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August 10, 2020

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## IT Challenges

For designing and implementing a cyber-security awareness project

Organizational cybersecurity and cybersecurity awareness pose several challenges, all of which go beyond the pure technical implementation and are socio-technical in nature.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 740723. This communication reflects only the author's view and the Commission is not responsible for any use that may be made of the information it contains.

# General Challenges



These include:

- **The global cybersecurity (or cybercrime) environment is complex**, fast moving, and hard to control and not necessarily compatible with any legal framework currently available. This is not even taking into account the global cross-border dimension of cybercrime that gives attackers an inherent advantage. challenges
- **The organically grown socio-technical IT systems** set-up in organizations, with the focus traditionally centring around "keep everything working" and less "keep everything working in a secure fashion". The complex nature of cybersecurity in organizations demands a multi-disciplinary and multi-department viewpoint that is not fostered in traditionally organization culture.
- **Focusing on the market of LPAs**, the challenge of different sizes and complexities of municipal administrations poses another challenge: the project needs to be able to cater to the needs of municipalities with populations under 1000 citizens to metropolitan areas with populations of several million.

The implementation of a cyber-security awareness project needs to take the above factors into account. Additionally, the trans-European multi-stakeholder nature of European research and innovation projects adds another layer of complexity that influences the implementation approach of such a project



# BASIC APPROACH

To contemplate these challenges in such a project there are two concepts that stand out that allow the flexibility and dynamicity in implementation:

- **cooperation/collaboration** as well as
- **agility in all phases of the project**, from requirements analysis to implementation and validation.

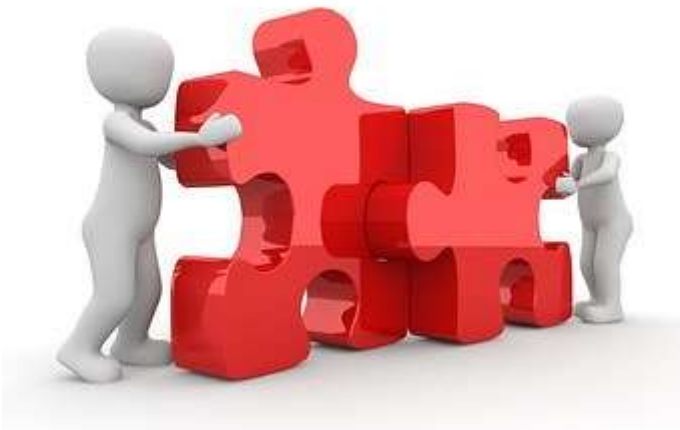
The methodologies and approaches chosen for the implementation of such a project need to reflect these concepts.

## Cooperation and Collaboration

In any large project, but especially in a cybersecurity/cybersecurity awareness project, the cooperation and collaboration between all actors is critically important for the success of the implementation. This includes not only the cooperation and collaboration among the system implementers, but between all actors, e.g. end users, experts, suppliers, and technical partners that need to cooperate to create a holistic picture.

While this is also an important aspect during implementation, it is even more critical in the phases before and after implementation, the requirements analysis and evaluation phases.

- For **requirements** analysis we adopted the soft systems methodology (SSM), a method that is extremely powerful to understand and react to problems in complex environments. The methodology facilitates those who are actually working and facing problems within such an environment (e.g. users, administrators, managers) to create a holistic picture of the problem situation and derive counter measures, supported by the expert opinion of the analyst.
- For **evaluation** we adopted design science based evaluation in order to receive feedback on developments in a collaborative and cooperative way. Design science allows a holistic evaluation of results that collects feedback on a multitude of levels that cannot be captured by traditional evaluation means like key performance indicators.



# THE CHALLENGES



**Agility** is the logical next step of a good cooperation and collaboration. It encompasses the ability to react quickly to changing situations in any of the aspects relating to the awareness system (user, organization, cybersecurity environment, expertise, ...) and implement the changes quickly to react to the changed environment, in all phases of the project including requirements analysis, implementation and validation.

In software development, there is a well-established methodology called "Agile development" that covers exactly this aspect and was applied successfully in all phases of our project.

