



2ND IMPROVER / ERNCIP WORKSHOP

IMPROVED RISK EVALUATION AND IMPLEMENTATION OF RESILIENCE CONCEPTS TO CRITICAL
INFRASTRUCTURE

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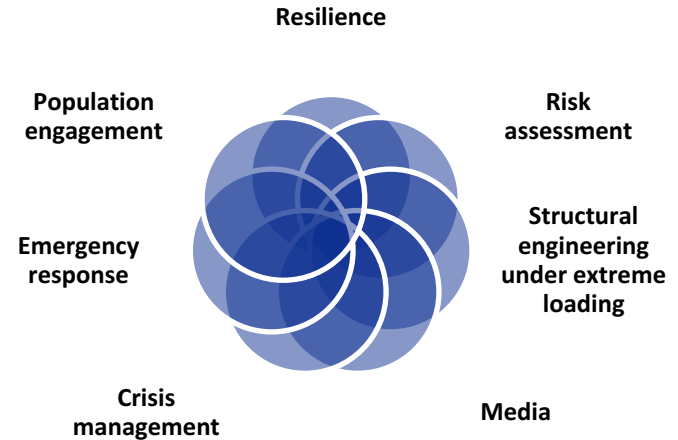
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IMPROVER

- Improved risk evaluation and **application of resilience concepts to critical infrastructure**
- Horizon 2020, Secure Societies, DRS-7-2014: Crisis management topic 7: Crises and resilience – operationalizing resilience concepts
- 1st of June 2015 – 31st of May 2018



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What is critical infrastructure?

Critical infrastructure is an asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions. Examples of critical infrastructure include supply of basic services like water, food, energy, transport, housing/shelter, communications, finance, health.

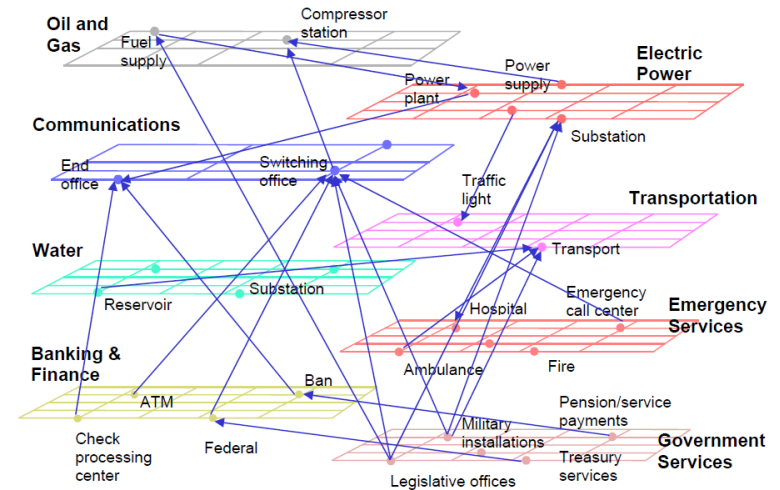
Council Directive 2008/114/EC of 8 December 2008 on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection. Official Journal of the European Union, 23 December 2008.

- **Characteristics of CI:**
 - Complex (technical) systems,
 - Exposure to several types of hazards,
 - Serious consequences of failure,
 - Interdependencies with other types of infrastructure.



An interconnected society

- **Highly interconnected society** reliant on critical infrastructures providing centralised services
 - Contextual if not territorial...
- **Cascading failures** between critical infrastructure systems mean that the **indirect consequences of natural and man-made disasters may be more severe than expected**



The Institute of Public Utilities; Technical Assistance Briefs: Utility and Network Interdependencies: What State Regulators Need to Know; The National Association of Regulatory Utility Commissioners; April 2005



Protection of infrastructure...

Shift in focus from CI protection...

- Safety of assets cannot be ensured by all means.

... to resilience of CI

- New policies and research initiatives shift the focus to **resilience** rather than protection.



Resilience is...?

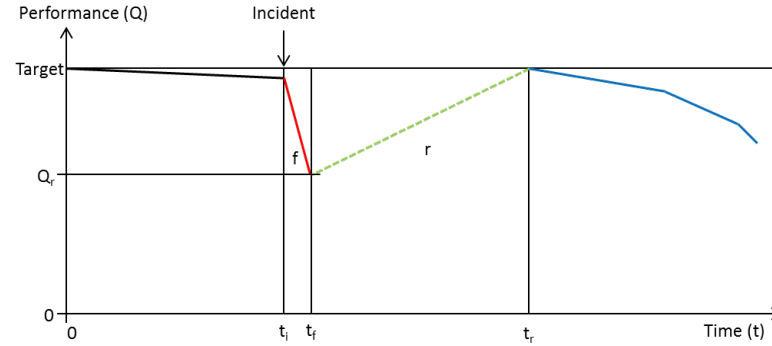
*“The **ability of a system**, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions”*

2009 UNISDR terminology on disaster risk reduction



CI resilience

- Multi-dimensional
 - The technical dimension
 - Indicators
 - The organisational dimension
 - Processes
 - The social dimension
 - The economic dimension

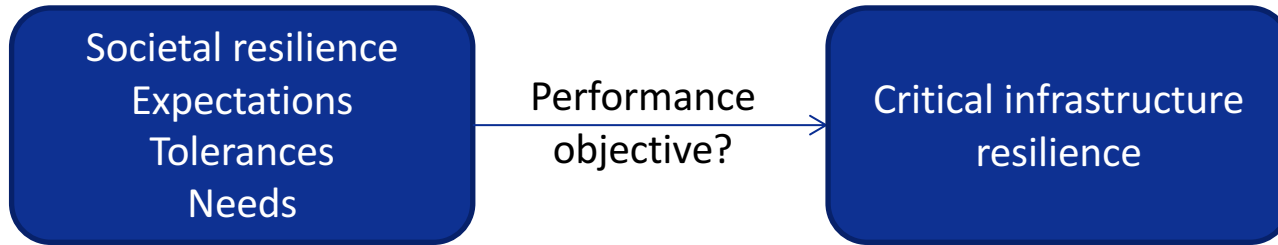


Resistive, absorptive, restorative and adaptive capacity

The successful implementation of the concept of resilience to CI ... relies on its successful integration in existing security activities; including the risk assessments at a CI operator, a system and a national level.



Critical infrastructure is essential for the maintenance of vital societal functions



The overall objective of IMPROVER is to:

“Improve European critical infrastructure resilience to crises and disasters through the implementation of combinations of societal, organisational and technological resilience concepts to real life examples of pan-European significance”



What we mean by this is:

1. **Understand the definition of resilience** and it's application to critical infrastructure
2. Understand **how this can be measured**
3. **Develop methods and tools** to help operators to *measure, evaluate and improve* the resilience of their infrastructure and ultimately maintain the ability of systems to continue to provide the service required



Living labs and associate partners

- We are working within four "living labs", comprised of the projects associate partners:
 - The Oslo harbour region
 - The Öresund region
 - The A4 highway in France
 - Water supply and distribution in Bareiro
- These are clustered regions of different types of infrastructure which provide specific services to a city or region
- In addition to these, we have associate partners of the project in:
 - Michigan
 - Toronto
 - Queensland
 - Regensburg



Implementation

Stage1: A **survey** of available approaches for the definition, implementation and evaluation of resilience concepts to critical infrastructure

Stage 2a: An **evaluation** of promising available approaches

Stage 2b: Further **development** to improve their effectiveness, linking the developed approaches with EU risk assessment guidelines

Stage 3: A **demonstration** of the methodologies, which are presented in the guideline, in operation



The purpose of this workshop is to continue to intensify the collaboration with operators within the ERNCIP and IMPROVER networks

Topics for discussion include:

- (a) improving organisational resilience for CI operators and**
- (b) achieving community resilience in collaboration with CI operators**



