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

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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 €.

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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.

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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

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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

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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

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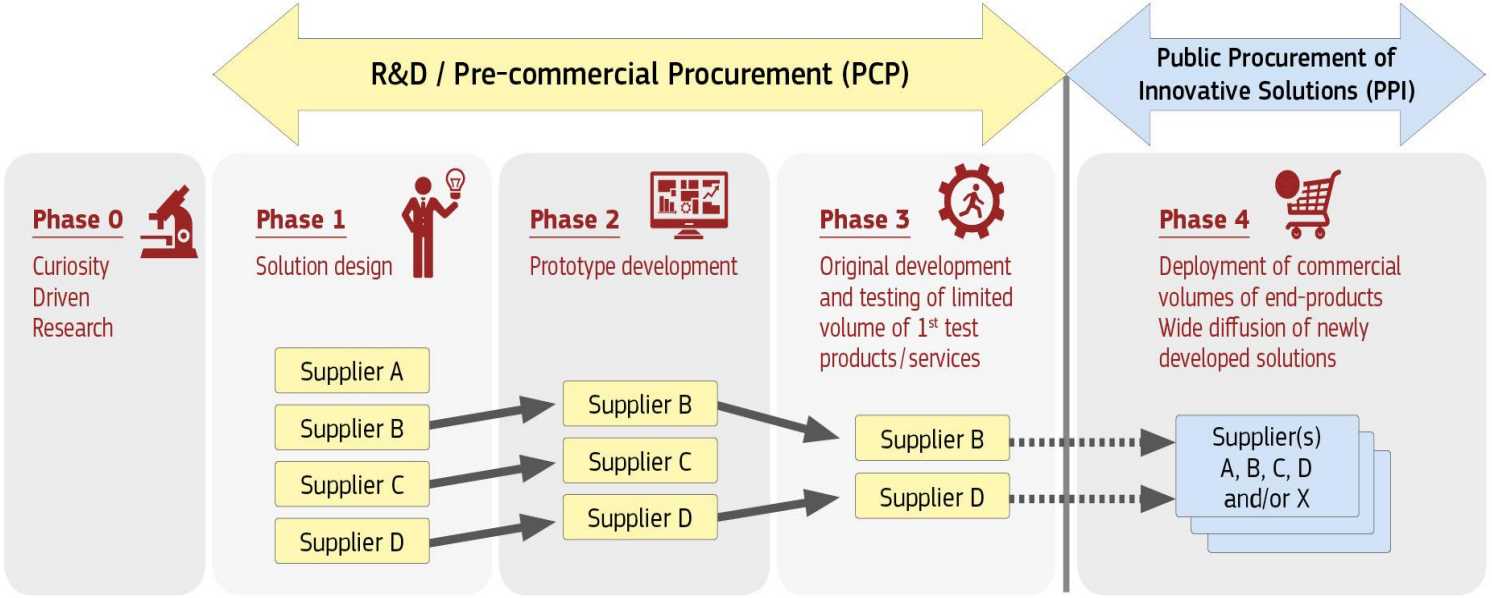
The EU innovation demand policy

- 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.

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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**

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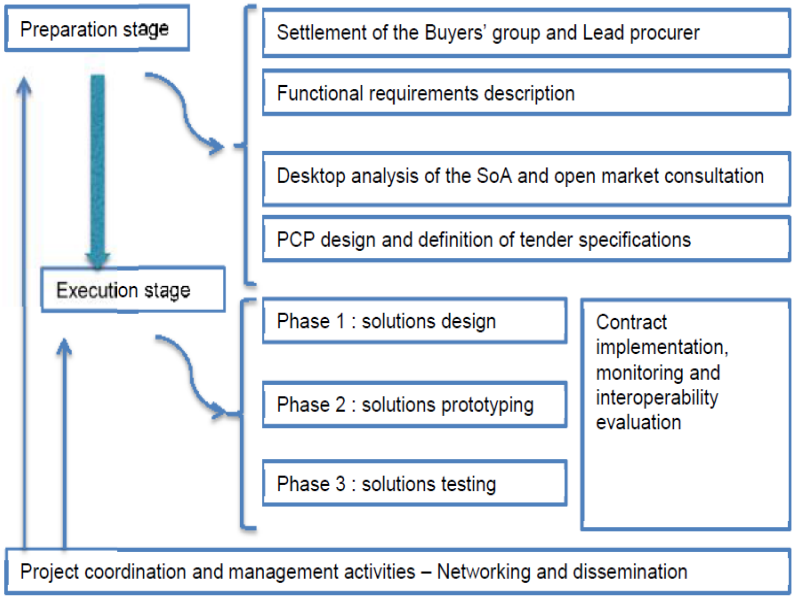
PCP timeline and estimated budget



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*
OLUTION 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%)

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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

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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.

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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.

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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.

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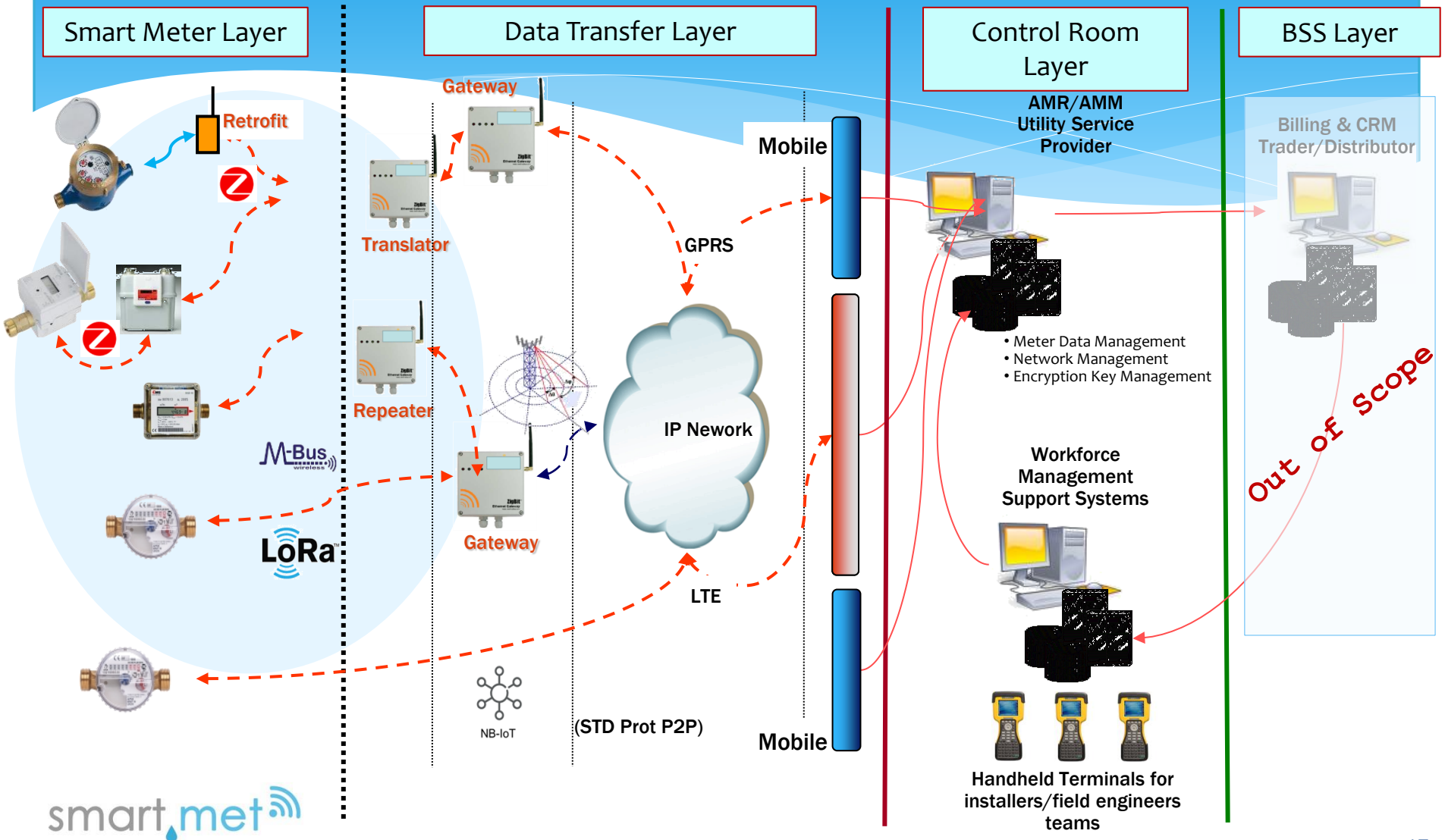
SMART.Met general reference functional architecture



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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)

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SMART.Met Innovation need

Bi-directional Communication (2)

- Measurement reading: every 1 minute
- Communication between the checkpoint and the mete

Data Frequency Transmission

- At least once a day
- On demand communication

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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 acceptable. At least the joints/threads should be metallic (26)

Technical Lifecycle (6)

- 16 years

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SMART.Met Innovation need

Power

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

Protection

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

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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)

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SMART.Met Innovation need

Installation

- Easy installation with little or no masonry works (18)
- No special competences but the 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)

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SMART.Met Innovation need

Communication

- Wireless from the meter side to the control room side(29)
- Integrated but still removable from the metering section of the meter itself(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)

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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)

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SMART.Met Innovation need

Control system (SCADA)

- 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 centralised backup and synching of configuration parameters from the old meter to the new one at installation time (33)

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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 communications protocol, like, for instance DLMS (IEC 61334-4-41) in its water flavour; 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 synchronisation method to ensure the same clock in every device

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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 garantee the communication in “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 (ex.: detection of a reverse flow->immediate closure of the water meter and generation of an alarm that is sent to the control room).

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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 .

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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.

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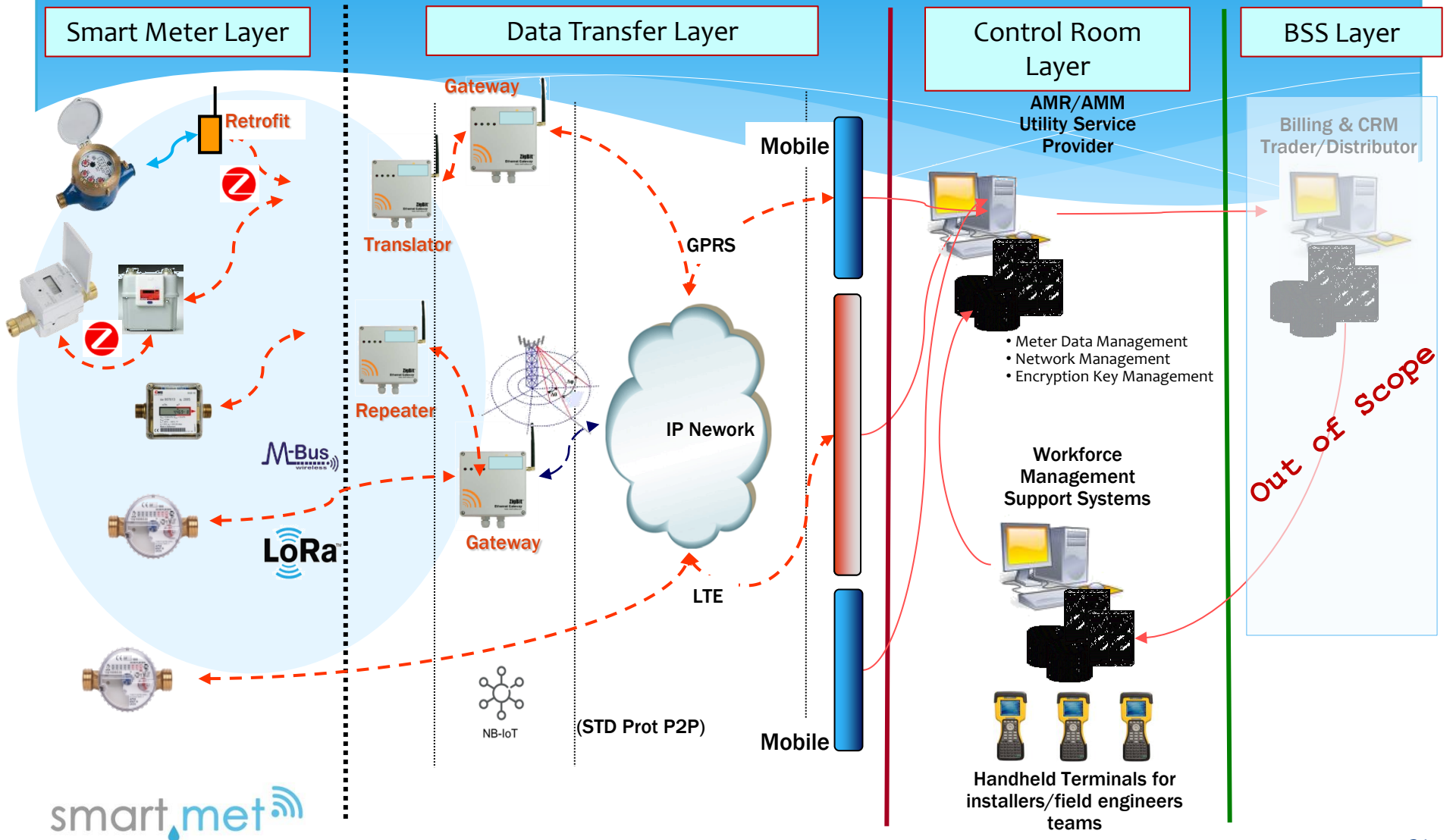
SMART.Met general reference functional architecture



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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 (every 1 minute)

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

2quater. Data Frequency Transmission (at least once in a day)

3. On site measure calibration capability
4. Open Multilayered Interconnection Standard (OSI style)
5. On demand communication
6. 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

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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 acceptable. 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 centralised 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**

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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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