**
Legal Registration No	**REA VR - 387036**
Registration Date	**13/07/2011**
Legal Status	**Public body**
Pic Number	**950693121**
Legal address:	
Street Name and No	**Lungadige Galtarossa 8**
Post Code	**37133**
Member State	**Italy**
Website	**http://www.viveracqua.it/**

VIVERACQUA is a Public Equivalent Body established in 2011 that plays an overarching role in the water management of the Veneto Region. It is a consortium of 14 Integrated Water Management Public entities of the Veneto Region that identified the need to jointly manage part of their activities.

VIVERACQUA covers all the Veneto Region area and manages a catchment area of 530 municipalities and 4.2 million inhabitants, with revenues of over 680 million Euros per year and plans for investment over the next 20 years estimated around 4 billion euro .

VIVERACQUA is central to the sustainability of water resources in the region. In fact, its main objective is to reduce the final cost paid by users of the integrated water service, increase the quality of service and the environmental sustainability of the operations and water resources. In this context, research activities are performed to advance the quality of the service and the conservation of water.

Main activities are:

- shared and centralized system for the public procurements;
- stable benchmarking between purchasing departments of each company to converge on common procedures and buying habits;
- created a common IT platform to manage procurements and suppliers albums.
- share ways of organizing work and responding to regulatory requirements;
- promote exchange of experiences (testing equipment and personal protective equipment ...);
- implement joint training programs on specific risks;
- shared data analysis center for the quality of water resources;
- development and improvement of the water resources monitoring network
- find out the financial resources needed to carry out the investment plans : 13 minibond issue totalling 227 million euro listed on the Luxembourg stock exchange and bought mostly by the EIB (so-called Hydrobond Project) , which will enable the implementation of infrastructure works in the integrated water service in the period 2014-2018 for a total of 450 million euro.

VIVERACQUA is a member of “Aqua Publica Europea”, an international association of public water service companies, which work to bring the attention of the European Institutions to the needs of the operators of public water services, and to communicate with the similar companies to other EU countries.

VIVERACQUA will be the Lead Procurer within the Buyers’ Group.

PARTNER Nº 3 : PROMEDIO (Spain)

PROMEDIO, Environmental Management Consortium of the Provincial Government of Badajoz, was created in order to implement strategic planning in the mid/long-term for contributing to sustainable development of the province, giving high-quality response to immediate and future environmental needs.

PROMEDIO provides its services to towns under 20,000 inhabitants, which means the 93% of the towns in the area, with a total population of 372,000, more than the 50% of the provincial total, on an area, and here is the challenge, of 21,766 km2.

Therefore, PROMEDIO is created with the aim of establishing itself as a municipal manager of those services concerning the environment, both urban and rural, with emphasis on those activities related both to the Integrated Water Cycle (collection, purification, distribution and Wastewater Treatment) and with the complete cycle of collection and transportation of all types of waste, Municipal Solid Waste (MSW) from all of its members.

PROMEDIO serves 176 local entities in the province of Badajoz, in 3 different areas:

- Special Services: collection of worn out furniture, electrical appliances and other household items or spent batteries, as well as dumpster washing or removing of blockages in public pipes.
- Municipal solid waste (MSW) management: since 2010 we manage the MSW collection (daily collecting of organic garbage and weekly collecting of used paper) and treatment in the province of Badajoz. The system is based on a inter-municipal model: all municipalities share dustcarts, fuel cost, staff... and every user pays the same for the service, without considering where they live. Last year PROMEDIO collected over 1 ton of used packaging and 2 tons of used paper in 75 municipalities, with a total population of 160,000.
- Integral Water Cycle (IWC) management: this service includes Drinking Water Supply and the Sewage Control Department, which was established in 2007 and currently it manages a total of 50 Wastewater Treatment Plants (WWTP) and 9 Water pumping Stations, which provide services to around fifty municipalities of the region and a total population of 180.000.
- Regarding the Drinking Water Supply department, we manage 7 Drinking Water Treatment Plants (DWTP), almost 80.000 inhabitants get clean water treated by PROMEDIO in 28 towns.

Two facts make the proposal specially interesting for us: 100% of our meters are implemented into single family homes and they are spread on an area of 21,766 km2.

Curriculum vitae :

Miguel LEÓN GUISADO (M) Environmental Science 5-year Graduate and Public Works Engineer; 16 years of professional experience in the Integral Water Cycle, 7 of which in the private sector, the rest in PROMEDIO, where he is currently the Technical Manager.

Alfonso NÚÑEZ MURILLO (M) Senior Technician in Automatic Control and Regulation Systems, and Expert in Industrial Telecommunications; 8 years of professional experience in Remote Control an Automation in PROMEDIO, where he is the responsible of the Remote Control and Automation department.

List of relevant publications, and/or products, services relevant to the call content:

- Patent 201231551 by J. Morillo, A.F. Pulido y J. Hernández, "Dispositivo y procedimiento de control para la trazabilidad de vehículos refrigerados".

- Publication: "La Red de Estaciones de Referencia GNSS de Extremadura (REP)"; Authors: Juan Morillo Barragán, Antonio Andrés Moreno González y Ángel Felipe Pulido Moreno. In: "La Agricultura y la Ganadería Extremeñas. Informe 2009"; Publ.: Facultad de Ciencias Económicas y Empresariales y Escuela de Ingenierías Agrarias–UEX; Badajoz, 2010. I.S.B.N. 978-84-889-5699-1. pp 91-104.
- Paper on "GNSS RTK networks in auto-steering systems for agricultura industry in Extremadura (Spain)". Autores: A.F. Pulido, J. Morillo, J. Hernández Congreso: International Conference of Agricultural Engineering, Valencia, 2012.

PROMEDIO controls the meters in the input and the output of water in Drinking Water Treatment Plants via RTUs (small automata), with a high cost.

Design and implementation of small automata created by us, connected via GPRS and Radio at 868Mhz and 433Mhz in order to control pumping and water tank towers.

List of relevant previous projects or activities, connected to the subject:

- Automation and Remote Control systems implemented in 100 Wastewater Treatment Plants (WWTP) Project.
- Automation and Remote Control systems implemented in Water pumping Stations Irrigators Associations Project.
- Implementation of a wifi and radio telecommunications nets covering the whole province of Badajoz (21,766 km2) Project.
- Geopositioning Net of Extremadura (GNE) Project (with other entities): tasks of research and maintenance operations in the GNE, v.g. remote control of 11 antennas GRX 1200 GNSS spread along all Extremadura (41,634 km2) and 3 servers with the control of protocols RTCM 2.3, 3.1, MAX and i-MAX.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work:

We have the possibility of launching a pilot in different kinds of scenarios, v.g. 1,100 meters in a whole neighbourhood in the town of Zafra.

PROMEDIO manages 7 Drinking Water Treatment Plants (DWTP) for 28 towns, 36 local water tanks, 50 Wastewater Treatment Plants (WWTP), 9 Water pumping Stations, for a total population of 180.000. We deliver over 3,6 million m3 of water through 600km of pipe systems.

We have a Remote Control and Automation Department with 5 technicians, appropriately equipped and a lab.

PROMEDIO will be a member of the Buyers' Group.

PARTNER Nº 4 :EAU DE PARIS (France)

Depuis le 1er janvier 2010, Eau de Paris est l'entreprise publique en charge de la production et de la distribution de l'eau dans Paris. Interlocuteur unique des usagers et des abonnés, Eau de Paris gère l'ensemble du circuit de l'eau, depuis le captage jusqu'au robinet des consommateurs. Elle est également garante de la qualité et de la pression de l'eau.

Eau de Paris prélève, transporte, traite et distribue en moyenne 483 000 m³ d'eau potable chaque jour à 3 millions d'usagers. Elle gère la relation client et sensibilise le grand public aux questions liées à l'eau. Elle veille à entretenir son patrimoine et à se maintenir à la pointe de la recherche. Elle propose également aux entreprises et aux collectivités des alternatives à l'eau potable via des offres d'eau non potable.

Le réseau d'eau potable de Paris intra-muros représente 2000 km de canalisations, dont 70 % sur la rive droite de la Seine et 30% sur la rive gauche. 95% des conduites d'eau potable se situent en égout ou en galerie et peuvent se visiter à pied.

La structure unique de ce réseau ainsi que les diverses campagnes annuelles de vérification des canalisations permettent de détecter et de réparer très vite la moindre fuite. Paris dispose ainsi d'un des meilleurs réseaux d'eau potable de France avec un rendement supérieur à 92%

Curriculum vitae :

Olivier Roy (M) is the project coordinator of the smart metering strategy of Eau de Paris, in charge of the definition and implementation of the renewal of meters towards smart meters ; he is a member of AFNOR E17Z committee (the French standardisation body) for the adaptation of the standard EN 13757 to gas and water metering.
He was formerly a radio engineer with a telco company.

Laurence Vauthier (F) is the head of the Metering and Quality department within the Water Supply Division ; she supervises the management of the installed meters, the internal lab for metering intelligence, and the team in charge of the water quality monitoring.

Eau de Paris will be a member of the Buyers' Group.

PARTNER Nº 5 : SYNDICAT DES EAUX ET DE L'ASSAINISSEMENT ALSACE-MOSELLE – SDEA (France)

Formed in 1939, the SDEA is a “syndicat mixte”, an authority associating municipalities and inter-municipal cooperation bodies, the Urban Community of Strasbourg and the Bas-Rhin department, the French subnational authority between region and municipality.

Overall, the SDEA operates on behalf of almost 500 municipalities and 800,000 inhabitants with a budget of 200 million of euros in 2014 and employing 550 people.

The members of the SDEA transfer all or part of their competence regarding the management of water i.e. drinking water production, transport and supply, wastewater and rainwater collection and treatment. As members, these local authorities elect their representatives to the deliberative and decision-making bodies governing at local, territorial and global levels.

The meter reading is annual. 70% of our 180 000 meters are radio-reading (Walk-by technology). SDEA is looking for a smart metering technology which can transmit data once or twice per day with an open technology. This technology could:

- reduce leaks
- inform (and maybe warn) customers in case of overconsumption
- bill only real consumption (and not based on a statistic of consumption)

Curriculum vitae :

Florian SIMONIN (M), Territory Director and smart meter project manager, is in charge of this project. As project manager, he has already followed walk-by meter reading development. As Territory Director, he is in contact with customers and in charge of customer relationship.
Florian SIMONIN is a ENSIL engineer, specialized in Water and Environment.

Eric MASSON (M) has been the Chief Information Officer at SDEA since 2009 ; he worked previously as the head of the IT department at SDEA (1994-2009).

List of relevant previous projects or activities, connected to the subject of this proposal;

- walk-by water meter reading deployed for more than 100 000 meters
- manage tests of drive-by meter reading

SDEA will be a member of the Buyers’ Group.

PARTNER Nº 6 : COMPAGNIE INTERCOMMUNALE LIEGEOISE DES EAUX – CILE (Belgium)

CILE (Compagnie Intercommunale Liégeoise des Eaux) is the second biggest public operator in Wallonia in charge of the production and distribution of drinking water for about 600.000 people living in the 24 municipalities constituting the company.

The individualization of the consumption is one of the multiple obligations of the distributor of water in this Region. So more than 250.000 meters are now in place and the reading is annual either by a manual control either by transmission of the information by the consumer himself.

By using a smart metering technology, it would be probably possible to reduce the unrecorded volumes and the leaks thanks to a continuous management of the distribution networks: Moreover, it would offer a better service to the consumer by informing him for an abnormal consumption. And finally it would allow to protect the local network of the company from a reverse flow (by transmitting this information to the general dispatching service and/or coupling the meter with an automatic valve).

Curriculum vitae:

Bernard MICHAUX (M) is the Chief Operating Officer of the company since 2010. By working before in big chemical companies as chemical engineer, he has acquired a solid experience in the management of new industrial projects.

David SCHYNS (M) is the manager of the distribution for the company for several years. He knows perfectly the practical problems linked to the continuous measurement of meters and leads the department in charge of new connections and renewal of old meters.

List of relevant publications, and/or products, services relevant to the call content:

The Company works for years with a central supervision system connected to more than 250 structures. It allows to follow continuously the critical parameters of a lot of equipment such as pumps, vessels, … in order to ensure the distribution of water through the 3500 km networks. The acquired experience with that technology could probably be useful for the implementation of more local smart metering.

The transmission of the data of the structures is managed since 2013 by a company that is able to use the various existing communication systems (optical fiber, mobile phone, coaxial cable, …).

The general software for the supervision has been recently upgraded in order to improve the efficiency and the speed of reaction by sending direct messages to the people in stand-by day and night.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work;

CILE is now discussing with other public operators in charge of the distribution of gas and electricity for example in order to share the transmission infrastructure costs.

The company has been approached by a local distributor of valves and meters proposing new materials in test. It consist in a set of an automatic valve connected to a digital meter with a battery that would enable to exchange data with a supervision system during 16 years.

CILE will be a member of the Buyers' Group.

PARTNER Nº 7 : VIVAQUA (Belgium)

VIVAQUA (public company legally acting on behalf of HYDROBRU[21] for the services of water distribution and sewerage in Brussels until the merger by absorption in 31st December 2016 - where all activities only depend of VIVAQUA) is one of the main Belgian intermunicipal associations involved in the production and distribution of drinking water.

VIVAQUA is a cooperative company with limited liability owned by 23 cities and towns and one intermunicipal association.

Covered activities are the development and operation of drinking water abstraction, treatment, supply, storage and distribution services and installations.
It employs roughly 1,500 people.

The flood protection is managed in collaboration with the SBGE, the Brussels public urban wastewater treatment company.

VIVAQUA carries out studies, research, development and construction of drinking water and sewage networks.

Beside activities in the Brussels Region, VIVAQUA operates in the North Region (Flemish) and in the South Region (Walloon).

In the Brussels Region, we currently have 339,126 traditional meters for 1,175,173 inhabitants and 625,105 housing. 2/3 meters serve several households. Indeed, in the Region, the buildings are usually old and only 1/3 of the households has its own meter.

It is also common that households and small businesses share a same meter. 2/3 housing share meters which is an obstacle for the development of a responsible consumption. In 2015, the "typical" household (2 people) having its own meter consumes 30-35 m³/pers./year. The “typical” household delivered by a shared meter consumes 40 m³/pers./year.

The meter reading is annual. VIVAQUA is looking for a smart metering technology which can transmit data once or twice per day. Thanks to that daily reading, we would be able to:

- -reduce the unrecorded volumes, for instance, detecting leaks (13 % in 2015);
- -warn consumers of high consumptions, repair quickly any potential water leak and adapt the interim invoices;
- -reduce the number of unpaid invoice (€ 656,343 of bad debts in 2015).

Curriculum vitae

Werner PROVOST (M), holds a master degree of electronical engineering and joined the “Branch of Operations” of VIVAQUA in 1993. He is head of the department of specialized services.

Gaëtan GILLET (M), holds masters in Commercial Sciences and in Tax management. He joined VIVAQUA in 2011 and works at the “Corporate Strategies Division” as head of “Development”.

[21] HYDROBRU (Brussels water distribution and sewerage inter municipality) is a cooperative company owned exclusively by the 19 municipalities of Brussels. The Brussels Intercommunal authority manages the drinking water supply network and sewage network.

HYDROBRU is the only drinking water supplier of the Brussels Region. The Brussels Intercommunal is also in charge of flood protection.

Yves BOURDEAU (M), Financial Director of VIVAQUA, is a qualified economist – with a financial profile – and joined VIVAQUA in 2018 after the merger by absorption from HYDROBRU by VIVAQUA where he previously held the position of Director general. Mr. BOURDEAU has been working in the Brussels Region water and wastewater sector for 8 years.
Having an extended experience in the infrastructure sector projects (mainly legal and economical ones), he is familiar with all major challenges in the water sector.

List of relevant publications, and/or products, services relevant to the call content:

- Sewerage network renovation and drinking water network maintenance: Mr. BOURDEAU leads the multi-annual plan of renovation of the sewerage network (annual investment budget: > € 60 million). Mr. BOURDEAU is also in charge of the annual drinking water maintenance plan (annual investment budget: € 20 million whose € 2 million for the installation or replacement of approximately 30,000 traditional meters. An annual operating budget of € 2 million is also dedicated to the field service for the annual meter reading).
- Optical fibre network: Mr. BOURDEAU currently participates in a project which aims to develop an optical fibre network in the sewerage network in the Brussels Region.

List of relevant previous projects or activities, connected to the subject of this proposal:

There is at the moment no plan to develop any other technology of metering than traditional metering in the Brussels Region.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work:

- The buildings are usually old and the meters are generally placed in basements. The issues of the waves transmissions and of the adaptation of internal (private) water installation is one of our main challenge. The smart metering rollout in the Brussels Region could consider the implementation of smart meters on other locations than building basements. That could partly solve waves transmission issue;
- The average lifetime of a traditional meter is between 8 and 16 years depending of the diameter. The Brussels Region would like to preserve this lifetime (which included the replacement parts of meters), which is a challenge in term of autonomy for the smart meters (battery).

VIVAQUA is looking for cost-sharing technologies with other operators (gas, electricity, etc.) for all the transmission infrastructure (relay antenna, data server /router, etc.).

VIVAQUA will be a member of the Buyers' Group.

PARTNER Nº 8 : VIZMUVEK (Hungary)

Budapest Waterworks is a 148 years old water utility company serving 2,3 million customers in the Hungarian capital – the 9th biggest city of Europe – and several settlements in the agglomeration of the city. Apart of water extraction, distribution and supply, there are several sewage treatment plants in the portfolio of the company. The ownership is distributed among the served municipalities, with a vast majority of Budapest.

The water supply is based on 740 river bank filtration wells along the river Danube. The water distribution is ensured through a 5.200 km long network that is split into more than 90 pressure zones. The production capacity reaches 1 million m3 per day, the annual water supply is more than 16 million m3. The customer portfolio covers 260.000 connections with main meters and more than a million sub-meters that belong to the accounting base. One of the main achievements of the company is the reduction and maintenance of non-revenue water below 16%.

Apart of serving the customer base with outstanding quality water, the company is active on external markets with improvement of operational processes (e.g. network management, non-revenue water optimization), managing construction activities (e.g. water treatment plants) and other water engineering activities. Budapest Waterworks is actively participating in the activities of several local and international organisations.

Research and development activities focus supply network management, pressure management, loss management / NRW-reduction, mobile water treatment. Relevant employees are regularly taking part on conferences, seminars and trainings. The company participates in several R&D&I project calls of the EU, among others the AquaNES consortium.

Curriculum Vitae :

Géza Csörnyei (M), water operations director. Expert on water production and network management, with strong management skills on operations, maintenance and international experience. Strong references in water management.

Péter Bognár (M), director for customer relations. Expert in setting up operational strategies, customer base management, contractual relations and a.o. smart metering. References and memberships in the field of customer relations and smart metering.

List of relevant previous projects or activities, connected to the subject of this proposal:

The company carried out a pilot project on Smart Metering that has been carried out in co-operation with other utilities in Budapest. As part of the project 700 smart meters were installed and those are operated through a joint data processing centre with direct data transfer to the integrated business operation system.

As there are several unsolved problems remaining after the implementation of the smart metering pilot project, Budapest Waterworks expects the development of the smart meters' specification regarding technical optimization, integrability into business and technical processes and structured customer relations.

VIZMUVEK will be a member of the Buyers' Group.

PARTNER Nº 9 : ARAGON Partners (Italy)

Aragon Partners is a management consulting firm. The name, emphasizing the underpinned values, comes from “aragonite”, the raw material whereby oysters generate and grow pearls over time.

Aragon Partners was born in 2005 on the initiative of a team of Partners and Associate Partners coming from PricewaterhouseCoopers Consulting (PwC).

We are a team of about 20 people based in Italy with two offices, Rome and Milan.

Beside its offering in business consulting services (Business Process Re-engineering, organization, IT supporting systems, Program Management Office of complex and large projects), Aragon Partners is leader on some niche market sector requiring very specialist skills:

- Advisory services on machine to machine solutions, i,e. utility services Automated Meter Reading (AMR) or Automated Meter Management (AMM).
- Advisory services on Smart metering and smart city solutions
- Definition and delivery of Logic Models implemented as IT tools to support financial planning and decision of company top management.

Main references on Utilities:

- Customer: AGSM Distribuzione - Verona
  - Multi utility AMM Pilot Project (AEEGSI 393/2013/R/Gas)
  - Two years assignment to support grants application procedure, project management and technical coordination within the pilot project on multiservice AMR solution delivery on gas, electricity, water, public lighting services.
- Customer: AGSM Distribuzione - Verona
  - Gas network AMM: Program Budgeting and Planning.
  - Support to define the investment program and to identify and plan activities related to installation and operations management of AMR solution for industrial and residential users of gas distribution network.
- Customer: Gelsia Reti - Seregno
  - Gas Network AMM: Program management Automated Metering Management
  - Support and advisory services to define and plan a field trial programme to adopt a AMM solution for consumer user segment and to choose some technology partners to deliver the field trial.
- Customer: Telecom Italia – Utility Market sector
  - Feasibility Study to provide AMM services to Utility companies
  - Strategic Market scenario analysis, vendor solution offering survey and scouting on available technologies for AMM. Scenario simulation as to AMM service offering.
  - AMM process design and re-engineering and functional requirements definition.
- Customer: AGSM Distribuzione - Verona
  - Electricity AMR System Deployment: Support to financial planning and budgeting, Definition and negotiation of installation services contracts.
  - After the completion of tender procedure and the final assignment to the winner the project started with planning the installation program and allocating the investment pluriannual budget. A negotiation activity has been carried on to close the contract related to meter and devices field operations (installations of new electricity meters and replacement of old ones).
- Customer AGSM Distribuzione - Verona

    - Program management Automated Metering Management Deployment
    - Aragon Partners provided Program Management support to the setting up, the starting and the coordination for several project streams involved in the introduction of AMM solution for power distribution grid in the AGSM jurisdiction area. The installation plan has been respected as well as the effectiveness of delivery test and contract validation agreements. The minimization of impacts on service level has also been achieved.
- Customer: Hera - Bologna
    - AMM for power grid: Special technical support for the preparation of supply contract of AMM solution.
    - We have been supporting Hera team to the shortlisting process to select the solution and the related vendor. We gave a substantial contribution to the definition of a technical RFP to be annexed to the contract. Main project phases were: 1. RFP document preparation; 2. Solution selection based on objective evaluation criteria; 3. Special Advisory Support to technical aspects of contract terms in safeguards of Hera.

Curriculum Vitae :

Massimiliano Marciano (M) : with almost two decades of working experience for consultancy multinational firms, during last ten years he has been working in the area of Energy (electricity and gas) smart metering and Wireless Sensor Networks applied to Safety. Deep skills are matured in Business Planning and Modeling, Strategy Execution and in Process Design.

Namely for the Smart Metering projects, he has driven as program manager, several projects to implement overall solutions, in accordance with the regulatory authority framework, starting from the first draft of business planning and project planning ending with the last meter installation, passing through architectural blueprint definition, new processes design, change management rollout, stakeholders management, purchasing issues, long term installation plans.

For Companies in the Utilities, Telco and Media markets, he has driven complex projects as program manager.

Paolo Botiglione (M) : founder of Aragon Partners and Managing Partner since 2005, he has dealt primarily with Business Planning, Business Processes Reengineering and the automation of processes through the use of IT architectures, applications and appliances. Namely he has also been engaged with the profitability analyses and deployment of AMR and AMI for both electricity and gas for major Italian Utilities companies in accordance with the national tariff regulation framework.
He has also been both program and project manager for significant projects aimed at the evaluation and management of the outsourcing of processes and support systems in the Telco industry.

PARTNER Nº 10 : UNIVERSITY OF LIMOGES – Unilim (France)

XLIM is a public research laboratory which belongs at the same time to the CNRS and to the University of Limoges (UMR 7252). XLIM gathers approximately 400 peoples (180 Ph-D students and post-docs) distributed in axis.

People concerned by the present project belong to the team named RESYST (Réseaux et Systèmes de Télécommunications) of the research axis SRI (Systèmes et Réseaux Intelligents). The core activity of RESYST is to study and optimize digital transmission systems taking into account physical characteristics of propagation channel and component specificities. The members of this team aim at proposing and testing digital signal processing algorithms to approach the theoretical capacity of studied channels. A classic example consists in allocating transmit resources such as power, modulation scheme, pre-coder…, taking into account the channel quality with a feedback link from receiver to transmitter.

Among the high number of application fields they already investigated, one can cite for example cellular radio-communication systems such as LTE-4G, robust consumption information gathering for smart grid application, high rate optical links and remote monitoring of sick patients. Apart from the physical layer, they are getting involved more and more in the study of higher network layers with new coding techniques such as fountain coding or network coding. Particularly, they have recently worked on the optimization of the MAC layer of electrical distribution networks through the study of different coding schemes. That is why they are particularly interested in new fields of investigation such as smart metering for water distribution networks in order to bring their expertise.

Curriculum vitae:

Christelle Aupetit-Berthelemot (F) received the engineer degree in telecommunication from ENSIL (Ecole Nationale Supérieure d'Ingénieurs de Limoges)-University of Limoges in 1995. She received the M.S. degree as well as PhD degree in High Frequency and Optic Telecommunications from University of Limoges respectively in 1995 and 1998. She is currently a Full Professor and the head of Electronics and Telecommunications department (ELT) at ENSIL. She coordinated and scientifically followed 15 research projects including 6 national cooperative projects (ANR). Her current research activities concern optical telecommunication for which she focused on optimizing digital transmission systems taking into account physical characteristics of propagation channel and component specificities. She is the (co-)author of more than 100 publications in scientific journals and international conferences. She will coordinate the present H2020 project for University of Limoges.

Vahid Meghdadi (M) received the BSc and MSc degrees from Sharif University of Technology, Tehran, Iran, respectively in 1988 and 1991 and PhD degree from the University of Limoges, France in 1998. He has worked at the ELT department of ENSIL/University of Limoges as full professor since 2014. His main interest in research is the telecommunication systems including MIMO systems, coding, network coding, cooperative communications, sensor network and smart grid. Since 1998, he has been scientific manager for more than 10 research projects in the field of ICT (information and Communications Technology). He is the (co-)author of more than 100 publications in scientific journals and conferences and served as TPC members in several international conferences. He will be the scientific coordinator in this project.

Jean Pierre Cances (M) is graduated from the engineering school Telecom Bretagne in 1990. He also obtained the PhD degree from Telecom Paris in 1993 in the field of satellite Telecommunications. He is the (co-)author of more than 180 publications in scientific journals and conferences and served as TPC members in several international conferences. He leads the research group RESYST. His main research areas concern: designs and performances of MIMO and Massive MIMO systems, channel coding/decoding based on

iterative processes (mainly Turbo codes, LDPC codes, LT and Raptor Codes), wireless sensor networks. Recently, he has been getting involved in the development of efficient MAC layer protocols for massive IoT deployment using short length erasure codes. He will be a scientific expert in this project.

Anne Julien-Vergonjanne (F), received the PhD degree in Microwave and Optical Communications in 1987 from Limoges University and the Habilitation à Diriger des Recherches (HDR) in 2006 in the field of digital processing applied to optical communications. She is currently a full professor at ENSIL in ELT department and develops research activities in the XLIM laboratory. Her research activities are in the fields of digital communications, optical communications, and sensor networks. Recently, she developed applications around optical wireless communication systems and networks for e-Health. She will be a scientific expert in this project.

Oussama Habachi (M) received the Engineering Degree in Computer Sciences from ENSI (Tunisie) in September 2008, and in 2009 the M.Sc in Network and Communications from the University of Pierre and Marie Curie (UPMC), Paris, France. From October 2009 to September 2012, he pursued his PhD thesis in Computer sciences at the University of Avignon. Since 2014 he is an assistant professor at the University of Limoges. His main research concerns the development and the optimization of MAC layer protocols, network coding, cooperative communications and MIMO systems for telecommunication systems and wireless sensor networks. He will act as a scientific member in this project.

List of relevant publications, and/or products, services relevant to the call content:

(1) Joint network-channel code optimization for wireless sensor networks, N Alaoui, V Meghdadi, JP Cances, EURASIP Journal on Wireless Communications and Networking 2013 (1), pp. 1-12, janvier 2013.
(2) Performance of Gabidulin Codes for Narrow-band PLC Smart Grid Networks, AW Kabore, V Meghdadi, JP Cances, accepté à Power Line Communications and its Applications (ISPLC), 2015 19th IEEE International Symposium on.
(3) Majed Haddad, Yezekael Hayel and Oussama Habachi, "Spectrum Coordination in Energy Efficient Cognitive Radio Networks", Transactions on Vehicular Transmissions, July 2014
(4) Chevalier, L.; Sahuguede, S.; Julien-Vergonjanne, A.,"Optical Wireless Links as an Alternative to Radio-Frequency for Medical Body Area Networks," in Selected Areas in Communications, IEEE Journal on , vol.33, no.9, pp.2002-2010, Sept. 2015
(5) Toumieux P. ;Chevalier L. ;Sahuguède S. ; Julien-Vergonjanne A.,"Optical wireless connected objects for healthcare" in Healthcare Technology Letters, Volume 2, Issue 5, p. 118 –122, Oct. 2015

List of relevant previous projects or activities, connected to the subject of this proposal:

The members of RESYST Team belong to the Labex project named SIGMALIM of University of Limoges and they contribute to the sub-project entitled “Sensor Networks”. JP CANCES is the head of the project entitled security of people, data and places.

Several projects have been submitted to the ANR (French Research national Agency) by RESYST concerning the field of sensor networks and particularly addressing the topics of massive access in the context of IoT. Members of RESYST are getting involved in some research projects concerning the use of BAN (Body Area Networks) for the remote monitoring of sick patients and they have built a prototype system which is used in CHU (Hospital Center) of Limoges. Due to interference problems, the choice of wireless optical links has been done for this project.

Currently, four PhD students are working on the field of sensor networks in RESYST.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

RESYST members have participated to the MEDYBAT project which consisted in equipping a complete building with a high number of temperature sensors to qualify the energy efficiency of the building materials.

Different sensor platforms with wireless or optical links have been tested in the context of the Labex project SIGMALIM.

PARTNER Nº 11 : FUNDACIÓN NUEVA CULTURA DEL AGUA – FNCA (Spain)

The Fundación Nueva Cultura del Agua (FNCA) is an Iberian (Spain and Portugal) non-profit organization composed of over 200 members from academia, research institutions, public administration, private sector, stakeholders and citizens, whose goal is to promote a more sustainable water management.

The FNCA seeks the application of inter and trans-disciplinary approaches, the integration of ecological, economic, social and cultural dimensions, an improved water governance and citizen participation and a wide cross-collaboration among researchers, stakeholders, decision-makers and the public opinion.

The FNCA profile perfectly matches with its role in this proposal regarding the assessment of the project impact, the maximization of the social and environmental benefits achieved by the project and the active involvement of stakeholders. On one hand, the FNCA team has a long research experience on the urban water cycle, the use of open data and citizen participation for better water governance, the application of water indicators and the involvement of local governments in integrated water resources management. On the other hand, the FNCA has a wide network of collaborations with NGOs and citizen networks regarding participatory processes in water issues.

Curriculum vitae:

Nuria Hernández Mora (F), primarily responsible for the proposal, is specialist in water governance and water policy analysis. She holds a BS in Economics and Business Administration and MS degrees in natural resources policy and in water resources management. She has worked in land use and water resources policy in US and Spain and as consultant for non-profit and governmental organizations. She has participated in research projects on the use of economic instruments for water resources management, urban water management, water governance, public participation, transparency, citizen science, open knowledge and citizen networks in water issues.

Leandro del Moral (M) is a full professor at the University of Seville (Department of Human Geography). Throughout the last 20 years he has been researching on decision-making processes related to water management and the urban water cycle in particular. He has led the Spanish teams of several international R&D projects on water resources (SIRCH, ADVISOR, SWAN) with especial attention to the analysis and diagnosis of socio-ecological systems, the identification of objectives and the definition of strategies for action based on social agents involved and active participation. He served on the Board of EMASESA, Seville's public utility (1993-2011) and has done extensive research on urban water demand and management. At present he also works in USA (University of Arizona, Tucson, partner of 7th European R&D programme) and Latin America. He has recently directed three doctoral dissertations on urban water demand technologies for sustainable water management.

Julia Martínez Fernández (F) is executive director of the New Water Culture Foundation (FNCA) and collaborating researcher at the Observatory of Sustainability of the Institute for Water and Environment of University of Murcia. Her research experience has a strong emphasis on inter and transdisciplinary approaches to water dynamics in socio-ecological systems, socio-environmental model simulation, water sustainability indicators and the integrated water management at watershed scale. She has participated in around 25 national and international research projects and has more than 100 scientific publications. She also has a wide experience on the assessment of water policies.

Alba Ballester Ciuró (F) is an expert in water governance, risk governance and water conflict management. BS in Education; BA in Social and Cultural Anthropology; MS in Sustainable river management and integrated water management; MA in Social and Cultural

Anthropology. She has worked as consultant on sustainable water management, as a public participation advisor in water planning, and as a facilitator of participatory processes, for different public administrations, consulting companies, and NGOs from the water sector. Her research has focused on the analysis of public participation on water planning, social capacity building and the analysis of new forms of collective action.

List of relevant publications, and/or products, services relevant to the call content:

- Pedregal, B., Cabello, V., Hernández-Mora, N., Limones, N. and L. Del Moral. (2015) Information and Knowledge for Water Governance in the networked society. Water Alternatives 8(2): 1-19.
- Hernández-Mora, N. and L. Del Moral. (2015) Developing markets for water reallocation: Revisiting the experience of Spanish water mercantilización. Geoforum 62: 143-155.
- Banos-Gonzalez, I.; Martinez-Fernandez, J.; Esteve Selma, MA. Using dynamic sustainability indicators to assess environmental policy measures in Biosphere Reserves. Ecological Indicators (Accepted).
- Banos-González I, Martínez-Fernández J, Esteve-Selma M.A. 2015. Dynamic integration of sustainability indicators in insular socio-ecological systems. Ecological Modelling 306: 130-144.
- Parés, M.; Ballester, A. 2015. Las governanzas del agua en España: el impacto de las nuevas formas de participación (Water governance in Spain: impact of new ways for participation). In: Governança da água no contexto iberoamericano. Chapter 7. Jacobi, Fracalanza & Empinoti (Eds).

List of relevant previous projects or activities, connected to the subject of this proposal:

- AquaRiba Project. Sustainable Management Systems for the Urban Water Cycle in the Integrated Rehabilitation of Disadvangaged Neighborhoods in Andalucia (Sistemas de Gestión Sostenible del Ciclo Urbano del Agua en la Rehabilitación Integral de Barriadas en Andalucía (Aqua-Riba), del Programa Operativo FEDER-UE de Andalucía 2007-2013. Expediente: G-GI3001/IDIN.) 2014-2016. Also: "Factors explaining the Urban Water Demand. Micro-scale study in Seville Municipality" (Factores Explicativos de la Demanda Doméstica de Agua. Estudio a Microescala del Municipio de Sevilla).
- The FNCA leaded the project “Water Saving in the Tortosa Municipality”, Tortosa, Spain. 2008-2009. The project included a diagnosis of citizen perceptions, an action plan with associated water indicators and a monitoring and assessment plan.
- SWAN Project. Sustainable Water Action: Building research links between the US and the EU). FP7-INCOLAB-2011; Contract number 294947. 2012-2016.
- Socio-economic indicators for the sustainable management of water resources in semi-arid basins. Exp. 19342/PI/14. University of Murcia. Fundación Séneca. 2015-2017.
- Formulation of an integrated system of water sustainability indicators for Galapagos and application to Santa Cruz island, Galapagos National Park, Ecuador. Secretaría de Educación Superior, Ciencia, Tecnología e Innovación. 2014.

PARTNER Nº 12 : AQUA PUBLICA EUROPEA – APE (Belgium)

Aqua Publica Europea (APE) is a Belgium-based non-profit international association that brings together public utilities and their regional and national associations from different European countries. Overall, its members provide water and sanitation services to over 70 million European citizens, from densely-populated to rural and remote areas, and from the North Sea to the Mediterranean.

APE's main objective is to promote technological cooperation and the exchange of best practices among its members, with a view to enhancing their industrial performance and the quality of the services they provide to end users.

Curriculum vitae:

Milo Fiasconaro (M) is Executive Director at Aqua Publica Europea. Together with the Management Board, he defines the thematic and operational priorities and proposes the annual budget. He has an extensive professional and academic experience in EU policies, especially in the field of Research and Enterprise policies. He holds an MA by research in Human Geography.

Annette Jantzen (F) is Policy and Communication Officer at Aqua Publica Europea. She is responsible for the internal and external communication activities of the association and the projects in which APE participates, and helps the association position itself on different policy areas. She holds a master's in European Studies and is fluent in Spanish, German, French and English.

List of relevant publications, and/or products, services relevant to the call content;

As 100% publicly-owned water operators, the members of APE routinely carry out public procurement procedures for the purchase of water-related technologies.

In this framework, not only does APE provide a platform for information sharing on technology opportunities, but it also acts as a facilitators for the launch of trans-national joint procurement procedures among members that share similar needs. Thanks to this, some APE members have already carried out pilot joint public procurements in the past.

Finally APE contributes to disseminating relevant information on members' activities and common project within the network, in order to foster the diffusion of effective solutions.

List of relevant previous projects or activities, connected to the subject of this proposal;

As a partner in the FP7 "Water Public Innovation Procurement Policies » (WaterPipp) project, whose aim is to explore new public innovation procurement methodologies and test them in the water sector, APE is in charge of liaising with public water utilities, carrying desk-top and on-field research on different practices and approaches and of disseminating the outcomes of the project.

APE is also a member of the EIP Water « Finnowater » action group, which intends to explore, develop and implement new approaches to increase financial flows in the water (and water-related) sector, particularly by incentivizing public innovation (Pre-Commercial Procurement PCP, and Public Procurement of Innovative Solutions PPI) of new technologies and services as well as other innovative financial tools and mechanisms.

PARTNER Nº 13 : SARA BEDIN (Italy)

BEDIN SARA, individual SME, natural person
Graduated in Economics at the Bocconi University in Milan, Sara Bedin is working in implementing the innovation procurement strategy in Europe. Since 2007 she has been working to introduce pre-commercial public procurement (PCP) into the Italian research and innovation policy framework as well as to contextualize the European model within the existing Italian exemption from procurement law and ICT regulations.

She has also supported, as independent expert, the Italian Government to carry out PCPs within the broader reform plan of incentives for applied research and innovation. She has assisted and she is actively supporting major European public sector entities (policy makers and public procurers) for the concrete implementation of innovation procurement strategies and she is the Lombardy Regional Authority advisor for the PCP strategy design and implementation.

She is also involved in several EU-funded project finalized to create practical impact on the use of PCP&PPI and to strengthen forward looking procurement strategies.

As PCP specialist she's a member of the European Assistance for Innovation Procurement initiative aimed promote PCP and PPI across the Member States. She has developed a research for EC-DG Connect, measuring the impact of PCP across Europe compared to other procurement approaches. She is recognized, at EU level, as one of the leading authorities in PCP methodology and implementation. Sara Bedin is an executive board member of EuroCloud Italy, aimed to promote open standard in IT sector, qualifying the demand and the offer side towards cloud computing.

Innovation procurement policy setting:

- ✓ Strategic, legal and technical advice to the Italian Government (Public Administration Digitalization and Technological Innovation Department) to introduce PCP into Italian research and innovation policy and to draw up the PCP Italian framework and Guide-line (published by EC).
- ✓ Support, as specialist/expert, to Italian Ministry for Research (MIUR) for the definition of legislative acts concerning the national policy of PCP (Decree Law "Crescita 2.0" - Section VII art. 19, Decree 593/2000 implementing Legislative Decree no. 297/99).
- ✓ Design and activation of the first (national) PCP policy and pilot in the health technological domain (Lombardy Region) compliant with COM799(2007) and regional PCP governance model and guide-line definition (recognized as best practice by EC)
- ✓ Technical advice to Lombardy Region to contextualize the PCP/PPI measures in Regional Operational Program and co-fund it with Structural Funds, coherently with smart specialization.
- ✓ Advice, as specialist/expert, to Italian Ministry for Research (MIUR) and the Italian Ministry of Economy (MISE) to design and carry out PCPs within the broader reform of incentives for applied research and innovation (design and definition of Public notice for the recognition of innovation needs in Convergence Region - DD 437 of 13 /03/2013, measure funded by 150M€).
- ✓ Evaluation, as independent expert, of the (199) innovation needs presented to MIUR-MISE in response to the national call for interest on PCP (DD 437 of 13/03/2013).
- ✓ Legal advice to the Italian Government to contextualize PCP within the existing Italian (vertical) regulations, with particular attention to ICT domain.
- ✓ Participation to the open consultation on the draft R&D&I-framework with the aim to support the PCP and innovation partnership regulation with a view to prevent actions liable to distort dynamic incentives in the market and discriminate against the participation of SMEs.

- ✓ Technical assistance in implementing the Development and Competitive Positional Strategic Plan and smart specialization for Valle D'Aosta Region through design of new instrument to promote innovation and the design of demand-side policies. Design of PCP regional framework (energy efficiency domain).

Major project managed/conducted (related to ICT sector):

- ✓ Monitoring of 134 co-financed regional and local government projects following the first Call for selection of e-Government implementation projects (definition of methodology and tools, monitoring of around 30 projects, project coordination and training)
- ✓ Training for public managers and personnel in the methodology, approach and operational tools used in monitoring e-democracy and e-government projects.
- ✓ Development and application to national projects of a methodology for measuring and evaluating the regional impact of e-government based on the measurement framework developed as part of the eGEP (e-Government Economics Project) commissioned by the e-Government Unit of the European Commission.
- ✓ Multi-disciplinary analysis and design of new financing/implementation instruments of the 'Lombardy Digital Agenda" (living-lab, PPP, PPI, PCP, crowd-funding, crowd-sourcing…).
- ✓ Design of procurement action finalized to acquire cloud computing services concerning a territorial fidelization program based on CRS (Lombardy card for public services).

Innovation procurement initiatives/policy evaluation:

- ✓ Evaluation, as independent expert, of the (199) innovation needs presented to Italian Ministries MIUR-MISE in response to the national call for interest on PCP (DD 437 of 13/03/2013).
- ✓ Evaluation, as independent expert, of the ICT related proposals in FP7.

Innovation procurement policy analysis:

- ✓ Conduction of the study "SMART 2014-0009 – Quantifying the impact of PCP procurement in EU based on evidence from the ICT sector": methodology setting and fine-tuning, questionnaires definition, criteria definition for PCP and panel of control identification, interviews to procurers and awardees, empirical analysis, tools definition and report writing, *2014.*
- ✓ Europe-wide benchmarking of PCP models (rational, phases, procedures, IPRs management..), *2008.*
- ✓ Comparative study of the EU versus USA model of PCP in collaboration with the U.S. Small Business Administration – Washington, *2009.*

Innovation procurement implementation:

- ✓ Participation, as sub-contractor and expert, to EAFIP initiative launched by European Commission to promote the impacts of PCP and PPI procurement in EU to policy makers and public procurers (contract SMART 2014-0018), to define a toolkit for PCP and PPI implementation across EU.
- ✓ Design of the first (national) PCP pilot in the health technological domain (Lombardy Region) compliant with COM799 (2007).
- ✓ Design of PPI finalized to procure cloud computing services concerning a territorial fidelization program based on CRS (Lombardy card for public services).
- ✓ Participation, as expert on innovation public procurement and as responsible for PCP/PPI EU Academy, in INSPIRE project, finalized to create practical impact on the use of PCP/PPI and to strengthen forward looking procurement strategies in eHealth, Active Aging and Independent Living in partner Regions (UK, FR, IT, FI, AT, ES).
- ✓ Participation, as expert on PCP/PPI approach, in WATERPiPP project, finalized to support trans-national networks of procurers, to promote and develop innovation-oriented public procurements in the domain of water management & use (IT, NL, FR, ES, DE, FI, BE).

- ✓ Participation, as expert on PCP/PPI approach, in PROBIS project, finalized to support joint cross-border procurement of builidng Innovative solutions (IT, ES, SE, HU).
- ✓ Specialist and advisor on PCP implementation to IMAILE project, finalized to run a joint cross-border procurement of e-learning solutions.
- ✓ Participation, as expert on PCP/PPI approach, in BRODISE project, finalized to support joint cross-border PCP in the area of soil decontamination (PT, ES, IT).
- ✓ Concept design, consortium creation and participation, as expert on PCP/PPI approach, in PRO-4-VIP project, finalized to support joint cross-border PCP/PPI in the area of visual impairment (ES, IT, FR, DE, UK, EU).

Innovation procurement training and coaching support:

- ✓ Technical assistance to Marche Region and IKTIMED Project aimed at improving the openness of the Mediterranean territories innovation systems, through the setting-up of new innovation instruments, like PCP/PPI. Comparative analysis of demand-side policies for innovation in the Mediterranean area and promotion of PCP approach in line with EU principles.
- ✓ Capacity building activities within MARIE project (Mediterranean building rethinking for energy efficiency improvement) co-financed by the MED Programme and finalized to encourage innovation, sustainability and energy efficiency in construction procurement.
- ✓ Capacity building activities within SCI-NETWORK project (Sustainable Construction & Innovation through Procurement) that connects public authorities looking to procure innovative and sustainable solutions within their construction projects.
- ✓ Design and conduction of multi-disciplinary training&coaching programme, concerning PPI/PCP, targeted at departmental heads and procurement staff of primary public authorities and public company (Collegio Europeo di Parma, ANAS, CSI Piemonte, Marche Region, City of Turin, Tuscany Region, Friuli Venezia Giulia Region, Area Science Park, EU Taftie Academy…).

Innovation procurement related major events design and organization:

- ✓ 2014 Co-organization (concept design, agenda design, speaker invitation and relation, communication strategy, logistic and technical services arrangements…) of EU high-level event on PCP/PPI “Modernizing the public sector and boosting economic growth through Innovation Procurement” planned for 26-27 November in Milan (Italy).
- ✓ 2013 Organization of Cloud Communities Day event, Milan

Other relevant experiences (innovation exploitation & management):

- ✓ Consulting in the sector of public utility services.
- ✓ Definition of the competitive positioning strategy for an Italian Region and definition of an Action Plan to develop and attract industrial investments.
- ✓ Benchmarking of monitoring processes for ICT projects involving EC funds and instruments, in place in Convergence Regions.
- ✓ Consulting and support for the market positioning of the regional centers of expertise in Campania region.
- ✓ Set-up and running of the Finmeccanica Project Management Program aimed at reinforcing/aligning/updating key Project Management competencies.
- ✓ Development of the 2007-2009 Information Technology Strategic Plan for Telecom Italia Group.

Relevant publications:

- ✓ Study “SMART 2014-0009 – Quantifying the impact of PCP procurement in EU based on evidence from the ICT sector”: methodology setting and fine-tuning, questionnaires definition, criteria definition for PCP and panel of control identification, interviews to procurers and awardees, empirical analysis, tools definition and report writing, *2014.*
- ✓ Italian National Guidelines for PCP Implementation, 2012

4.2. Third parties involved in the project (including use of third party resources)

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
R&D activities will be subcontracted as it is the aim of the PCP, allowing public procurers to buy R&D for answering to their needs not yet satisfied by the market. • *Viveracqua will subcontract legal assistance to the procurement department.* • *Aragon Partners will subcontract the patent search to a competent body as none of the participating partners has the required expertise in house.* • *APE will subcontract support for the organisation of 2 communication events (open dialogue and final conference).*	
Does the participant envisage that part of its work is performed by linked third parties[22]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	Y

[22] A third party that is an affiliated entity or has a legal link to a participant implying collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Viveracqua envisage contributions in kind against payment provided by its shareholders Acque Veronesi S.c.a.r.l. and ETRA S.p.A. Viveracqua is a consortium created in 2011 and composed of 14 water utility companies, that have a common agenda and a structure consisting of a Cooperative Company (S.c.a.r.l.) with the aim to coordinate joint procurement, create synergies in order to optimise operating costs, manage jointly several parts of the respective activities and cooperate in the research for supplies and services. To this end, Viveracqua provides to its shareholders a Central Purchasing Body (Centrale Unica di Committenza) with highly qualified staff in tender matters. Though, in function of its societal objectives, Viveracqua does not employ technical staff, which is instead put at disposal by the shareholders where required. Within SMART.MET, Viveracqua represents its shareholders and coordinates administratively their work in the Action, while also providing for a qualified Tender Manager. The biggest shareholder Acque Veronesi seconds the Project Manager, taking into account the technical knowhow required for this function. Shareholder ETRA seconds an experienced engineer, expert in smart metering devices, that will support the SMART.MET-TAC in the evaluation activities related to the tender procedures. The seconded Project Manager is expected to perform a total effort of about 6 pm, distributed presumably as follows: 1,2 for WP1, 2 for WP2, 1,75 for WP3, 0,5 for WP4 and 0,5 for WP5. 67.325,00 €. The seconded smart metering expert is expected to perform 0,75 pm in WP3 and 0,25 pm in WP4. Viveracqua reimburses to the third parties salary costs and travel costs relative to the efforts of both employees in the SMART.MET project, for a total estimated cost of 60.510 €.	

Section 5: Ethics and Security

5.1 Ethics[23]

The real time gathering of the personal water consumption could allow the tracking of personal behaviour, indirect identification of persons in home etc.

These issues will be scrutinized during the task T.2.1. Needs assessment and description, by the partners, in order to feed the functionalities requested ; the recommendations will be listed in the deliverables “D2.1: Needs elicitation and assessment through WIBGIs events with end users” and “D2.2: Challenge brief and description of uncovered functionalities”, which will be made available on Month 8.

Security and privacy are a couple of sensitive topics that have been largely addressed for electricity and gas market with successful experiences that must be considered also for water AMR solutions. A proper security implementation encompasses and addresses also the privacy issue. Security in AMR is about encrypted consumption data transmission and anti-tampering countermeasures.

5.2 Security[24]

Please indicate if your project will involve:

- • activities or results raising security issues: NO
- • 'EU-classified information' as background or results: NO

[23] See Article 34 of the General Model Grant Agreement.

[24] Article 37.1 of Model Grant Agreement. *Before disclosing results of activities raising security issues to a third party (including affiliated entities), a beneficiary must inform the coordinator — which must request written approval from the Commission/Agency;* Article 37. *Activities related to ‘classified deliverables’ must comply with the ‘security requirements’ until they are declassified; Action tasks related to classified deliverables may not be subcontracted without prior explicit written approval from the Commission/Agency.; The beneficiaries must inform the coordinator — which must immediately inform the Commission/Agency — of any changes in the security context and — if necessary —request for Annex 1 to be amended (see Article 55)*

ESTIMATED BUDGET FOR THE ACTION

	Estimated eligible[1] costs (per budget category)										EU contribution			Additional information		
	A. Direct personnel costs PCP subcontracting	B. Costs for related additional coordination and networking activities								Total costs	Reimbursement rate %	Maximum EU contribution[3]	Maximum grant amount[4]	Information for indirect costs	Information for auditors	Other information:
		B.1 Direct personnel costs				B.2 Direct costs of subcontracting	B.3 Other direct costs		B.4 Indirect costs[2]					Estimated costs of in-kind contributions not used on premises	Declaration of costs under Point B.3.4	Estimated costs of beneficiaries/ linked third parties not receiving funding/ international partners
		B.1.1 Employees (or equivalent) B.1.2 Natural persons under direct contract B.1.3 Seconded persons *[B.1.6 Personnel for providing access to research infrastructure]*		B.1.4 SME owners without salary B.1.5 Beneficiaries that are natural persons without salary			B.3.1 Travel B.3.2 Equipment B.3.3 Other goods and services *[B.3.4 Costs of large research infrastructure]*	B.3.5 Costs of internally invoiced goods and services								
Form of costs[6]	Actual	Actual	Unit[7]	Unit[8]		Actual	Actual	Unit[8]	Flat-rate[10] 25%							
	a	b	Total c	No units	Total d	e	f	Total g	h = 0,25 x (b +c+d+f+g +*[i1]*[12]+*[i2]*[13]-n)	j = a+b+c+d+e+f +g+h+*[i1]*+*[i2]*	k	l	m	n	Yes/No	
1. OIEAU	0.00	91 990.00	0.00	0.00	0.00	0.00	15 060.00	0.00	26 762.18	133 812.18	90.00	120 430.96	115 931.27	0.00	No	n/a
2. VIVERACQUA	443 793.78	88 771.28	0.00	0.00	0.00	60 000.00	13 226.90	0.00	25 499.55	631 291.51	90.00	568 162.36	568 162.36	0.00	No	n/a
3. PROMEDIO	443 793.78	43 129.96	0.00	0.00	0.00	0.00	20 747.22	0.00	15 969.30	523 640.26	90.00	471 276.23	471 276.23	0.00	No	n/a
4. EAU DE PARIS	443 793.78	48 750.00	0.00	0.00	0.00	0.00	9 000.00	0.00	14 437.50	515 981.28	90.00	464 383.15	464 383.15	0.00	No	n/a
5. SDEA	443 793.78	70 807.83	0.00	0.00	0.00	0.00	11 151.98	0.00	20 489.95	546 243.54	90.00	491 619.19	491 619.19	0.00	No	n/a
6. CILE	443 793.78	77 801.78	0.00	0.00	0.00	0.00	12 227.98	0.00	22 507.44	556 330.98	90.00	500 697.88	500 697.88	0.00	No	n/a
7. VIVAQUA	443 793.78	48 750.00	0.00	0.00	0.00	0.00	9 000.00	0.00	14 437.50	515 981.28	90.00	464 383.15	464 383.15	0.00	No	n/a
8. WATER-BUDAPEST	443 793.78	64 889.88	0.00	0.00	0.00	0.00	9 000.00	0.00	18 472.47	536 156.13	90.00	482 540.52	482 540.52	0.00	No	n/a
9. ARAGON	0.00	78 000.00	0.00	0.00	0.00	8 125.00	10 800.00	0.00	22 200.00	119 125.00	90.00	107 212.50	107 212.50	0.00	No	n/a
10. UNILIM	0.00	39 000.00	0.00	0.00	0.00	0.00	10 800.00	0.00	12 450.00	62 250.00	90.00	56 025.00	56 025.00	0.00	No	n/a
11. FNCA	0.00	68 250.00	0.00	0.00	0.00	0.00	9 000.00	0.00	19 312.50	96 562.50	90.00	86 906.25	86 906.25	0.00	No	n/a
12. APE	0.00	41 250.00	0.00	0.00	0.00	9 000.00	9 000.00	0.00	12 562.50	71 812.50	90.00	64 631.25	64 631.25	0.00	No	n/a
13. SARA BEDIN	0.00	22 500.00	0.00	2 167.15	75 200.11	0.00	5 300.15	0.00	25 750.07	128 750.33	90.00	115 875.30	115 875.00	0.00	No	n/a
Total consortium	3 106 556.46	783 890.73	0.00		75 200.11	77 125.00	144 314.23	0.00	250 850.96	4 437 937.49		3 994 143.74	3 989 643.75			0.00

[1] See Article 6 for the eligibility conditions.
[2] Indirect costs already covered by an operating grant (received under any EU or Euratom funding programme; see Article 6.5.(b)) are ineligible under the GA. Therefore, a beneficiary/linked third party that receives an operating grant during the action's duration cannotdeclare indirect costs for the year(s)/reporting period(s) covered by the operating grant, unless it can demonstrate that the operating grant does not cover any costs of the action (see Article 6.2.B4).
[3] This is the theoretical amount of EU contribution that the system calculates automatically (by multiplying all the budgeted costs by the reimbursement rate). This theoretical amount is capped by the 'maximum grant amount' (that the Commission/Agency decided to grant for the action) (see Article 5.1).
[4] The 'maximum grant amount' is the maximum grant amount decided by the Commission/Agency. It normally corresponds to the requested grant, but may be lower.
[5] Depending on its type, this specific cost category will or will not cover indirect costs. Specific unit costs that include indirect costs are: costs for energy efficiency measures in buildings, access costs for providing trans-national access to research infrastructure and costs for clinical studies.
[6] See Article 5 for the forms of costs.
[7] Unit : hours worked on the action; costs per unit (hourly rate) : calculated according to beneficiary's usual accounting practice.
[8] Unit and costs per unit : calculated according to the beneficiary's usual accounting practice.
[9] See Annex 2a 'Additional information on the estimated budget' for the details (costs per hour (hourly rate)).
[10] Flat rate : 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises and unit costs declared under budget category F if they include indirect costs (see Article 6.2.B.4).
[11] See Annex 2a 'Additional information on the estimated budget' for the details (units, costs per unit).
[12] See the Annex 2a for the details (units, costs per unit, estimated number of units, etc).
[13] Only specific unit costs that do not include indirect costs.
[14] See Article 9 for beneficiaries not receiving funding.
[15] Only for linked third parties that receive funding.

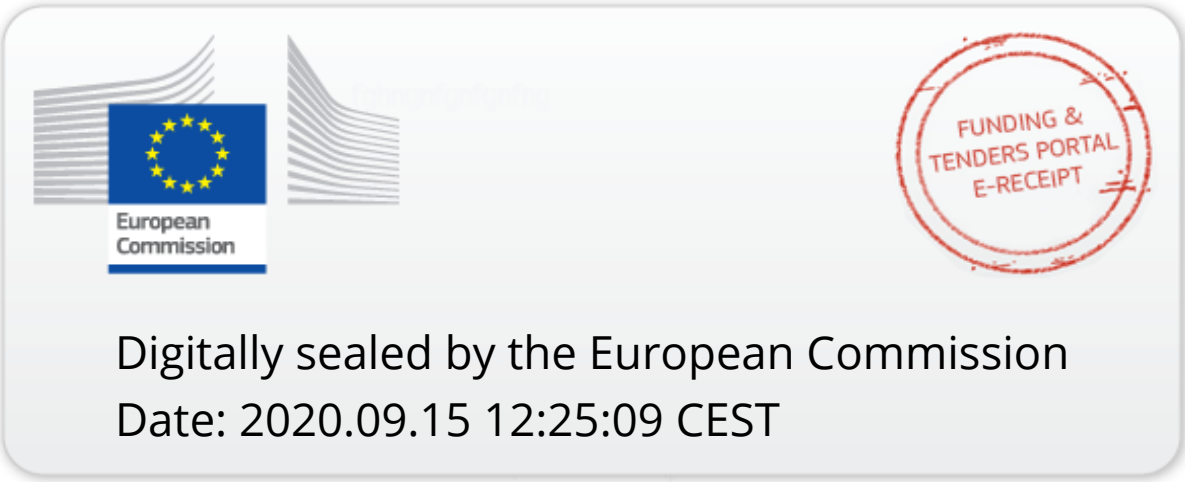
ANNEX 2a

ADDITIONAL INFORMATION ON THE ESTIMATED BUDGET

Unit cost for SME owners/natural beneficiaries without salary 1.

Costs for a beneficiary that is a natural person not receiving a salary Units:

Hours worked on the action :	2,167.15 hours
Amount per unit ('hourly rate'):	
Sara Bedin :	monthly living allowance: EUR 4 650 (Work Programme 2016-2017) country-specific correction coefficient : 106.7% (IT) amount per unit (hourly rate) = EUR 34.70



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