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D2.4: OMC's and EU-level meet-the-market events report

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Executive summary

Introduction

Following the outcomes of the WIGBI (wouldn't it be great if...?) sessions reported in D2.1, that had led to a need identification and assessment, and the analysis of the common functional requirements and the presumed uncovered items amongst them, laid down in D2.2, the project foresaw the good practice to verify the findings by Open Market Consultations and sharing the identified common 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. Moreover, the partnership needed to disseminate the project objectives, the innovative solution concept and the PIN (Prior Information Notice) amongst potential providers of innovative solutions.

The SMART.MET OMC consisted of:

- A questionnaire published at the project website (http://www.smart-met.eu/omc-survey/), inviting potential vendors to provide written contributions.
- Four Open Market Consultation (OMC) Meetings which were organized in four different European Member States (Italy, Spain, Belgium and Hungary). OMC is a formal step of the Preparation Stage of the Pre Commercial Procurement (PCP) timeline framework and allows for a two-way dialogue with the potential solution providers, to identify market risks potentially able to endanger business goals and supplier performance and to find out whether technologies are commercially available and acquire preliminary information about the level of coverage of the desired functionalities, in order to confirm the assumption for PCP.
- Market survey through a questionnaire aimed to collect (in depth) technical information on innovative and commercialized solutions that were performed on the basis of the written contribution provided by 12 players that had participated to OMCs and expressed their availability to explain and clarify the state-of-the-art, under confidentiality conditions.

Objectives of the Open Market Consultations

SMART.MET adopted and implemented three actions:

The Objective of the **questionnaire** was to collect market information on innovative and commercialized solutions, inviting industries to provide written contributions to form the basis for more in-depth State-of-the-art analysis and to assure the confidentiality on the information and solutions presented.

The main objectives of the **OMC events** were to:

- inform potential suppliers, developers and all other interested parties of the content and goals of the SMART.MET project;
- find out whether technologies are commercially available and acquire information about the level of coverage of the desired functionalities, in order to confirm the assumption for PCP;
- receive feedback on the goals set by the project and the feasibility from interested potential suppliers, subject experts and other parties;

The Objective of the **market survey** was to obtain a major response than had been reached with the OMCs and, under confidentiality conditions, deepen some aspects of participating technology vendors' feedback that were not properly addressed during the OMC events, to better understand if the targets set are realistic, attainable and innovative.

Outcomes of the Open Market Consultations

9 Participants initially compiled the questionnaire that had been published on-line.

About 85 attendees took part in the four OMC events. The outcomes of these events were helpful for both the technology vendors that participated in the events, as well as for the SMART.MET Consortium members, because both sides were given the possibility to reciprocally better explain some relevant topics, in particular the following:

- The Pre Commercial Procurement (PCP) process and timeline;
- Intellectual Property Rights (IPR) concerns and other relevant legal aspects;
- Technical aspects of the sought solution.

All of the 95 people initially enlisted in the 4 OMC's were subsequently invited by Aragon to fill-in the questionnaire, obtaining useful information from 12 participants (in total) that could not be fully dealt with during the meetings.

Main outcomes of the OMC step include:

- A market awareness about the project goals and scope as to innovation, research and development requirements and opportunities for leading edge companies both national SMEs, mid-sized players and multinational enterprises;
- Drawing the attention of technology vendors towards the Project and consequently an

increased interest into SMART.MET activities;

- Identification of the current solutions on the market in term of functionalities and potential future evolution with their related strengths and weaknesses updating the Baseline and State of the Art scenario. This being paramount as an input to next step (D2.5) where a patent search will be executed for a selection of functional requirements seemingly not implemented by described available solutions on the market.

The below sections report on the activities performed in the different parts of the OMC phase and its results, represented in the methodological step # 5.

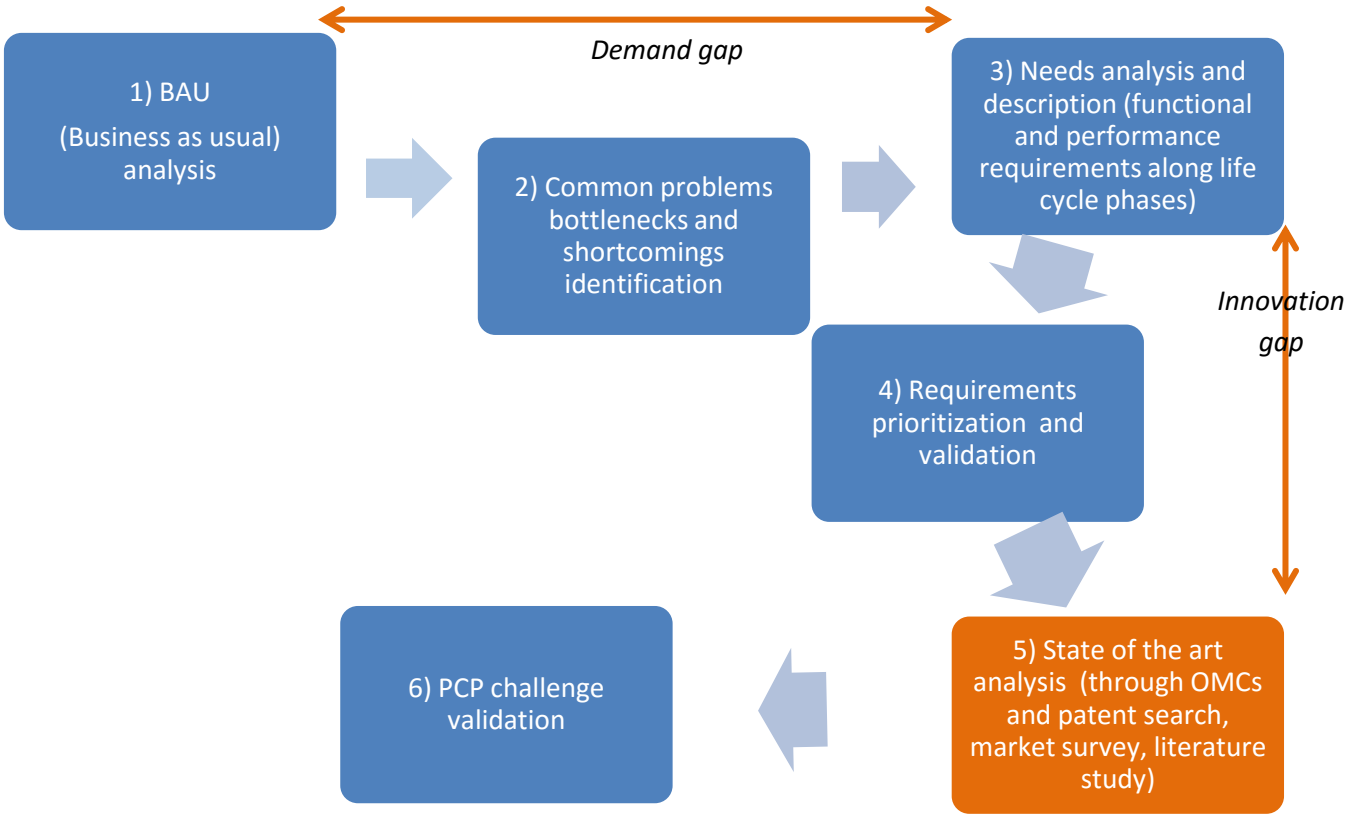

Figure 1 - Methodology and step covered in the document (in orange)

We recommend the reader to consider WP2 deliverables in an integrated way, because they have been designed, developed, updated, integrated and reviewed at different times, also to incorporate the recommendations provided by the EU commission's reviewers.

Revision History

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V. 17	13/12/2017	Paolo Bottiglione ARAGON	Release for ExB approval after Procurers' revision
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V.18	30/12/2017	Paolo Bottiglione ARAGON	Internal Review after Lead Procurer revision
V.19	4/1/2018	Paolo Bottiglione ARAGON	Release to submit to Quality Assurance Committee + request last info
V.20	24/1/2018	Sara Bedin	New release after QA
V.21	29/01/2018	Paolo Bottiglione ARAGON	Acceptation modifications Bedin + additional corrections
V.22	30/01/2018	Sara Bedin	Revision
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V24	3/2/2018	Paolo Bottiglione ARAGON	Integration of suggestions, final page-setting
V.25	4/2/2018	Sara Bedin	Final QA revision

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Annex VI: SMART.MET OMC Madrid and Livorno Press Releases

Annex VII: Pictures of the SMART.MET Open Market Consultations

Glossary and Abbreviations

Baseline Solution: The collection of systems and processes currently in use by the buyers group in the SMART.MET project.

State of the art Solution (SoA): The most advanced solutions made of systems and processes the market is already offering or it is about to offer

Breakthrough Solution: A solution that overcomes obstacles or restrictions that current SoA technology is not able to face, leading to the removal of current barriers for achieving needed and currently unsatisfied functionalities.

Technical and Regulatory References

[1] OIML R 49-1 WATER METERS FOR COLD POTABLE WATER AND HOT WATER. PART 1: Metrological and technical requirements

[2] OIML R 49-2 WATER METERS FOR COLD POTABLE WATER AND HOT WATER. PART 2: Test methods

[3] OIML R 49-3 WATER METERS FOR COLD POTABLE WATER AND HOT WATER. PART 3: Test report format

[4] EN 14154 -1 WATER METERS - PART 1: General Requirements

[5] EN 14154- 2 WATER METERS - PART 2: Installation and Condition of Use

[6] EN 14154- 3 WATER METERS - PART 3: Test Methods and Equipment

[7] EN 14154- 4 WATER METERS - PART 4 : Additional Functionalities

[8] IEC 61158-2:2014 INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS – PART 2: Physical Layer Specification and Service Definition

[9] IEC 61326-1:2012 ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL AND LABORATORY USE - EMC requirements - Part 1: General requirements

[10] BS 5515:1984 Code of practice for documentation of computer-based systems

[11] EN 13757-2 COMMUNICATION SYSTEMS FOR REMOTE READING OF METERS. PHYSICAL AND LINK LAYER

[12] EN 13757-3 COMMUNICATION SYSTEMS FOR METERS AND REMOTE READING OF METERS -. PART 3: DEDICATED APPLICATION LAYER

[13] EN 13757-4 COMMUNICATION SYSTEMS FOR METERS AND REMOTE READING OF METERS - PART 4: WIRELESS METER READOUT (Radio meter reading for operation in SRD bands)

[14] EN 13757-5 COMMUNICATION SYSTEMS FOR METERS – PART 5 : WIRELESS M-BUS RELAYING

[15] EN 13757-7 COMMUNICATION SYSTEMS FOR METERS - PART 7: TRANSPORT AND SECURITY SERVICES

1. Introduction

1.1 Open Market Consultation

Preliminary steps to the OMC

The Open Market Consultation (OMC) represents a formal step in the Preparation Stage of the SMART.MET Pre Commercial Procurement (PCP) project, as highlighted in the figure below:

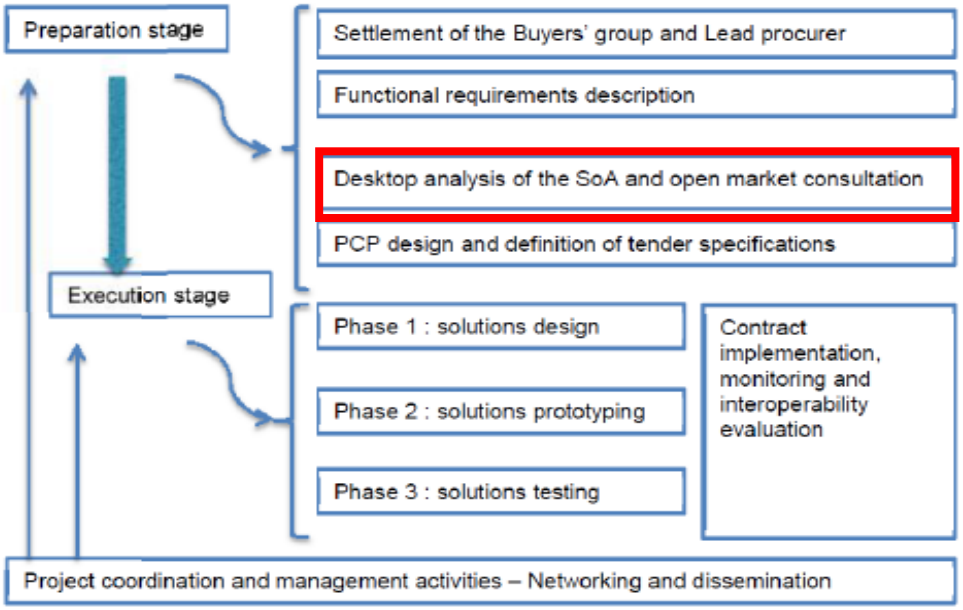


Figure 1 – PCP Timeline Framework

The OMC phase was aimed to enable the Smart.Met Consortium to raise awareness of the market regarding the project and to get valuable insights concerning the feasibility thereof. Specifically, the OMC allowed the Smart.Met public procurers to establish a dialogue with the potential solution providers, to assess the risks associated with this specific procedure before launching the PCP, to verify the identified needs with the industry and research sector, to get insight that will be fed into the design of the procurement model, to probe possible first release technology issues and verify the acknowledged technology gap.

The OMC phase was preceded by two preparatory steps: a Needs Analysis and Functional Requirements Elicitation and the definition of a Challenge Brief and Uncovered Functionalities description, as further provided below:

- The first step of the preparation phase of SMART.MET project concerned the conduction of the needs elicitation, identification and analysis, which has been executed and translated into a first list of functional requirements (D2.1).
- In the second step, these requirements have been checked against the Baseline and State of the Art Solutions (see Glossary and Abbreviations) and the possible technology gap to cover the desired requirements has been investigated (D.2.2).

Against this background, the SMART.MET project conducted 4 OMC events and published a questionnaire preceded by the advertised publication of a PIN, followed-up by several insights with available technology vendors, with the aim to get a proper understanding of what the market may currently offer as response to the sought solution, to preliminarily feed the SoA analyses. The sections below provide additional details on the organization and outcomes of the OMC.

Organization of the OMC events

The OMC was advertised online, through the publication of a Prior Information Notice [n° 213642-2017, published on 03/06/2017]. Four different OMCs were organized in September 2017, in four different EU Member States, as follows:

1. **Madrid, Spain** - 05/09/2017
2. **Livorno, Italy -** 11/09/2017
3. **Brussels, Belgium -** 21/09/2017
4. **Budapest, Hungary -** 26-27/09/2017 (as main and resuming OMC meeting)

The SMART.MET partnership decided to change the initial option to execute just one OMC, in order to broaden the footprint of the initiative and get a strong visibility on a larger market. The OMC events were carried out in four different locations based on the nationalities of Buyers belonging to the Consortium, so to assure an easier location to be reached by many solution providers and to have the opportunity to have the meeting mostly in their own language.

At the beginning of every OMC, the objectives of the event were recalled:

1. Check the technological state of the art concerning smart water metering solutions
    - Find out whether technologies are commercially available
2. Identify market risks potentially able to endanger supplier performance

3. Highlighting the fact that OMC is not a tender phase, nor a pre-selection step
    - Participants were not expected to submit tenders or proposal at this preliminary stage
    - The competitive phase of the Smart.Met joint and cross-border public procurement procedure will be conducted separately with an open and advertised procedure.
4. Enable networking and B2B (Business-to-Business) interactions to increase the opportunities for industry to form consortia and take part in the envisaged procurement.
5. Enable preliminary analysis of the operational contexts where innovations will be introduced.

The OMCs offered the possibility to companies to gather more in-depth information about the scope and objectives of the SMART.MET project, in addition to the information provided through web site communication. Several of SMART.MET partners member assisted to the various OMC events to achieve this result and guarantee the homogeneity of the communication across the four events.

The launch of the Open Market Consultation was a good opportunity to issue press releases and promote the project at European level and in each country where SMART.MET Consortium partners are located. Moreover the Consortium intended to encourage other public water utilities procurers to be involved in the project.

The proceedings of the 4 OMCs organized by SMART.MET partners are provided in chapter 2. References are made to the presentation in **Annex I:** SMART.MET OMC's presentation.

1.2 Market survey and Questionnaire

The OMCs gave the possibility to promote general knowledge on the project to a wide range of audiences, with a special focus on the European Union.

As mentioned above, the OMC events contributed to raise awareness on the benefits of innovation of water smart metering and eventually to raise awareness on the current issues faced by water utilities willing to adopt solutions for water smart meters (e.g. vendor lock-in, lack of ready-made market solutions responding to the procurers' needs).

The OMCs were also the place for a public disclosure of the progress and results that the project is seeking for. Additionally, the SMART.MET project got the possibility to promote PCP towards both incumbent and new smart metering suppliers (ensuring the highest possible engagement of the market so as to obtain the best available solutions), and to engage other water utilities to share experiences.

Even if the OMCs had some undeniable benefits and they were the perfect occasion for technology vendors to grab opportunities, at the end of the day it was not really clear what solutions they could bring on the market in terms of functionalities and potential future evolution. The debate, though supported by some structured material, was not at the expected technical level.

This drawback was expected to be countered by the published questionnaire, but only 9 participants had provided textual contributions. Moreover, from the OMCs several aspects had emerged that brought the need to revise the questionnaire to include new insights.

For this reason the Smart.Met group decided to deeper investigate the baseline and the state of the art proposed by the vendors.

Final results and conclusions concerning the OMC and meet the market activities are laid down in chapter *4. Final Conclusions* from OMC's and market survey.

2. Proceedings of the Open Market Consultation events

2.1 Key figures

All the OMC events were held in September 2017, as follows: the first one took place in Spain - Madrid on 5 September 2017, then the second OMC event was organized in Italy - Livorno on 11 September 2017, the third one in Belgium - Brussels on 21 September 2017 and finally the last one was held in Hungary - Budapest 27 September 2017.

All the OMC events were organized following an Agenda structured as listed below:

09:00/9:30 Registration of participants

09:45/10:00 SMART MET project: goals and achievements

10:00/10:15 The EU innovation demand policy: definitions, legal references and operational indications

10:15/11:30 Innovation needs presentations from SMART MET procurers

11:30/13:00 Technical Dialogue with the market and evaluation of the technology state-of-the-art

13:00/13:30 Final remarks

13.30/14.30 Networking

During the OMC events, a presentation of the project was screened and it served as the basis for a bilateral discussion between the SMART.MET group and technology vendors.

The Smart.Met project delegates who attended the meetings were the Coordinator, OIEAU, the Lead Procurer (Viveraqua), a group of representatives among the Technical Partners and Buyers representing the country where the Open Market Consultation was taking place.

The OMC events saw the participation of 85 stakeholders, among technology vendors (e.g., smart meter manufactures and system integrators) as well as water distributors (see Figure 2**Errore. L'origine riferimento non è stata trovata.**) from 9 different countries[1] (see Figure 1).

[1] In case of multinational companies, the country of origin of the holding company has been chosen instead of local subsidiary.

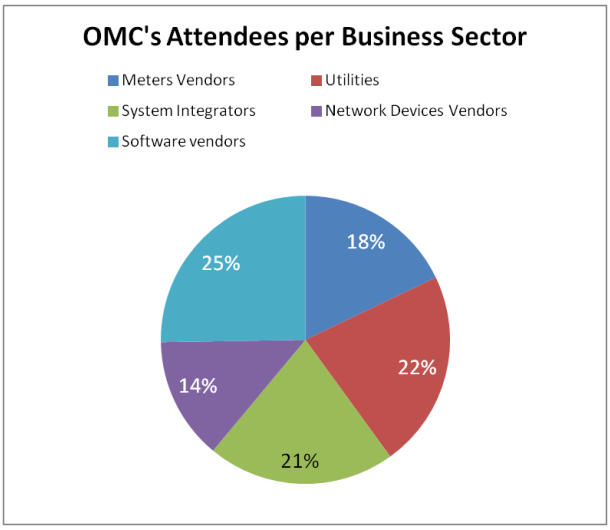


Figure 2

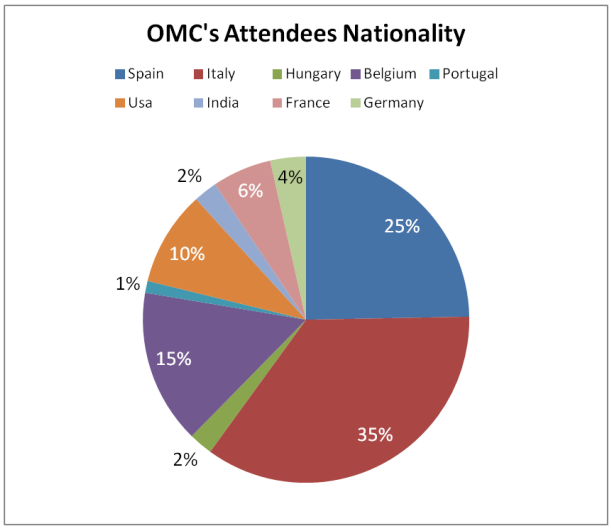


Figure 1

In general, it can be affirmed that all the OMC events were fruitful in terms of information gathering and sharing. See **Annex II:** SMART.MET OMC's attendees list and **Annex VII**: Pictures of the OMC's.

2.2 Topics presented and discussed during OMC events

The following expected benefits of the Smart.Met sought Solution were presented to the OMCs' participants and discussed during the meetings.:

1. Better detection of leak/water loss and possibility to take immediate actions;
2. Prevention of water network pollution due to water reverse flow in case of floods;
3. Capability to implement other functions (e.g. monitoring water quality and composition);
4. Better management of networks and water balance: decreasing operating costs;
5. More efficient management of the billing process:
    a. Effective rather than expected consumption
    b. More accurate calibration of water tariffs
6. More efficient water use thanks to increased awareness on water users' behavior;
7. More sustainable meters: longer battery lifetime, easily recyclable;
8. Avoid lock-in situations thanks to openness of the solution.

During the OMC, it was mentioned to the participants that the above list of project objectives (then translated in the solution functionalities) was the result of several brainstorming sessions and desk analyses performed by the Smart.Met team with regard to procurers' need. It was also mentioned that the related functional requirements would be provided in the tender documentation and would represent a basis for the application of one awarding criterion.

Furthermore, the audience to the OMC events received information regarding what the SMART.MET Project intended with the concepts "Baseline", "State of the Art" and "Breakthrough" Solutions. Particularly:

- the SMART.MET Project refers to **Baseline Solutions** as the collection of both systems and processes currently in use by the SMART.MET Buyers.
- the SMART.MET Project defined as **State of the Art Solutions**, the most **advance**d solution made of systems and processes the market is already offering or it is about to offer
- the SMART.MET project refers to **Breakthrough Solutions** as those new solutions that overcome obstacles or restrictions that current SoA technology is not able to face, leading to the removal of current barriers for achieving needed and currently unsatisfied functionalities.

Lastly, the particular challenge of the PCP was unfolded: proposed solutions need to be **Breakthrough**, innovative or even disruptive. They must go beyond both the **State of the Art** and what the SMART.MET Team Members have experienced as **Baseline**.

2.3 Questions & Answers

Alongside the presentation and during the subsequent discussions, a range of questions were asked by the participants.

They can be roughly divided in 2 main topics:

A. General information about the Funded Project and related issues, including Intellectual Property Rights (IPR)

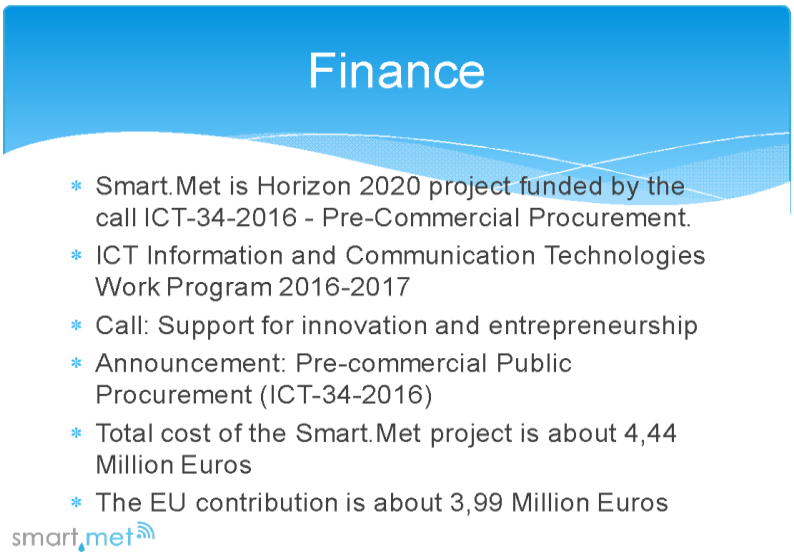
B. Solution Delivery: functional requirements

Herein below the additional information that was provided upon the questions is detailed. Where the question was connected to a specific slide, it is referred to in the text and an image is shown to facilitate the understanding of the reader. However, the full page slides can be found as Powerpoint Presentation in **Annex I:** SMART.MET OMC's presentation.

A. General information

Rif Slide 5 – Who is going to finance the project?

The European Commission provides funds to support solutions required and defined by buyers and identified and then proposed by vendors. Buyers provide for 10 % of the needed resources.



Rif Slide 10 – What is PCP Pre-Commercial Procurement?

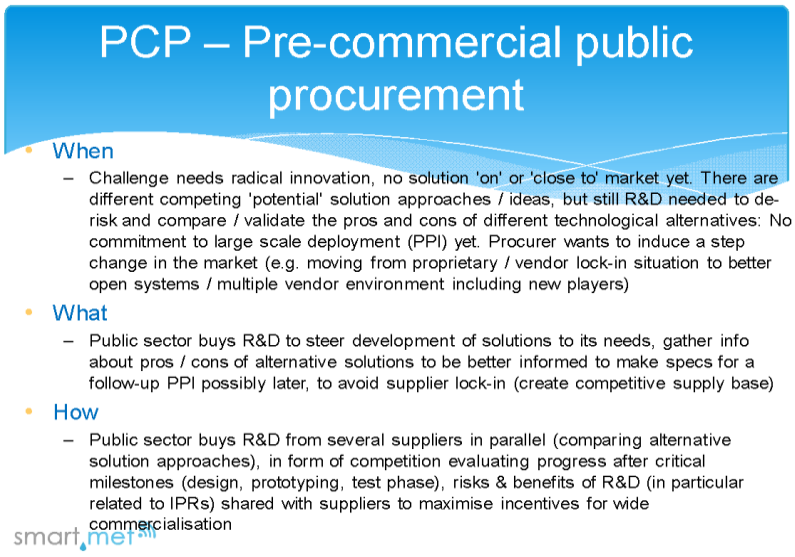
PCPs allocate the ownership of Foreground Intellectual Property Rights (IPR) generated by participating R&D providers to those R&D providers themselves. All Background IPR remains normally the property of the party that generated it. However, there may be licensing obligations relating to Background Intellectual

Property Rights in a PCP. Since the purpose of PCP is to encourage both the development and diffusion of innovative solutions, PCP contracts often include an obligation to commercialize the R&D results generated in the PCP. A so called 'IPR call-back provision' provides that, if an R&D provider that who participated in the PCP would abuse or would fail to commercialize the R&D results that it generated in the PCP (foreground IPR) against the public interest (within a certain time-frame defined in the PCP contract) the ownership of foreground IPR shall revert to the public procurer.

All possible results arising from Phase I activities and their intellectual property rights that could be the first step of a possible solution, or part thereof, will remain belonging to the vendor company. Smart.Met Partners are obliged to publish an abstract of the solution presented, as agreed with each coordinator, as well as the PCP results not covered by IPR's. All the contractual conditions will be explicitly clarified beforehand in the Call for Tender (CfT). In general terms, there is an obligation for the project to assure dissemination of an abstract of the solutions selected, as agreed with each contractor, as well as the PCP results not covered by IPRs. In any case, it is a precise task of each single contractor to protect his own generated IPRs.

As a consequence, any contractor is allowed to exploit commercially its newly developed solutions. In return, the price defined in the tender must contain any financial compensation in the case where the IPRs would be transferred to The Procurers.

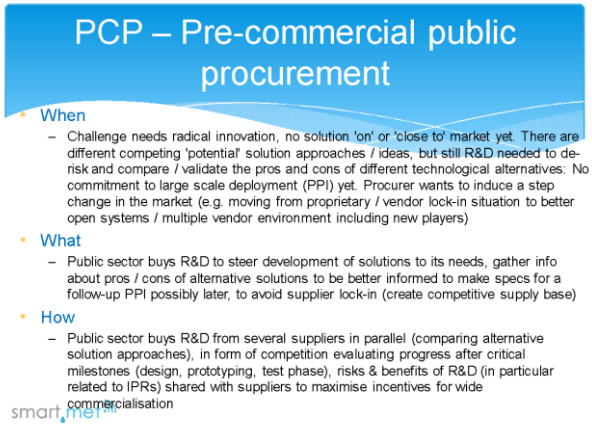
In return, the tendered price must contain a financial compensation for keeping the IPR ownership compared to the case where the IPRs would be fully transferred to the Procurers. Moreover, the Procurers must receive rights to use the R&D results for internal use and licensing rights basing on certain conditions. For the avoidance of doubt, the PCP supplier will retain the ownership of the IPR developed during the PCP, The Procurer will retain a right to use the IPR after the PCP (not paying for the IPR again, should the specific solution be procured in a post-PCP public procurement), and the Contractor shall for its retained ownership to the IPR offer a Price for the PCP services including a discount.

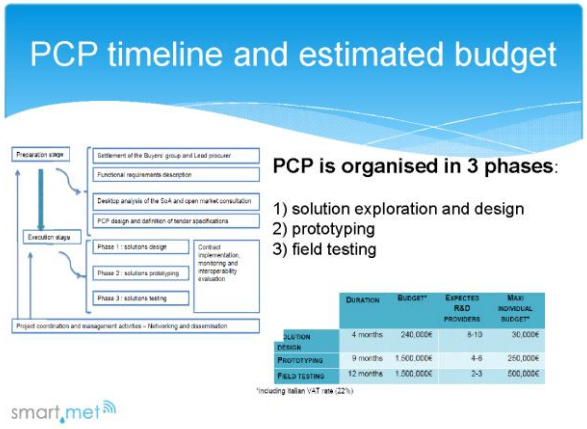


Rif Slide 10-12 – What is the way PCP Pre-Commercial Procurement works / Timeline / Milestones?

The SMART.MET Project will be developed following the rules of a PCP framework.

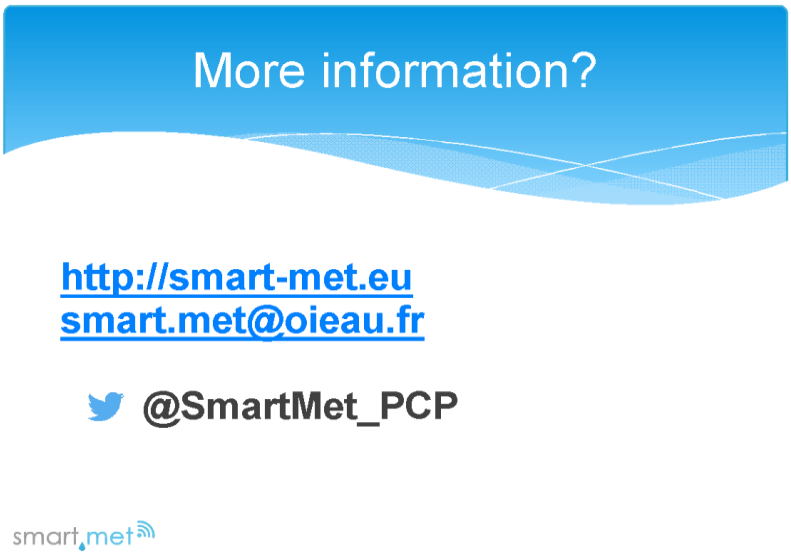
PCP awards R&D contracts to a number of competing contractors at the same time, in order to evaluate and compare different approaches to solve the problem. It thus offers innovators an opportunity to show how well their solution performs against the competitor's one. The R&D is split into three phases (solution design – Phase I-, prototyping – Phase II-, and original development & testing – Phase III-). Evaluations after each phase progressively identify the solutions that offer the best value for money and meet the customers' needs. This phased approach allows selected successful contractors to improve their offers for the next phase based on lessons learnt and feedback from procurers in the previous phase.





Rif Slide 36 – More information?

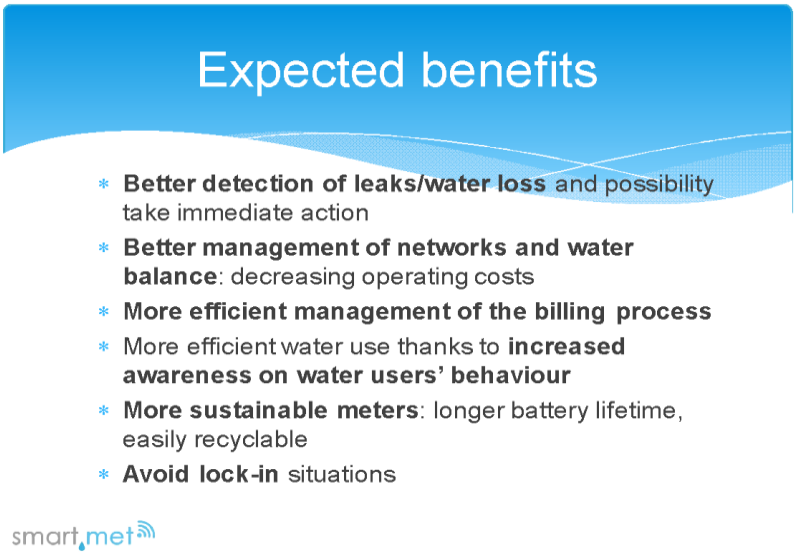
All SMART.MET materials will be published also on the project web site and consequently available to all OMCs participants.



B. Solution Delivery: functional requirements

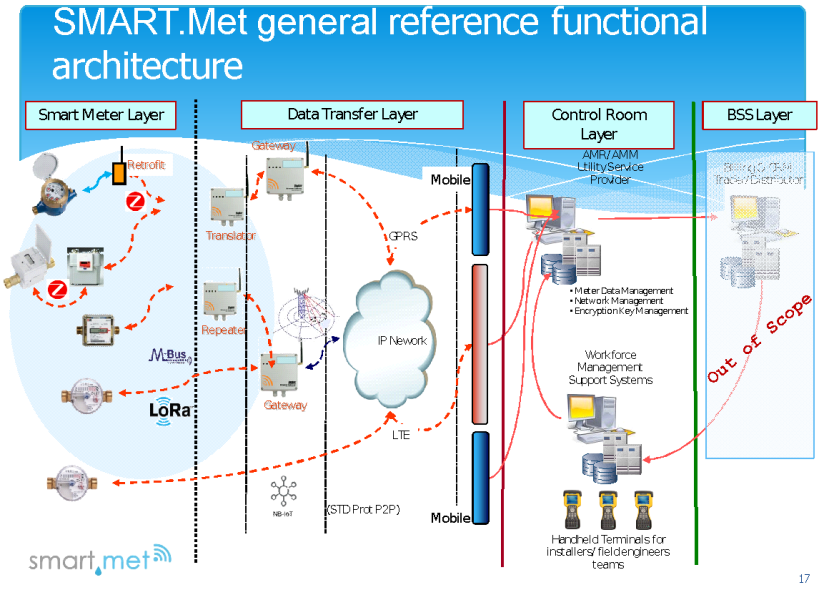
Rif Slide 6 – Is there a maximum operating costs per unit that should be taken into account?

Smart.Met-TAC (The Technical Assessment Committee) defined current total costs per unit as acceptable maximum cost of the new solutions.



Rif Slide 17 – SMART.MET general reference functional architecture

Referring to the possibility to respond to the tender as a supplier of a specific component of the entire solution, the SMART.MET project underlines that is not possible.



Rif Slide 18 – SMART.MET Innovation Need

Meters must be compliant with quality standards already defined by the European Commission. Moreover, when the tender will be issued, a detailed specification list of mandatory and optional additional requirements will be available.

Referring to the presence of possible restrictions or preferences about measurement technologies, Smart.Met project states that any metering technology complying with the existing metrological and technical legislation can be used.

The main feature required is the **interoperability/interchangeability**. From this concept comes immediately the need of an open common standard communication and functional protocol and the related data model. This feature enables competition among vendors, and prevent lock-in situations among buyers.

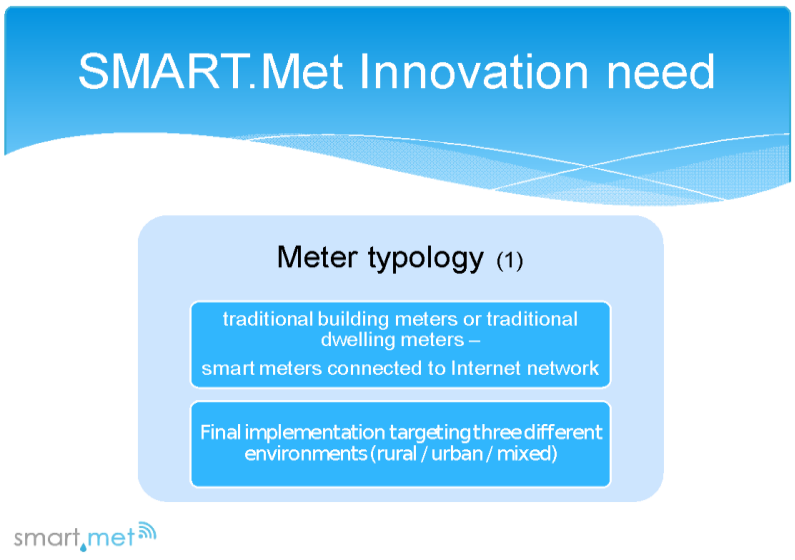
Bi-directional communication and the possibility to operate a Smart Meter **centralized data management and back up/ synchronization** is another highly regarded functionality.

The Smart.Met project does not require any specific technology for implementation of sensors for **leakage detection** on board the meter. The capabilities to set the frequency of the daily transmissions (how many times per day) and to synchronize meters clocks to a reference master clock valid throughout the three layers architecture (Smart meter layer, Data Transfer Layer, Control Room Layer) allows to perform flawlessly a network side leakage detection functional process and many other functionalities whose execution or monitoring may require time accuracy if not even event synchronization.

A Smart Meter local display along with a local communication channel is also appreciated.

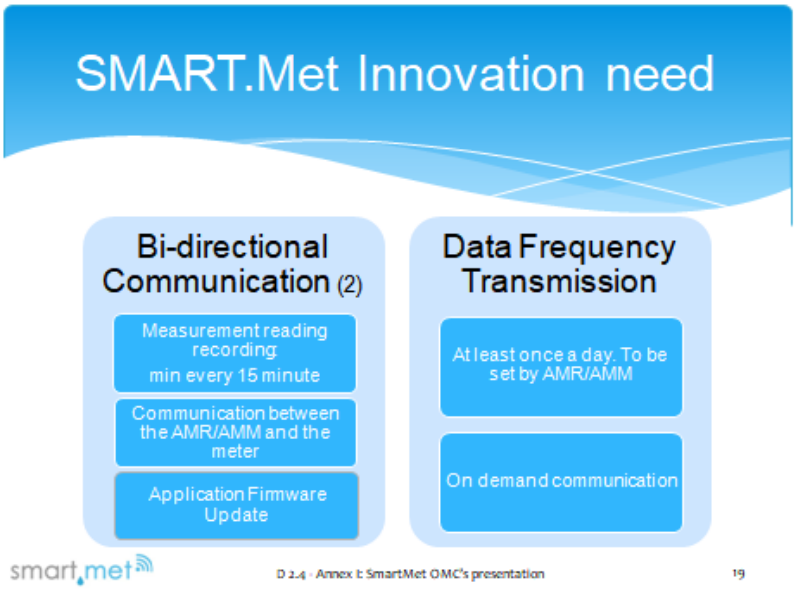
An additional requirement is that the measurement and the transceiver units have to be in two separate and distinct components, even if integrated into the same device.

This solution allows to change the transceiver unit in case of new transmission protocols needs or technology update without interfering with metrological approval or technical regulation infringements of the meter.



Rif Slide 19 – SMART.MET Innovation Need

The update of the firmware on board the meter must be performed remotely by the AMR/AMM application.



The transmission of the data from meter to AMR/AMM Utility Service Providers (see **Annex IV** – Smart.Met functional Architecture) must be set by AMR/AMM application and could have more than one daily transmission.

The meter must record, in a specific on-board memory storage device:

- The measurement data at least every 15 minutes;
- At least the last 20 alert events data;
- The memory storage has to be large enough to store data for at least a rolling window of 2 months of elapsed time with the possibility to overwrite the new data when the end of the dedicated buffer is reached.

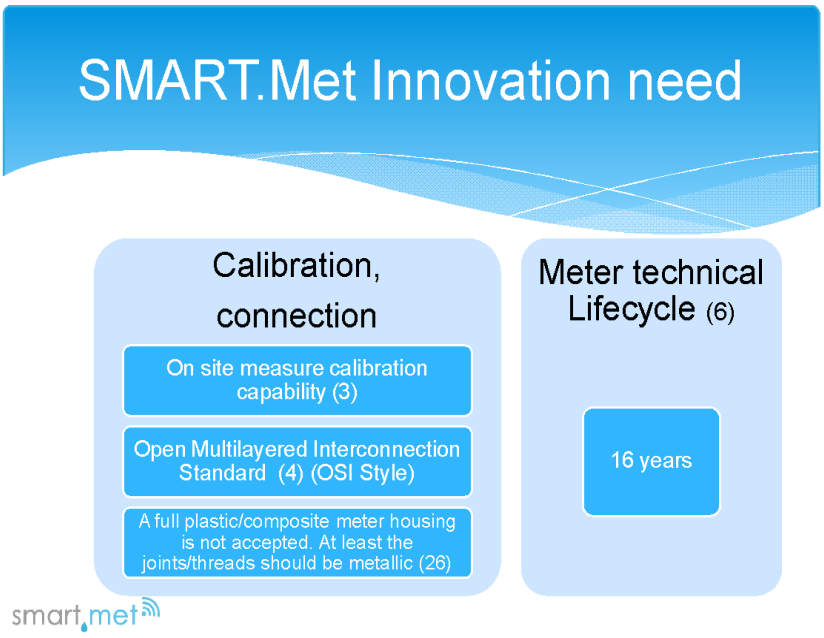
The complete or selected part of this memory content must be transmitted on request to AMR/AMM application.

Better performances of the meter in terms of Data Measurement Recording Frequency, number of alert events and memory storage capacity of the database have to be deeply balanced with the direct consequences on the battery lifecycle duration.

Rif Slide 20 – SMART.MET Innovation Need

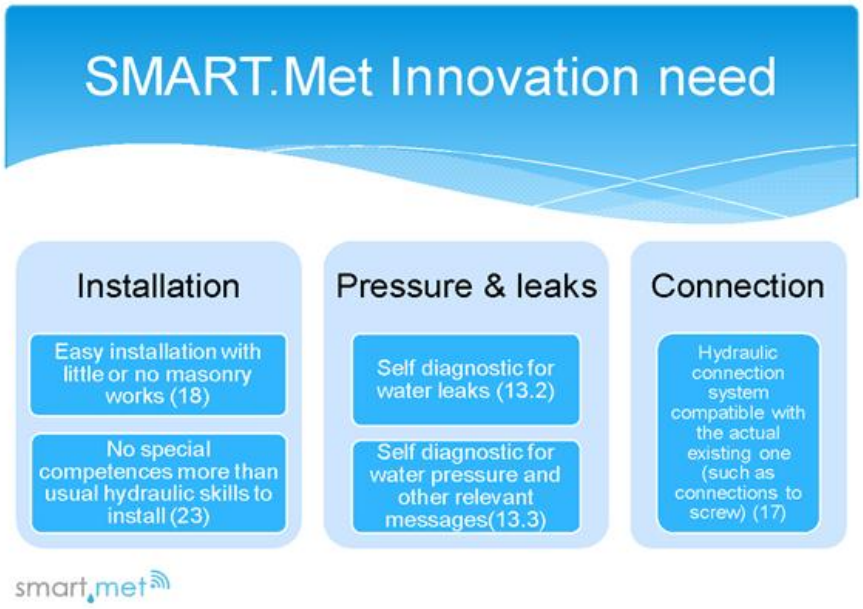
Battery lifetime should be at least as long as the regulatory lifetime of the meter, which is for some countries as Belgium 16 years.

The Smart.Met project encourages the investigation and the consequent development of battery re-charging mechanisms to contribute to guarantee the 16 years meter battery lifetime duration.



Rif Slide 23 – SMART.MET Innovation Need

The Smart.Met project requires that the smart meter will be capable to perform autonomously reverse flow detection. In this case the meter, when the reverse flow occurs, must automatically close the valve, wake up the transmission module and send a specific alert to AMM/AMR application in the Control Room. All these functionalities shall be realized in a max time delay defined by stakeholders and procures during the tendering phase.

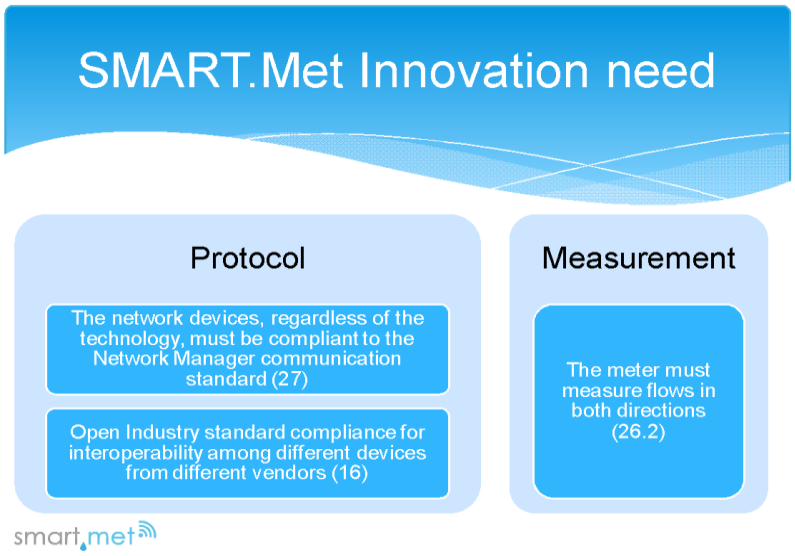


Rif Slide 25 – SMART.MET Innovation Need

Regarding the need of an open protocol, it will be chosen and adopted among those already available or it could be defined from scratch. Security protocols in communications have to be chosen among those already available and corresponding to the security best practices in use in others application such as gas or electricity.

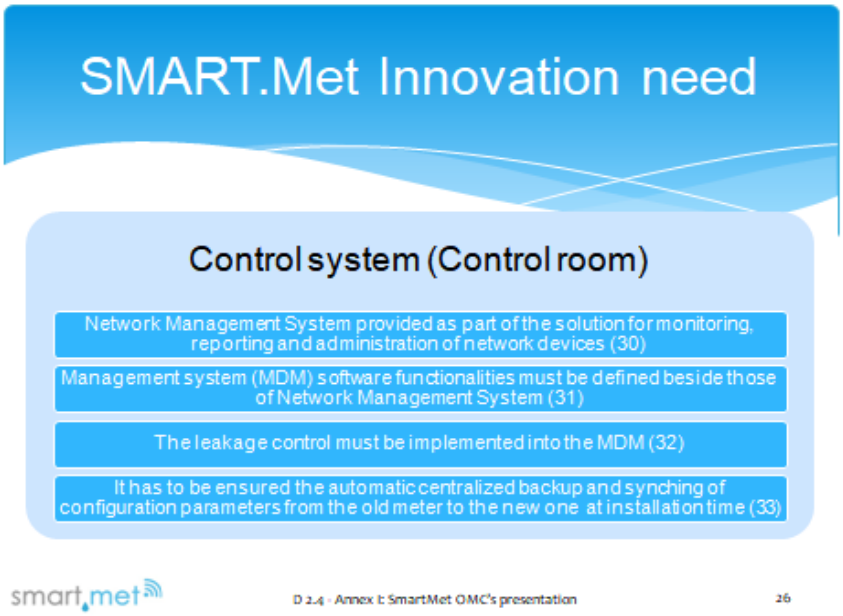
Moreover, it is required a bidirectional communication between Smart Meters and Control Room. In the tender documents, all specific needs of such protocols will be defined.

The European Commission does not perform a specific evaluation and approval task on protocols, but will assess the overall solution, including protocols.



Rif Slide 26 – SMART.MET Innovation Need

Detailed requirements for the AMM/AMR application are not yet defined.

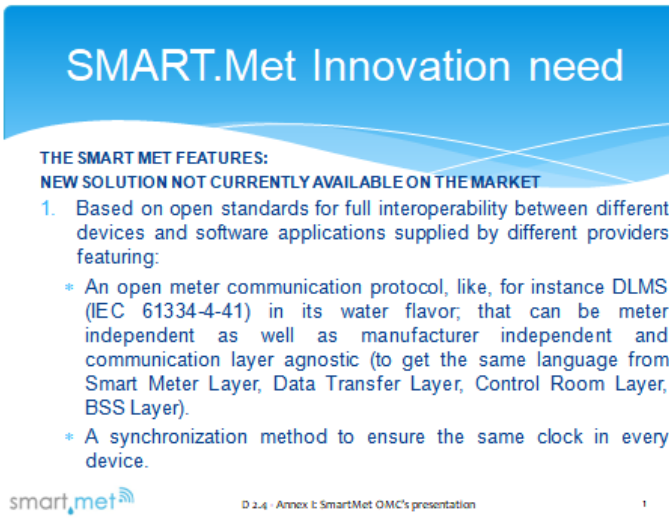


Rif Slide 27 and 28 – SMART.MET Innovation Need

Besides the long list of functional requirements identified during the WIBGI sessions (see D2.1 and D2.2) four main requirements have been highlighted during OMC sessions:

1. Open Standard for full interoperability between different devices and software applications provided by different suppliers (communication and application protocol).
2. Near real time mode communications from Smart Meter layer to Control Room Layer and backwards.
3. Energy source capable to ensure real-time operations for the whole meter life-cycle duration[2].
4. Smart Meter capable to make some basic decisions and to execute some automatic actions (e.g. valve closure in case of reverse flow detection).

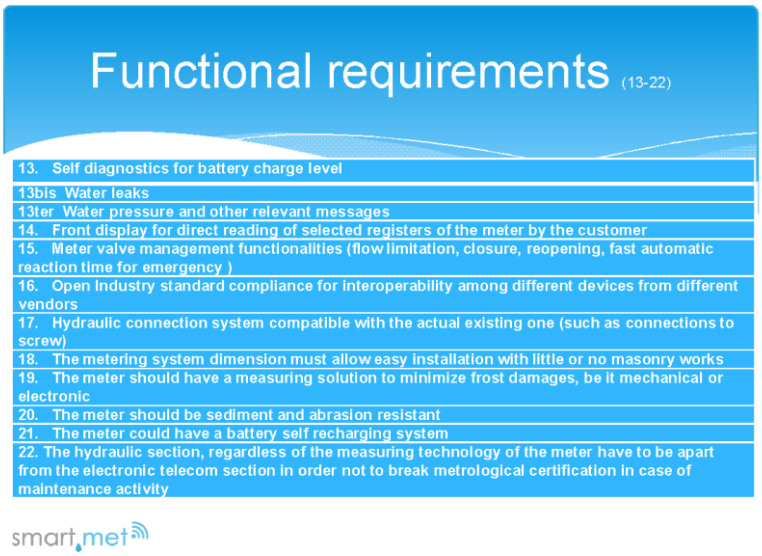
Further, Smart.Met Project Executive Board will decide whether or not to include specific water quality parameters sensors into the meter requirements. At the moment those sensors are not considered as required.



[2] In the meetings that followed OMC events, requirements 2 and 3 have been reconsidered by the Buyers Group and replaced by a Schedulable On Demand bi-directional real-time communication within a limited timeframe to reduce energy consumption and gaining a lighter impact on battery life. The survey performed after the OMC events took into consideration this change.

Rif Slide 33 – Functional requirements

All the metrological characteristics shall be compliant with the existing legal technical requirements (MID) and European sector regulations.



2.4 Feedback received from participants

Although much of the time during the OMC events was spent presenting the project objectives, PCP features and Questions & Answers, some significant feedback was received from the participants.

Namely:

- Attendees saw an opportunity in the project to create something new even though it appeared undoubtedly challenging.
- It emerged that the questionnaire published at the project website was not filled out by many participants due to difficulties in answering it and confidentiality conditions to be assured. It led to the decision to deepen the technical aspects with the respondents, reviewing the questionnaire and structuring it alongside more specific questions with a closed modality for answers (yes/no, option a or b, etc).
- Participants clearly pointed out that the first barrier to be understood is the previous and actual fragmentation of demand and of the standards to be adopted. The current fragmentation reduces the potentiality of the smart water market. Manufacturers feel the need for a complete standardization of an application as an innovation process. Either if coming from an alliance of selected manufacturers or driven by some new EU directive / national regulation (e.g. Italian AEEGSI 155/08) it is very well accepted, as a vehicle for a more open competition.
- Participants placed serious doubts on the feasibility to comply with the requirements regarding the battery lifetime considering the many functions that have to be guaranteed.

- A proposal was done to consider a "*Schedulable On Demand Bi-directional Real-Time Communication within a Limited Timeframe*" to reduce energy consumption and gaining a lighter impact on battery life.
  In the (internal) project meetings that followed the OMC sessions, this proposal has been discussed amongst Procurers and embraced, leading to the replacement of original requirements 2 and 3.

Budapest

Brussels

Livorno

Madrid

Figure 3 – Impressions of OMC events and materials

3. Market Survey and questionnaire

3.1 Questionnaire

A questionnaire had been developed by the SMART.MET TAC and was published since June 2017, contextually with the PIN, on the project website at the link http://www.smart-met.eu/omc-survey/ mentioned in the PIN.

The questionnaire asked 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. Also information on lifetime and compliance with EU and other regulations and standards were requested.

In August the Questionnaire was slightly revised, including an evaluation of the feasibility of the requested solutions.

Nine questionnaires were submitted by participants, though not all fully and adequately completed. They brought the following insights:

- Participants often provide technologies for one or several aspects of the needed systems.
- Interoperability of radio devices and the related battery life-time are considered the most challenging issues and not considered feasible by all participants.
- Not all the answers were provided. We think that it could be due to having asked open questions instead of multiple choices, giving rise to uncertainty by the reader.

3.2 Methodology of the in-depth market survey

Following the analyses of the technical information provided by participants to the OMCs a follow-up market survey was organised to obtain more technical information on several aspects of the performance of proposed solutions. It was performed as follows:

1. An updated survey was prepared, taking into consideration the feedback obtained during the OMC events: technical questions were reformulated and the initial requirements updated with the replacement of n. 2° and 3° by a *Schedulable On Demand Bi-directional Real-Time Communication within a Limited Timeframe* (see footnote 2);
2. The technical in-depth survey was sent to all 95 participants who had registered during the OMC events;
3. 12 Vendors answered positively to the e-mail and with them a call was scheduled of about 45 minutes, following the questionnaire structure, to support the completion. At the end, 12 questionnaires were submitted to Aragon from 4 companies from Italy; 4 from Belgium; 1 from Germany, 1 from Portugal, 1 from UK and 1 from France. They covered the following business sectors: Meter Vendors, Network Devices Vendors, Software Vendors, System Integrators.

All the 12 completed questionnaires were sent to ARAGON and gathered in the anonymized report hereby attached (see **Annex IV:** SMART.MET Post OMC Survey).

In the survey, 49 technical questions were investigated. The survey was structured with multiple choices questions and a closed list of possible answers (e.g yes/no; a/b) divided in four main clusters derived from the main phases of the life-cycle in smart water metering application (see D2.1):

1. Installation and Replacement
2. Use and Management
3. Maintenance
4. Disposal

This methodology allowed for a post analysis identification of indexes, trends and performance.

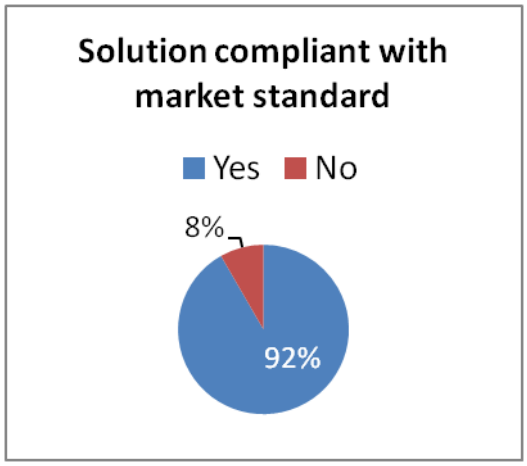
3.3 Results of the market survey

After collecting all the needed information through the survey, an analysis was carried out. We decided to report here only the most significant questions and answers out of the 49 questions submitted to vendors (for the complete set of questions and answers details see Annex IV), that reflected the highest rate of innovation in our opinion and that gave, in several cases, evidence of the most significant functional and technology gap. This study has been the basis for drawing up the recognition of the most advanced solutions the market is already offering or it is about to offer. It ended up with the wished validation of the assumptions for PCP, that involves R&D services aimed to the development of new and original or even disruptive solutions if related respectively to the State of the Art and to the Baseline.
It should be highlighted that, while the questionnaires that had been autonomously compiled by answering the web-published version had resulted often in scarce details and generic answers and the interaction during the OMC events had resulted affected by a high level of reservation, the survey had allowed to enter more specifically in technical details.

Moreover, confrontation with the technical features of the proprietary technologies of these vendors as present on the market, gave the impression that the answers were sometimes referred to what they could develop in a relatively limited time at low TRL level (initial prototypes) and not to what they actually offer on the market. For this reason, the here presented outcomes should be considered with a certain suspicion of "wishful thinking", typical of a commercial company that wishes to present its solutions as the best on earth, and were thus subsequently verified by in-depth SoA analysis.

The parallel desk analysis revealed that the declarations of compliance with specific requirements were not based on technical features and functionalities that are fundamental to allow for it

Question #1– **Installation and Replacement** - Is your interoperable solution component complying with a defined industry market standard?

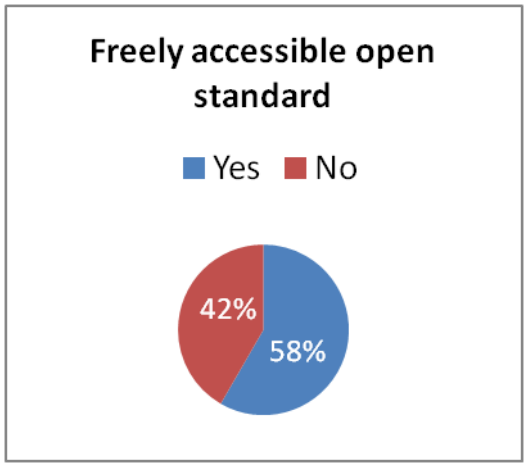


Vendors mentioned mostly the following standards concerning both communications and metrology:

* OMS[3], OPC UA[4]
* Wireless Mbus (EN 13757-4)
* LoraWan / Sigfox, Frequency band: 868 MHzCEN EN 14154, IEC 61158-2,BS 5515,IEC 61326-1

[3] Open Meter Specification
[4] Open Productivity Collaboration Unified Architecture

Question #3 – **Use and Management** - Do the Smart Meter, Data Transfer and Control Room Layers offer an Open, solid, market tested, efficient and resilient interconnection standard?



Vendors who claimed to have an open standard affirmed respectively for Communication and Application protocols to have:

Communication protocol:

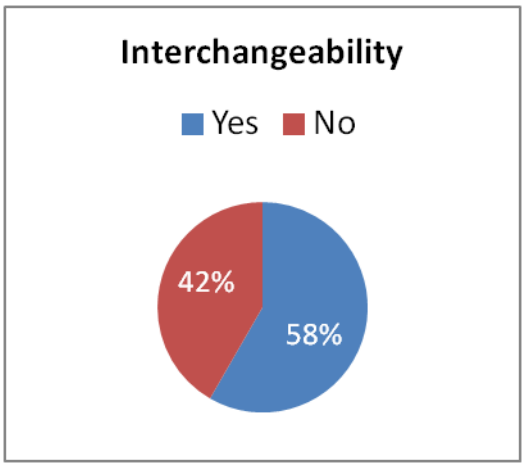
* Standard 13757-4 / 13757-7, Sigfox and LoRaWAN
* OMS

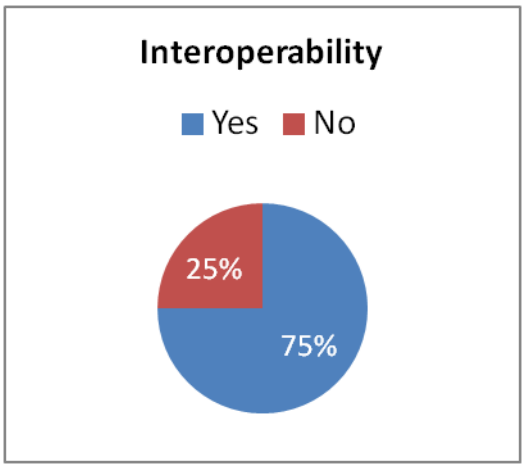
Application protocol:

Wireless M-Bus standard EN13757-x and Cosem for specific markets (Italy)

Question #4 – **Use and Management** - Does your open protocol application ensure **interoperability** among components from different vendors?

Question #5 – **Use and Management** - Does your open protocol application ensure **interchangeability** among components from different vendors?





All the Vendors with an open standard also declare to have *interoperability*[5] among components, except for two that, while not adopting any open standard they still claim to have an interoperable solution. This is a clear inconsistency[6]. Although we report these answers the way they were provided, we think that they must be thoroughly verified.

As expected the interchangeability requirement has a significant reducing impact on the percentage of available solutions that potentially comply with SMART.MET requirements: we go from a 75% of interoperable solutions to 58% of interchangeable technologies.

Anyway, these figures show that the interoperability/interchangeability issue is complex and that a buyer can easily be mistaken by a restrictive interpretation of it or mislead by marketing driven assertions. In this project the scope of interoperability/interchangeability covers all layers of the communication protocols from the physical layer to the application layer (as defined in the OSI model).

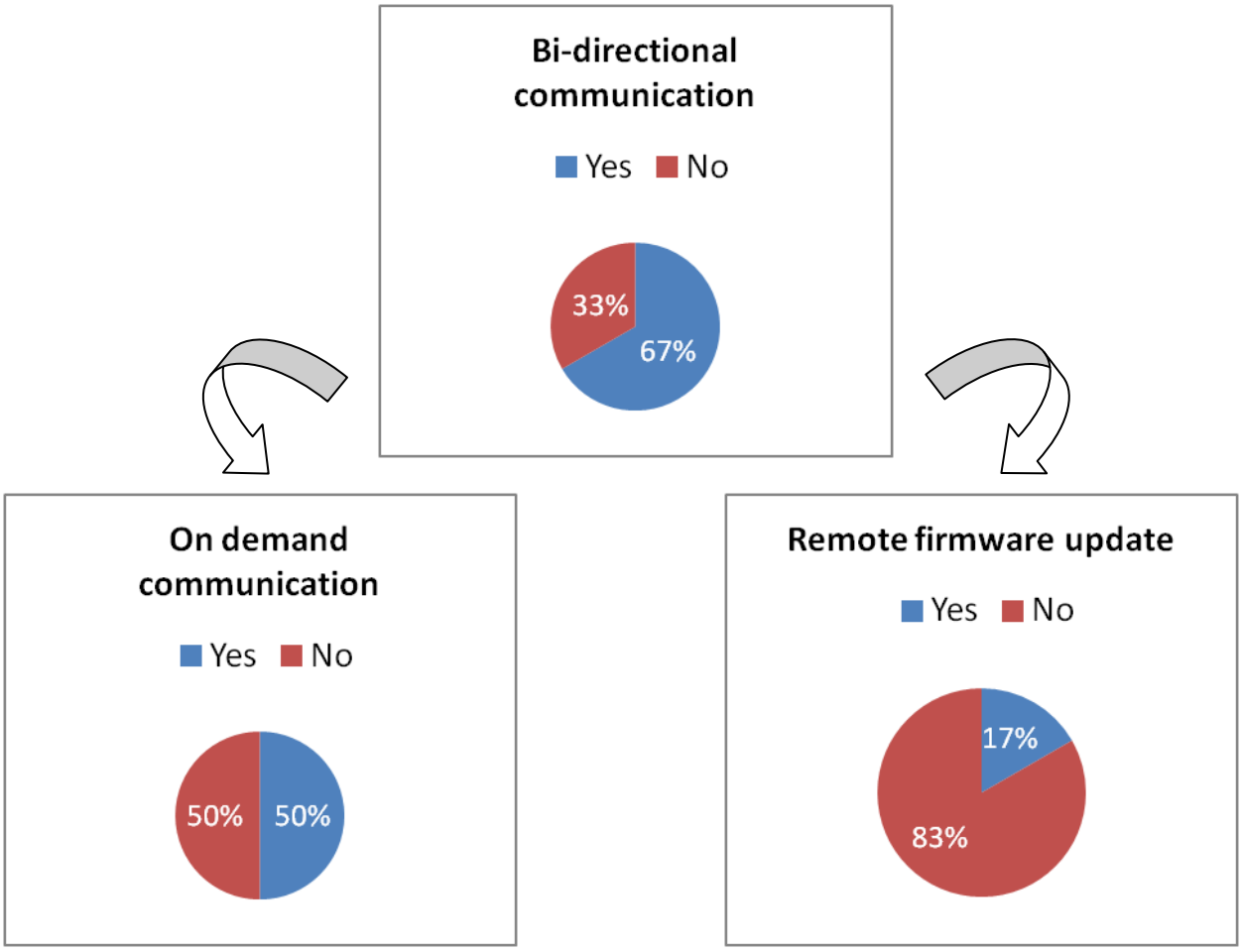
[5] As already seen in D2.2, Table 8, Req. Id. I_1, the Smart Meter Coordination Group (SMCG) that has been acting on the M/441 mandate defines **interoperability** as the ability of a system to exchange data with other systems of different types.

[6] It is obviously possible to implement interoperability through the adoption of a shared proprietary standard the use of which is subject to payment of a fee, but this was not the case. No shared standard was mentioned.

Question #1- **Use and Management** - Does your solution have a bi-directional communication?

Question #9 - **Use and Management** – A schedulable On-Demand communication feature is very useful to have the benefit of a real-time communication for a short period. This functionality should be activated or deactivated on demand to ensure the battery energy saving. Does your Smart Meter have such a feature?

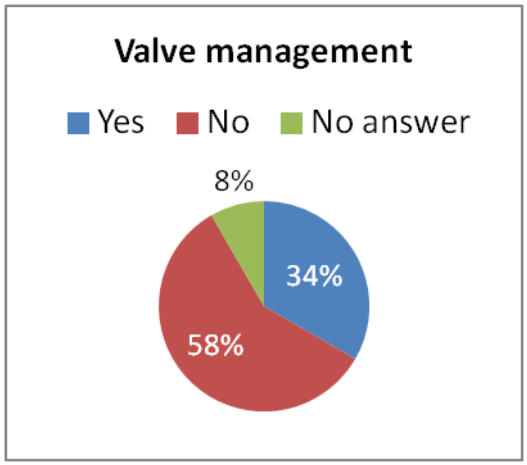
Question #4 – **Maintenance** - Does your solution include an On the Air Smart Meter Remote Firmware Update capability?



The *schedulable on demand communication*, according to the SMART.MET requirements, implies a hierarchical relation with the *bi-directional communication* functionalities. Nevertheless it was noticed that in one case a vendor while not having a *bi-directional communication* he still claimed to have an *on demand communication*. This is another inconsistency that deserves an accurate verification by means of a specific patent search on the functional requirement.

Despite the *remote firmware update* seems to be way more relevant for maintenance and networks operations in terms of costs and labour time, nevetheless it has been found far less frequently as part of the solution than on demand communications. Also in this case we think that this functionality should be verified in the patent search investigation. Such a long duration data exchange must have some characteristics like data *security* and *download session pause and resume* in order to optimize bandwidth occupation and to prevent communication interruptions and possible hacking .

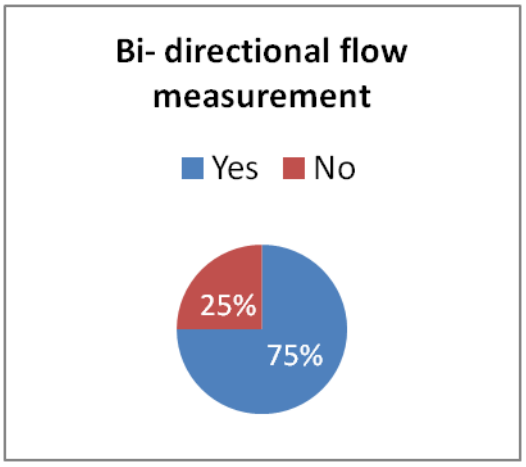
Question #18 – **Use and Management** - Does your Smart Meter have valve management functionalities like: a) remotely operated flow limitation, b) manual on site reopening remotely enabled, c) automatic closure for specific events)?

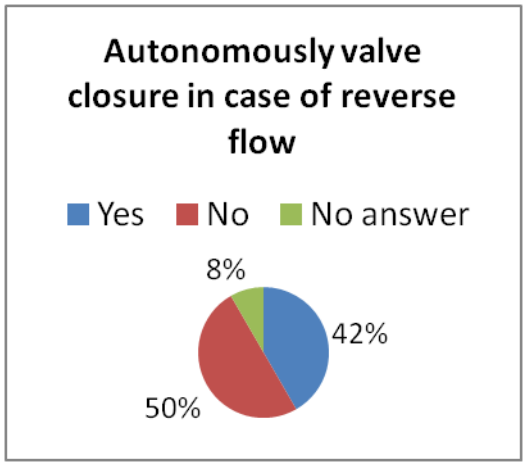


For the sake of clarity, 58% of vendors who answered **"No"** to the question related to valve management are all meter manufacturers.

Question #11 – **Use and Management -** Does your solution have a bi-directional flow measurement?

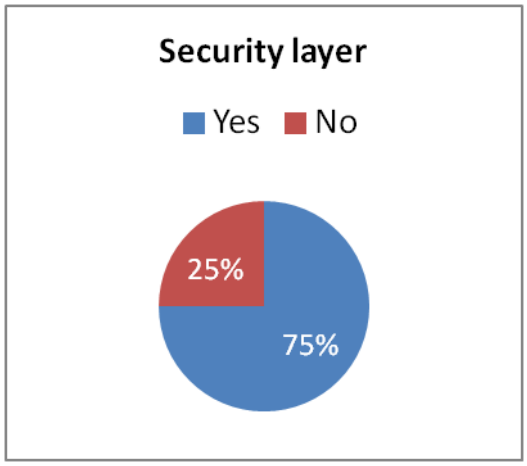
Question #14 – **Use and Management** Does the system have a self-diagnostic alerting function in case of water reverse flow and automatic valve closure?





The automated valve closure in case of reverse flow not necessarily depends on bi-directional flow measurement. Indeed a simple reverse flow detection could be enough to trigger the automatic valve closure. Looking at the data it seems a little bit odd that 33% declares to have valve management functionality, while 42% declares to have an autonomously valve closure in case of reverse flow that should be part of the more general valve management, another potential inconsistency. Also this point could deserve to be verified.

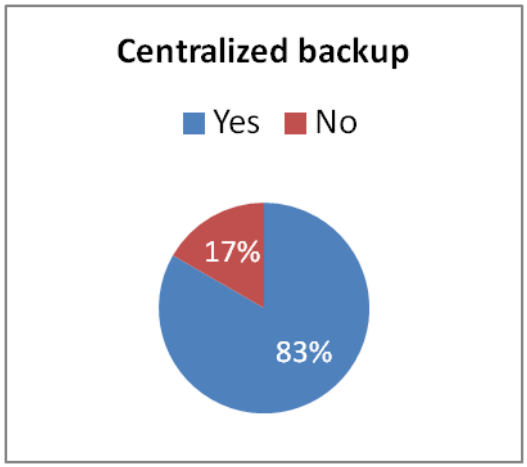
Question #6 – **Use and management -** Is the selected application protocol structured with a security layer compliant with relevant standard of information security best practices?



Even if the **"Yes"** answer is predominant, nevertheless, a unique common security standard is never referenced. In some cases (Question #7) not even the security model (Symmetrical Keys/Private Key Infrastructure/TLS/etc...) has been described. This has two possible implications:

1) It is likely that the due importance of data privacy seems not to be properly considered by the vendors
2) Somehow another fundamental block of interoperability on this security layer has not been implemented.

Question #4 – **Installation and management -** Is the automatic centralized backup and synching of configuration parameters from the old smart meter to the new one in case of replacement ensured?

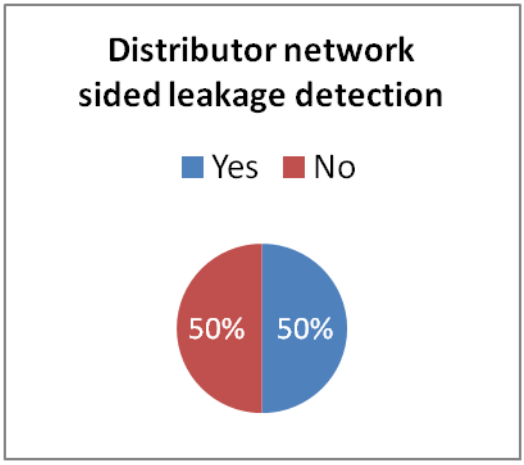


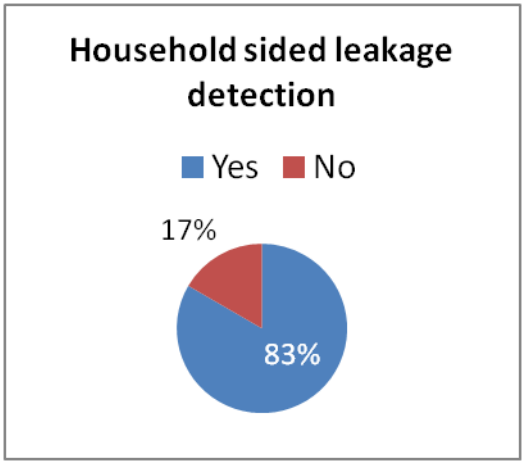
The centralized backup seems to be a well defined and implemented functionality, while the approaches can be different. Nevertheless the description of this functional requirement is quite complex. In SMART.MET project the requirement wants a functionality similar to the one we are all acquainted with when we change our old smart phone with a new one and we do not need to reinitialize manually everything. The new phone is centrally updated and synchronized, along with the contacts and the agenda

by means of a user authentication on the smartphone operating system provider (whatever it may be, whether it is iOS or Android). This requirement should be verified. This could dramatically shorten smart meter replacement time and prevent human faults due to manual procedures.

Question #2 – **Installation and management -** Does your solution perform a Distributor Network sided leakage detection?

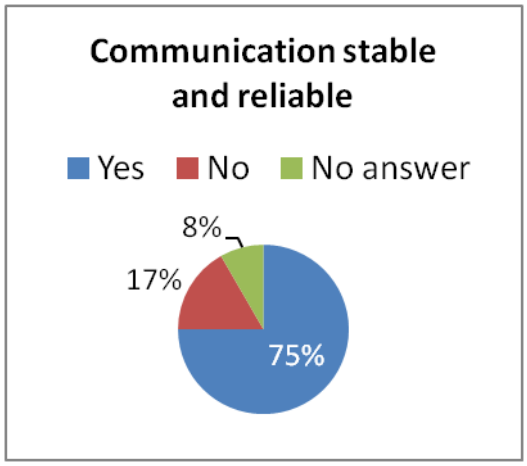
Question #21 – **Installation and management -** Does your solution perform a Household sided leakage detection?





The outcome concerning the Household sided leakage detection is as expected. The percentage of solutions implementing the distributor network sided leakage detection is lower because of higher implementation costs and/or poor sensibility of the vendors towards this kind of problem. In our opinion this will be a significant feature for smart metering solution. The network sided leakage detection is a quite new functionality. The availability of recent scientific publications treating these concepts (this will be treated in D2.5) , leads us to think that there is room for different level of functional implementation offering different capabilities under the same "name". It definitely deserves a verification.

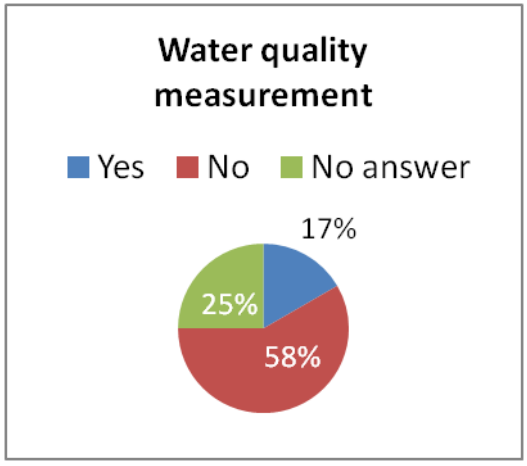
Question #24 – **Use and Management** - Is the communication of the Smart Meter stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)?



The question associated to the *RF performance link budget* demonstrated that only some current but not completely open standard (e.g Sigfox) are able to satisfy it.

These same standards show also that the performance is obtained at the expenses of data rate reduction and frame-length shortening, making hard or impossible the implementation of certain functionalities requiring some higher data rates or longer data frame.

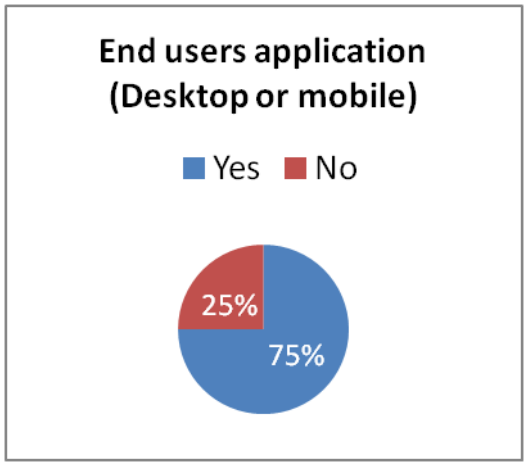
Question #36 – **Use and Management** - Does your solution implement a water quality measurement in time?



The *no* responses and the *no answer* responses are largely predominant. This could be due to a very low attention by vendors or disparate interpretation of the quality monitoring issue or it could hide a technology issue (cost effectiveness). This is a requirement out of scope[7] and as such will not be part of futher investigation.

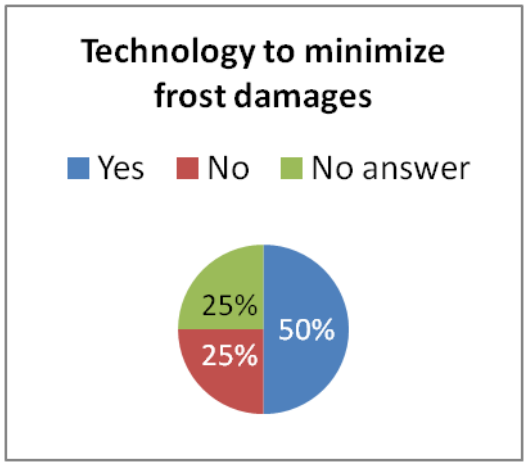
[7] See pag.26, *Rif Slide 27 and 28*, last indent.

Question #38 – **Use and Management** - Does your solution Implement an end user application (desktop or mobile) to enable the customer to access his own consumption profile, with service alerts and relevant messages from the Distributor?



This is meant to implement consumption awareness and further valuable applications (consumption forecasting or leakage alerting).

Question #2 – **Maintenance** - Does your meter have a measurement technology to minimize frost damages?



This is relevant in a pan-European smart meter solutions scenario spanning from temperate climate countries to continental climate areas.

This is currently considered only by vendors with interests in continental climate territories were the temperature excursions can be dramatic for the operating range of the devices.

4. Conclusions and evaluation of the results of the Open Market Consultation activities

In the next six paragraphs we will provide overviews of 1) the conclusions that can be drawn concerning the compliance of solutions currently commercialized with the SMART.MET functional requirements; 2) the interest of manufacturers in the sought solution; 3) the size market opportunities and the related strategic drivers; 4) the operational risks and the constraints that feature this business sector. Moreover we will outline the next steps and further investigations we will perform. At last we describe how we keep in touch with the Market having created a special discussion space for suppliers and stakeholders to foster a discussion and exchange space on innovation.

4.1 Conclusions on yet available solutions proposed by participants

The OMC activities permitted the SMART.MET consortium to broaden its knowledge on solutions currently said to be offered or imminent to be offered to the market by vendors in the smart water metering sector.

Benchmarking these presented solutions against the identified SMART.MET functional requirements the following emerges:

1. Most prominent evidence emerged from the activities is the absence of a currently shared and well defined market standard. Actually, this is one of the most important challenges that SMART.MET Project must address. Despite some vendors claim to have implemented a solution component based on an open standard there is no evidence of unique standards for hardware, software and protocols, that would allow to implement **interchangeability** of components in an Advanced Meter Infrastructure (AMI) solution.

2. The second shortcoming is the lack of a unique, common, open, free accessible communication and application protocol enabling a EU wide accepted standard. Such a protocol is the fundamental condition to ensure **interoperability** between solution components developed by different vendors competing on the same open market and also open the door to the interchangeability concept.

Vendors who answered positively to the interchangeability question are mostly components manufacturers or system integrators. Their response can be motivated because they see the enormous potential of this type of functionality, not really because interchangeability among components exists today. On the other hand, it seems that distributors, differently from SMART.MET procurers, are not really focused on the TCO optimization that interchangeability will imply. Moreover, many respondents adopt standards not even freely accessible (e.g. Sigfox), that are out of the scope of SMART.MET. More details are provided in Annex III (SMART.MET Survey).

With reference to requirements-id established in D2.2, we see on the one hand that *Req. U_{10} – Front Display*, can be excluded from further analysis because it appears to be part of some consolidated solutions. On the other hand some doubts arose from inconsistency in provided answers, that pushes us to investigate further on through a patent search on the following:

3. Req. # I_4 - Smart Meter Centralised Back-up and Synching: A possible mistaken interpretation of the requirement by the people involved in the survey demands for a verification of the real availability of the functionality.

4. Req. # U_4 - Smart Meter Schedulable On-demand Communication: some vendors, although not having a *bi-directional communication,* still claimed to have an *on demand communication*, which is logically impossible.

5. Req. # U_6 - Smart Meter Self Diagnostic Alerting Functions: there is a contradiction in the hierarchy between valve management functionality and autonomously valve closure in case of reverse flow.

6. Req. # U_{11} - Network Sided Leakage Detection: there is the possibility of different level of functional implementation offering different capabilities under the same "name".

7.Req. # M_4 - Smart Meter Remote Firmware Update: very few vendors are offering this functionality. We want to be sure that it is based on a solid and interoperable technology.

In short, the preparatory SMART.MET phase, consisting in innovation gap validation process, can be illustrated as a converging funnel (below). The overall preparatory process started with a broad range of innovation driven requirements and gradually refines and selects from among them, and has been integrated by additional requirements creating a project that can be managed through PCP.

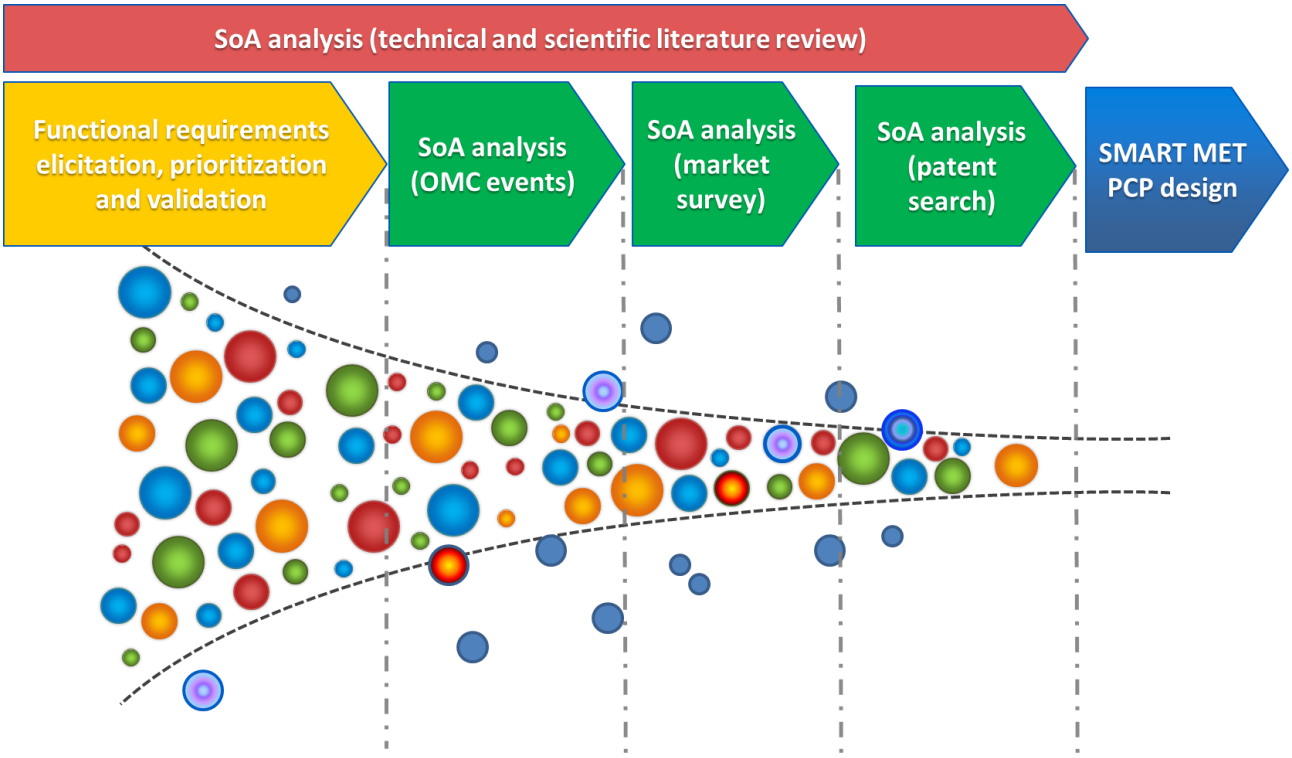


Figure 2 – SMART.MET Innovation funnel

4.2 Market Actors' interest in solutions

95 stakeholders from 44 organizations shown their interest in contributing to the needed innovative solutions, which is, in this market segment, considered a positive result. Amongst them most of the key players in the sector were represented. The attendees were distributed as follows: 17 from meter manufacturers, 13 from Network devices vendors, 21 from water distribution companies and 44 other stakeholders among which software and system integration companies.

One of the key drivers foreseen from the very beginning by the EU M/441 mandate (see D2.2) is the focus on process/product innovation that the new Smart Metering paradigm can exploit. Clearly for the manufacturer already accustomed to R&D initiatives, the unmet needs arising from the market are positively accepted because they can create competition and real possibilities to enter in European-wide markets with a new product generation. During the OMC's we got the feeling the attendees saw a real opportunity in the project to create something new even though it appeared undoubtedly challenging.

It is also important to understand that for manufacturers the need for a complete standardization of an application is considered as an innovation process. Either if coming from an alliance of selected manufacturers or driven by some new EU directive / national regulation (e.g. Italian AEEGSI 155/08). It is usually very well accepted, even if it is perfectly understood that it will increase competition.

4.3 Business opportunities and strategic drivers

If we give a look to some figures coming from recent market research and/or EU financed projects we can understand why there should be such a real interest as we indeed have checked. Analysts[8] agree on a market size evaluation for Europe of about 200 Million units of residential water meters, increasing at the rate of about 1.8%/y in the period 2017 – 2020 from 192Mio Water Meters to 203 Mio Water Meters.

This is the whole potential EU market irrespective of measurement technology.

104 Millions of Water Meters of those 200 Million (about 50%) is estimated to be substituted by Smart Meters by 2020, while the remaining part could be substituted until the 80% of the total is reached, in case of some EU directive extending the scenario of electricity or gas smart metering to water networks.

The strategic driver for solution or product suppliers is first of all in the market size and in the opportunity to promote new generations of their products.

On the other hand for water distributors the strategic drivers are determined by the following considerations.

[8] See Frost & Sullivan - Smart Water Metering Market: Global and European Perspectives - European Utility Week – Smart Water - 6th November 2014, Amsterdam

In urban areas utilities spend worldwide[9] about 150 Billions € each year supplying drinkable water, but they lose up to 8 Billions € of the previous amount for leaked water. Therefore, a new smarter approach to manage water in cities is needed.

One point that often is not completely understood is that water usage in households is also linked to energy use, given that 50-60% of domestic water consumption occurs because of energy consuming appliances (washing machines, shower, bathtubs, dishwater) but there is also a contribution to energy consumption due to water pumping when required by the network operations.

Definitively, the supply of drinkable water (but also disposal of wastewater) are energy intensive processes.

A change of water use behavior therefore not only has the potential to reduce the cost of lost water but also to extend the life of our present water resource and to reduce the demand for energy with its consequent environmental benefits.

4.4 Operational risks and constraints

Participants to the OMC events and respondents to the survey clearly pointed out that the first barrier to be understood is the pervasiveness of requirements. One point that should be pushed because the main motivation that convince more and more utilities to proceed with investments in smart systems, is the expected TCO reduction and the optimization/rationalization of the water distribution process along with customer relationship and care.

About cost/benefit consideration, and focusing for a while on costs side, we should consider a TCO encompassing operational processes of water network distribution and their related infrastructure as a whole (see D2.2). This is a more objective approach to properly weight the increase of Capital Costs (CAPEX) against a strong reduction of Operating Costs (OPEX) to provide a better service level. An extended TCO analysis approach would properly embrace also the provision of a wide range of new services enabled by the new smart metering solution (distribution network management, flexible tariffs, remote monitoring and control and last but not least for the awareness and loyalty of end customers), that once economically weighted, will justify vendors/distributors investments.

4.5 Next steps and further investigation

Following the results of all the Open Market Consultation activities we ended up with a better picture of which functional requirements vendors consider achievable with currently available technologies and which instead could apply to be considered effectively an uncovered requirement. Overall it clearly emerged that the identified Need cannot be integrally covered with currently available solutions or

[9] Smart Meters, Smart Water, Smart Societies: The iWIDGET Project - 16th Conference on Water Distribution System Analysis, WDSA 2014

solutions ready for market introduction and thus a Breakthrough Solution is needed. As follow-up an in-depth State of the Art analysis and patent search is needed, to rule out that those requirements that seem currently to be uncovered are so indeed and could provide the vendors with opportunities for IPR and/or with a clear competitive advantage. These requirements will also strengthen the validation of PCP as the correct instrument for the provision of the Solution, where they focus on the acquisition of new technology, to be combined with the needed innovative and smart integration of existent technologies.

The first and most relevant outcome was the lack of a unique, common, open, free accessible communication and application protocol enabling a EU-wide accepted standard. Such a protocol is the fundamental condition to ensure interoperability between solution components developed by different vendors competing on the same open market and also open the door to the interchangeability concept. Especially component manufacturers and system integrators see the enormous potential of this type of capability, while on the other hand it seems that distributors are not focused on the TCO optimization that interchangeability/interoperability will imply.

The analyses of the options available to address the lacking standard open protocol, being the cornerstone of every breakthrough solution, will be performed in D2.5.

Furthermore, the following requirements (with reference to requirements-id established in D2.2), following the OMC activities, are considered to be probably uncovered by currently available Solutions, and will be subject to a further patent and state of the art analyses:

a) Req. # I_4 - Smart Meter Centralised Back-up and Synching
b) Req. # U_4 - Smart Meter Schedulable On-demand Bi-Directional Communication
c) Req. # U_6 - Smart Meter Self Diagnostic Alerting Functions
d) Req. # U_{11} - Network Sided Leakage Detection
e) Req. # M_4 - Smart Meter Remote Firmware Update

It should be reminded that none of the currently available solutions cover all the other functional requirements that have been identified to provide for a proper solution of the Need.
Figure 4, in the next page, gives an effective representation of this evidence as to *Baseline* Solutions and *Initial State of the Art* Solutions we considered in D2.2. Green color shows covered functionalities, yellow color highlights those partially covered, while uncovered functional requirements are rendered in red. On the columns the buyer that adopted the specific solution in use or in trial is reported along with the name of the solution itself (e.g. Cile /Hydroko, Eau de Paris/EDP Home Rider, etc.). The requirement # $U_{10,}$ in previous stage considered partially satisfied, has in this stage been corrected as it fully complied with by the Hydroko solution (see page 40 above). None of the additional solutions presented during the OMC phase provided sufficient proof that they cover all these requirements (see Annex IV and discussion above).

Obviously, the functional requirements currently covered by one or more Solutions, do not need to be subjected to patent and literature search as their availability on the market has been ascertained, yet not in combination with all the others.

			CILE	Eau de Paris	Eau de Paris	Promedio	Promedio	Promedio	SDEA
		Requirements	Hydroko	EDP Homerider	EDP Suez	Acciona Arrow	Contazara	Elster	Itron
Installation and replacement (Phase I)	I1	Interchangeability vs Interoperability	no	no	partially	no	no	partially	partially
	I2	Mechanical Constraints - Hydraulic connection system compatible with the actual existing one (such as connections to screw)	yes	yes	yes	no	no	no	no
	I3	Ease of installation - The meter and the related solution should be as simple as to require no special competences but the usual hydraulic skills to install	no	no	no	partially	partially	partially	yes
	I4	It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.	no	no	partially	partially	partially	partially	not given
	I5	The metering system size must allow easy installation with little or no masonry works	yes	yes	yes	partially	partially	partially	yes
Use and Management (Phase II)	U1	Bi-directional Communication	yes	partially	yes	yes	yes	yes	yes
	U2	On site metrological check, verification capability - a process must be defined to measure bias (negative or positive) and to trigger an alert	yes	no	no	partially	partially	partially	yes
	U3	Open Standard: The Smart Meter, Data Transfer and Control Room Layer should offer an open, solid, tested, efficient and resilient interconnection standard and data modeling support	no	no	partially	no	no	partially	partially
	U4	Schedulable On Demand Communication	no	no	no	partially	partially	partially	no
	U5	Self Powered Devices (battery)	yes	yes	yes	yes	yes	yes	yes
	U6	Self Diagnostics and alerting: water pressure, low battery and other relevant messages	no	no	no	partially	partially	partially	no
	U7	Product lifetime 16 years	no	partially	yes	partially	partially	partially	partially
	U8	Required Water Tightness protection >= IP68	yes	yes	yes	yes	yes	yes	yes
	U9	Flow Control - Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)	yes	no	no	partially	partially	partially	no
	U10	Front display for direct reading of the most importat selected registers of the meter by the customer and local communication from a local port for field engineer operations	yes	partially	partially	partially	partially	partially	partially
	U11 - NS	Network Sided Leakage Detection	no	no	no	no	no	no	no
	U11 - HS	Household Sided Leakage Detection	yes	partially	yes	partially	partially	partially	yes
	U12	Fraud Attempt - The system will issue a fraud alert message towards the AMR/AMM system	yes	yes	yes	yes	yes	yes	yes
	U12	Anti Tampering - The system will sense the attempt to infringe the meter integrity and will issue a tampering alert message towards the AMR/AMM system	yes	yes	yes	yes	yes	yes	yes
	U13	The network devices, regardless of the technology, must be compliant to the Network Manager communication standard	no	no	no	yes	yes	yes	no
	U14	The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)	yes	partially	partially	partially	partially	partially	no
	U15	Self diagnostics about tampering alert, Reverse flow detection and management	yes	no	no	partially	partially	partially	yes
	U16	Meter Typology: the solution has to match both household meters and building meters	NewGen Submeters	not given	not given	yes	yes	yes	not given
	U17	Toxic agents and chemicals protected devices	partially	yes	yes	partially	yes	yes	yes
	U18	The meter should be sediment and abrasion resistant	yes	partially	yes	partially	partially	partially	yes
	U19	Self Rechargeable - The meter could have a battery self recharging system	no	no	no	partially	yes	partially	no
	U20	The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.) and is economically convenient (*)	yes	yes	yes	yes	partially	yes	not given
	U21	Water Meter Materials - A full plastic/composite meter housing is not acceptable. At least the joints/threads should be metallic	no	yes	yes		partially		not given
	U22	The communication should be wireless from the meter side to the control room side	yes	yes	yes	yes	yes	yes	no
	U23 - MDM	Management system (MDM) software functionalities must be defined beside those of Network Management System	yes	yes	yes	partially	yes	partially	yes
	U23 -NM	Network Management System has to be provided as part of the solution for monitoring, reporting and administration of network devices	yes	partially	yes	partially	partially	partially	yes
	U24	Capability to measure flows in both directions - this is necessary for measurement accuracy and for reverse flow detection	yes	yes	yes	partially	yes	partially	partially
	U25	Scalability : MDM and NM systems must be scalable	yes	yes	yes	yes	yes	yes	yes
	U26	MID approval, Meter Class	yes	yes	yes	yes	yes	yes	yes
	U27	Measurement Rate - Reading Recording (at least every 15 minutes)	yes	not given	not given	not given	not given	not given	not given
	U28	Data Frequency Transmission (at least once in a day)	yes	yes	yes	yes	yes	yes	yes
Maintenance (Phase III)	M1	Frost Damages - The meter should have a measuring solution to minimize frost damages, be it mechanical or electronic	no	partially	partially	partially	yes	partially	no
	M2	Design philosofy - The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic communication section in order to infringe metrological certification in case of maintenance activity	no	no	no	partially	yes	partially	yes
	M3	Meter Technical Lifecycle 16 years. Battery must have a lifecycle of 16 years regardless of operations behaviour (e.g. from how many times in a day communications occur)	no	partially	yes	partially	partially	partially	partially
	M4	Remote Firmware Update	no	no	partially	no	no	no	no
Disposal (Phase IV)	D1	The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activity	no	no	no	partially	yes	partially	yes

Figure 4 – Baseline and Initial SoA Solutions - Functional Requirements Coverage

4.6 Discussion space on innovation for suppliers

A special Interest Group has been created on LinkedIn to enable interested suppliers and stakeholders to meet and discuss on innovation opportunities and related risks within the framework of SMART.MET project. To date the group has 34 followers amongst which several participants to the OMCs.

See [link web]: https://www.linkedin.com/groups/13567135

Annexes

Annex I: SMART.MET OMC's presentation

Annex II: SMART.MET OMC's attendees list

Annex III: SMART.MET pre OMC questionnaire

Annex IV: SMART.MET Post OMC Survey

Annex V: SMART.MET functional Architecture

Annex VI: SMART.MET Press Releases Livorno and Madrid OMC

Annex VII: Pictures of the Open Market Consultation events

D 2.4 Annex I
Open Market Consultations

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 731996

The Project: objective

* Horizon 2020 Project funded under call ICT-34-2016 - Pre-Commercial Procurement

* Drive the development of a **new** cost effective, efficient, interoperable Water Smart Metering system based on open standards

H2020

* Smart.Met project is part of Framework Program for Research and Innovation of the European Union for the period 2014-2020.

* The aim of the program is to finance initiatives and projects for research, technological development, demonstration and innovation with clear European added value.

* Total budget of this program is 77.028 M €.

H2020

Horizon 2020 groups and strengthens the activities that were financed during the period 2007-2013 by:

* the Seventh Research and Development Framework Program,
* the innovation actions of the Competitiveness and Innovation Framework Program and
* the actions of the European Institute of Innovation and Technology.

Finance

* Smart.Met is Horizon 2020 project funded by the call ICT-34-2016 - Pre-Commercial Procurement.
* ICT Information and Communication Technologies Work Program 2016-2017
* Call: Support for innovation and entrepreneurship
* Announcement: Pre-commercial Public Procurement (ICT-34-2016)
* Total cost of the Smart.Met project is about 4,44 Million Euros
* The EU contribution is about 3,99 Million Euros

Expected benefits

- **Better detection of leaks/water loss** and possibility take immediate action
- **Better management of networks and water balance**: decreasing operating costs
- **More efficient management of the billing process**
- More efficient water use thanks to **increased awareness on water users' behaviour**
- **More sustainable meters**: longer battery lifetime, easily recyclable
- **Avoid lock-in** situations

The Consortium

Coordinator

Office International de l'Eau

Buyers Group

CILE

HYDROBRU

VIVERACQUA GESTORI IDRICI DEL VENETO

BUDAPEST WATERWORKS

PROMEDIO DIPUTACIÓN DE BADAJOZ

eau de Paris L'eau, Un service public

SDEA

Technicals Partners

FUNDACIÓN Nueva Cultura del Agua

aragon partners

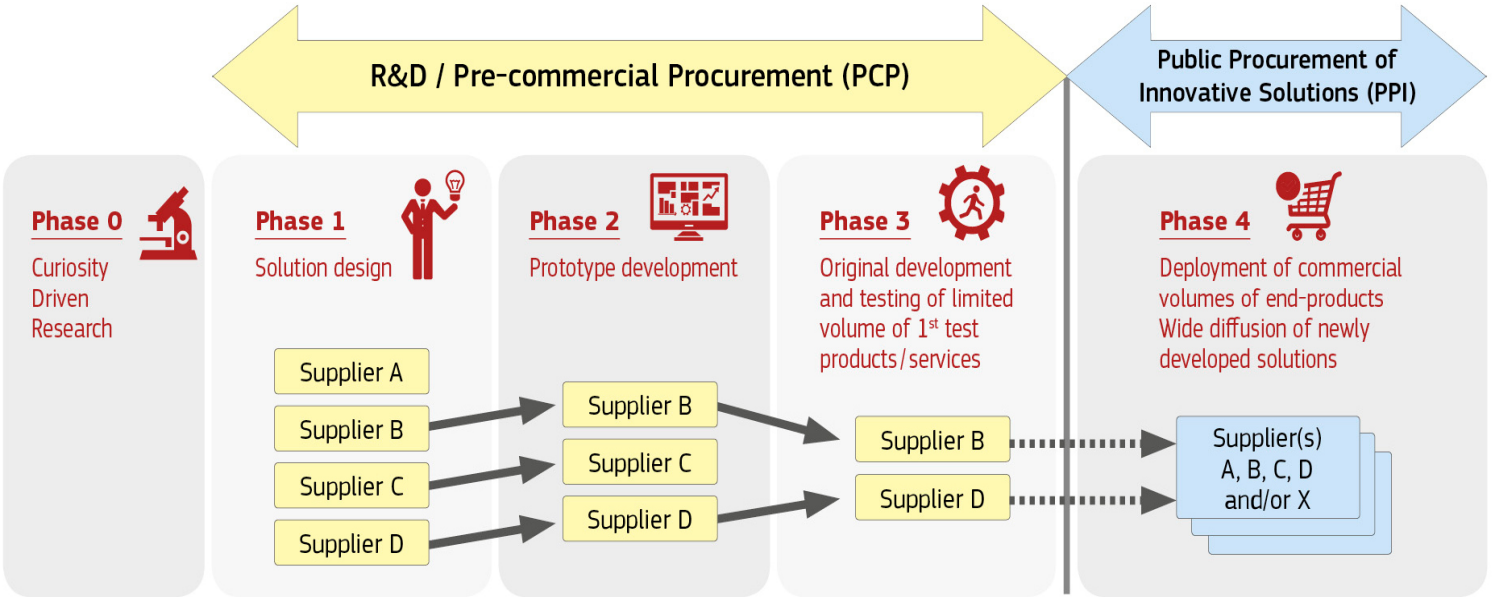
xlim INSTITUT DE RECHERCHE

Aqua publica europea EUROPEAN ASSOCIATION OF PUBLIC WATER OPERATORS

smart PRO curement

The EU innovation demand policy

- PCP to steer the development of solutions towards concrete public sector needs, whilst comparing/validating alternative solution approaches from various vendors
- PPI to act as launching customer / early adopter / first buyer of innovative commercial end-solutions newly arriving on the market



PPI - Public Procurement of Innovative Solutions

- When
  - Challenge requires solution which is almost or already on the market in small quantity but not meeting requirements for large scale deployment yet. Desired solutions would be provided if clear requirements/sufficient demand would be expressed by the market. Incremental innovation (production adaptation, scaling up of production) or non-R&D innovation (e.g. organisational/process innovation) can deliver required quality/price, so no procurement of R&D involved.
- What
  - Public sector acts as launching customer / early adopter / first buyer for innovative products and services that are newly arriving on the market (not widely commercially available yet)
- How
  - Public sector acts as facilitator establishing a buyers group with critical mass that triggers industry to scale up its production chain to bring products on the market with desired quality / price ratio by a specific time. After potentially a test / certification / labelling, the buyers group buys a significant volume of solutions.

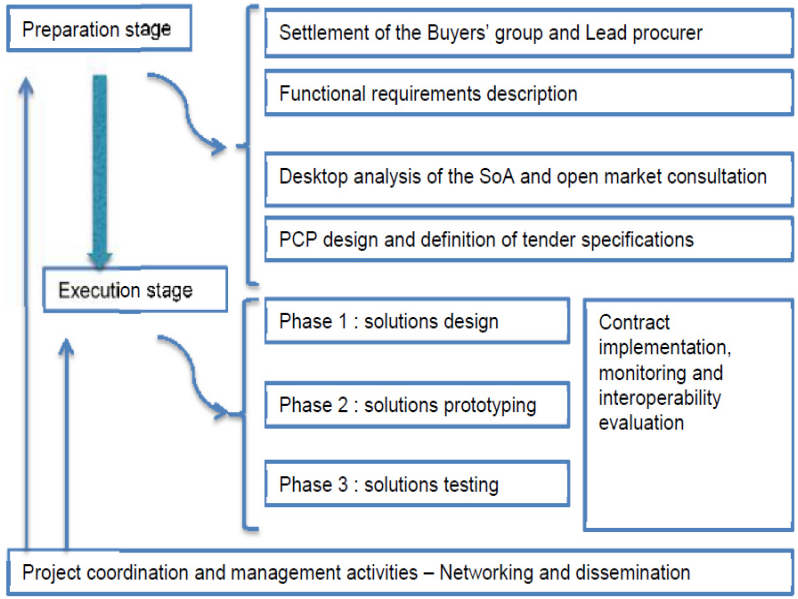
PCP – Pre-commercial public procurement

- When
  - Challenge needs radical innovation, no solution 'on' or 'close to' market yet. There are different competing 'potential' solution approaches / ideas, but still R&D needed to de-risk and compare / validate the pros and cons of different technological alternatives: No commitment to large scale deployment (PPI) yet. Procurer wants to induce a step change in the market (e.g. moving from proprietary / vendor lock-in situation to better open systems / multiple vendor environment including new players)
- What
  - Public sector buys R&D to steer development of solutions to its needs, gather info about pros / cons of alternative solutions to be better informed to make specs for a follow-up PPI possibly later, to avoid supplier lock-in (create competitive supply base)
- How
  - Public sector buys R&D from several suppliers in parallel (comparing alternative solution approaches), in form of competition evaluating progress after critical milestones (design, prototyping, test phase), risks & benefits of R&D (in particular related to IPRs) shared with suppliers to maximise incentives for wide commercialisation

Pre-Commercial Procurement

* **Procurement of research and the development of new innovative solutions**
* **R&D before commercialization**
* **PCP involves different suppliers competing through different phases of development**
* **Risks and benefits shared between procurers and suppliers**

PCP timeline and estimated budget



PCP is organised in 3 phases:

1) solution exploration and design
2) prototyping
3) field testing

	DURATION	BUDGET*	EXPECTED R&D PROVIDERS	MAXI INDIVIDUAL BUDGET*
DLUTION DESIGN	4 months	240,000€	8-10	30,000€
PROTOTYPING	9 months	1,500,000€	4-6	250,000€
FIELD TESTING	12 months	1,500,000€	2-3	500,000€

*including Italian VAT rate (22%)

Project and PCP milestones

- January–December 2017 – **PCP Preparation and design**
  - June 2017: Publication of the Prior Information Notice √
  - September 2017: Open Market Consultations √
- 1st half of 2018 – **Solution exploration and design**
- 2nd half 2018 – 1st half 2019 – **Prototyping**
- 2nd half 2018 – 2020 – **Field testing** of the selected prototypes and final assessment

Open Market Consultation objectives

1. Check the technological state of the art concerning smart water metering solutions.

* Find out whether technologies are commercially available.

2. Identify market risks potentially able to endanger supplier performance.

3. Not yet a tender phase:

* Participants are not expected to submit tenders or proposals at this preliminary stage.
* The competitive phase of the SMART.MET joint and cross-border public procurement procedure will be conducted separately with an open and advertised procedure.

Open Market Consultation objectives

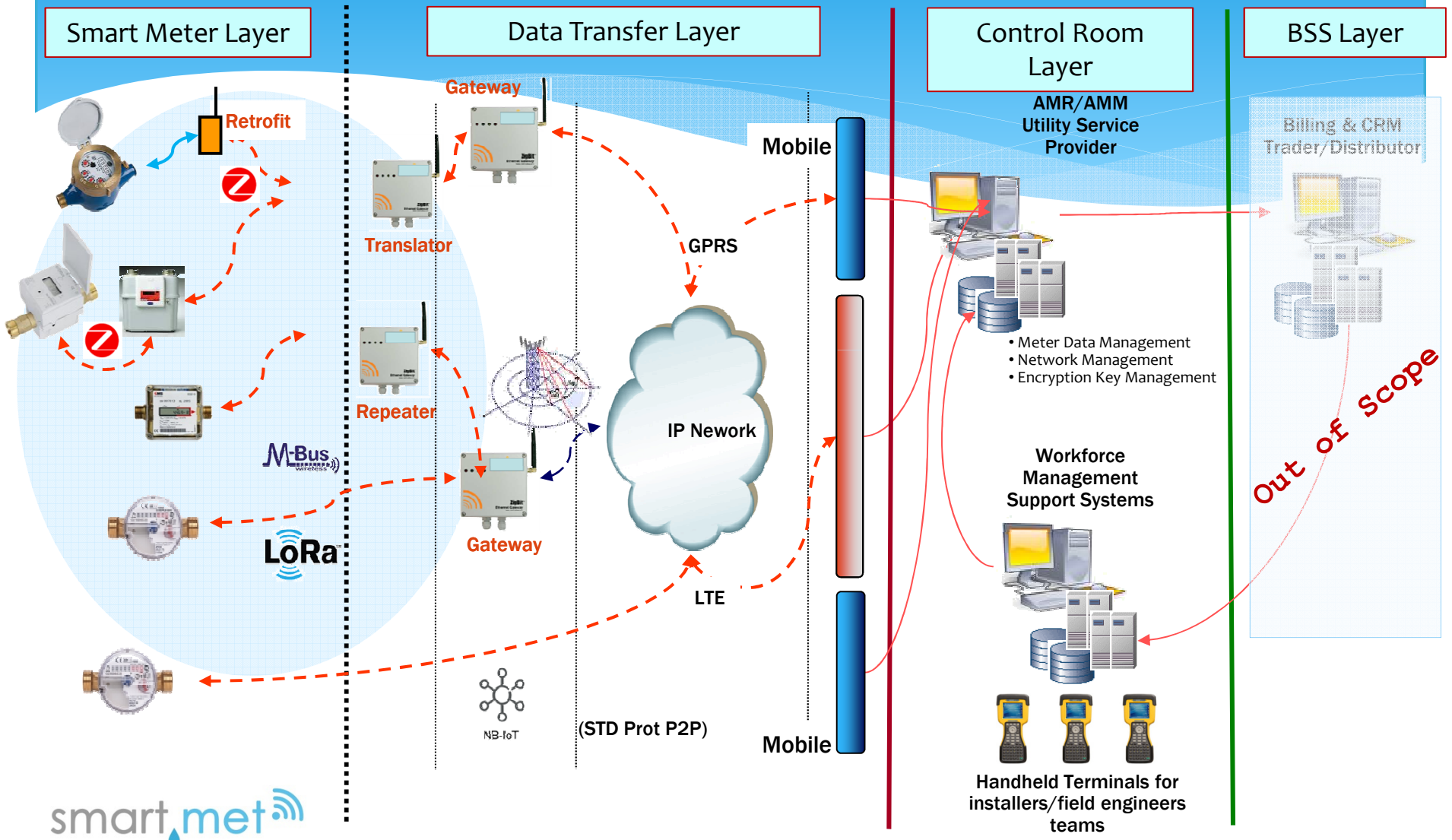
4. Enable networking and B2B (business-to-business) interactions increase the opportunities for industry to form consortia and to take part in the envisaged procurement.

5. Enable preliminary analysis of the operational contests where innovations will be introduced.

Open Market Consultations

- **The market consultation does not lead to any obligations on the part of the contracting authorities involved in the SMART.MET project or to any rights or privileges for the participants.**
  - The contracting authorities involved in the SMART.MET project are not legally bound in any way by the outcome of the market consultation.
  - 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.

SMART.Met general reference functional architecture



SMART.Met Innovation need

Meter typology (1)

traditional building meters or traditional dwelling meters –

smart meters connected to Internet network

Final implementation targeting three different environments (rural / urban / mixed)

SMART.Met Innovation need

Bi-directional Communication (2)

- Measurement reading recording:
  min every 15 minute
- Communication between the AMR/AMM and the meter

Data Frequency Transmission

- At least once a day. To be set by AMR/AMM
- On demand communication

smart.met

SMART.Met Innovation need

Calibration, connection

- On site measure calibration capability (3)
- Open Multilayered Interconnection Standard (4) (OSI Style)
- A full plastic/composite meter housing is not accepted. At least the joints/threads should be metallic (26)

Meter technical Lifecycle (6)

- 16 years

SMART.Met Innovation need

Power

- Self Powered Devices (7)
- Self diagnostics for battery charge level (13)
- Meter could have a battery self recharging system (21)

Protection

- Water Tightness protection >= IP68 (8)
- Toxic agents and chemicals protected devices (9)

SMART.Met Innovation need

Security 1/2

- Anti tampering systems (12)
- Measuring solution to minimize frost damages (mechanics or electronic) (19)

Security 2/2

- Sediment and abrasion resistant (20)
- Valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency) (15)

SMART.Met Innovation need

Installation

- Easy installation with little or no masonry works (18)
- No special competences more than usual hydraulic skills to install (23)

Pressure & leaks

- Self diagnostic for water leaks (13.2)
- Self diagnostic for water pressure and other relevant messages(13.3)

Connection

- Hydraulic connection system compatible with the actual existing one (such as connections to screw) (17)

SMART.Met Innovation need

Communication

- Wireless from the meter side to the control room side (29)
- Communication module integrated into the device but still removable and distrinct from the metering component (24)
- Minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.) (25)
- Stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.) (28)

Display

- For most important register contents(10)
- Front display - direct reading of selected registers of the meter by the customer (14)

SMART.Met Innovation need

Protocol

The network devices, regardless of the technology, must be compliant to the Network Manager communication standard (27)

Open Industry standard compliance for interoperability among different devices from different vendors (16)

Measurement

The meter must measure flows in both directions (26.2)

SMART.Met Innovation need

Control system (Control room)

- Network Management System provided as part of the solution for monitoring, reporting and administration of network devices (30)
- Management system (MDM) software functionalities must be defined beside those of Network Management System (31)
- The leakage control must be implemented into the MDM (32)
- It has to be ensured the automatic centralized backup and synching of configuration parameters from the old meter to the new one at installation time (33)

SMART.Met Innovation need

THE SMART MET FEATURES:

NEW SOLUTION NOT CURRENTLY AVAILABLE ON THE MARKET

1. Based on open standards for full interoperability between different devices and software applications supplied by different providers featuring:
   - An open meter communication protocol, like, for instance DLMS (IEC 61334-4-41) in its water flavor; that can be meter independent as well as manufacturer independent and communication layer agnostic (to get the same language from Smart Meter Layer, Data Transfer Layer, Control Room Layer, BSS Layer).
   - A synchronization method to ensure the same clock in every device.

SMART.Met Innovation need

THE SMART MET FEATURES:

NEW SOLUTION NOT CURRENTLY AVAILABLE ON THE MARKET

2. Based on standard communication protocols, like for instance IoT
   * Able to guarantee the communication in “near real time mode” from Smart Meter Layer and Control Room Layer
3. Based on an energy source capable to ensure real-time operations for the whole duration of the meter life-cycle, like, for instance an auto-production of energy for its proper use by using the water flow as an energy source.
4. Able to make decisions on its own without prior communication with the Control Room Layer (i.e. detection of a reverse flow for immediate closure of the water meter valve and trigging of an alarm that is sent to the Control Room).

SMART.Met Innovation need

Open standards:

- Based on rules issued by the largest standardization bodies granting permission for their standards to be used (their implementation may be subject to "reasonable and non-discriminatory" royalties and other license terms).
- A standard is not really open unless the specifications with which it has been designed and subsequently implemented are publicly available.

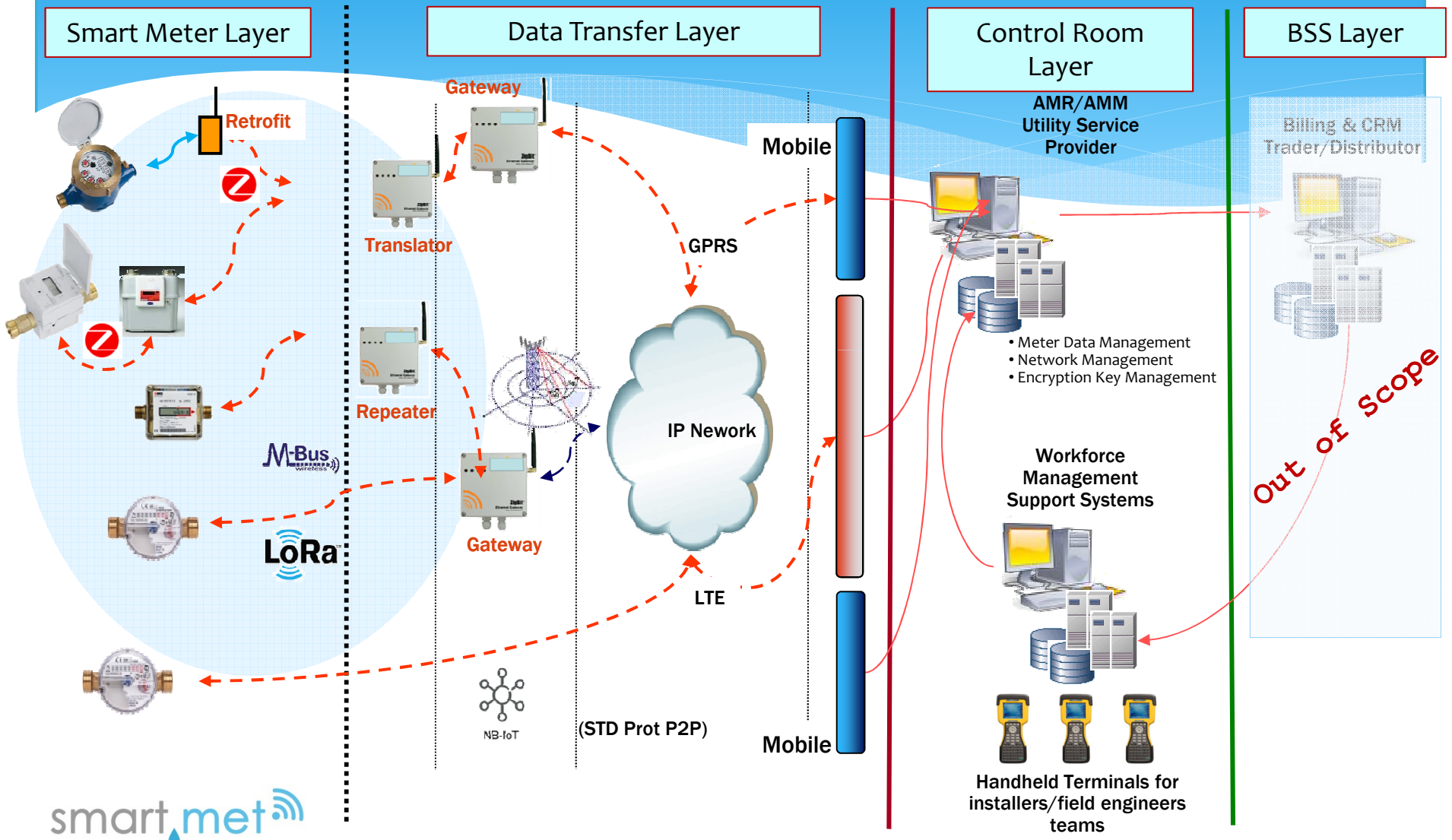
IPR policy:

- PCP allocate the ownership of (foreground) IPRs generated by participating R&D providers to those R&D providers, the public procurer obtain a 'free use' license to the PCP R&D results (restricted to 'internal use' only, not including the right to sublicense). The non-exclusivity of the license allows the solution provider to commercialize the solution further on the market .

SMART.Met benefits

- Smart meters can help decrease operating costs, identify performance issues, improve customer service and better prioritize infrastructure investments:
  - Timely detection of water leakage ("non-revenue water") --> reduce energy costs for pumping additional water or wasting chemicals for water treatments
  - Prevention of water network pollution due to water reverse flow in case of floods->reduce service level inconvenience and related network sanitization operations and costs.
  - More accurate calibration of water tariffs --> better customer relations
  - Effective rather than expected consumption --> more accurate invoicing system --> better customer relations
  - Capability to host other functions (e.g., monitoring water quality and composition) --> eased transition to further improvements
  - More efficient meter reading and billing systems --> reduced personnel and process costs for meter reading
  - Lower transition costs to switch to a new solution/vendor --> lower operating costs due to ability to freely choose between several suppliers.

SMART.Met general reference functional architecture



Functional requirements (1-12)

1. Meter Typology
   (traditional building meters or traditional dwelling meters)
   (smart building meters or smart dwelling meters)
2. Bi-directional Communication

2bis. High Frequency Measure Reading

2ter. Exchanged information see Requirements-related Data Structure below

2quater. Data Frequency Transmission (from 1 to 4 times in a day)

3. On site measure calibration capability
4. Open Multilayered Interconnection Standard (OSI style)
5. On demand communication
6. Meter technical Lifecycle 16 years
7. Self Powered Devices
8. Water Tightness protection >= IP68
9. Toxic agents and chemicals protected devices
10. Display for most important register contents
11. Pipe section, room occupation etc. for procurement compliance
12. Anti tampering systems

Functional requirements (13-22)

13. Self diagnostics for battery charge level
13bis Water leaks
13ter Water pressure and other relevant messages
14. Front display for direct reading of selected registers of the meter by the customer
15. Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)
16. Open Industry standard compliance for interoperability among different devices from different vendors
17. Hydraulic connection system compatible with the actual existing one (such as connections to screw)
18. The metering system dimension must allow easy installation with little or no masonry works
19. The meter should have a measuring solution to minimize frost damages, be it mechanical or electronic
20. The meter should be sediment and abrasion resistant
21. The meter could have a battery self recharging system
22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activity

Functional requirements (23-33)

23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to install
24. The communication module should be integrated but still removable from the metering section of the meter itself
25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)
26. A full plastic/composite meter housing is not accepted. At least the joints/threads should be metallic
26bis. The meter must measure flows in both directions
27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standard
28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)
29. The communication should be wireless from the meter side to the control room side
30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devices
31. Management system (MDM) software functionalities must be defined beside those of Network Management System.
32. The leakage control must be implemented into the MDM.
33. It has to be ensured the automatic centralized backup and synching of configuration parameters from the old meter to the new one at installation time.

Next steps

- **OMC participants contacts to be published on website**
- October 2017 ⟹ **decision on tender**
- December 2017 ⟹ **tender published**

More information?

http://smart-met.eu
smart.met@oieau.fr

@SmartMet_PCP

The Smart.met team thanks you for your attention!

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D 2.4 Annex III

Contents

Contents

Answer 1–A2

Q1

Contact details

XXXXXX

Q2

I have read the PIN and the Technical Prospectus

- Yes

Q3

Your company is a:

- manufacturer

Q4

Do you rely on any partner for the products/component of your solution?

- No

Q5

Company information.

- **What is the approximate annual turnover of your company (in euros)?**1500000000
- **How much is the yearly investment for R&D (in euros)?**> 1 century
- **For how many years has your company been trading?**100000000
- **In which EU countries does your company supply products or services?**all

Q6

Product information.

- **Please provide a short description of your commercialized solution.**smart metering & smart water solution
- **Please provide a short description of the innovative aspects of your solution, if any.**end to end solution, low power communication, expert data management & analytics
- **Is the product already available on the EU market?**yes

Q7

How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- **1.Meter Typology (traditional building meters or traditional dwelling meters) (smart building meters or smart dwelling meters)**full range of meters - XXXX is #1 world manufacturer of smart wtaer meters
- **2. Bi-directional Communication**yes
- **2bis. Bi-directional Communication - High Frequency Measure Reading (every 1 minute)**That'd be at the expense of battery life time
- **2ter. Bi-directional Communication - Exchanged information see Requirements-related Data Structure below**yes
- **2quater. Bi-directional Communication - Data Frequency Transmission (at least once in a day)**yes
- **3. On site measure calibration capability**?
- **4. Open Multilayered Interconnection Standard (OSI style)**depending on implementation
- **5. On demand communication**depending on implementation
- **6. Technical Lifecycle**12 to 15 years
- **7. Self Powered Devices**yes
- **8. Water Tightness protection >= IP68**yes (IP68)
- **9. Toxic agents and chemicals protected devices**some
- **10. Display for most important register contents**yes
- **11. Pipe section, room occupation etc. for procurement compliance**full range
- **12. Anti tampering systems**yes
- **13. Self diagnostics for battery charge level**yes
- **13bis. Self diagnostics for water leaks**possible on some solutions
- **13ter. Self diagnostics for water pressure and other relevant messages**possible on some solutions
- **14. Front display for direct reading of selected registers of the meter by the customer**yes

- **15. Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)**possible on some solutions
- **16. Open Industry standard compliance for interoperability among different devices from different vendors**some
- **17. Hydraulic connection system compatible with the actual existing one (such as connections to screw)**yes
- **18. The metering system dimension must allow easy installation with little or no masonry works**yes
- **19. The meter should have a measuring solution to minimize frost damages, be it mechanical or electronic**?
- **20. The meter should be sediment and abrasion resistant**yes
- **22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activity**yes
- **23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to install**yes
- **24. The communication module should be integrated but still removable from the metering section of the meter itself**yes
- **25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)**yes
- **26. A full plastic/composite meter housing is not acceptable. At least the joints/threads should be metallic**OK
- **26bis. The meter must measure flows in both directions**yes
- **27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standard**some
- **28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)**yes
- **29. The communication should be wireless from the meter side to the control room side**yes
- **30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devices**yes
- **31. Management system (MDM) software functionalities must be defined beside those of Network Management System.**yes
- **32. The leakage control must be implemented into the MDM.**yes
- **33. It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.**yes

Q8

Which is technical life expectation of your product and components (years)?

12 to 15 years

Q9

What minimum warranty period do you provide for your solution (years)?

variable

Q10

Compliance with EU and other regulations and standards.

- **Does your product have CE Marking?**Yes
- **Does your product have MID certification?**Yes
- **Does your product have DLMS compliance?**No
- **Do you have any other marking/certification for this product?**

Answer 2–B2

Q1

Contact details

XXXXXX

Q2

I have read the PIN and the Technical Prospectus

- Yes

Q3

Your company is a:

- manufacturer

Q4

Do you rely on any partner for the products/component of your solution?

- No

Q5

Company information.

- **What is the approximate annual turnover of your company (in euros)?**100.000€
- **How much is the yearly investment for R&D (in euros)?**50.000€
- **For how many years has your company been trading?**7
- **In which EU countries does your company supply products or services?**Italy

Q6

Product information.

- **Please provide a short description of your commercialized solution.**XXXX develops smart metering system for water monitoring
- **Please provide a short description of the innovative aspects of your solution, if any.**The Devices that we produce are Interoperable with any kind of probe or counters, easy to use, self powered with 10 years of life cycle, easy to use, open protocol, complete with water data managment syystem, and open to integrate data in existing sata mangment system, complete with connectivity too.
- **Is the product already available on the EU market?**Yes
- **If possible, please provide a link to a relevant picture and/or technical documentation (or send them by email to smart.met@oieau.fr).**

Q7

How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- **1.Meter Typology (traditional building meters or traditional dwelling meters) (smart building meters or smart dwelling meters)**any kind of meter with pulse emitter
- **2. Bi-directional Communication**yes
- **2bis. Bi-directional Communication - High Frequency Measure Reading (every 1 minute)**yes
- **2ter. Bi-directional Communication - Exchanged information see Requirements-related Data Structure below**yes
- **2quater. Bi-directional Communication - Data Frequency Transmission (at least once in a day)**yes
- **3. On site measure calibration capability**Via Cloud computing
- **4. Open Multilayered Interconnection Standard (OSI style)**yes
- **5. On demand communication**yes
- **6. Technical Lifecycle**10 years
- **7. Self Powered Devices**yes
- **8. Water Tightness protection >= IP68**IP68
- **9. Toxic agents and chemicals protected devices**no
- **13. Self diagnostics for battery charge level**yes
- **13bis. Self diagnostics for water leaks**yes

- **13ter. Self diagnostics for water pressure and other relevant messages**yes
- **14. Front display for direct reading of selected registers of the meter by the customer**yes
- **16. Open Industry standard compliance for interoperability among different devices from different vendors**yes
- **18. The metering system dimension must allow easy installation with little or no masonry works**yes
- **22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activity**yes
- **23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to install**yes
- **24. The communication module should be integrated but still removable from the metering section of the meter itself**yes
- **25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)**yes
- **26bis. The meter must measure flows in both directions**yes
- **27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standard**yes
- **28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)**yes
- **29. The communication should be wireless from the meter side to the control room side**yes
- **30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devices**yes
- **31. Management system (MDM) software functionalities must be defined beside those of Network Management System.**yes
- **32. The leakage control must be implemented into the MDM.**yes
- **33. It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.**yes

Q8

Which is technical life expectation of your product and components (years)?

Respondent skipped this question

Q9

What minimum warranty period do you provide for your solution (years)?

10 years

Q10

Compliance with EU and other regulations and standards.

- **Does your product have CE Marking?**Yes
- **Does your product have MID certification?**No
- **Does your product have DLMS compliance?**No
- **Do you have any other marking/certification for this product?**No

Answer 3–C2

Q1
XXXXXX

Q2
I have read the PIN and the Technical Prospectus

- Yes

Q3
Your company is a:

- manufacturer

Q4
Do you rely on any partner for the products/component of your solution?

- No

Q5
Company information.

- What is the approximate annual turnover of your company (in euros)?1500000000
- For how many years has your company been trading?93
- In which EU countries does your company supply products or services?worldwide

Q6
Product information.

- Please provide a short description of your commercialized solution.meters, and AMM systems in electricity, gas, water and heat
- Please provide a short description of the innovative aspects of your solution, if any.provide end to end solutions
- Is the product already available on the EU market?Yes
- If possible, please provide a link to a relevant picture and/or technical documentation (or send them by email to smart.met@oieau.fr).

Q7
How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- 1.Meter Typology (traditional building meters or traditional dwelling meters) (smart building meters or smart dwelling meters)yes
- 2. Bi-directional Communicationyes
- 2bis. Bi-directional Communication - High Frequency Measure Reading (every 1 minute)yes - impacts the battery life
- 2ter. Bi-directional Communication - Exchanged information see Requirements-related Data Structure belowyes
- 2quater. Bi-directional Communication - Data Frequency Transmission (at least once in a day)yes
- 3. On site measure calibration capabilityto be studied
- 4. Open Multilayered Interconnection Standard (OSI style)to be studied
- 5. On demand communicationyes
- 7. Self Powered DevicesCompatible
- 8. Water Tightness protection >= IP68yes
- 9. Toxic agents and chemicals protected devicesyes
- 10. Display for most important register contentsyes
- 11. Pipe section, room occupation etc. for procurement complianceyes
- 12. Anti tampering systemsyes
- 13. Self diagnostics for battery charge levelyes
- 13bis. Self diagnostics for water leaksyes
- 13ter. Self diagnostics for water pressure and other relevant messagesto be studied
- 14. Front display for direct reading of selected registers of the meter by the customerto be studied
- 15. Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)yes
- 16. Open Industry standard compliance for interoperability among different devices from different vendorsyes

- 17. Hydraulic connection system compatible with the actual existing one (such as connections to screw)yes
- 18. The metering system dimension must allow easy installation with little or no masonry worksyes
- 19. The meter should have a measuring solution to minimize frost damages, be it mechanical or electronicyes
- 20. The meter should be sediment and abrasion resistantyes
- 21. The meter could have a battery self recharging systemto be studied
- 22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activityyes
- 23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to installyes
- 24. The communication module should be integrated but still removable from the metering section of the meter itselfyes
- 25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)yes
- 26. A full plastic/composite meter housing is not acceptable. At least the joints/threads should be metallicyes
- 26bis. The meter must measure flows in both directionsyes
- 27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standardyes
- 28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)yes
- 29. The communication should be wireless from the meter side to the control room sideyes
- 30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devicesyes
- 31. Management system (MDM) software functionalities must be defined beside those of Network Management System.yes
- 32. The leakage control must be implemented into the MDM.yes
- 33. It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.yes

Q8

Which is technical life expectation of your product and components (years)?

up to 20 years

Q9

What minimum warranty period do you provide for your solution (years)?

Respondent skipped this question

Q10

Compliance with EU and other regulations and standards.

- Does your product have CE Marking?Yes
- Does your product have MID certification?Yes
- Does your product have DLMS compliance?Yes
- Do you have any other marking/certification for this product?No

Answer 4–D2

Q1
Contact details
XXXXXX

Q2
I have read the PIN and the Technical Prospectus

- Yes

Q3
Your company is a:

- manufacturer
- Other (please specify)Metering Services

Q4
Do you rely on any partner for the products/component of your solution?

- Yes (Please specify)Apator

Q5
Company information.

- What is the approximate annual turnover of your company (in euros)?25,000,000 €
- How much is the yearly investment for R&D (in euros)?7% of the turnover
- For how many years has your company been trading?50 years
- In which EU countries does your company supply products or services?Spain, Germany

Q6
Product information.

- Please provide a short description of your commercialized solution. Metering services for water and energy
- Please provide a short description of the innovative aspects of your solution, if any. ultrasonic
- Is the product already available on the EU market? Yes
- If possible, please provide a link to a relevant picture and/or technical documentation (or send them by email to smart.met@oieau.fr).

Q7
How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- 1.Meter Typology (traditional building meters or traditional dwelling meters) (smart building meters or smart dwelling meters)ultrasonic
- 2. Bi-directional Communicationyes
- 2bis. Bi-directional Communication - High Frequency Measure Reading (every 1 minute)yes, each 10 sec.
- 2quater. Bi-directional Communication - Data Frequency Transmission (at least once in a day)yes
- 3. On site measure calibration capabilityyes, NFC technology
- 4. Open Multilayered Interconnection Standard (OSI style)W-Mbus OMS
- 5. On demand communicationyes
- 6. Technical Lifecycle10 years
- 7. Self Powered Devicesyes, battery
- 8. Water Tightness protection >= IP68IP65, on demand IP68
- 9. Toxic agents and chemicals protected devicesyes
- 10. Display for most important register contentsyes
- 11. Pipe section, room occupation etc. for procurement complianceDN15-DN500
- 12. Anti tampering systemsyes
- 13. Self diagnostics for battery charge levelyes
- 13bis. Self diagnostics for water leaksyes
- 13ter. Self diagnostics for water pressure and other relevant messagesno
- 14. Front display for direct reading of selected registers of the meter by the customeryes

- 15. Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)no
- 16. Open Industry standard compliance for interoperability among different devices from different vendorsyes
- 17. Hydraulic connection system compatible with the actual existing one (such as connections to screw)yes
- 18. The metering system dimension must allow easy installation with little or no masonry worksyes
- 19. The meter should have a measuring solution to minimize frost damages, be it mechanical or electronicyes
- 20. The meter should be sediment and abrasion resistantyes
- 21. The meter could have a battery self recharging systemno
- 22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activityyes
- 23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to installyes
- 24. The communication module should be integrated but still removable from the metering section of the meter itselfyes
- 25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)no
- 26. A full plastic/composite meter housing is not acceptable. At least the joints/threads should be metallicyes
- 26bis. The meter must measure flows in both directionsyes
- 27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standardyes
- 28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)yes
- 29. The communication should be wireless from the meter side to the control room sideyes
- 30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devicesyes
- 31. Management system (MDM) software functionalities must be defined beside those of Network Management System.no
- 32. The leakage control must be implemented into the MDM.no
- 33. It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.yes

Q8

Which is technical life expectation of your product and components (years)?

15 years

Q9

What minimum warranty period do you provide for your solution (years)?

2 years

Q10

Compliance with EU and other regulations and standards.

- Does your product have CE Marking?Yes
- Does your product have MID certification?Yes
- Does your product have DLMS compliance?Yes
- Do you have any other marking/certification for this product?No

Answer 5-E2

Q1

Contact details

XXXXXX

Q2

I have read the PIN and the Technical Prospectus

- Yes

Q3

Your company is a:

- manufacturer
- Other (please specify)manufacturer, designer, developer and system integrator

Q4

Do you rely on any partner for the products/component of your solution?

- Yes (Please specify)We buy communication modems and modules

Q5

Company information.

- What is the approximate annual turnover of your company (in euros)?10622906
- How much is the yearly investment for R&D (in euros)?716728
- For how many years has your company been trading?34
- In which EU countries does your company supply products or services?Spain, Poland, Portugal, France

Q6

Product information.

- Please provide a short description of your commercialized solution.Electronic water meters with communication capabilities and gateways. Transmission technologies: wired, mesh ISM radio, GPRS...
- Please provide a short description of the innovative aspects of your solution, if any.Smart meter, 100 internal calculated data including leak detection, communication wired bus, wireless transmission
- Is the product already available on the EU market?Yes
- If possible, please provide a link to a relevant picture and/or technical documentation (or send them by email to smart.met@oieau.fr).

Q7

How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- 1.Meter Typology (traditional building meters or traditional dwelling meters) (smart building meters or smart dwelling meters)Smart dwelling, building, bulk and irrigation meters
- 2. Bi-directional CommunicationMeters include wired and wireless bi-directional interface
- 2bis. Bi-directional Communication - High Frequency Measure Reading (every 1 minute)Possible, but battery like should be considered
- 2ter. Bi-directional Communication - Exchanged information see Requirements-related Data Structure belowProcessed by meter, internal data: volume, flowrate and time distribution, peaks and registers
- 2quater. Bi-directional Communication - Data Frequency Transmission (at least once in a day)Programmable, up to 8 times per day
- 3. On site measure calibration capabilityNo
- 4. Open Multilayered Interconnection Standard (OSI style)Different options: wired (UNE standard), wireless (propietary), cellular (GPRS)
- 5. On demand communicationAvailable
- 6. Technical Lifecycle8 years
- 7. Self Powered DevicesAvailable
- 8. Water Tightness protection >= IP68Available
- 9. Toxic agents and chemicals protected devicesNo
- 10. Display for most important register contentsLegal data
- 11. Pipe section, room occupation etc. for procurement complianceAccording to MID and EN-ISO standards

- 12. Anti tampering systemsFor magnet, disassembling or removing from pipe
- 13. Self diagnostics for battery charge levelCalculated
- 13bis. Self diagnostics for water leaksInternal calculation by microcontroller
- 13ter. Self diagnostics for water pressure and other relevant messagesNo
- 14. Front display for direct reading of selected registers of the meter by the customerOnly legal data
- 15. Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)Available as external device
- 16. Open Industry standard compliance for interoperability among different devices from different vendorsWired connection is Spanish Standard
- 17. Hydraulic connection system compatible with the actual existing one (such as connections to screw)According to MID and EN-ISO standards
- 18. The metering system dimension must allow easy installation with little or no masonry worksAccording to MID and EN-ISO standards
- 19. The meter should have a measuring solution to minimize frost damages, be it mechanical or electronicAvailable
- 20. The meter should be sediment and abrasion resistantYes
- 21. The meter could have a battery self recharging systemNo
- 22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activityAvailable
- 23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to installYes
- 24. The communication module should be integrated but still removable from the metering section of the meter itselfAvailable
- 25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)Yes, in GPRS solution
- 26. A full plastic/composite meter housing is not acceptable. At least the joints/threads should be metallicAvailable
- 26bis. The meter must measure flows in both directionsAvailable
- 27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standardYes
- 28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)It depends on cellular coverage or metallic cover thikness
- 29. The communication should be wireless from the meter side to the control room sideAvailable
- 30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devicesAvailable
- 31. Management system (MDM) software functionalities must be defined beside those of Network Management System.Available
- 32. The leakage control must be implemented into the MDM.Available
- 33. It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.Available

Q8

Which is technical life expectation of your product and components (years)?

8

Q9

What minimum warranty period do you provide for your solution (years)?

2

Q10

Compliance with EU and other regulations and standards.

- Does your product have CE Marking?Yes
- Does your product have MID certification?Yes
- Does your product have DLMS compliance?No
- Do you have any other marking/certification for this product?Yes

Answer 6–F2

Q1
Contact details
XXXXXX
Q2
I have read the PIN and the Technical Prospectus

- Yes

Q3
Your company is a:

- developer

Q4
Do you rely on any partner for the products/component of your solution?

- No

Q5
Company information.

- What is the approximate annual turnover (ref 2016) of your company (in euros)?100000
- How much is the yearly investment for R&D (in euros, ref 2016)?25000
- For how many years has your company been trading?5
- In which EU countries does your company supply products or services?Whole EU
- How many people does your company employ?2

Q6
Product information.

- What goods/services do you specialize in that can be of use to meet the project's requirements?Wireless communications
- Please provide a short description of the innovative aspects of your solution, if any.Open wireless infrastructures and platforms
- Is the product already available on the EU market? If yes, how many companies have you supplied this solution to?250

Q7
How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- 1.Meter Typology (traditional building meters or traditional dwelling meters) (smart building meters or smart dwelling meters)Perfect
- 2. Bi-directional CommunicationPerfect
- 2bis. Bi-directional Communication - High Frequency Measure Reading (every 1 minute)Perfect
- 2ter. Bi-directional Communication - Exchanged information see Requirements-related Data Structure belowPerfect
- 2quater. Bi-directional Communication - Data Frequency Transmission (at least once in a day)Perfect
- 3. On site measure calibration capabilityPerfect
- 4. Open Multilayered Interconnection Standard (OSI style)Perfect
- 5. On demand communicationPerfect
- 6. Technical LifecyclePerfect
- 7. Self Powered DevicesPerfect
- 8. Water Tightness protection >= IP68Perfect
- 9. Toxic agents and chemicals protected devicesPerfect
- 10. Display for most important register contentsPerfect
- 11. Pipe section, room occupation etc. for procurement compliancePerfect
- 12. Anti tampering systemsPerfect
- 13. Self diagnostics for battery charge levelPerfect
- 13bis. Self diagnostics for water leaksPerfect
- 13ter. Self diagnostics for water pressure and other relevant messagesPerfect
- 14. Front display for direct reading of selected registers of the meter by the customerPerfect
- 15. Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)Perfect

- 16. Open Industry standard compliance for interoperability among different devices from different vendorsPerfect
- 17. Hydraulic connection system compatible with the actual existing one (such as connections to screw)Perfect
- 18. The metering system dimension must allow easy installation with little or no masonry worksPerfect
- 19. The meter should have a measuring solution to minimize frost damages, be it mechanical or electronicPerfect
- 20. The meter should be sediment and abrasion resistantPerfect
- 21. The meter could have a battery self recharging systemPerfect
- 22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activityPerfect
- 23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to installPerfect
- 24. The communication module should be integrated but still removable from the metering section of the meter itselfPerfect
- 25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)Perfect
- 26. A full plastic/composite meter housing is not acceptable. At least the joints/threads should be metallicPerfect
- 26bis. The meter must measure flows in both directionsPerfect
- 27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standardPerfect
- 28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)Perfect
- 29. The communication should be wireless from the meter side to the control room sidePerfect
- 30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devicesPerfect
- 31. Management system (MDM) software functionalities must be defined beside those of Network Management System.Perfect
- 32. The leakage control must be implemented into the MDM.Perfect
- 33. It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.Perfect

Q8

Which is technical life expectation of your product and components (years)?

20

Q9

What minimum warranty period do you provide for your solution (years)?

3

Q10

Feasibility of the requested solution

Respondent skipped this question

Answer 7-G2

Q1

Contact details

XXXXXX

Q2

I have read the PIN and the Technical Prospectus

- Yes

Q3

Your company is a:

- manufacturer

Q4

Do you rely on any partner for the products/component of your solution?

- Yes (Please specify):
- Partnership with a French company for the development of new radio devices

Q5

Company information.

- What is the approximate annual turnover (ref 2016) of your company (in euros)?15 million €
- How much is the yearly investment for R&D (in euros, ref 2016)?0,5 million €
- For how many years has your company been trading?more than 100 years
- In which EU countries does your company supply products or services?Portugal, Spain, France, Italy, Germany, Suitzerland,
- How many people does your company employ?200

Q6

Product information.

- What goods/services do you specialize in that can be of use to meet the project's requirements?Water meters and smart metering devices
- Please provide a short description of the innovative aspects of your solution, if any.Easily, scalable and modular smart telemetry solution based on new Standard IoT network communication
- Is the product already available on the EU market? If yes, how many companies have you supplied this solution to?Yes. Deployments allready in place in more than 15 relevant water companies in the EU market

Q7

How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- 1.Meter Typology (traditional building meters or traditional dwelling meters) (smart building meters or smart dwelling meters)Mainly traditional building meters/smart building meters
- 2. Bi-directional CommunicationYes
- 2bis. Bi-directional Communication - High Frequency Measure Reading (every 1 minute)No. Extreme profile comm: 15/15 min. ; Standard profile comm: 1/1h
- 2ter. Bi-directional Communication - Exchanged information see Requirements-related Data Structure belowYes. Up to one remote reparametrization per device per month
- 2quater. Bi-directional Communication - Data Frequency Transmission (at least once in a day)Yes. Transmission once a day (consumption indexes and alarms)
- 3. On site measure calibration capabilityNot in the present available version. On development
- 5. On demand communicationNo. Due to lifetime battery requirements
- 6. Technical Lifecycle12 years. (standard mode transmission)
- 7. Self Powered DevicesYes
- 8. Water Tightness protection >= IP68IP68
- 9. Toxic agents and chemicals protected devicesNo
- 10. Display for most important register contentsNo
- 11. Pipe section, room occupation etc. for procurement complianceDN5 to DN50
- 12. Anti tampering systemsYes
- 13. Self diagnostics for battery charge levelYes
- 13bis. Self diagnostics for water leaksYes. SW reports if an hydric balance is available/posible
- 13ter. Self diagnostics for water pressure and other relevant messagesYes. SW alarms

- 14. Front display for direct reading of selected registers of the meter by the customerNo
- 15. Meter valve management functionalities (flow limitation, closure, reopening, fast automatic reaction time for emergency)No
- 16. Open Industry standard compliance for interoperability among different devices from different vendorsNo from the device's side but Yes from the network side
- 17. Hydraulic connection system compatible with the actual existing one (such as connections to screw)Yes
- 18. The metering system dimension must allow easy installation with little or no masonry worksYes
- 19. The meter should have a measuring solution to minimize frost damages, be it mechanical or electronicNo anti-frost system
- 20. The meter should be sediment and abrasion resistantYes
- 21. The meter could have a battery self recharging systemNo
- 22. The hydraulic section, regardless of the measuring technology of the meter have to be apart from the electronic telecom section in order not to break metrological certification in case of maintenance activityYes
- 23. The product and the related solution should be as simple as to require no special competences but the usual hydraulic skills to installYes
- 24. The communication module should be integrated but still removable from the metering section of the meter itselfYes
- 25. The solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.)Yes
- 26. A full plastic/composite meter housing is not acceptable. At least the joints/threads should be metallicYes
- 26bis. The meter must measure flows in both directionsYes
- 27. The network devices, regardless of the technology, must be compliant to the Network Manager communication standardYes
- 28. The communication must remain stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)Yes. Network coverage limits do exist.
- 29. The communication should be wireless from the meter side to the control room sideYes
- 30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devicesYes
- 31. Management system (MDM) software functionalities must be defined beside those of Network Management System.Yes
- 32. The leakage control must be implemented into the MDM.Yes
- 33. It has to be ensured the automatic centralised backup and synching of configuration parameters from the old meter to the new one at installation time.Yes

Q8

Which is technical life expectation of your product and components (years)?

12 years on standard profile transmission mode

Q9

What minimum warranty period do you provide for your solution (years)?

2 years

Q10

Feasibility of the requested solution

- The Smart.Met project seeks to develop a new remote reading system for water meters, which ensures effectiveness, efficiency and interoperability and which is based on open standards. The solution developed should tackle shortcomings, inter alia, in the areas of interoperability, battery lifetime, radio coverage and people's acceptance of the technology. In your opinion, is this ambition feasible?Yes
- What, in your opinion, will be the main challenges in fulfilling this ambition?1) Radio device's interoperability between diferent brands is an issue due to geometrical diferences in the registers. 2) acomodate 16 years battety lifetime along with 1/1 min transmission mode seems very unlikely
- What, in your opinion, would be an appropriate deployment strategy for this new solution? Please address the role of other organizations, the role of the customer and the time it will take to deploy.The already available XXXX IoT network infrastruture provides an easy and cost effective way to a definitive breakthrough deployment as it requests no significant scale or densification nor brand or manufactirer dependence. The end user can be an interested part if he can be provided with relevant

aditional services or information. No relevant time spent is requested to implement MYWATER (XXXX's smart metering solution)

- Please describe your strategy for safeguarding the transition to new technology, in the future. In what way does your strategy contribute to an adaptable, easy to do business model without technology or vendor lock-in?XXXX defends a complete separation between product manufacturers and Telecoms operators. Manufacteres in our opinion must be "tech agnostic" in order to provide various communication devices compatible with whatever standard protocol communication or metering technologies costumers might choose.

Answer 8–H2

Q1

XXXXXX

Q2

I have read the PIN and the Technical Prospectus

- No

Q3

Your company is a:

- developer

Q4

Do you rely on any partner for the products/component of your solution?

- Yes (Please specify):
- RBS Wave (Germany)

Q5

Company information.

- What is the approximate annual turnover (ref 2016) of your company (in euros)?500.000
- How much is the yearly investment for R&D (in euros, ref 2016)?375.000
- For how many years has your company been trading?17
- In which EU countries does your company supply products or services?Spain, Germany, Uruguay, Saudi Arabia
- How many people does your company employ?13

Q6

Product information.

- What goods/services do you specialize in that can be of use to meet the project's requirements?Software for detecting/reducing both types of water losses
- Please provide a short description of the innovative aspects of your solution, if any.By analyzing data water utilities already have, it detects pipes that may be leaking and which are the water meters that are causing commercial losses
- Is the product already available on the EU market? If yes, how many companies have you supplied this solution to?10

Q7

How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

- 30. Network Management System provided as part of the solution for monitoring, reporting and administration of network devicesWater Meter Management
- 31. Management system (MDM) software functionalities must be defined beside those of Network Management System.It is a platform for detecting both types of water losses
- 32. The leakage control must be implemented into the MDM.One of the modules addresses leakages

Q8

Which is technical life expectation of your product and components (years)?

10

Q9

What minimum warranty period do you provide for your solution (years)?

it is based on a yearly service fee, we grant guaranty during the service fee period

Q10

Feasibility of the requested solution

- The Smart.Met project seeks to develop a new remote reading system for water meters, which ensures effectiveness, efficiency and interoperability and which is based on open standards. The solution developed should tackle shortcomings, inter alia, in the areas of interoperability, battery lifetime, radio coverage and people's acceptance of the technology. In your opinion, is this ambition feasible?yes
- What, in your opinion, will be the main challenges in fulfilling this ambition?interoperability
- What, in your opinion, would be an appropriate deployment strategy for this new solution? Please address the role of other organizations, the role of the customer and the time it will take to deploy.agreements between main water meter manufacturers

- Please describe your strategy for safeguarding the transition to new technology, in the future. In what way does your strategy contribute to an adaptable, easy to do business model without technology or vendor lock-in?we only analyze data, we are vendor independent

Answer 9–I2

Q1

Contact details

- First
- Last Name
- Job TitleDirector
- Organization
- Location (City, Country)
- Email Address

Q2

I have read the PIN and the Technical Prospectus

- Yes

Q3

Your company is a:

- system integrator

Q4

Do you rely on any partner for the products/component of your solution?

- Yes (Please specify):
- manufacturers, operators

Q5

Company information.

- What is the approximate annual turnover (ref 2016) of your company (in euros)?€ 14.0 billions

Q6

Product information.

- What goods/services do you specialize in that can be of use to meet the project's requirements?Integration, IoT and big data processing, network operations

Q7

How does your solution match with the following functional requirements? Please provide key numerical indicators wherever possible.

Respondent skipped this question

Q8

Which is technical life expectation of your product and components (years)?

Respondent skipped this question

Q9

What minimum warranty period do you provide for your solution (years)?

Respondent skipped this question

Q10

Feasibility of the requested solution

- The Smart.Met project seeks to develop a new remote reading system for water meters, which ensures effectiveness, efficiency and interoperability and which is based on open standards. The solution developed should tackle shortcomings, inter alia, in the areas of interoperability, battery lifetime, radio coverage and people's acceptance of the technology. In your opinion, is this ambition feasible?Yes, it is
- What, in your opinion, will be the main challenges in fulfilling this ambition?

Survey Questions and Answers

Rif. Functional Requirement	#Number	Installation and Replacement	A1 Answer	A1 Note	B1 Answer	B1 Note	C1 Answer	C1 Note
I1	1	It is your solution component interoperable complying with a industry market standard defined? (yes/no) If yes, please indicate which one.	yes	lorawan	yes	Our solutins are complying with many different standards (indoor radio communication, measurements desinitions, database systems, security, etc.) I don't know is there any specific standard in questioin here.	yes	standard protocol wirless M-bus
I2	2	In countries like Italy, France, Spain, Belgium and Hungary there are in use pipe section, thread, step and other technical characteristics - e.g. room occupation - for an easy installation and procurement compliance. Does your Smart Meter fit these characteristics? (yes/no) If yes, please indicate the characteristic of your solution and the related target countries.					yes	dn15 dn20
I3	3	To install and set up the smart meter and the related solution: a)it is essential to have special competences b) traditional hydraulic skills are enough? (a/b)			b	Although the WSN end nodes have electronic and radio modules , there is no specific extra know-how needed for installations. The same goes for the gateways, repeaters, etc. Of course, extra skills beyond simple hydraulic ones are	b	
I4	4	Is it ensured the automatic centralized backup and synching of configuration parameters from the old smart meter to the new one in case of replacement? (yes/no)	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning.	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning.	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning.
I5	5	Does your Smart Meter size allow easy installation with no masonry works? (yes/no) Please give the size required for the niche to fit. (H x W x D)			yes		yes	ce standard 115*65*55

Rif. Functional Requirement	D1 Answer	D1 Note	E1 Answer	E1 Note	F1 Answer	F1 Note	G1 Answer	G1 Note
I1	yes	OMS (Open Metering System) par of Wireless MBUS	yes	EN13757-4 Communication systems for meters and remote reading of meters – Part 4: Wireless meter readout (Radio meter reading for operation in SRD bands); English version EN 13757-4:2013, OMS (Open Metering Specification) wMBUS (wireless M-BUS) http://oms-group.org	yes	Wireless MBUS / LoraWan / Sigfox Frequency band: 868 MHz	yes	Our devices are interoperable with any other device. The transmitter could be connected to any kind of probe/counter. Datalogger/Getway is able to read from any kind or brand of counter/ sensor via wired or wireless (LoRa or Wm_Bus) and they send data with open protocol to any managment system provided also as cloud compuntig service
I2	yes	France : DN15/110, DN/170, DN20/130, DN20/190 , DN25,32,40,50,60,80,100,125,150,200,250,300 - Standard Gaz step Espagne : 3/4"/115, 7/8"/115, DN20, 25, 32, ... - Standard Gaz step Belgique : DN15/165 ; DN20/165 ; DN20/190 and all other DN sizes - Standard Gaz step Italie : DN15/110, DN15/165, DN20, DN32, ... - Standard Gaz step	yes	ISO 4064 compliant	yes	F1 is compliant with Eurpean standard (MID, communication). Ultrasonic technology based water meter embeding either Wireless Mbus communication or LoraWan/Sifgox Communication. Targeted MKT : EMEA		
I3	b		b	no configuration on site necessary; communication starts automatically after water flow;	b	F1 objective is to deliver easy to install the smart meters with a standard meter configuration from factory and support the customers for thecommunication coverage. Ready to be used.	b	No special skills are required, our device are plug&play
I4	no	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning. NO need for today	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning. Meters are plug and play for installation; no need for sync during meter replacement on site;	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning.	yes	All data and configuration are stored on a back up memory of the datalogger, and the same configuration is on remote managment system too. So when the meter has replaced the old configuration is automatic restored, and anyway if is required to restart or change configuration it can be easily done both from the remote system or on place, the system will provide to syncronize the configuration.
I5	yes	Size of the niche depends of meters size.	yes	see XXX data sheet	yes	DN15 with integrated radio communication - Height : 132 mm - Length : 110 to 170 mm - Larger : 93 mm	no	

Rif. Functional Requirement	H1 Answer	H1 Note	I1 Answer	I1 Note	L1 Answer	L1 Note	M1 Answer	M1 Note	N1 Answer	N1 Note
I1	yes	MID/RF certifications/Electrical Security/Electrical Mag Compatibility	yes	The relevant standards are CEN EN 14154,IEC 61158-2,BS 5515,IEC 61326-1	yes	oms, largely used in water industry, wirless also with loraOne Sigfox	yes	data communication, CRISP-DM CRISP-DM OPC UA, protocol data https://opcfoundation.org/	no	industry standard are only for spain no for the eurpean one
I2	yes	Italy, France, Spain, Belgium (Hungary?)	yes	Further explanation required					yes	ISO standard 4064
I3	b		b	Confirmation of successful communication to the control systems must be assured via a simple configuration process after physical installation using traditional hydraulic skills.					b	
I4	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning.	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning.	yes	they keep track from history data, channel of the radio as well	no	**In other words: before Smart** Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning.	yes	In other words: before Smart Meter replacement (it means that a Smart Meter gets replaced by another Smart Meter) we require that all the "old" Smart Meter Configuration Parameters be BACKED UP on the Control Room MDM System. The "old" Smart Meter gets removed while the "new" Smart Meter is installed and, subsequently, configuration parameters are RESTORED from MDM to the "new" Smart Meter. This way there is no need for further new Smart Meter configuration nor activation / commissioning. NO WATER METER READING)
I5	yes	specific sizes vary depending on technology of measurement (single jet more compact, volumetric/MultiJet more bulky)	yes	180mm(H) X 400mm(W) X 250mm(H)					yes	115 MM 86MM 115 MM

		Use and Management	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note
U1	1	Does your solution have a bi-directional communication? (yes/no)	yes	bi-directional	yes		no	monodirectional to the gateaway , bidirectional to the meter	no		no	primary communication from meter to data concentrator (DC) is radio communication unidirectional; tertiary communication from DC to MDM is bidirectional; opto service interface in site is bidirectional	yes		yes	Our Datalogger/getway send data from sensor/meter to data managment system and receive data/ commands (change sampling time, communication time, guards level ecc.)	yes		yes	Up: Meter readings, Leakage, Tamper Down: Control signals	no		yes	http protocol	yes	
U2	2	Does your Smart Meter offer a functionality and an automated or semi-automated process to detect a potential measurement error (negative or positive) and possibly to trigger an alert (in case of automated process)? (yes/no)			yes	This is a bit unclear description.	yes		yes		yes	self check of sensing system and electronics	yes		yes	The list of alert/error/fault could be configured and extended on the clients needs, and when an error occur an automatic communication sends it to the system.	yes	One of the Alarms is Under-Flow, you can define a minimum flow and if there is a flow registered bellow what you define the alarm is trigered, so if you define the flow as the minimum flow where the meter in use measures with precision, then the alarm is trigered everytime the meter is being used at flows with lower precision. The same can be made on the high flows with the over flow alarm	yes						no	METER CAN DETEC METER DIFUNCTIONALITIS BUT NOT METEROLOGICAL
U3	3	Do the Smart Meter, Data Transfer and Control Room Layers offer an **Open**, solid, market tested, efficient and resilient interconnection standard?(yes/no) In case Yes, please indicate which one do you have. If yes, go to questions 4 and 5, otherwise go to question 6.	no		no	Our WSN uses B1's proprietary protocol on „room layer". The „open" protocol what you are mentioning is used not on „room" layer but on the „building" layer	yes	wirless M-bus tratto 3 applicativo e tratto 4 radio	no		yes	EN13757, OMS (Open Metering Specification) wMBUS (wireless M-BUS); REST API Interface for Headend-System; TXT or CSV Export;	yes	Locations : Europe, Middle East	yes		yes	SigFox, LoRan WAN and NB-IoT are available.	yes		yes	OMS, lora	yes	https	no	
I1	4	Does your open protocol application ensure interoperability among components from different vendors? (yes/no) Please indicate which open standard protocol do you have.	no	The Smart Meter Coordination Group (SMCG) that acts on the M/441 mandate, defines interoperability as the ability of a system to exchange data with other systems of different types. We define interchangeability as the ability to exchange one device with another without reducing the original functionality. To achieve interchangeability, several extra conditions must be met beyond the conditions for interoperability. Interchangeability requires devices to support the same functional behaviour on their communication interfaces or allow changes in functionality to be supported by the relevant communication protocol. This document describes the different degrees of interoperability that can be achieved, of which interchangeability would be the highest.	yes	The Smart Meter Coordination Group (SMCG) that acts on the M/441 mandate, defines interoperability as the ability of a system to exchange data with other systems of different types. We define interchangeability as the ability to exchange one device with another without reducing the original functionality. To achieve interchangeability, several extra conditions must be met beyond the conditions for interoperability. Interchangeability requires devices to support the same functional behaviour on their communication interfaces or allow changes in functionality to be supported by the relevant communication protocol. 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Interchangeability requires devices to support the same functional behaviour on their communication interfaces or allow changes in functionality to be supported by the relevant communication protocol. This document describes the different degrees of interoperability that can be achieved, of which interchangeability would be the highest. OMS	yes	The Smart Meter Coordination Group (SMCG) that acts on the M/441 mandate, defines interoperability as the ability of a system to exchange data with other systems of different types. We define interchangeability as the ability to exchange one device with another without reducing the original functionality. To achieve interchangeability, several extra conditions must be met beyond the conditions for interoperability. Interchangeability requires devices to support the same functional behaviour on their communication interfaces or allow changes in functionality to be supported by the relevant communication protocol. This document describes the different degrees of interoperability that can be achieved, of which interchangeability would be the highest. EN13757 wMBUS, T1; OMS4.0 T1,	yes	Open protocoles proposed by F1 Smart meters : Wireless Mbus - Open public operator compliant with ETSI 868-870 MHz ISM bandwith in Europe LoRaWAN or Sigfox or Private LoRaWAN Operator if existing in the Utility - Frequency band: 868 The Smart Meter Coordination Group (SMCG) that acts on the M/441 mandate, defines interoperability as the ability of a system to exchange data with other systems of different types. We define interchangeability as the ability to exchange one device with another without reducing the original functionality. To achieve interchangeability, several extra conditions must be met beyond the conditions for interoperability. 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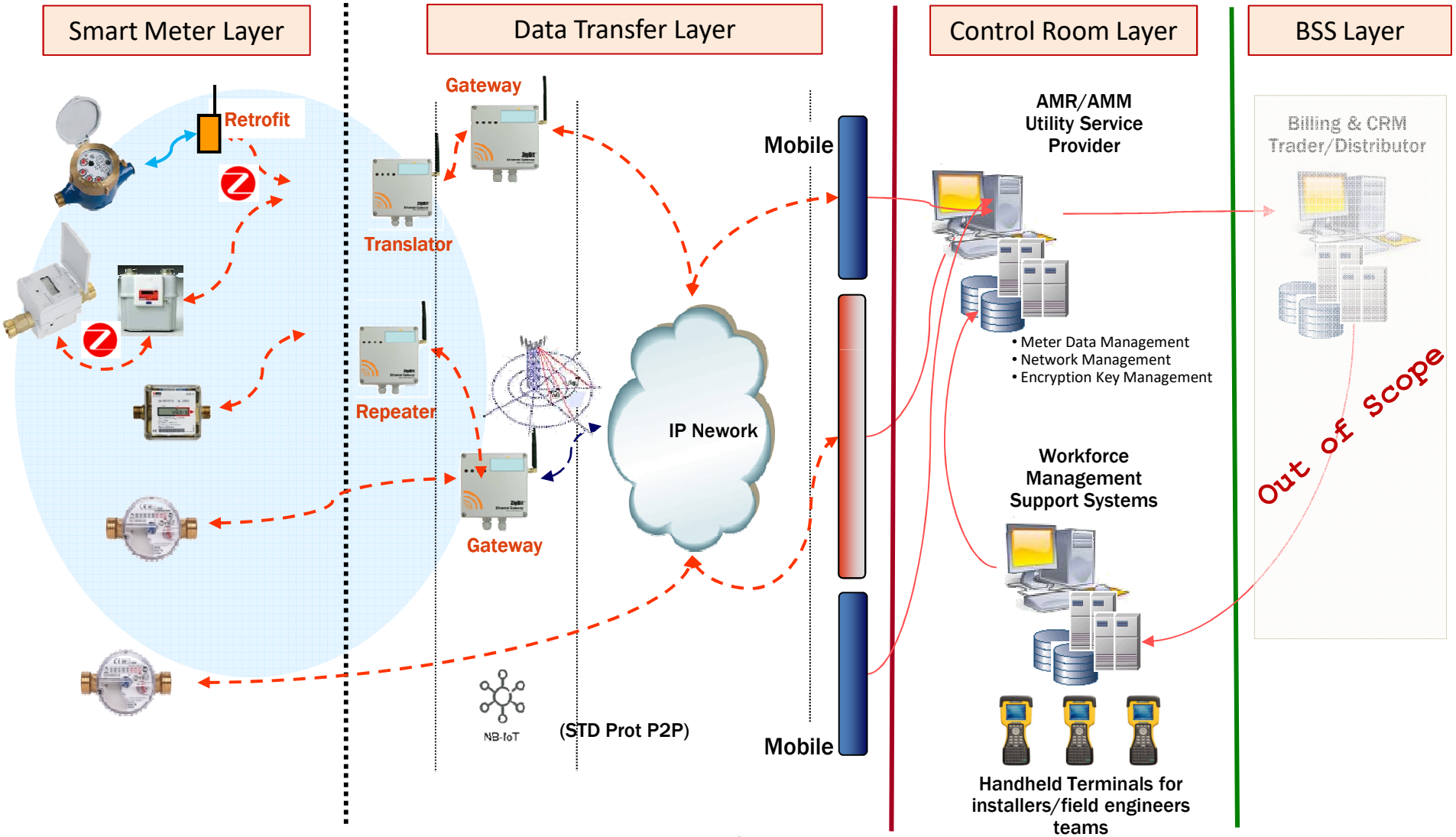
To achieve interchangeability, several extra conditions must be met beyond the conditions for interoperability. Interchangeability requires devices to support the same functional behaviour on their communication interfaces or allow changes in functionality to be supported by the relevant communication protocol. This document describes the different degrees of interoperability that can be achieved, of which interchangeability would be the highest.	yes	The Smart Meter Coordination Group (SMCG) that acts on the M/441 mandate, defines interoperability as the ability of a system to exchange data with other systems of different types. We define interchangeability as the ability to exchange one device with another without reducing the original functionality. To achieve interchangeability, several extra conditions must be met beyond the conditions for interoperability. Interchangeability requires devices to support the same functional behaviour on their communication interfaces or allow changes in functionality to be supported by the relevant communication protocol. This document describes the different degrees of interoperability that can be achieved, of which interchangeability would be the highest.	yes	OMS	yes	https / opc ua	yes	The Smart Meter Coordination Group (SMCG) that acts on the M/441 mandate, defines interoperability as the ability of a system to exchange data with other systems of different types. We define interchangeability as the ability to exchange one device with another without reducing the original functionality. To achieve interchangeability, several extra conditions must be met beyond the conditions for interoperability. Interchangeability requires devices to support the same functional behaviour on their communication interfaces or allow changes in functionality to be supported by the relevant communication protocol. This document describes the different degrees of interoperability that can be achieved, of which interchangeability would be the highest. io 657 transision mode ti1 / OMS for the 0 T 1 / oeterpatuod system developement kids to go to the networkwor dgetiono ationod eiono detion ation meio water meter eyion quiono giònono etiomoalood tuondo
I1	5	Does your open protocol application ensure interchangeability among components from different vendors? (yes/no) Please indicate which open standard protocol do you have.	no				no		no	The communication protocol OMS makes the communiczation copatible but the hardware is different from manufacturer to manufacturer. It would be physically impossible to create the interchangeability with other brands. We have solution to recuperate for example a pulse outout and transform it in to our	yes	EN13757, Mode T1; OMS 4.0 Mode T1,	yes		yes	Our device are able to read any kind of radio transmitter with every protocol we can read, from vendors, and from evry type of frequency (868Mhz, 169Mhz, 433Mhz)	no		yes		yes	OMS	yes	only if there is an open protocol on the other side	yes	Ia306577 mode t 1 or for ti is for the xoero more ta
NA	6	Is the selected application protocol structured with a security layer compliant with relevant standard of information security best practices? (yes/no) If yes, go to questions number 7 and 8, otherwise go to question 9.	yes		no	Our WSN security protocol in the first layer (between individaul nodes (water meters) and repeaters is B1's security protocol . It is a closed system for security reasons.	no	Partially	yes		yes		yes	Compliant with security mode defined in MBUS standard	yes		no		yes		yes		yes	https	no	user password no encryption with autentication
NA	7	Which Security model is adopted (Symmetrical Keys/Private Key Infrastructure/TLS/etc...)	symmetrical/Priv key/ Prot key						Symmetrical Keys			Symmetrical Keys;		Symetrical keys AES128, encryption and authentication		The security adopted depend on the type of getway/datalogger we use. For datalogger with GPRS getway /interface, data are compressed and encrypt before the gatway send them to server on which is provided a Private Key to login. For getway with Lora/Wm-Bus. we use the we				Private Key Infrastructure: It will be private when possible according to the technology used. Or crytographic algorithm or symetric key algorithm with 32 bits.	Private Key Infrastructure		need to check			
NA	8	Which is the encryption algorithm and the related key length ?	AES 128					no safe channel, data are encrypted according to aes 128 bit	AES 128 CBC	Mode 5, 7 AES 128 CBC Mode 8 AES 128 CTR		AES 128		Symetrical keys AES128, encryption and authentication		On the trasmitter we adopt the encryption and key expected from the standard of protocol Wm-Bus or LoraWan, or both of them if we use doble radio interface on the same getway				sigfox the communications are not encrypted but authentication is used for the device and frame counter to avoid spoofing / repetition.			need to check			
U4	9	A schedulable On-Demand communication feature is very useful to have the benefit of a real-time communication for a short period. This functionality should be activated or deactivated on demand to ensure the battery energy saving. Does your Smart Meter have such a feature? (yes/no)	yes		yes		no		no	No need for energy saving mode	yes	Meter transmits the actual values every 14s for the whole meter lifetime (typ. 15 years)	yes		yes	OOur devices have always autonomously powered, and when an alert/error/fault occurs, the device sends a pre-alarm communication to the server, and than start to sampling at very higher frequency for a while (the period and the frequency can be easily changed and configurated by	no		yes	sigfox. has no ondemand lorawan. depending on the type of node. Classes A, B and C. Class A does not have. Class C does have (with its associated battery cost)	no		no		no	
U5	10	Is your Smart Meter autonomously powered? (yes/no)	yes		yes		no		no		yes	integrated battery; no battery change necessary;	yes		yes		yes		yes	Battery powered					yes	any reading device
U24	11	Does your solution have the capability to measure flows in both directions? (yes/no)	no		yes		yes		yes		yes	but with limits to return flow;	yes		yes	We detect it from pulse emitter, if it is provided	yes	and No: back flow is detected but we don't memorize and transmite the volume measured in backflow	yes		yes		no		yes	
U6	12	Does the system have a selfdiagnostic alerting function in case of lack of water pressure? (yes/no)	yes		no		no		no		no		no		yes	we can connect pressure probe to our device	no		yes		yes		no		no	
U6	13	Does the system have a selfdiagnostic alerting function in case of measurement errors? (yes/no)	yes		yes		no		yes		yes		yes		yes	the device could detect several conditions that indicate a measurement error zeroflow consumption, and from data mining some problem could be detect	yes	under flow alarm and over flow alarm	yes		yes		no		no	
U15	14	Does the system have a selfdiagnostic alerting function in case of water reverse flow and automatic valve closure? (yes/no)	no	only alerting	yes		no		no	Yes : Reverse flow only	yes		yes	Except valve closure alarm	yes	We detect it from pulse emitter, if it is provided	yes	yes for reverse, no for valve	yes	Automatic valve closure is possible under defined conditions	yes		no		no	in case of reverse flow and the automatica valve closure becasuse no valve
U15	15	Does the system have a selfdiagnostic alerting function in case of tampering and fraud? (yes/no)	yes		yes		yes		yes		yes		yes		yes	We detect it from pulse emitter, if it is provided	yes	yes, module removal from the water meter	yes		yes		no		yes	
U6	16	Does the system have a selfdiagnostic alerting function in case of low battery? (yes/no)	yes		yes		yes		yes		yes		yes		yes	Yes, Our devices detect the battery level and they comunicate it to the system	yes	Yes, battery level	yes		yes		no		yes	
U8	17	Is your Smart Meter protection level >= IP 68? (yes/no)			no		yes		yes		yes		yes		yes	The device is insulated in bicomponent gel to garantee Ip68 protection	yes		yes				no		yes	
U9	18	Does your Smart Meter have valve management functionalities like: a) remotely operated flow limitation, b) manual on site reopening remotely enabled, c) automatic closure for specific events)? (yes/no) If yes, please give a bullet pointed list.	no		yes	a) Yes, b) No, c) Yes	no		no		no		no	Existing solution on case by case	yes	We can connect one device out put to a valve and remotely we command it	no		yes	1. Flow Limitation 2. Manual on site reopening after remote enabling 3. Automatic close at excess flow rates	no		no			
U10	19	What are the most relevant register contents for both end-users purposes and field technicians your Smart Meter has? Please, give a bullet pointed list of the most relevant register contents.			ssage number-communicatioin interval status		solo conteggio		Index Value, Batterie level, Flow direction, Alarm Number, Sealing Fraud, Temperature	For Mechanical meters: Index Value, Flow direction, For Static meters : Index Value, Batterie level, Flow direction, Alarm Number, Sealing Fraud, Temperature		serial number, meter communication adress, actual volumen, last due date volumen, last due date, actual flow, actual water temperatur, errors, alarms, flow direction,					dex of the mecha		meter reading						dected leakages, measurement mode,	
U11	20	Does your solution perform a Distributor Network sided leakage detection? (yes/no) If yes, please explain the process.	no		yes	the system monitors water consumption on each meter on-line with adjustable sampling interval. A pre-defined (adjustable from software individually) status for „leakage" (constant flow overlong time interval) and	no		yes	smart leakage function integrated in the smart meter. Settings can be adjusted and alarm is sent by RF communication.	yes	smart leakage analysis in the MDM System IZAR PLUS PORTL	yes	Possible with a additional equipment	yes	We detect losses from different conditions. On a group of meters on the same network, the system calculates the water balance, for a single node or a group of nodes, we set the limits above or below we consider there is a problem , on a single node. we could detect the loss by setting an	no		no		yes	Algorithm implemented to CILE	no		no	

		Use and Management	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note
UI1	**21**	Does your solution perform a Household sided leakage detection? (yes/no) If yes, please explain the process.	yes		yes	the same as above with different triggering values (adjustable)	no		yes	smart leakage function integrated in the smart meter. Settings can be adjusted and alarm is sent by RF-communication	yes	smart leakage function integrated in the smart meter. Settings can be adjusted and alarm is sent by RF-communication	yes	Alarm based on a permanent consumption monitoring	yes		yes	Continued Flow Alarm, you can define the number of hours after which no alarm is triggered if the meter is running non-stop, depending on the knowledge of the end-user consumption profile you know if it is normal or a potential leak/Under measuring flow you can define a flow that if the meter is registering bellow then you consider a leak, because a very low flow is not a normal consumption flow	yes	The NETWORK solution captures reading from the last mile. Household side detection is via low level water flow for a defined period of time, typically several hours.	yes	Through an algorithm, they do not deployment the process, they just provide the algorithm to a company and they perform and implement	no		yes	in the meter is integrated leakage detection functionalities,
UI2	**22**	Is your Smart Meter provided with an anti-fraud system to detect and prevent measurement fraud and will issue an alert message towards the AMR/AMM system in the Control Room? (yes/no)		when the treshold is overpassed the central control room receive an alert and then the customer ticket occours	yes		no		yes		yes		yes		yes		yes	Backflow alarm is also a potential measurement fraud alarm	yes	Definition of fraudulent events to be agreed	yes		no		no	
UI3	**23**	Is your Smart Meter provided with an anti-tampering system to detect and prevent device tampering and will issue an alert message towards the AMR/AMM system in the Control Room? (yes/no)	yes	when the alert occours the central control room receive an alert and then the customer ticket has been sent	yes		yes		yes		yes		yes		yes		yes	module removal from the water meter	yes		yes		no		yes	
UI5	**24**	Is the communication of the Smart Meter stable and reliable regardless of meter locations (basements, dedicated meter rooms, technical rooms, etc.)? (yes/no) To what extent, please indicate the Dynamic Range (RF power Budget) (Db)	yes	in the -130 dB range	yes	We use hardware on different radio system. The radio system is chosen in each system to match optimum performance. The systems we currently use: ISM (433 and 868 MHz with 169 MHz as option for special difficult cases) and LoRa. On ISM the normal power is 10dBm (node to repeater) and narrowband HP (repeater – gateway)	no		yes	157 dB with 12Dbi antenna	yes	Standard mode: EN13757 T1 868 MHz => 112 dB Linkbudget (10 dBm To Power). Longrange mode R4 with 132dB Linkbudget (10dBm To Power), additional linkbudget depending on antenna gain;	yes	RF link (emitter + receiver) budget depends on the technology used. Question : peut-on adapter la techno en fonction de l'environnement ?	yes	Our device has an simple SMA connector and a little antenna with a 3mt of cable. If isn't enough we can attach an extension cord and/or if it is needed we can change the antenna with someone with an higher db gain	yes	25Mw 14dBm	yes	sigfox link budget 159dB lorawan link budget 157dB catM link budget 156dB			no		yes	1G 2G bd
UI6	**25**	In case of reverse flow is your Smart Meter able to sense it and to autonomously close the valve to prevent network pollution, sending a special alert message to the Control Room? (yes/no)	no		yes		no		no		no		yes	Possible with a additional equipment	yes		yes	yes, detects / no valve	yes		no		no			
UI6	**26**	Which of the most frequent meter typology currently used do you support: new generation Smart Meter Household, new generation Smart Meter Building, old generation retrofitted meter Household, old generation retrofitted meter Building?		no retrofit	old generation meter household		old generation meter household		new generation smart meter household	AND New generation Smart Meter Building		all, no difference		All segments are addressed by our meter ranges	new generation smart meter building	Every kind of counter with a pulse emitter for smart reading	old generation meter household	We can equiped all our range of meters from DN15 up to DN50, so you could say that we also have Building meters	new generation smart meter household						static meters
UI7	**27**	Does your Meter respect regulation about toxic agents and chemicals of materials? (yes/no) If yes, please give standard ranges	no		yes		yes	WRAS, ACS, KTW, P24, BELGAQUA	yes	Germany KTW; France ACS, UK WRAS,	yes	KTW, WRAS, ACS certification. F1 design and manufacture meters according to Europen regulation					yes	Sanitary certificates: WRAS, ACS, KTW	yes					yes	
UI8	**28**	Is your Smart Meter resistant to sediment and abrasion? (yes/no) If yes, please give standard ranges	no		yes		yes	Propiatory Norm NSD20G - granulometry of sand from 0,09 to 1mm 12h horizontal position at 700l/h with 0.3gr/liter of sand 12h vertical position at 700l/h with 0.3gr/liter of sand 21 days horizontal position, 45% at Q3,	yes	particle size up to 2 mm	yes	Detection fo deposit and air in pipe are included			yes	Depends on the measurement technology being used, the meters are more or less resistant, there are no harmonized standards regarding this issue, what we have is customer specifications depending on markets	yes					yes	
UI9	**29**	Does your meter have a battery self recharging system? (yes/no) If yes, please briefly indicate the mechanism adopted.			**no**		**no**		**no**	**not necessary**	**no**		**yes**				**no**		**no**				**no**	
UI20	**30**	Do you think your solution minimizes the request of equipped sites (e.g. gateways, repeaters, translators, etc.) and is economically convenient? (yes/no)? If yes, please explain.	yes	use of picocells to solve local radio propagation problems	yes	We are specialist in indoor radio communication (WSN and other). Example: in our system a typical appartment building in Hungary which is 10+1 levels, 6 apartments / level – that is 66 cold + 66 hot water meters we normally cover with 1 gateway only (no data repeaters)	yes	huge capacity to store data	yes	Star solution without repeater, long range	yes	long range radio for fixed network, mobile reading as backup in parallel	yes	F1 provide hybrid multimode smart meters : FN + Mobile capability - F1 solution relies on technologies that minimize infrastructure (Sigfox/LoraWan) and allows back-up mobile reading capability. - Wireless Mbus version is readable both in fixed network and mobile reading.	yes		yes	Our product works with Multi Service Public Networks, they don't request any intermediate equipment between radio device and gateway/antenna. The potential for being economic increases with the number of IoT devices populating the networks. Today the cost of service is still not ideal for the water sector	yes	sigfox does not need gateways, depends on network deployment by Sigfox in the area lorawan It needs gateways. They can be private or a company that acts as a service provider and has deployed gateways throughout the area Catm It does not need gateways, it depends on network deployment (support) by the telephony service provider in the area	yes	Info can be translated in the cloud	no		yes	communication directly to control room up to 50 water meter to an single devices
UI21	**31**	Are your Smart Meter joints/threads resistant to the same tightening torque of joints/threads of the current traditional meter pipes? (yes/no) If yes, please give standard ranges.	yes		yes	/	yes		yes	brass threads	yes	F1 provide meters compliant with connection regulation					yes	we are using the standard meters and trasnforming them into smart-meters through the use of a compact radio device, so all the standard meter caracteristics remain the same	yes					yes	
UI22	**32**	Is the communication wireless from the meter side to AMR/AMM system on the Control Room side through the **Data Transfer Layer**? (yes/no)	yes		yes		yes		yes		yes		yes		yes	Data has sent to AMR system using TCP/IP protocol	yes		yes		yes		yes	
UI23	**33**	Is the Network Management System (NM) provided as part of the solution for monitoring, reporting and administration of network devices? (yes/no)	yes		yes		no		yes		yes		yes		yes	Our system is completed by a software provided as cluod computig service too, that has a part dedicated for this	yes	Provided by the Public networks. in case of LoRa Wan there is the option of a private network	yes		no		yes	
UI23	**34**	Is the Meter Data Management System (MDM) provided for the execution of meter reading and command operations execution? (yes/no)	yes		yes		yes	according to the monodirectional capability, commands are only few	yes		yes		yes		yes		yes		yes		no		no	
UI23	**35**	Are the Network Management System (NM) and the Meter Data Management System (MDM) apart but tightly integrated? (yes/no)	yes		yes		yes	1 software	yes		yes		yes	Both options are possible	yes		yes	LoRaWan Private more tightly, because they would be both provided by Janz	yes		yes		no		yes	
NA	**36**	Does your solution implement a water quality measurement in time? (yes/no) In case it does, please explain the general principle of the method.	no		no		no		yes	meter calculates "forward energy", which indicates the water quality (cold water) in respect to bacteria grows potential	no	YES : if Quality measurement in time means reverse flow detection due to defective retrun valve NO - if Quality measurement in time means chemical analysis	no	We could add a input to read a quality water sensor	no		no	Solution acquire data from any sensors 24x7 in real time. Sensors have the capability to transfer data on demand.	no		no		no	
UI25	**37**	Is it possible to scale up NM and MDM Control Room Layer Systems in case of PoD and related Smart Meter fleet increase? (yes/no)	yes		yes		no		yes		yes		yes		yes		yes		yes		yes		yes	
NA	**38**	Does your solution implement a n-end user application (desktop or mobile) to enable the customer to access his own consumption profile, with service alerts and relevant messages from the Distributor? (yes/no)	yes		yes		no	allert only to control room	no		yes		yes		yes	We provide for desktop or mobile software	no		yes		yes		yes	

D 2.4 - Annex IV

		Maintenance	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note	Answer	Note
M3	1	Please select the range of the technical lifecycle being defined as the shortest lifecycle of each Smart Meter components included battery* of your Smart Meter. a. Between 10 and 15 years b. between 15 and 20 years *Please note that the estimate lifecycle of the smart meter needs to take into account all variables e.g. weather conditions of the installation site, radio coverage performance due to position, wakeup and communication windows etc.).				- First of all, there are absolutely no market acceptable Smart Metering solutions which will fulfill battery life cycles of 5 - Battery lifecycles of a) (10 to 15 years of operation) is possible only very limited QoS. Our system's battery lifecycle is up to 8 years under normal circumstances with a possibility of on-site battery change without de-installation of the meters	a		b		b		b		b		a		b		a					
M1	2	Does your meter have a measurement technology to minimize frost damages? (yes/no) Please, indicate if it is mechanical or electronic.			no		no		yes		yes		yes	Static technology minimize frost damages and alert in case of low water temperature	yes		no		yes	Electronic	no					
M2	3	The measurement technology of the meter must be apart from the electronic communication section. The metrological certification must be preserved in case of maintenance activity not regarding the measurement section. In your meter, are the measurement section and the electronic communication section apart? (yes/no)			yes		yes		yes	For Mechanical meters : RF part is separated from measurement For Static meters : RF part can't be separated from measurement	no	fully integrated device; IP68 protection through potting; no service necessary	yes	Welmec compliant	yes		yes		yes		no			
M4	4	Does your solution include an On the Air Smart Meter Remote Firmware Update capability? (yes/no)	na		no		no		no		no	not necessary; OIML T1;	yes	Depends on the technology	yes		no	With NB-IoT might be possible, but not yet	no		no		no	only for the concentrator
		Disposal	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**	**Answer**	**Note**
D1	1	Are the electronic waste separate from hydraulic components? (yes/no)			yes		yes		yes	For Mechanical meters : Yes For Static meters : No	yes		yes				yes		yes							
NA	2	Are batteries removable from Smart Meter for waste management? (yes/no)			yes		yes		yes	For IP68 meters : Batteries can't be removed For IP54 meters : Batteries can be removed	yes	nic block to be separated after opening me yes together with electronic block	yes	F1 design includes environmental co Extractable battery in lab or warehouse. - fully replaceable for static meter - for mechanical meter : extractable only for recycling			no		yes				yes	you have to replace the meter		

A General Reference Functional Architecture



This project has received funding from the European Union's Horizon 2020
research and innovation programme under Grant Agreement No 731996

D2.4 Annex VI

Livorno Press Release

Water utilities and R&D providers gather in Livorno to exchange on innovative solutions for water metering

Brussels, 12 September 2017

On Monday the 11th of September, the project consortium of the EU-funded SMART.MET project, which seeks to steer the development of new smart metering solutions for water through innovation procurement, gathered attendees from a dozen companies from all around Europe in Livorno for an Open Market Consultation (OMC). OMCs allow utilities to assess the technological aspect as well as the already available smart water metering solutions in view of procuring research and development (R&D) services.

The aim of this R&D procurement will be to make water metering more efficient by helping to better detect leaks, better manage networks and reduce energy consumption, which will result in a better service provided to the final user.

The SMART.MET project is funded by the European Commission under its Horizon2020 research programme. Its objective is to drive the development of a new cost-effective, efficient and interoperable smart metering system for water that is based on open standards. This will be done through a Pre-Commercial Procurement (PCP) procedure, through which public authorities can buy R&D services to steer the development of solutions that cover their needs.

The SMART.MET project will be running until the end of 2020 with a budget of over 3 million euros dedicated to procuring R&D services. The project partners include a group of 7 public water utilities from 5 different countries, serving over 10 million people, plus several technical partners.

The last two OMCs will take place in Brussels (Belgium) on the 21st of September and in Budapest (Hungary) on the 27th of September.

Find out more on the project website:
http://www.smart-met.eu/

Contact the project consortium:
info@aquapublica.eu, smart.met@oieau.fr

This project has received funding from the European Union's Horizon 2020
research and innovation programme under Grant Agreement No 731996

D2.4 Annex VI

Madrid Press Release

Over 20 companies meet in Madrid to exchange on innovative solutions for water metering

Brussels, 6 September 2017

More than 20 companies, including water utilities, SMEs and large companies active in the water and ICT sectors met yesterday in Madrid to discuss smart water metering. The meeting was organised by the project consortium of the EU-funded SMART.MET project, which seeks to steer the development of new smart metering solutions for water through innovation procurement.

The Madrid meeting was the first of four meetings that are being organised during the month of September with the objective of checking the technological state of the art and availability of smart water metering solutions and identifying market risks that could affect potential suppliers of innovative solutions. Ultimately, these meetings will help prepare a public tender aiming at procuring research and development (R&D) services for smart water meters that should be published at the end of this year.

The SMART.MET project is funded by the European Commission under its Horizon2020 research programme. Its objective is to drive the development of a new cost-effective, efficient and interoperable smart metering system for water that is based on open standards. This will be done through a Pre-Commercial Procurement procedure, through which public authorities can buy R&D services to steer the development of solutions that cover their needs.

As underlined by the director of Promedio Badajoz, one of the water utilities organizing the Madrid meeting, the aim of this R&D procurement is to make water metering more efficient by helping to better detect leaks, better manage networks and reduce energy consumption, which will result in a better service provided to the final user.

The SMART.MET project will be running until the end of 2020 with a budget of over 3 million euros dedicated to procuring R&D services. The project partners include a group of 7 public water utilities from 5 different countries, serving over 10 million people, plus several technical partners.

Find out more on the project website:
http://www.smart-met.eu/

Contact the project consortium:
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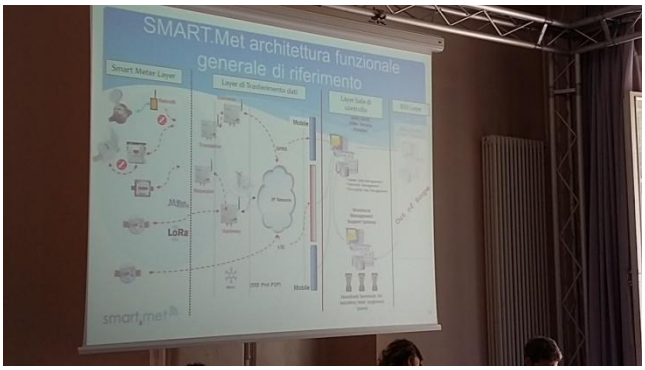
ANNEX VII

PICTURES OF THE SMART.MET OPEN MARKET CONSULTATIONS

OMC Brussels - 21 September 2017

OMC Budapest - 26 September 2017

OMC Livorno - 11 September 2017



OMC Madrid - 5 September 2017