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Fiware4Water results

How can river basin organisations benefit?

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KWR Director Watershare

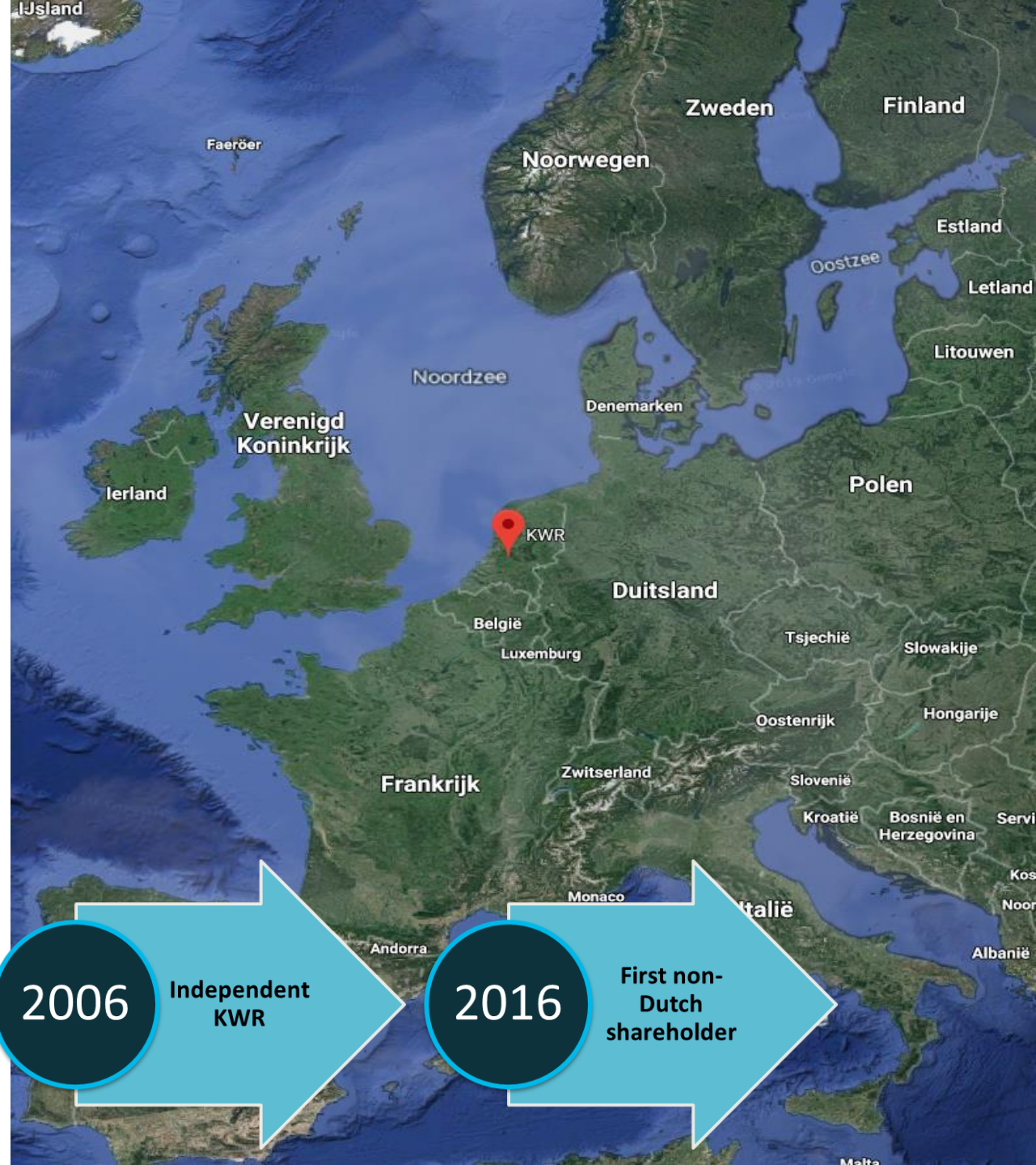
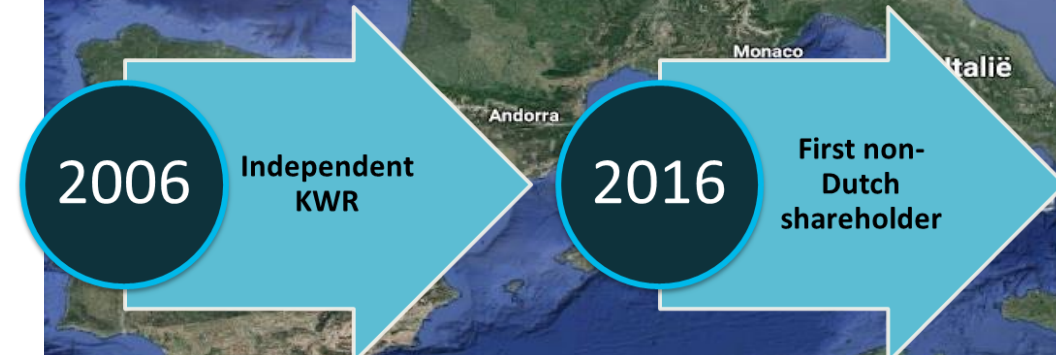
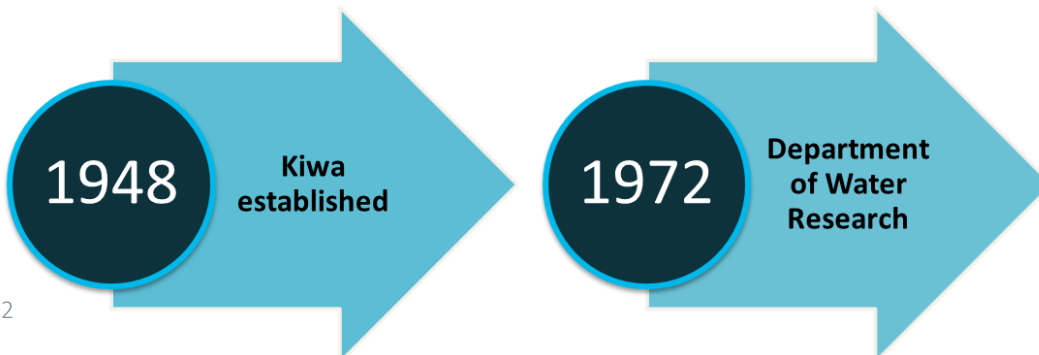


Bridging Science to Practice



KWR Water Research Institute

- **Bridging Science to Practice**
- Nieuwegein, The Netherlands
- Shareholders: 10 Dutch and 1 Flemish water utilities
- +/-180 employees: +/- 135 researchers
- Covering the full water cycle



KWR research agenda 2017-2023

- Climate change, pollution, population growth - impact on the water cycle.
- KWR generates knowledge to enable the water sector to be water-wise.
- Our scientific findings and the resulting practical innovations contribute, worldwide, to a sustainable water cycle and the UN Sustainable Development Goals.



Digital water

- Combining the value of Water (e.g. water saving) with the value of data and knowledge management.
- Leading to:
 - Smart water management
 - Smart homes and smart cities
- Tools:
 - Digitalisation and **Integration**
 - Digital Business models & Customer Access
 - Products and Services



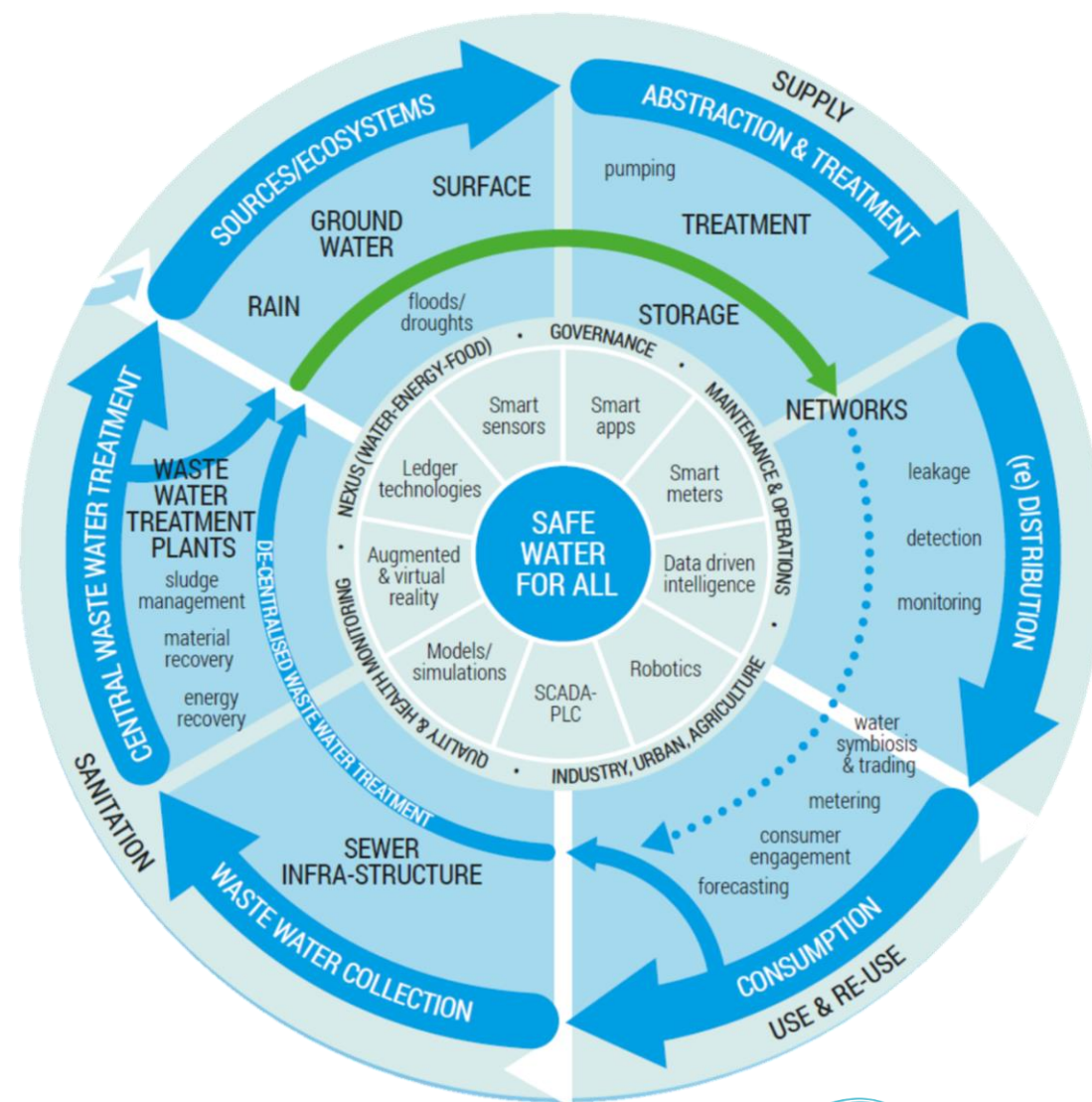
The value
of Data



The Value
of Water

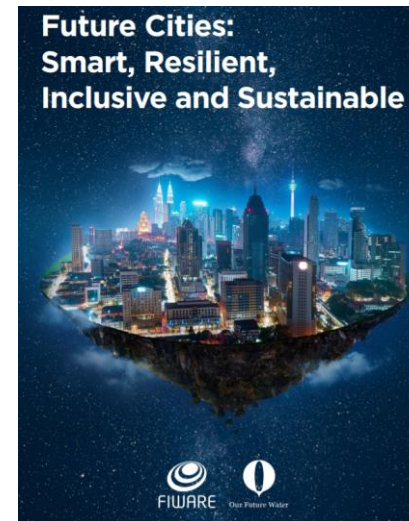
Digital water challenges

- Digital Water needs to address the whole water cycle
- The water sector is generally conservative and fragmented
- Information science, data science and digital technology are relatively recent additions to water management
- But rapidly increasing to a new digital reality.
- Currently the water sector is in **digital transition**



Digital transition

- Towards the Internet of Things (IoT) era.
- Multiple data sources (sensors, images...)
- Across sectors (e.g. water, energy, weather)
- Real-time operational management.
- Interconnected systems-end of “isolation” .
- Cloud services-Data exchange.
- Single European Data Space
- Single European Digital Market Services
- Digital twins:
 - Integration
 - **Interoperability**
 - Standardisation



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Future challenges and trends at EU level for Digital Water

- Digital water needs to meet three challenges at EU level:
 1. **European Data Space**: *'the aim is to create a **single European data space** – a genuine single market for data, open to data from across the world ...'*
 2. **Artificial Intelligence**: The EU is *'committed to enabling scientific breakthrough, to preserving the EU technological leadership and to ensuring that new technologies are at the service of all Europeans – improving their lives while **respecting their rights**'*
 3. The **Green deal** stating that *"the full benefits of the **digital transformation** need to support the ecological transition"*.

Current situation

- Directed call in 2018:

SC5-11-2018 Digital solutions for water: linking the physical and digital world for water solutions

Specific Challenge: Address several challenges hampering the potential of digital technologies in the water sector and harness their potential to create the foundations for a more water-smart society

- Introducing the need for IoT approaches for the water sector
- Resulting in 5 sister projects



- Common component: investigating and developing open source FIWARE compatible applications for the water sector (whole water cycle).
- Promoting interoperability and data exchange through the ICT4WATER cluster

Fiware4Water: Bringing FIWARE to the water sector

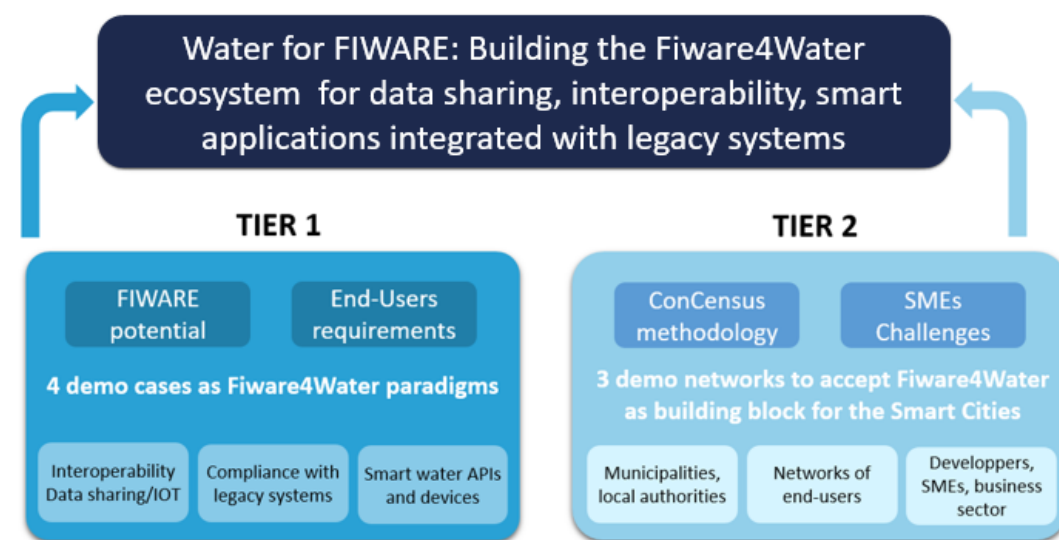
Fostering a **Digital Single Market for Smart Water Services**, addressing:

- The low level of maturity of the water sector on:
 - the integration/standardization of ICT solutions
 - the business processes of these solutions (including **integration with legacy systems**)

For

- Water sector end-users: cities, water utilities & authorities, citizens and consumers
- Solutions providers: private utilities, SMEs, developers

To benefit from the **FIWARE ecosystem**



What is FIWARE? (www.fiware.org)



FIWARE IS A CURATED FRAMEWORK OF OPEN SOURCE PLATFORM COMPONENTS TO ACCELERATE THE DEVELOPMENT OF **SMART SOLUTIONS**



OPEN SOURCE

A market-ready open source software, combining components that enable the connection to IoT with Context Information Management and Big Data services in the Cloud.



SMART USAGE OF DATA

Standard APIs for data management and exchange, as well as harmonised data models.



SMART SOLUTIONS & SERVICES

Automation of processes across the entire value chain. Easy plug&play integration with other solutions and services. Part of a marketplace of portable and interoperable solutions.

Fiware4Water: In a nutshell

3 years
2019-2022
H2020

14 partners, experts
in ITC, water and social
sciences

More info
@Fiware4Water
www.fiware4water.eu

4 Demo Cases
Athens Water Supply and Sewerage (GR)
Cannes Water Distribution System (FR)
Amsterdam Wastewater Treatment (NL)
Smart metering (UK)

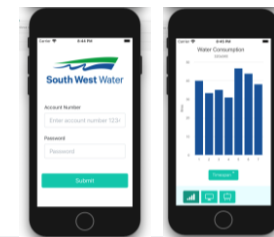
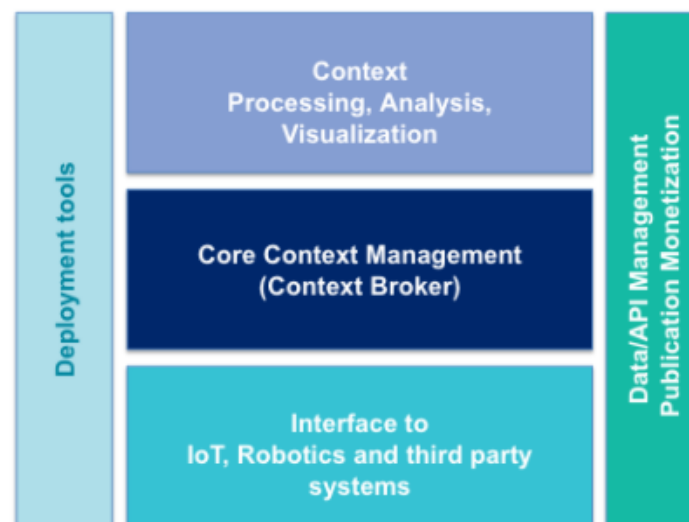
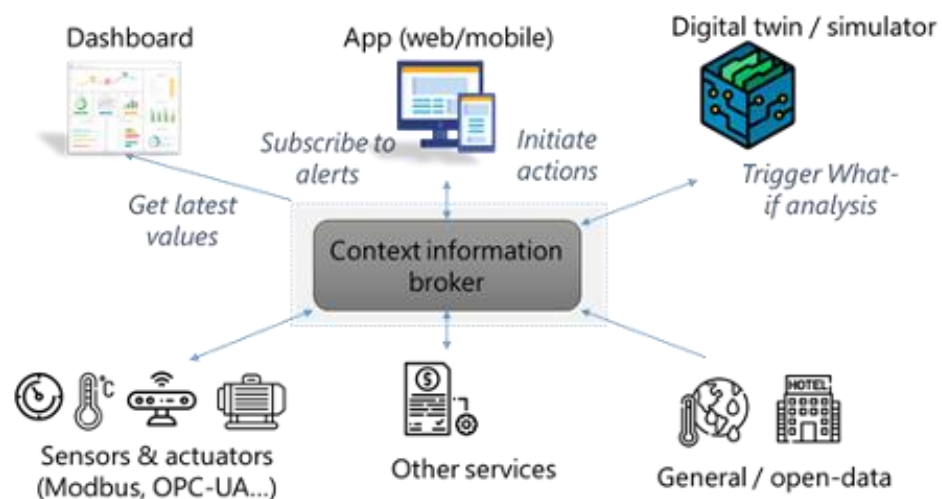
3 Demo Networks
Municipal Governments
Policymakers and managers
SMEs and innovators

Fiware4Water: The concept



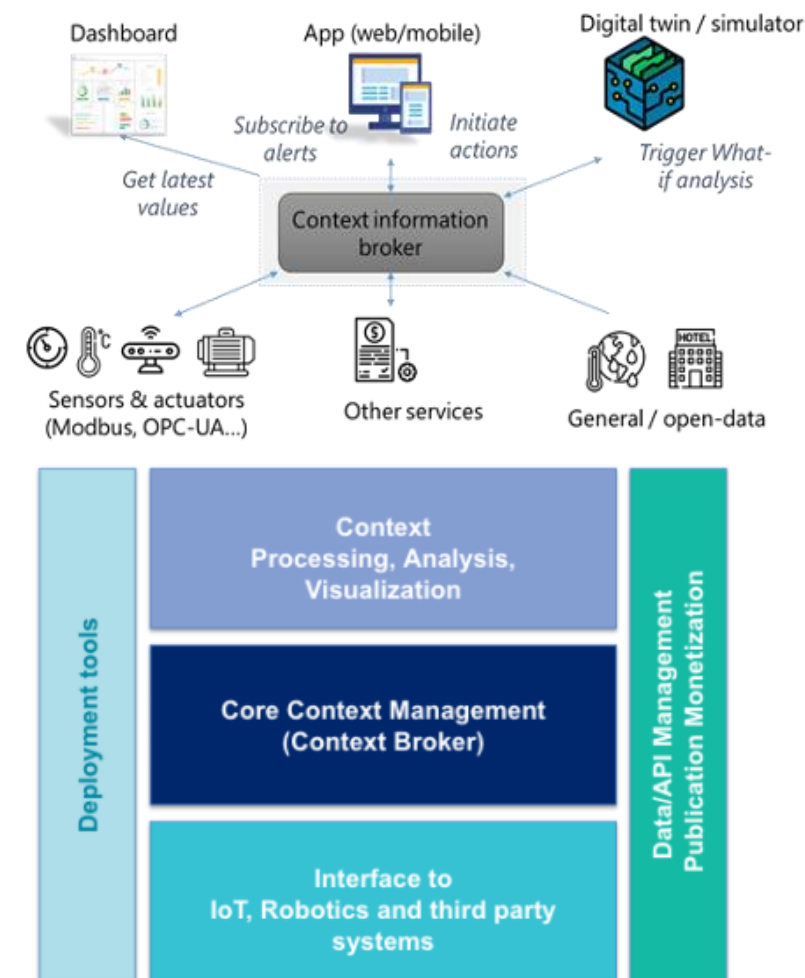
FIWARE concept (www.fiware.org)

- Formalised use of a **context brokerage architecture** (FIWARE), based on an IoT stack (sensing, network, data processing & application layers)
- Data models for (water) components (e.g. for EPANET)
- Core issue for smart cities and digital twins and IoT



Fiware4Water: Context broker interoperability advantages

- Core features **transferable** to other areas
- open and extensible *data formats* for key domain specific data structures,
- a *language agnostic approach* making it straightforward to develop solutions in a range of languages
- *off-the-self components* that remove the need to write time-consuming novel solutions.
- Using FIWARE allows to develop and deploy *generic solutions* with a large amount of *conceptual and functional reuse*

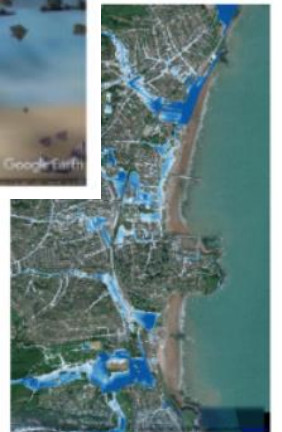
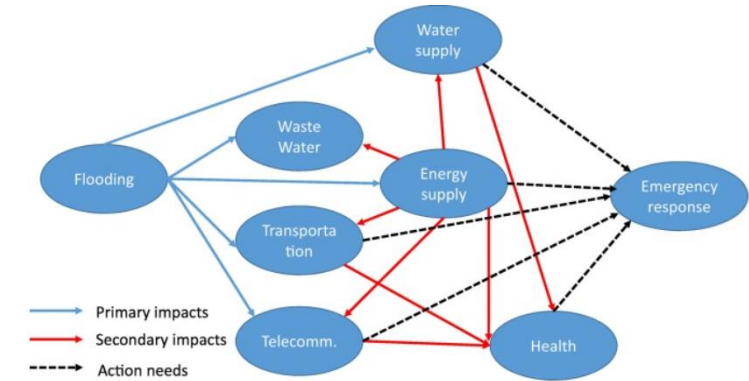




For River Basin Organisations

- The benefits from data exchange formats already created in F4W to improve:
- **Monitoring** of river/fluvial systems with sensors of all kinds
- Real –time **operational management** of river systems **combining data** from rivers (flow, water quality) with meteorological/ weather data, drones, citizen/social media (e.g. photos, texts)
- Provide **warnings** and **alarms** to the public
- Data and information **exchange** between organisations and authorities (e.g. leading to better understanding of multiple impacts of flooding).
- Fiware4Water paves the way for managers, operators and software developers for river management

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