CIPRNet

Critical Infrastructure Preparedness and Resilience Research Network

The CIPRNet Project and the EISAC Perspective

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DRMKC Event

Brussels – 17/03/2017
CIPRNet – Facts

- **Critical Infrastructures Preparedness and Resilience Research Network**
- Co-funded by: EU FP7 (Seventh research framework programme)
- Instrument: Network of Excellence (NoE)
- Start date: March 1, 2013
- Duration: 48 months
- Excellence: Partners represent experience of 60 CIP projects
CIPRNet’s strategy and activities

Capacity building
Massive effort: Seven major training events, seven organised conferences, 24 stakeholder meetings, 41 lectures, e-learning platform http://www.security-learning.eu

Knowledge & technology
Create an inventory of CIPRNet partners’ knowledge and technology
Make it accessible to the CIP community and stakeholders

VCCC
Create a Virtual Centre of Competence & Expertise in CIP for long-lasting support of end-users from the CIP research communities

Capability forming
Create mature prototypes with added value for end users and deploy them

Long term: EISAC
Sustain some VCCC services, create a distributed European Infrastructures Simulation and Analysis Centre (EISAC) with nodes in Member States and a (small) EU node
CIPRNet’s new capabilities

... for different end-users

- **CIPCast**: Advanced decision-support system for CI operators and civil protection
  - CI and dependency models, threat models, consequence analysis
  - Risk forecast

- **CIPRTrainer**: Simulation-based training system for civil protection crisis management at the tactical level
  - CI and dependency models, threat models, consequence analysis
  - ‘what if’ analysis for exploring different courses of action
CIPRNet’s new capabilities

**CIPcast: Decision Support System (DSS) with added value**

- **Functionality**
  - Modelling CI and their dependencies
  - *Prediction of weather events* and *of resulting risk* for elements of the power, telecommunications and drinking water infrastructures
  - Assessment of behaviour of CI under severe perturbations
  - Early warning allows robust configuration of distribution networks at precise points in time
  - Warm and hot phase support of emergency managers and CI operators
  - *Optimal scheduling* of recovery teams
CIPRNet’s new capabilities

CIPRNet-DSS CIPcast on LED wall in the control room of a CI operator

(Project partner ENEA: Italian research facility)

Transfer to end users

- Prototype in use at CI operators in Rome
- Enquiries received from national crisis management, the municipalities of Rome and Florence and the Mantova region
- System use at the Jubilee 2015-2016 in Rome
- System in use by National Civil Protection for damage assessment and area control in the aftermath of the Amatrice earthquake

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CIPRNet’s new capabilities

CIPRTrainer: ‘What-if’ analysis as a new capability for Crisis Management

- Explore different courses of action by simulated ‘going back in time’ (in real crises not possible)
- Which action produces the least consequences?
- Federated modelling, simulation & analysis (fMS&A) of complex scenarios involving CI and threats
- Impact and consequence analysis based on socio-economic data and damage models (ECI directive)
- Cross-border scenarios (Germany / The Netherlands) with two storylines
  - Cargo train derailment in a city centre
  - Extended cross-border flooding

Decision point: What if?

Consequence Analysis

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CIPRNet’s new capabilities

CIPRNet Master Class 3 in Sankt Augustin:

CIPRTrainer system on monitors in Fraunhofer’s advanced visualisation lab

(Project partner Fraunhofer: German research facility)

**Transfer to end users**

- Prototype used at three major training events
- Enquiries received from German national crisis management training academy and from Italian partner UCBM for homeland security course
Tangible Virtual Centre of Competence & Expertise in CIP (VCCC)

**Capabilities**

- **Decision Support System**
  - with added-value for emergency management and CI operators

- **‘what if’ analysis**
  - based on federated modelling, simulation & analysis and consequence analysis

**Services**

- **Supporting the secure design of NGI**
  - Next Generation Infrastructures

- **Knowledge repository**
  - CIP bibliographies, project lists, conferences, ...

- **CIPedia©**
  - Comprehensive online-glossary of CIP terms

- **Ask the expert**
  - Knowledge brokering service

**EISAC / VCCC**

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The EISAC Perspective

- How can CIP related research results be transferred into practical application?
- How can support of CIP research experts to end users be sustained?
- Ultimate goal:
  - Create a long-lasting European Infrastructures Simulation and Analysis Centre (EISAC)
  - Role model is NISAC (National Infrastructures Simulation and Analysis Center, USA)
The EISAC Perspective

- National Infrastructures Simulation and Analysis Center
  - Started as a research cooperation in 2000
  - Since 2003 part of US Department of Homeland Security
  - Source of national expertise for CIP R&D and analysis (congress mandate!)

- Goals:
  Supporting the preparedness and protection of nation and society by
  - Analysing CI loss or disruption, including hot phase
  - Participating in understanding of protection, reaction, mitigation and reconstruction options

- NISAC Inventory
  - Data of CI elements, economical data, ...
  - MS&A methods for 18 different CI sectors
The EISAC perspective

**Organisation**

- **EISAC shall be a pan-European facility**
- **National nodes**
  - provide “localised” services
  - may be existing (research) facilities or new ones
  - transfer of knowledge, technology and research results into application
- **Central roof organisation (“HQ”)**
  - manages technical synergies between national nodes
  - helps organising bilateral collaboration between nodes of neighbouring countries
  - provides services at EU level
**EISAC timeline**

- **CIPRNet**
  - Mostly project work
  - Planned lobbying and foundation activities

- **RoMA Project**

- **Virtual Centre of Competence and expertise in CIP fostering EISAC**

- **Association for fostering EISAC**

- **Subsequent founding of EISAC Nodes**

- **EISAC**

- **2013**

- **2017**

- **2020**

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EISAC

Staged development plan

- Original idea developed in the DIESIS project: Design study delivered in 2010
- CIPRNet developed strategy further
- Different business models for different MS, using national opportunities and partners’ expertise
- CIPRNet (restricted) deliverable describes plans for EISAC-NL, EISAC-IT, EISAC-CY, EISAC-DE, EISAC-FR, and EISAC-EU
- EISAC-IT most advanced
- How to proceed after the end of CIPRNet?
Towards EISAC – Association 2E!SAC

- “2E!SAC – association for fostering the resilience of vital infrastructures in Europe”
- Association by German law
- Registered office in Sankt Augustin
- Founded in November 2016
- Eight founding members: Fraunhofer, ENEA, TNO, CEA, Università Campus Bio-Medico of Rome, University of Cyprus, Acris, Tecnalia
- The association is a formal frame for fostering promotional activities for the EISAC idea
- New organisational members are welcome
- Contacts: Chairman Erich Rome (erich.rome@iais.fraunhofer.de), board members marieke.klaver@tno.nl and vittorio.rosato@enea.it
Conclusion

- CIPRNet’s main goals
  - forming new capabilities for CI operators and crisis managers in civil protection
  - capacity building within the CIP research communities (multi-disciplinary mindset)
  - sustaining all this by forming a VCCC and evolving it to EISAC
- CIPRNet succeeded in transfer / application of its knowledge and technology
- CIPRNet partners and external organisations have founded the association 2E!SAC
- Further support needed for establishing EISAC nodes
- EISAC can provide sustained support from the research communities to CIP stakeholders
Thank you for your attention!

comprehensive project website: ciprnet.eu

online glossary: cipedia.eu

e-learning platform: security-learning.eu

Acknowledgements: CIPRNet team