

# Why FIWARE for the Water Sector helps Innovation?

## From Easy Global Market (EGM)

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[FIWARE](#), was born as an EU flagship program from the Future Internet Public Private Partnership (FI-PPP) in the 2010's. FIWARE set up a complex landscape that helped to drive innovation and in particular engaged +1000 SMEs to boost new ideas. One main objective with a project such as **Fiware4Water** is to bring the successful context and success stories in the Water sector. To understand what FIWARE is and how it can apply to the Water sector, it is worth to quote the FIWARE vision where the arguments presented are fully compatible with the situations faced by the water sector in particular when taking significant use of the power of the ICT technologies toward the Digital Water.

### Changing ICT Landscapes and Trends impacting the Water sector

Over the last couple of years, a number of technology trends are recognized as significant new directions in the ICT landscape, which will usher in the era of the Future Internet in Europe. A first major trend is the on-going industrialization of IT in the form of cloud computing and open service delivery platforms. The on-demand, pay-per-use nature of these provisioning models is expected to fundamentally change how IT infrastructures are provisioned, essentially enabling them to be delivered as a service. Secondly, new wireless networking technologies such as LTE (4G) and the deployment of Fibre to The Home (FTTH) offer increased network capacity and bandwidth to customers, thereby paving the way for new (real-time) applications in mobile data networks as well as for stationary scenarios. Furthermore, the virtualization of classical carrier networks is also on-going and starting to find new areas of application. Thirdly, the Internet of Things is safely taking hold, with the vision of ubiquitously connecting intelligent devices and sensors and offering new possibilities for contextual and environmental information sensing, processing and analysis, thereby opening the door to new automation and control applications and services in various sectors, such as in the water sector. Lastly, the maturing Internet of Services is accelerating the creation of complex value networks of service providers, consumers, and intermediaries bringing businesses and end customers innovative applications better tailored to their needs. These networks increasingly span various different players that historically have worked largely separated from each other thereby leading to more agile and dynamic business relationships and environments never seen before.

### The Market Stakeholder Perspectives

Brought together, the above trends are the core drivers towards the emergence of a new era in the evolution of the Internet, which we may refer to as Future Internet. It will carry the potential for realizing new business opportunities for established and emerging application and service providers in areas such as telecommunications, healthcare, media and e-government but today in the Water sector as well. This Future Internet will address some key demands and expectations from the various Water market stakeholders which cannot yet be satisfactorily met. Thus, regarding Application and Service consumers:

- **End customers** want to gain access and easily consume applications that can effectively assist them in daily life situations. Some of the underlying problems involved are the management of the ever-growing data and information (e.g. from their sensor-enabled environments) and the seamless access anywhere, anytime and from any device. They also ask for improved means for communication and collaboration within their social networks, families, neighborhoods in real-time and while being mobile, meeting security and privacy requirements. Overall, these capabilities would transform communities, homes and cities into safer and better places to live and leverage the Internet as an additional societal utility.
- **Enterprises and organizations** on the other hand, wish to get closer to their customers in order to deliver an even more compelling user experience and better service. For this reason, they would like to exploit contextual user data which may lead to a more personalized interaction experience and service offering, and would like to realize a stronger participation of users in all phases of product and service lifecycles, thereby bringing the lessons of the Web 2.0 phenomena into the services space. In order to develop and operate their services, new methods, technologies and tools are needed to speed up the time to market, to establish value added services which may be better configured in partnership with others and to simplify access to relevant resources and capabilities, e.g., from the Internet of Things. Additional requirements on business services include reduced complexity of ICT provisioning, scaling, global availability and meeting security requirements from customers and legal authorities.

**Application/service developers and providers**, on the other hand, are challenged to build smart applications that cover the above-mentioned needs from consumers. From a development perspective, such applications and services should be built on top of powerful but easy to use APIs, be standards based and offer flexible deployment and provisioning means (e.g., many devices, multi-tenant architectures, global scalability, and on-demand provisioning) and management frameworks (e.g. in the Internet of Things).

In this context, it is worth noting the power of Generic Enablers (GEs) to develop smart applications and services and this is also very important for the Water sector.

FIWARE provides a curated framework of open source platform components which can be assembled together and with other third-party platform components to accelerate the development of Smart Solutions. The main and only mandatory component of any “Powered by FIWARE” platform or solution is a FIWARE Context Broker Generic Enabler, bringing a cornerstone function in any smart solution: the need to manage context information, enabling to perform updates and bring access to context.

FIWARE NGSI is the API exported by a FIWARE Context Broker, used for the integration of platform components within a “Powered by FIWARE” platform and by applications to update or consume context information. FIWARE NGSI API specifications have evolved over time, now matching NGSI-LD specified by the ETSI industrial specification group on context information management (ISG CIM).

Today the **NGSI-LD context broker will be provided to the water sector** in particular for several H2020 projects such as Fiware4Water, Aqua3s, Lotus... thanks to FIWARE foundation expertise and SMEs such as EGM which is just releasing [Stellio](#), an open source NGSI-LD

### Towards Strengthening Innovation-enabling Capabilities

The previous observations independently hold across vertical sectors such as health, transportation and logistics, energy and urban management. However, in practice, many solutions in those areas are today realized as custom made applications which are developed multiple times for particular purposes with proprietary interfaces. This severely hinders the growth of economies of scale for application and service developers, and limits the size of the addressable markets and ICT investments that can be made towards new products and services in vertical applications sectors. As most revenues in the ICT sector in 2020 will be generated by products and services which have not yet been developed, it is now commonly agreed by public and private thought leaders that investments into the innovation-enabling capabilities are crucial for success in the global market competition.

### Economical, Societal, and Political Benefits brought by a FIWARE Platform

**From an economic perspective** it can be observed that many companies in the traditional ICT sector face difficulties concerning the transformation of their own business models into new areas, tackling commoditization and marginalization threats. To address this difficulty, a framework is needed where new business models can be explored and validated effectively. Such a framework could help to cultivate an ecosystem comprised of agile and innovative service providers, which in turn consume services provided by the traditional ICT players.

Considering **the societal dimension**, the availability of a platform whereby stakeholders across different sectors (e.g., water, logistics, energy management, sustainability, transport etc.) can cooperate will accelerate the development of new innovative services for the European society within and across various sectors. Vertical and horizontal innovations in these areas will contribute to solving major societal challenges (e.g., Grand Societal Challenges identified by the EU Commission and EU Member States).

Lastly, on **the political dimension**, legal and legislative barriers presently hinder the efficient cross-border establishment of new innovative solutions due to complex or incompatible ICT policies in different countries and regions. The identification of legal and regulative aspects that could be potential barriers for innovation in the Future Internet should thereby be investigated and appropriate mitigation actions should be identified and brought to the attention of policy makers. A FIWARE Platform may serve the purpose of revealing such barriers.

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## Project Consortium



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