ECSCI (European Cluster for Securing Critical Infrastructures) Workshop

Venue: Google Meet

Dates: 24th-25th of June 2020

STOP-IT Project

STOP-IT

stop-it-project.eu

Project funded by the European Union's programme Horizon 2020 under the call **CIP-2016-2017-1** "Prevention, detection, response and mitigation of the combination of physical and cyber threats to the critical infrastructure of Europe".

Rita Ugarelli (PhD), SINTEF AS
Chief Scientist
Project Coordinator
Rita.Ugarelli@sintef.no

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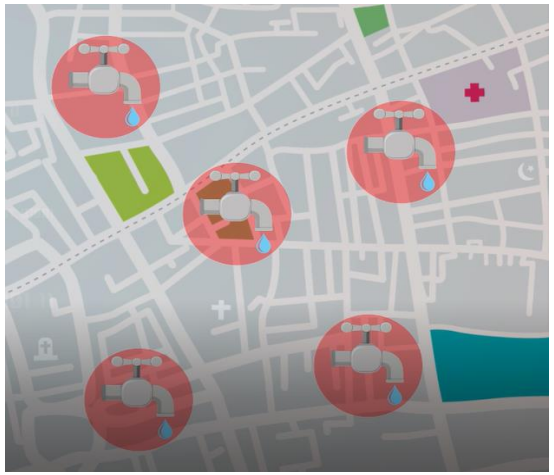
- Why do we need STOP-IT?
- Objectives of STOP-IT and Consortium
- Examples of technological and non outcomes
- Join us!
- Conclusions

Background

Water networks are vital for life

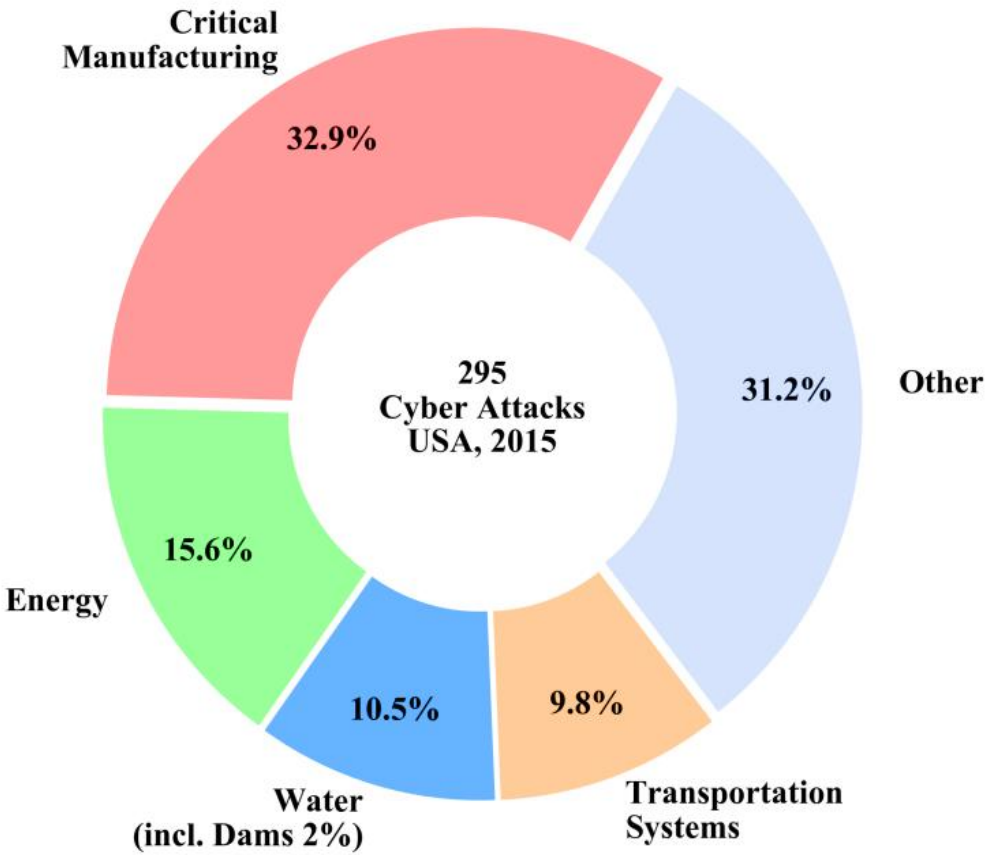
The use of digital technologies means new opportunities, but also new risks.

Cyberattacks on water utilities can have impacts on public health; not only in the delivery of clean, potable water to consumers but to other critical services that depend on the continuous delivery of water.



AND THE ATTACKERS INTEREST IN WATER SECTOR IS GROWING….

- Already a prominent target (**3rd most targeted**).
- Many cybersecurity incidents go either **undetected and unreported**, or undisclosed. (reputation+ customers trust)
- **Cyber security** is of course already part of the agenda for water companies.
- **Physical security** has been part of the agenda for some time.
- **Anything else?**



Cyber attack incidents in USA, 2015 (DHS, 2016)

STOP-IT will:

Make water critical infrastructure secure and resilient by improving preparedness, awareness and response level to physical, cyber threats, and their combination, while taking into account systemic issues, as well as cascading effects.

STOP-IT solutions will help water utilities operators to prioritize risks and develop a realistic approach and plan for enhancing physical and cyber protection.

Project duration: 2017-2021

STOP-IT SPECIFIC OBJECTIVES & Progress

Raise AWARENESS and COOPERATION in the water sector

Enhance external impact

Enhance ability to IDENTIFY and DETECT

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Enhance ability to COMPLY

Enhance ability to ANALYSE

Ensure wide applicability of security solutions

Enhance ability to PREVENT, TREAT or RESPOND

STOP-IT SPECIFIC OBJECTIVES & Progress

CoPs activities (WP2)
Dissemination – Communication – Exploitation (WP9)

RIDB (WP3)
Detect: Jamming Attacks, Human presence, water contamination, Real-Time Anomalies and much more (WP5)!

Demonstrating financing and investment options for the project solutions (WP9)

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Water utilities training - specific training programs and certifications (WP8)

Risk Analysis and Evaluation Framework (WP4)

Modular solutions embedded into an integrated scalable, adaptable and modular software platform (WP6 ⇔ WP7)

RRMD, System stress testing,
Organizational stress testing (WP4)
Access Control , Smart Locks, RT sensor control (WP5)
Public Warning System ,
Reasoning Engine (WP6)

- Ready for demonstration and feedback
- Work in progress
- Running along the entire project duration

Who are we?

STOP-IT involves 23 partners from across Europe and Israel

7 research centres

SINTEF

IWW
IWW Zentrum Wasser

KWR
Watercycle Research Institute

CETAQUA

eurecat
Centre Tecnològic de Catalunya

TECHNION
Israel Institute of Technology

ΕΠΙΣΕΥ
ICCS

7 Industry / SME sector

Atos

oylo
Trust Engineering

PNO

WORLD SENSING

RiSA
Sicherheitsanalysen GmbH

mnemonic
- securing your business

1 Technology Platform

Water Europe
Technology & Innovation

4 Front Runner Water Utilities

MEKOROT

Oslo

Aigües de Barcelona

Berliner Wasserbetriebe

4 Followers Water Utilities

hessenwasser

CITY OF BERGEN

emasagra

De Watergroep
WATER. VANDAAG EN MORGEN.

STOP-IT: TOOLS AND TECHNOLOGIES (1/5)

Modular components of
the STOP-IT risk management platform

Strategic & Tactical

Operational

Solutions that support:

- **Strategic/tactical planning and post action assessment**
- **Operational decision making**

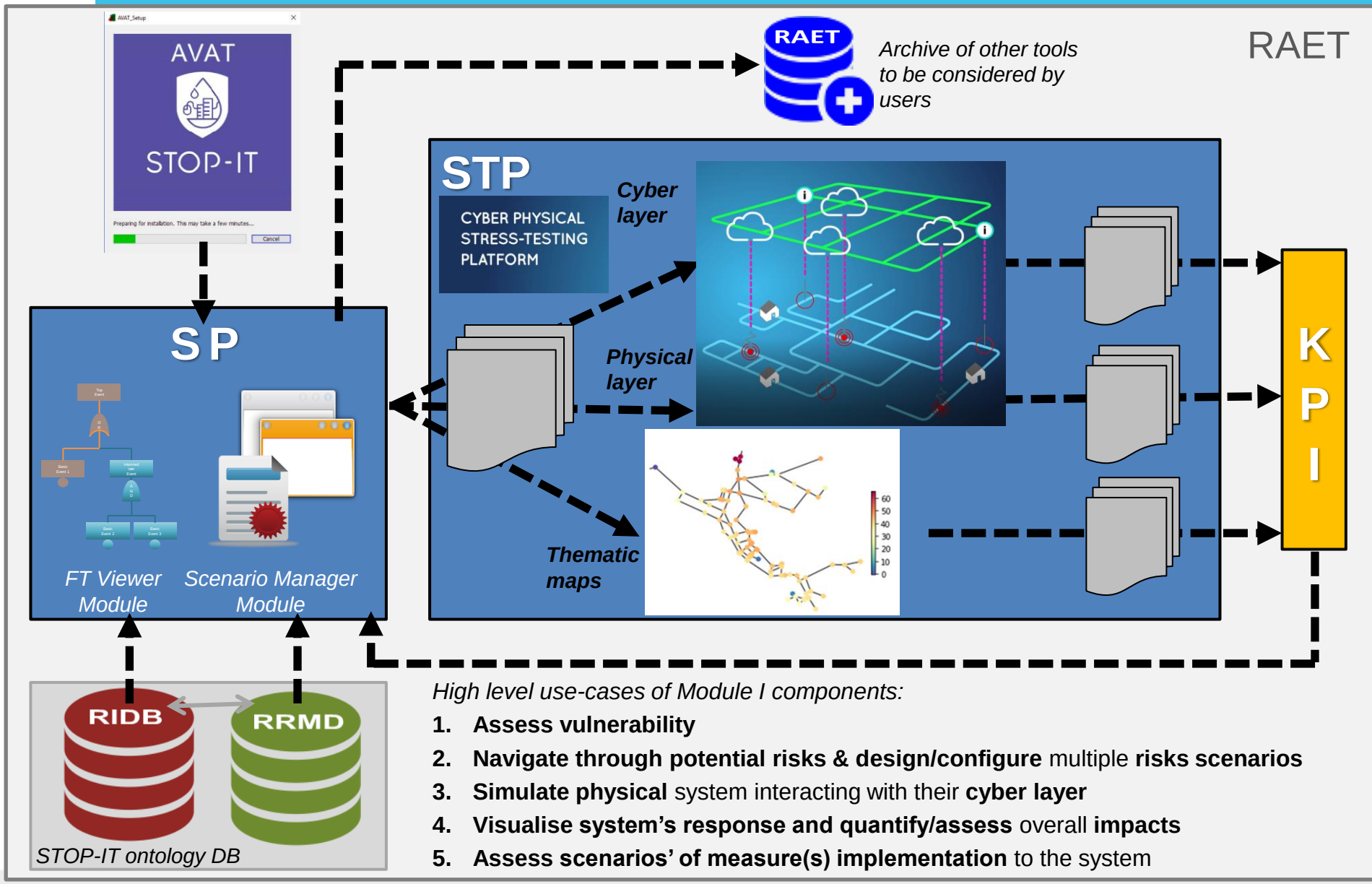
towards cyber-physical security of water infrastructures

Scalable **Adaptable** **Flexible**

STOP-IT modules:

- ❑ Module1: Risk Assessment and Treatment Framework
- ❑ Module 2: Secure wireless sensor communications module
- ❑ Module 3: Toolbox of technologies for securing IT and SCADA
- ❑ Module 4:Toolbox of technologies for protecting against physical threats in CI
- ❑ Module 5: Cyber Threat Incident Service
- ❑ Module 6: Real-Time anomaly detection system
- ❑ Module 7: Public Warning System-Secure Information Exchange Technologies
- ❑ Module 8:Reasoning Engine
- ❑ Module 9: Enhanced Visualisation Interface for the water utilities

STOP-IT: TOOLS AND TECHNOLOGIES (3/5)
Conceptual diagram of Module I



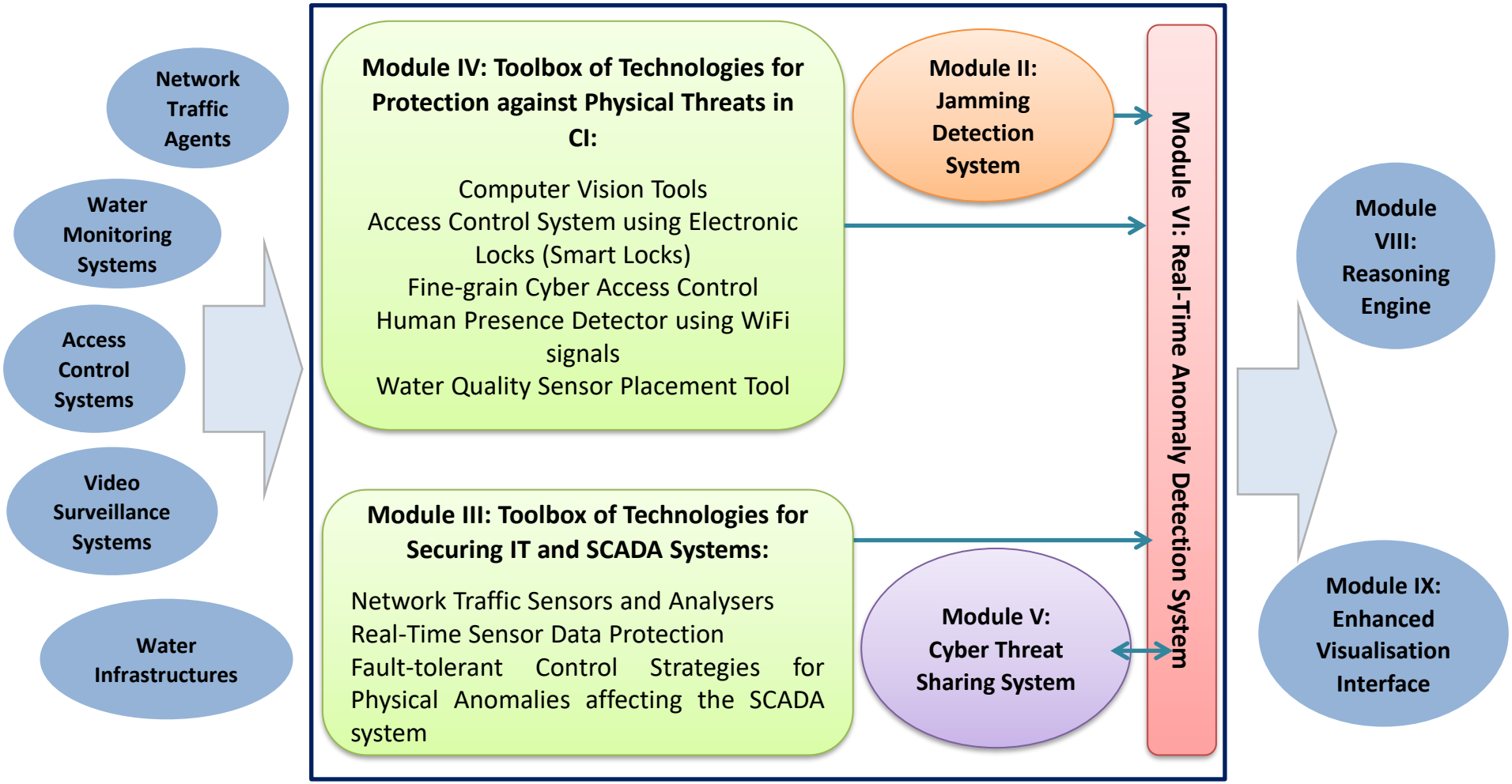
High level use-cases of Module I components:

1. **Assess vulnerability**
2. **Navigate through potential risks & design/configure** multiple **risks scenarios**
3. **Simulate physical** system interacting with their **cyber layer**
4. **Visualise system's response and quantify/assess** overall **impacts**
5. **Assess scenarios' of measure(s) implementation** to the system

Detailed information on Module I will be provided by Christos Makropoulos at 14:00 today !

STOP-IT: TOOLS AND TECHNOLOGIES (4/5)

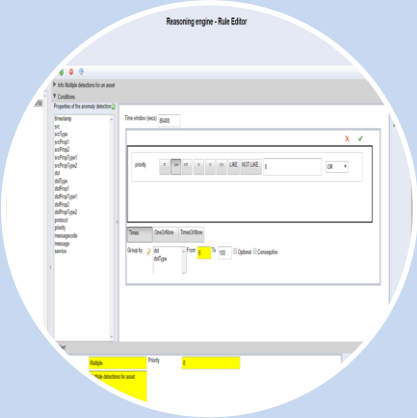
Operational solutions and technologies for cyber & physical protection



Detailed information on anomaly detection will be provided by Juan Caubet at 14:40 tomorrow!

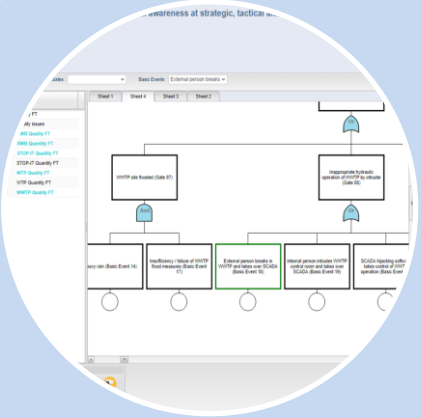
STOP-IT: TOOLS AND TECHNOLOGIES (5/5)

STOP-IT Integrated platform

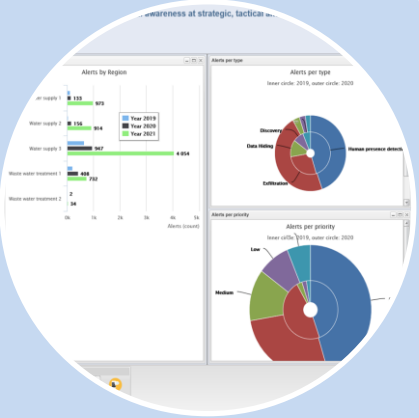


Alert generation based on configurable rules

Mitigation action proposition



Risk assessment



History view for gathering metrics

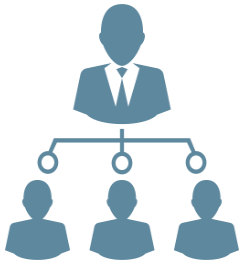
Operational – Tactical - Strategic

The STOP-IT platform embraces the various STOP-IT solutions, facilitates their communication and provides access to the web-accessible tools of the toolbox through the Enhanced Visualization Interface.

The STOP-IT platform will be validated in a simulated operational environment and demonstrated in the four FR demo sites.

STOP-IT: CUSTOMIZED TRAINING MATERIAL (1/2)
…FOR DIFFERENT End-user profiles

- Profile 1: **Decision makers**
  - **Board members** of the utility & relevant **top-managers**
  - People with **various background** and **expertise**
  - Training activities geared towards **awareness raising**



- Profile 2: **Risk management officers**
  (and modellers that support them)
  - **Risk managers/officers** at different levels, performance and quality managers incl. personnel for modelling activities
  - Training activities seeking to **enhance risk management processes** of a utility by utilizing STOP-IT solutions

- Profile 3: **Staff responsible for real time operations**
  - **Operators, maintenance managers** and staff responsible for real time operations e.g. SCADA room operators
  - Course goal is to train on i**nstallation/operation/use of technologies** and solutions targeting at the operational level of risk management

THE MAIN FOCUS AREAS FROM NOW

Continue with

- DEMONSTRATION
- TRAINING and CERTIFICATION
- EXPLOITATION/IPR MANAGEMENT

→ OPPORTUNITIES FOR SYNERGIES WITHIN ECSI?

Our communities of practice (CoP's)

STOP-IT has created CoPs and learning alliances with a multi-stakeholder perspective to contribute to the development of the project products.

The local CoP's for the Frontrunner water utilities will deal with technical aspects to be treated in a confidential environment.

The project CoP is designed to establish a network of different groups of stakeholders on the project and is open to a broader audience

The trans-project CoP is crossing boundaries between different critical infrastructure sectors and involves international networks and non-project expert groups.

Collaborations have been already established with relevant communities: the ICT4Water cluster (www.ict4water.eu/) , the "Community of Users on Secure, Safe and Resilient Societies" (CoU) (www.securityresearch-cou.eu/about), the JRC ERNCIP TG Water (https://erncip-project.jrc.ec.europa.eu/networks/tgs/water), ECSI - the European Cluster for Securing Critical Infrastructures (https://www.finsec-project.eu/#comp-k38hag4h) – contacts with ENISA and ECSO in progress ... Possibly more opportunity after today! But how to coordinate all those initiatives under a strategic road map?

CONCLUSION - Why is STOP-IT important?

- Water industry designed without security as a primary concern
- Technological advances put sector even more at risk
- Technological advances also requires new competence and training of personnel
- An attack could endanger public health and environment
- Upgrading to adequate security is a large task:
  - Time, money, manpower
  - Constant quality control

Digitalization of the water industry is the way ahead - it should not be "denied" because of security concerns

→ **STOP-IT contribute to the digital transition by enhancing prevention, preparedness, detection and mitigation**, therefore (also) contributing to the **European Programme for Critical Infrastructure Protection** (EPCIP)

→ We are now ready to strengthen relationship with standardization/certification bodies and with the other projects, dealing with critical infrastructure protection, to i) bring specific needs of the water sector into future relevant EU products (including standardization) and ii) coordinate work towards a European certification scheme on Cyber-Physical security.

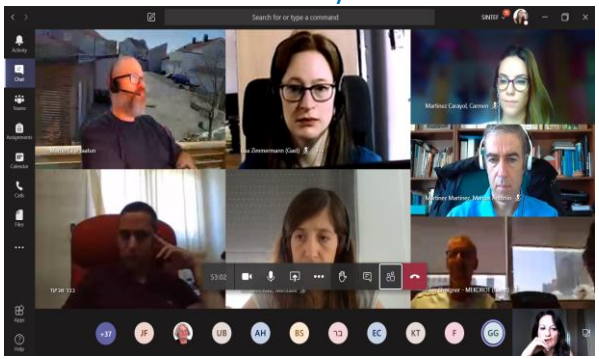
Interested? Contact the STOP-IT Team!

https://stop-it-project.eu/

General Assembly 2017

General Assembly 2018

General Assembly 2019



General Assembly 2020

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THANK YOU FOR YOUR ATTENTION

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Project Twitter: https://twitter.com/STOPIT_Project

Rita Ugarelli – STOP-IT Project Coordinator

Contact:
e-mail: rita.ugarelli@sintef.no
Mobile: +47 454 29 787
Skype: Rita24204
Linkedin: ritaugarelli

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