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CIPRNet's Virtual Centre of Competence and expertise in CIP: Towards EISAC

Marianthi Theocharidou

European Commission, Joint Research Center (JRC), Institute for the Protection and the Security of the Citizen (IPSC), Security Technology Assessment Unit

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Project Facts

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Critical Infrastructures Preparedness & Resilience Research Network

Scientific domain:	Critical Infrastructure (CI) Protection (CIP)
Co-funded by:	EU FP7
Instrument:	Network of Excellence (NoE)
Start date / duration:	March 1, 2013 / 48 months
Participants:	12
Lead partner:	Fraunhofer IAIS
Budget (EU contribution):	€6,6 M

FP7 NoE CIPRNet

Consortium and boards

- Partners represent more than 50 research projects related to CIP and civil security
- Large inventory of knowledge and technologies
- Highly networked in our communities, many contacts to stakeholders

• Advisory Board:

- Dutch and Austrian Ministeries, BBK, ABB, DKKV, ZOES, e-GEOS, ECSA, EU, INHESJ
- External independent Ethics Board (compliance, privacy)

CIPRNet Creating new capabilities

- Implementing new **capabilities** for supporting more effective responses to disasters that affect or originate from multiple CI:
 - Bundle and integrate existing know-how, technologies, and data for supporting the planned capabilities,
 - Create added-value decision-support capabilities for national and multi-nation emergency management and CI owners based upon integrating technologies available at CIPRNet partners,
 - Support the secure design of Next Generation Infrastructures,
 - Demonstrate timely, actionable, risk-informed CIP analyses and strategies for authorities (both nationally, cross-border, and EUwide) and CI owners.

CIPRNet Building capacities

- Building the required **capacities** for creating these new capabilities:
 - create a critical mass of expert knowledge, expertise and advanced CIP research by integrating resources of the CIPRNet network,
 - boost interaction of the CIPRNet-worked experts and their EU and national projects,
 - perform dedicated training activities, for young and established researchers,
 CIPRNet end-users and other stakeholders, and
 - foster cooperation between CIP researchers, experts, end-users and other stakeholder.
- Provide long-lasting end user support by establishing a

Virtual Centre of Competence and expertise in CIP (VCCC)

• VCCC as a first step towards European Infrastructure Analysis and Simulation Centre (**EISAC**).

NISAC: National Infrastructure Simulation and Analysis Center (USA)

Mission: Models, simulates, and analyzes the Nation's critical infrastructure and key resources

NISAC

- Assesses the technical, economic, population, and national security implications of infrastructure protection, mitigation, response, and recovery options.
- Provides strategic, multidisciplinary analyses of interdependencies and the consequences of infrastructure disruptions across all 16 critical infrastructure sectors at national, regional, and local levels.
- Offers **tools** to address the complexities of interdependent national infrastructure
 - Rapid response analysis is needed (e.g. Hurricane Katrina).
 - From reactive to proactive → unknown events

Australian Government Attorney-General's Department

CIPMA: Critical Infrastructure Protection Modelling and Analysis Program (Australia)

- Aim: enhance **CIP** and **resilience** of economy and society.
- Offers computer-based, decision-support capability:
 - sector simulation models, databases, geospatial information systems (GIS) and economic models ('impact models')
- Specifically, CIPMA supports decision-making by helping to:
 - identify and analyze dependencies between critical infrastructure nodes and facilities within sectors and across sectors
 - provide insights into the **behaviour** of **complex networks**
 - examine the **flow-on effects** of infrastructure **failure**
 - identify choke points, single points of failure, and other vulnerabilities
 - assess various options for investment in security measures, and
 - test mitigation strategies and business continuity plans.

Design Study project DIESIS

- <u>Technical feasibility</u>: a technical demonstrator for enabling distributed, federated CI simulation.
- Legal feasibility:
 - an ERIC, a form introduced in 2009 by the EC particularly for European Research Infrastructures, or
 - a suitable kind of **association** (German, Dutch, or Belgian ones).
- EISAC could serve as:
 - a platform for collaboration between research, governmental offices and CI stakeholders
 - a major **dissemination** and **exploitation channel** for CI related research

Virtual Centre of Competence and Expertise in CIP (VCCC)

www.ciprnet.eu

Mission Statement

For the **European Critical Infrastructure (CI) community**, the VCCC is a **collaborative platform** that provides **practical expertise** and **services** to enhance **CI resilience** and to **prepare** for **all hazards**.

VCCC First steps towards EISAC

- Created by CIPRNet during the term of the project
- Offers **support** to CI operators, emergency managers and other stakeholders
- Aiming to evolve into a network of facilities providing enduring support from research to CI stakeholders in EU Member States (beyond the duration the project)
- → EISAC will build on the capabilities developed within CIPRNet for the VCCC

VCCC Stakeholders

• End-users (initial audience)

CI owners and operators (and their crisis management functions), National and EU emergency management and other public authorities

• CI/CIP Policy-makers

private and public sector CIP policy-makers, governmental agencies

Academia and R&D institutions

core CIP research centres, individual researchers in CIP and related research areas, academic staff

• Other

the population in the EU and nations, CI sector-specific associations

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European (CIP

Advanced Decision Support

CIPRNet Decision Support System (DSS) services

Contact

ENEA

Italy

Dr. Vittorio Rosato

Casaccia Research Centre

vittorio.rosato(at|enea.it

The functions of the CIPRNet Decision Support System include consequence analysis, threat forecasting, threat visualisation, and data accessing and gathering. These functions are bundled into the following services:

- S1 (Operational DSS)
- S2 (DSS with Event Simulator)
- · S3 (DSS with synthetic Harms Simulator)
- S4 (What-if analysis tool)

S1 is the operational DSS that receives data in real time from true external inputs (meteo forecast, nowcasting data, earthquake data (shake maps), etc.) and starts operationally the whole chain of Risk Analysis.

52 is an on-demand tool containing the same workflow of S1 but using as inputs simulated meteo or geophysical events, like earthquakes, heavy precipitation and lightning, heat/cold waves and strong winds. This enables stress-testing of critical areas with respect to potentially occurring natural events.

53 is an on-demand tool supporting the creation of synthetic harm scenarios (virtual physical damages inserted by the user). For stress-testing during the preparedness phase of crisis management, S3 can produce artificial threat scenarios.

S4 triggers the start of the last part of the DSS workflow. End-users can use S4 on demand for designing, comparing, and validating mitigation and healing strategies through (what-if) analysis of potential consequences they produce.

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A multi-disciplinary glossary

- **Common reference point** for CIP concepts and definitions.
 - Various meanings and definitions are listed.
- Designed for CIP-related **stakeholders:** policy-makers, authorities, CI operators, manufacturers, CIP-related facilities and labs, and the public at large.
- **Dynamic**: it allows stakeholders to update information.
- Currently: 23.000 visits (April 2015), 145 views per day, 186 contents pages on CIP-related terms, list of CIP glossaries (sector-based), as well as a list of CIP-related conferences.

Research

EISAC A European facility that

- has autonomous national nodes EISAC that provide expertise and capabilities nationally and at the inter-regional level
- is coordinated by a European EISAC headquarters (HQ)
- offers EU-wide core functions for CI • Modelling, Simulation & Analysis
- supports cross-border collaboration
- is used by emergency managers, CI • operators and other stakeholders
- matches and collaborates with other • centres (e.g. US NISAC)

Current Timeline

Way forward

Within CIPRNet

- Offer broad spectrum of joint and integrated assets (by all CIPRNet partners)
- Continue the staff and know-how integration activities

Externally

- Explore collaboration with other projects, e.g. crossborder projects, H2020, etc.
- Seek support for fostering and financially supporting EISAC nodes at national or European level (and beyond CIPRNet)
- Elaborate further on the networking and collaboration function of EISAC (in consultation with stakeholders)

Potential Challenges

- Limitations in **funding** (both national and interregional)
- Lack of political commitment
- Varying priorities regarding CIP among Member States
- Constraints in **information sharing** among national nodes and stakeholders (data confidentiality, etc.)
- Weak role of the **central node**
- Non interoperable or ready to use **tools**
- Lack of **adoption** of non nationally developed technologies or expertise by other MS
- Lack of **support** from a wide range of **stakeholders** and **end users**

Thank you!

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For further information: marianthi.theocharidou@jrc.ec.europa.eu

