# New tools and methods to protect Europe's Critical Infrastructure

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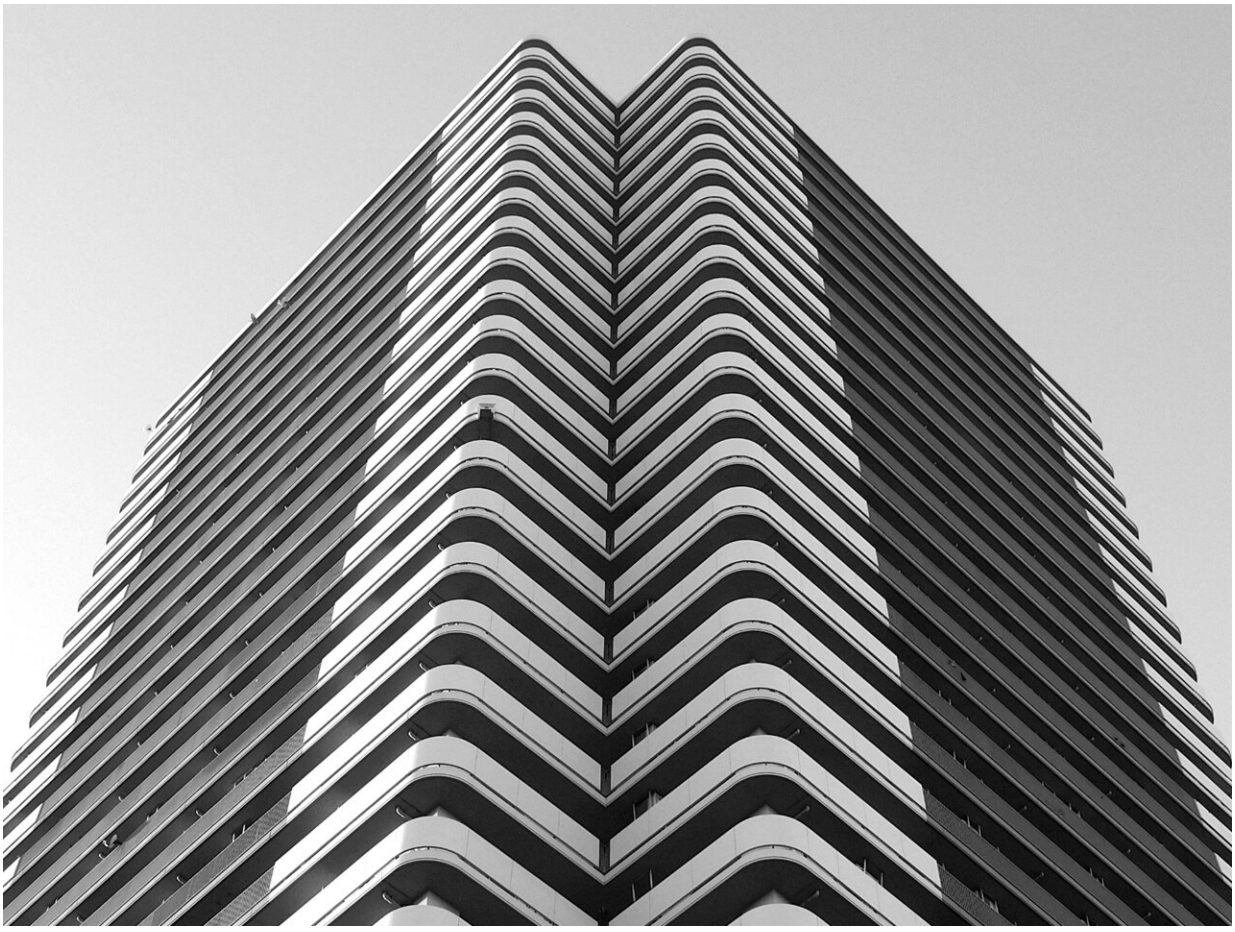

Credit: John Lee from Pexels

The EU CIPRNET project has contributed to the maintenance of

European safety and security, through enhanced protection of its essential infrastructure.

At the recent European Geosciences Union General Assembly in Vienna, work was presented from the EU-funded CIPRNET (Critical Infrastructure Preparedness and Resilience Research Network) project.

CIPRNET responds to the increasing dependence on the smooth running of Critical Infrastructure (CI) for socio-economic requirements such as commercial, transport, and utility provision. Alongside this dependence there is also a growth in the number of risks to the integrity of CI, for example through targeted cyber threats or catastrophic events brought about by natural hazards, such as extreme flooding. The potential damage ranges from economic disruption to social destabilisation and fatalities. The project aims to help authorities charged with civil protection to be able to understand these threats so that they can adequately mitigate, prepare and respond to emergencies, when and where they occur.

## Expanding capacity and capability

Firstly, to develop capabilities in preparedness, the project is developing a range of tools such as its Decision Support System (DSS) which includes consequence analysis, threat forecasting, threat visualisation, and data accessing and gathering. As well as providing access to real-time data (e.g. meteo forecasts), this workstream offers an Event Simulator to stress test systems; Harms Simulator where the user can enact artificial threat scenarios, and; a 'What-if-analysis' tool which can be used to design, compare and validate mitigation efforts.

Additionally, an innovation known as 'Ask the expert', provides stakeholders (public authorities, citizens etc.) access to a cadre of experts through a CIPRNET administered web portal, for timely and

actionable responses to CI related questions, along with links to reference material.

CIPRNET builds capacity through ongoing education and training, such as offering courses for post-graduate students, Master Classes, staff exchanges and lectures for a more general audience. Many of these opportunities are offered online as is CIPedia, an online-glossary of CI terms; a CIP bibliography, a list of CI-related conferences; and a searchable database of CI related projects.

CIPRNET also makes available modelling, simulation and analysis (MS&A) that can explore the interactions and dependencies across CI systems. This method necessitates a so-called 'federated approach to simulation' which amalgamates a wide range of experience and knowledge from different infrastructure data sources. To overcome the technical hurdle of combining these different sources, with their varying protocols and formats, the project has developed interoperability middleware which performs the task.

Finally, the project is cultivating shared competence by networking the various European research activities acquired in more than 60 EU co-funded projects into one Virtual Centre of Competence and Expertise in CIP (VCCC), with the added advantage of supporting not only regional and national, but also cross-border, emergency management. The work of this initiative further contributes towards the establishment of technical standards that enable effective collaboration.

## Building a foundation for the future

With over a decade of research into the CI field, Europe is now coming closer to having a system comparable to the National Infrastructures Simulation and Analysis Center (NISAC) in the United States. The CIPRNET driven VCCC is designed as a precursor to the development

of a European Infrastructures Simulation & Analysis Centre (EISAC) by 2020. This will further increase the ability to launch an effective pan-European preparedness plan and emergency response. It will also mean reduced interruption to CI and its associated socio-economic impact.

**More information:** For more information please visit the project website: www.ciprnet.eu/

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