Challenge 1: Sustainable and safe water infrastructures

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Water production and distribution

4 000 000 km of networks
45 000 Mm3/yr supplied
23% of losses
Wastewater & Stormwater collection and treatment

3 000 000 km of networks
Asset renewal rate: 0.5 - 2% / yr
Sustainable and safe water infrastructures

Main stakes

- Water conservation
- Water quality
- Water security
- Water treatment

Inspect
Monitor
Maintain
Sustainable and safe water infrastructures

Sub-Challenge 1

Aerial, underwater and ground robots

- Multi-sensing
- For remote inspections of large areas
- For pressurized water pipes and water reservoirs inspections
  - Enter through small access points
  - Identify defects
  - Perform repair tasks
- For safe and rapid access to underground pipes (Pavement cutting, detection of underground networks, ...)

REDUCE CLEAN WATER LOSS (LEAKAGES)
Sub-Challenge 2

Underwater and surface robots
- For water and wastewater pipes
- Autonomous
  - Perform continuous measurements
  - Detect water contamination issues, trigger alerts
  - Grab samplings
  - Communicate water quality
  - Operate long-term without human intervention

INCREASE EFFICIENCY OF WATER QUALITY CONTROL
ENSURE WATER INFRASTRUCTURES ARE OPERATIONAL AND SAFE

Sustainable and safe water infrastructures
Sub-Challenge 3

Aerial, Ground, and surface robots

- Sewer pipes, underground retention tanks and treatment plants underground facilities
- Empty or partially full of water assets
- Inspect and identify defects (multi-sensing)
- Enter through limited access points
- Geopositioning, communication, autonomy
Sustainable and safe water infrastructures
Sub-Challenge 4

Robots and cobots

- Avoid human risks
- Provide safe and rapid access to wastewater networks (lifting of manhole covers)
- Work in confined spaces
  - Perform repair and maintenance tasks
  - Increase precision
Water and wastewater infrastructures

Challenge 1
REDUCE CLEAN WATER LOSS (LEAKAGES)

Challenge 2
INCREASE EFFICIENCY OF WATER QUALITY CONTROL

Challenge 3
ENSURE WATER INFRASTRUCTURES ARE OPERATIONAL AND SAFE

Challenge 4
ROBOTICS TO ISOLATE WORKERS FROM RISKY INSPECTION IN CONFINED FACILITIES