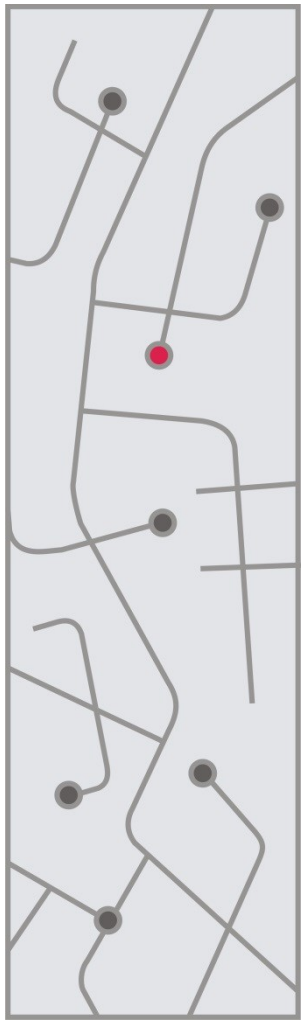

Interactive Risk Assessment in the Field of Critical Infrastructure based on the Integrated Geographic Information System

PRESENTATION OF PROJECT GOALS AND CONTEXT

Ljubljana, 29.03.2013

INTRODUCTION

CONTRIBUTION OF THE RISKGIS PROJECT:

contribution to the development of practical methods for protecting critical infrastructure (CI), especially risk assessment methods and interdependency assessment methods

PROJECT IS A RESULT OF INTERGATION OF THE FOLLOWING FIELDS:

- **risk assessment,**
- **critical infrastructure,**
- **GIS**

ASSESSING RISKS AND CRITICALITY IN THE FIELD OF INFRASTRUCTURE

- **Numerous and extremely divergent risk assessment methods** exist in Europe (also assessments of criticality, vulnerability and consequences in case of infrastructural malfunction); one of the consequences is a very **difficult comparison among the identified** risky, vulnerable and critical infrastructure accross countries.
- Numerous approaches do **not take into consideration cross-sectoral interdependency** – yet interdependency has become a neccessity, but there are again numerous analytical approaches tested and implemented.
- Increasing **integration of the GIS field with the field of critical infrastructure**:
  - Opportunity for developing **computer tools** that can display critical infrastructure and its mutual conncetions in the GIS environment ,
  - Calculation of risk paramters and their display in GIS environment,
  - Simulations.
- Proposal for research in this direction was made in other finished project from Slovenia: Definition and Protection of Critical Infrastructure in RS (2006-2009) (Definicija in zaščita kritične infrastrukture v RS (2006-2009).

- **GENERAL PROJECT GOAL**

CREATE AND TEST **INTERACTIVE ANALYTICAL AND SIMULATION TOOL/MODEL** FOR ASSESSING RISKS AND CRITICALITIES IN VARIOUS SECTORS OF CRITICAL INFRASTRUCTURE in GIS environemnt

- With taking intoconsideration of **cross-sectoral interdependency + all-hazards perspective** (regardless the type of threats)

- **SPECIFIC PROJECT GOALS:**

1. CREATE THE INTEGRATED AND MULTILAYERED GIS for the sectors (priority sectors from the EC Directive on the Identification of ECI, 2008):

- Transport (road, rail, air and sea transport)
- Energy (electricity, gas and oil) and
- ICT related to transport and energy (Information-Communication Technology)

2. DEVELOP THE SIMULATION ARCHITECTURE OR INTEGRATED COMPUTER **SIMULATION MODEL/TOOL FOR INTERDEPENDENCY-BASED CRITICALITY AND RISK ASSESSMENT** (computational program module and its methodological description):

- modul will be capable of computing specific interdependency factors, risk factors…

- **SPECIFIC PROJECT GOALS:**

3. **TEST interdependency-based RISK AND CRITICALITY ASSESSMENT** ON THE CASE OF SLOVENIA:

- Identification of risky and critical infrastructural objects,
- Identification and display the most vulnerable multi-sectoral intersections of infrastructures, geographic areas of infrastructural congestions, calculation of various risk factors

4. IDENTIFICATION AND ASSESSMENT OF **CRITICAL AND RISKY CROSS-BORDER INFRASTRUCTURAL LINKS**

SPECIFIC PROJECT OUTPUTS:

Deliverable 1: Integrated, multilayered and interactive GIS for the sectors of transport, energy and related ICT networks in Slovenia (GIS application, methodological description of its composition, workshops with experts).

D2: Integrated computer simulation model/tool for interdependency-based criticality and risk assessment (computational program module and its methodological description).

D3: Interdependency-based criticality and risk assessment for one EU member state (Slovenia).

D4: Workshops at national level (with relevant national sectoral experts) and international level (with relevant operators and policy makers from other EU member states).

D5. Identification and assessment of critical and risky cross-border infrastructural links based on the sectoral and cross-sectoral infrastructural attributes, derived calculations and graphic 3D representations.

D6: Dissemination of results (best practices) on project website and proactively to relevant national and international publics.

- **Web page information on the project, current activities and preliminary results.**
- **Presentations of papers at national and international conferences and workshops.**

USABILITY OF THE INTERACTIVE ANALYTICAL TOOL AND OTHER PROJECT OUTPUTS

- **Decision-makers** from various infrastructural sectors
- Infrastructural **managers** in Slovenia and abroad
- Improved universal risk awareness in the field of CI and thereby contribute to creating of a **more comprehensive critical infrastructure protection policy**: sectoral approaches are good but only to some extent because they are implemented in the interdependent infrastructure
- **Improve analytical capacities** in the field of CI
- Contribute to the rationalization of CIP activities (focus only on more risky, vulnerable and critical objects…)
- Create a possibility to **include project outputs into next (computer) exercises/simulation**s in the field of crisis management, CIP…