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Ideal-Ist Success Story

MICIE, Italy



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About Ideal-ist

Ideal-ist is the first and unique quality labelled international ICT partner search network with 13 years experience. The network of Ideal-ist consists of 63 national contact points (NCP) in the area of Information and Communications Technologies. The Consortium members are from EU and Non-EU Countries, including Associated States, Eastern European Partner Countries (EEPC) and Mediterranean Partner Countries (MPC) and Emerging countries like China, Brazil, India and South Africa. Ideal-ist is part funded by the European Commission and supports research organisations and companies worldwide

- to find partners for their project ideas.
- to join projects and
- to find services leading them to success in the 7th Framework programme.

Furthermore, the main goal is the enhancement of cooperation between the national NCPs within FP7 and an overall improvement of quality across Europe in the dynamically growing area of ICT.

This is in line with the international cooperation strategy of the European Commission.

How Did Ideal-ist Help?

“The Ideal-ist service has been very useful in the search of partners with well-defined and precise skills in specific areas needed to complete the consortium” says Ing. Paolo Capodieci, the coordinator of the MICIE Consortium. The MICIE project has received more than 68 Expression of Interests. The consortium includes 11 partners from 7 different countries.

Project Details

MICIE – Tool for systemic risk analysis and secure mediation of data exchanged across linked CI information infrastructures | Italy | submitted in FP7-ICT-SEC-2007.1.7

The issues addressed in the project are very relevant to the topics addressed in the call as they focus on the protection of interdependent, critical infrastructures. The proposed S/T methodology is sound. The work plan is well structured and convincing. Dissemination plans are reasonably well presented and adequate. The proposal received a degree of 13.0 point out of 15 and has been retained for funding by the European Commission



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What Is the Project About?

The MICIE project, being in line with EU initiative to establish a Critical Infrastructure Warning Information Network (CIWIN), will design and implement a so-called "MICIE alerting system" that identifies, in real time, the level of possible threats induced on a given CI by "undesired" events happened in such CI and/or other interdependent CIs. In particular, whenever such events occur, the MICIE alerting system will support the CI operators providing them with a real time risk level (e.g. expressed in a chromatic scale such as white, green, yellow, orange, red).

The alarm conditions will be evaluated by means of an on-line prediction tool making use of properly designed abstract CI models fed with aggregated metadata describing the CI status.

The CI model will make use of hierarchical modelling in order to evaluate the "level of interdependency" existing among the different CIs, which will be characterized through proper "thresholds" values. The CI model will also include the identification and the formalization of proper "metadata" suitable for describing the CI status, according to a "CI independent" approach which, as far as possible, leaves out of consideration the CI peculiarities.

The MICIE alerting system will also include a proper discovery, communication and composition infrastructure able to operate in an heterogeneous CI framework, aiming at discovering the "sensible" data in the different CIs, at translating them in CI-independent metadata, at transporting them via a secure and available communication network and at aggregating them by means of properly defined composition rules.

Key activities of MICIE project are:

- 1) Design and analysis of qualitative and quantitative interdependency metrics and indicators accounting the service continuity and data integrity of the ICT infrastructure of the CIs and the impact of such attributes on the delivery of service of any other cross-domain infrastructure.
- 2) Design and analysis of a hierarchical modelling framework for interdependency analysis based on the integration of heterogeneous modelling techniques.
- 3) Development of an on-line (real-time) "cascade failure induced" alarm level predictor able to provide a qualitative indication of the actual level of exposure to cascade failure;
- 4) Design of a suitable communication network able to assure availability, authenticity, integrity, confidentiality and non-repudiation of metadata exchanged
- 5) Validation of the interdependency alarm -predictor system on the infrastructure of an Electric Company, Israel Electric Corp, partner in the project.

General Objectives

MICIE project aims to improve the CI Protection capability (in Europe) through the design and implementation of a *MICIE alerting system* that identifies, in real time, the level of possible threats induced on a given CI by undesired events happened in the reference CI and/or in other CIs, which are interdependent with the reference CI.

The MICIE alerting system will compute, in real time, the CI risk levels basing on designed CI models (taking into account indicators of the mutual interdependency among CIs, as well as threshold values for such indicators) and on a suitable set of



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metadata (reporting in a properly aggregated way the status of the interdependent CIs), which are used as inputs of the above-mentioned CI models.

The MICIE alerting system will be based on the following concepts, equipment and tools:

- 1) The off-line design of *CI models* able to "catch" the dominant dynamics deriving from the occurrence of undesired events. The definition of such CI models will include:
 - a. the identification of key semantics elements for the description of the CI status which are *common* to heterogeneous CIs; these common semantic elements will be organized in metadata, hereinafter referred to as *CI independent metadata*, described through ontology based formal languages. These elements will include qualitative and quantitative metrics and indicators accounting for the QoS (e.g. expressed in terms of service continuity and data integrity) experienced in the CIs;
 - b. the definition of a hierarchical modelling framework for off-line interdependency analysis based on the integration of heterogeneous modelling techniques (i.e. continuous versus discrete, stochastic versus deterministic, simulation versus analytical approach). This framework will be used in order to identify the level of interdependency existing among the different CIs; such level of interdependency will be characterized by mean of proper "thresholds" values.
- 2) The design and implementation of *MICIE Secure Mediation Gateways* having the following roles: (i) collecting of the "sensible" *CI-specific data* in the various CIs (i.e. the alarms data of undesired event happening in the CIs), (ii) "translation" of such CI-specific data in CI independent metadata according to the selected ontology based formal language, (iii) mutual exchange of these metadata on secure ICT links, (iv) composition of the metadata received by
- 3) different MICIE Gateways in *aggregated metadata* by means of properly defined composition rules.
- 4) The design and implementation of a *MICIE on-line risk prediction tool* which, on the grounds of the CI models mentioned in the issue (1) and of the aggregated metadata mentioned in the issue (2) (these last are used as inputs of the CI models), is able to predict, in real time, the CI risk levels.

Detailed Information on the Project

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