ResiWater: An Innovative Secure Sensor Networks and Model-based Assessment Tools for Increased Resilience of Water Infrastructures

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ResiWater

Innovative Secure Sensor Networks and Model-based Assessment Tools for Increased Resilience of Water Infrastructures

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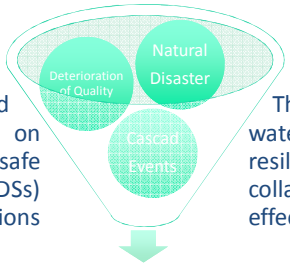
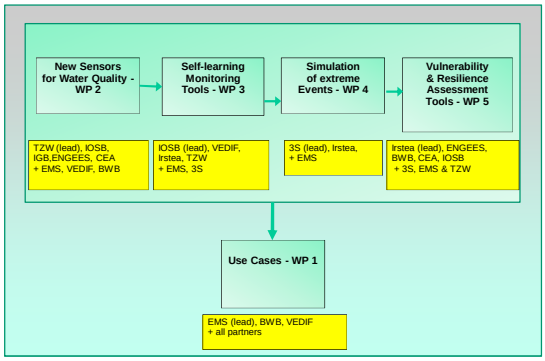
PROJECT AIMS

Water is a fundamental resource for human and economical welfare and modern society depends on complex, interconnected infrastructures to provide safe water to consumers. Water Distribution Systems (WDSs) are exposed to deliberate or accidental contaminations or may undergo a partially or full system collapse.

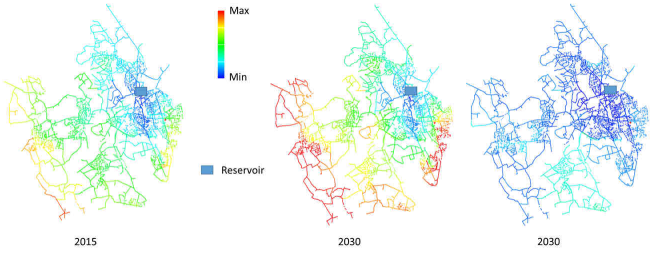


Threats

The project ResiWater aims to develop tools to prepare water utilities for crisis management and enhance their resilience with regards to three specific case studies: collapse of WDS, water quality deterioration and cascade effects between water, energy and IT infrastructures.

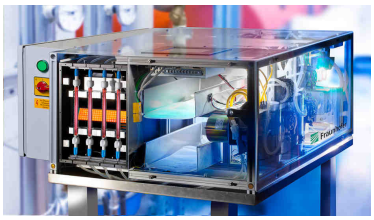


Overall project structure

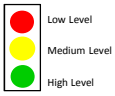


Development of supply failure probability from the initial state (left) without (middle) or with (right) rehabilitation [© 3S Consult]

Pilot scale at Dresden - TZW



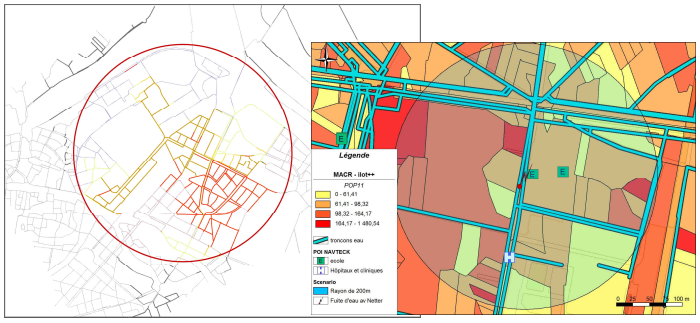
Prototype of biosensor - Fraunhofer



Steps	Tools	Natural disaster, terrorist attack, cascade effect					
		Collapse of system		Deterioration of water quality		Cascade effect: IT/Energy	
		Level of preparedness		Level of preparedness		Level of preparedness	
		Actual State	Project goal	Actual State	Project goal	Actual State	Project goal
1. Detection + Identification	Sensors		n.u.n.		WP2		
	Hydraulic models		n.u.n.				WP4
	Alarm generation modules		WP3		WP3		WP3
	Self learning monitoring		WP3		WP3		WP3
	Uncertainty analysis		WP4		WP4		WP4
	Vulnerability analysis		WP5		WP5		WP5
2. Planning	Hydraulic model		WP4		WP4		
	Training simulator		WP4				WP4
3. Action	Decision making-aid tool		WP5		WP5		WP5

n.u.n: no update necessary

Level of Preparedness for drinking water distribution



Synthetic Effect Zone left side with Porteau, right side from Amelie Grangeat's Phd (CEA)