



Enhancing Standardisation strategies to integrate innovative technologies for Safety and Security in existing water networks

the aqua3S project

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The Challenge

- **Potential disasters** has led to vulnerable societies that require **risk reduction measures**
- **Drinking water** is one main source of risk when its **safety** and **security** is not ensured
- Although there have been proposed **several technologies** for the analysis of drinking water, there is a **gap** on how we could **integrate them** in the existing water safety networks

aqua3S combines **novel technologies** in water safety and security, aiming to **standardise** existing **sensor technologies** complemented by state-of-the-art **detection mechanisms**

The Concept

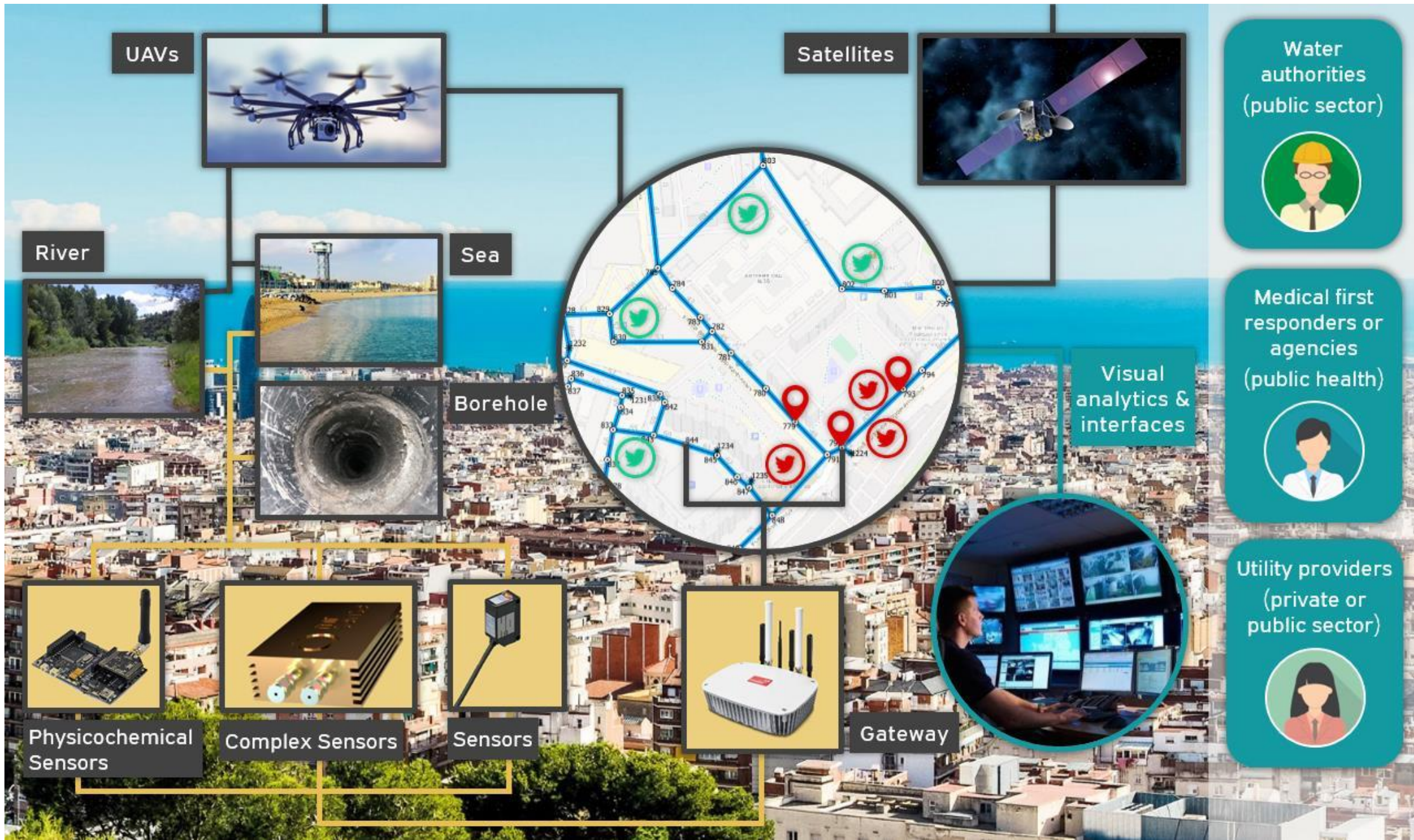
- **aqua3S** integrates a series of SoA **technological achievements from multidisciplinary fields**
 - sensors, IoT, semantic reasoning, high-level analytics, DSS, crisis management and situational awareness focusing on water sector
- aqua3S system will consist of
 1. a combination of high precision key point **spectroscopic** sensors & widely spread **refractive index sensors** deployed at fixed points throughout existing water distribution network
 2. complemented by a fleet of unmanned UAV, IoT and satellite images to detect, assess, evaluate and locate harmful substances

The Concept

- The **data** obtained from
 - **aqua3S' sensor networks** and
 - from **the existing infrastructure of the utility networks**

...will be processed by the **innovative threat detection algorithms** and **high-level multimodal fusion techniques**

- Practitioners from **water, medical sector, FRs** and **utility providers** will be supported by the aqua3S's **Early Warning and DSS**



Create strategies and methods in order a water facility to easily **integrate** solutions regarding water safety

Allow **easy engagement of different authorities** in a water related crisis

Introduce bottom-up approaches such as **citizen mapping initiatives**; build large exposure databases

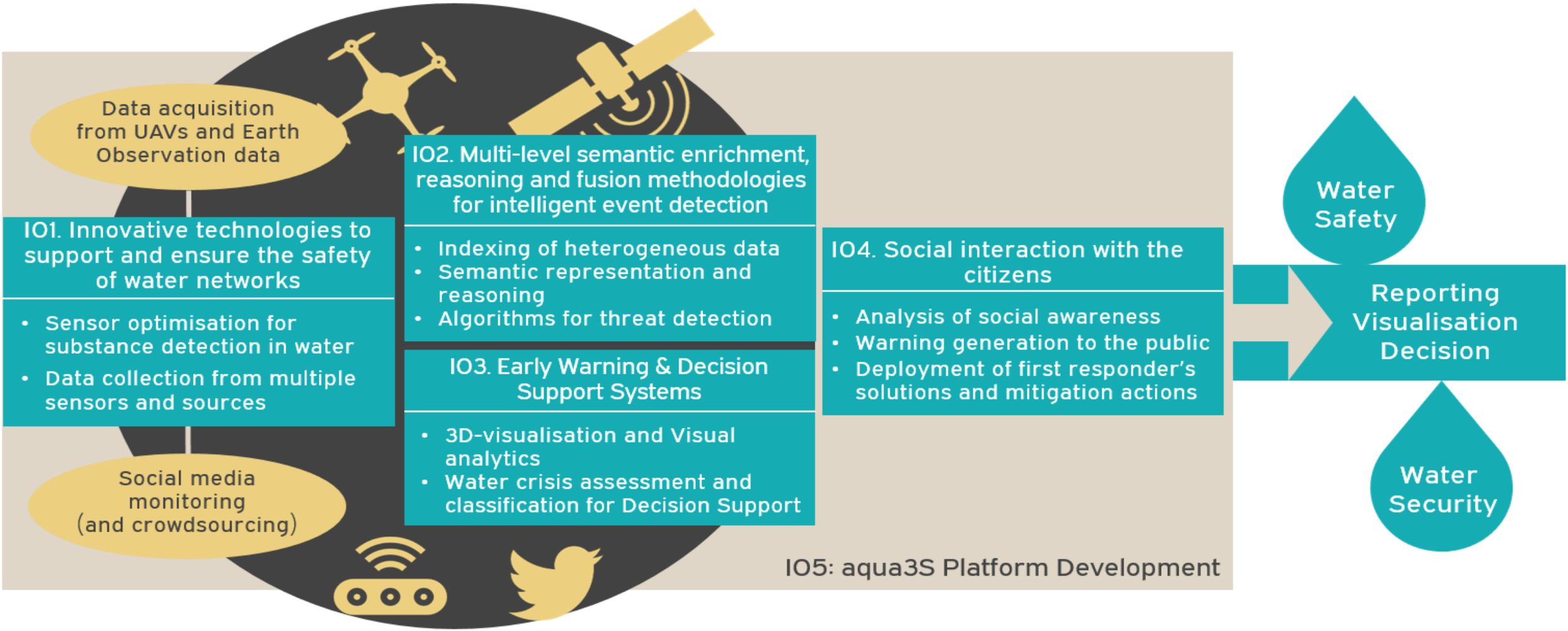
Propose **innovative sensor technologies** to support water safety

Create/use methods estimate the infrastructure **resilience level**

Create **early warning methods** for water authorities

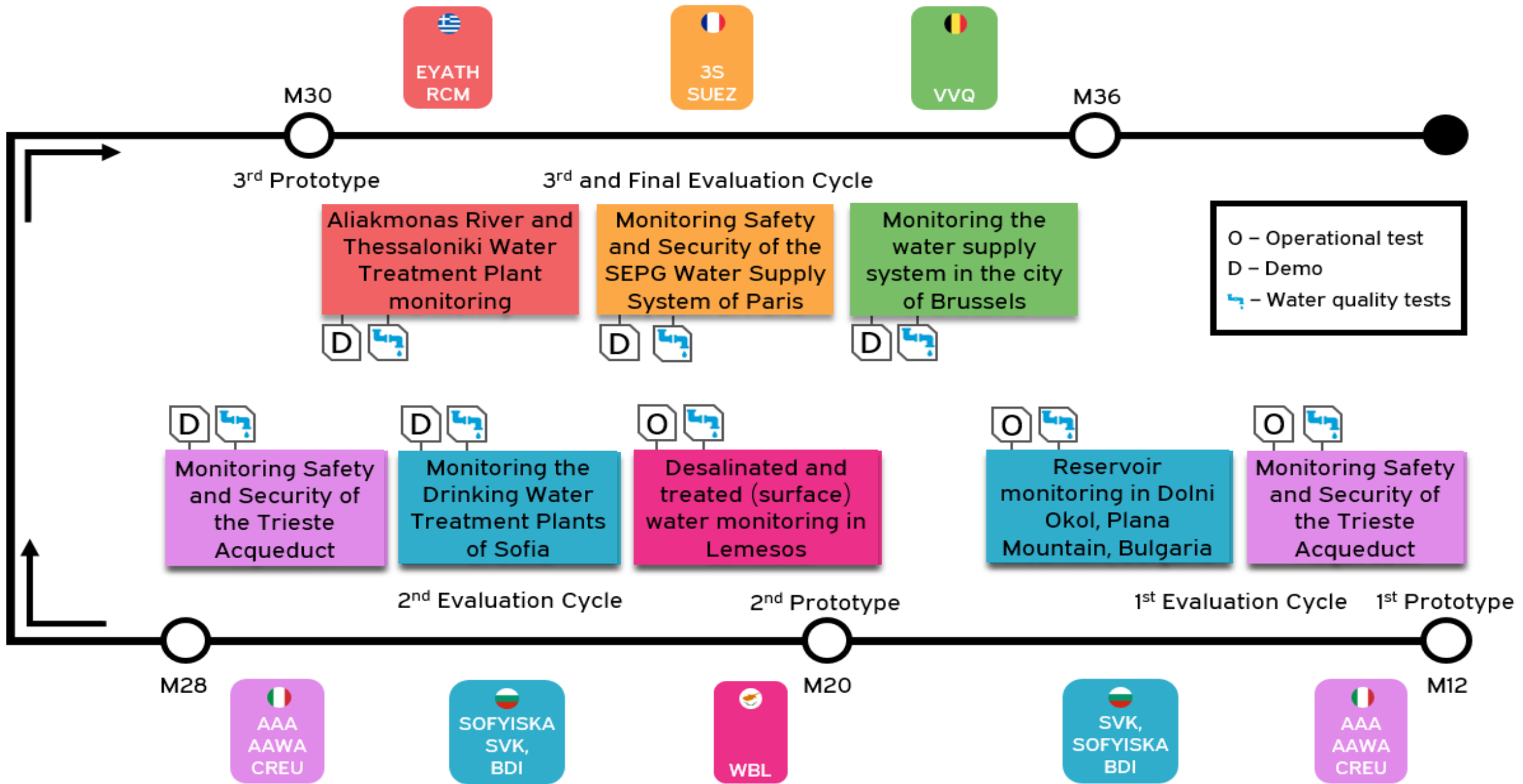
Model and classify a crisis event

Create a **complex collaborative system** recording problems and finding new solutions



Exploitation and Innovation

Operational Timeline



Evaluation - Expected results

- **Evaluation**
 - **Prototype** and **final system** evaluation
 - **User-oriented** evaluation
 - End users
 - External reviewers
 - User Group
- **Results**
 - Final system dealing with **6 pilots**
 - **Modules**
 - Operational approaches and **guidelines**
 - **Standardization** of the solution

Impact

- **Security of people:** aqua3S improves the way in which water authorities and companies are aware of a problem
- **Emergency working routines and standardization:** The facilitation of innovative technical solutions will allow water authorities and companies to do more focused and productive crisis management
- **Society:** aqua3S will facilitate the information flow to the water authorities, thanks to inclusion of new communication channels apart sensors (e.g. UAV, social media), making possible to inform about an emergency across different devices or services.

Policy framework and information management

- **Objectives:**

- understand the policy requirements for the aqua3S development from an analysis of the current and proposed European and National legal framework regulating water security
- identify if there are gaps or issues the existing legislative environment, if there are some parts outdated, if there is political interest for new legislation in this field

- **Results:**

- develop policy recommendations about the water security issues related to aqua3S
- Develop a white paper for policy makers
- Disseminate the outcomes to key stakeholders (i.e. policy makers, water authorities, community leaders and Citizen).

Policies, Information Management & Standardization

Internal work

- definition of which are the main topics of the legal framework about water security that are related to aqua3S
- Identification of the key Stakeholders both at European level, both at national level for each PUC

External interaction:

each Partner will interview (workshops, questionnaires, surveys form etc..) its own stakeholders to define:

1. Current legal framework
2. If there are any future planned updates
3. Existing criticism, issues, gaps in the legislation
4. Outdated legislation
5. Political interest in new legislation

Final results:

Outline new policy recommendations and Create a white paper for policy makers and the other stakeholders

Dissemination of the results and get feedback

Standardisation, Strategy & policy making

- **Objectives:**

- identify the current and relevant standards being used by water security authorities, industry, policy makers, health care, and civil protection across the European Union
- assess what 'water security' means in values and practice across Europe in order to determine future standardization needs use the results of relevant EU projects in the area of standards (e.g. ResiStand) to ascertain and identify future needs

- **Results:**

- provide an overview of standardization gaps, needs and opportunities within the scope of aqua3S . determine what are a) the possible de facto standards and b) what standards are deemed mostly likely to be included in the future by the target community.
- formulate new work items in collaboration with the target community; set out the scope and stakeholders for a CEN Workshop Agreement (CWA),
- deliver a CWA and a Priority Standardization Action Plan based on gaps, needs and opportunities. Organize a dedicated workshop

Standardisation, Strategy & policy making

- Internal work : Organise desktop and partners analysis on standards.
- External interaction: Organise interviews and involved organizations to get feedback on standardization – set up survey form – engage discussions to various standardization groups
- Engage with CEN with participation to existing work and prepare new CWA
- Prepare 2 workshops to get feedback and to present findings

Guidance for responsible applications of water security standards and policy

- Drafting a report to provide guidance for the future application of the project by technology designers and policy-makers on the responsible impact and applications of any proposed standards or policy to support whole-society resilience
 - **Pre-standardization impact assessment** – assessing ethics, legal and societal impacts;
 - Research with key stakeholders (e.g. via interviews and questionnaires with technical experts, policy makers, water safety agencies, environmental justice organisations) to develop adequate standards
 - Consider impacts and implications of the current and proposed water security and early warning frameworks identified.



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Thank you!
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