**Project Results**

**PREDYKOT**  
Intelligent security and smart access control for online networks

**PREDYKOT** set out to radically rethink approaches to security to enable organisations to develop security strategies and software to respond dynamically to organisational changes and reconfigure themselves to adapt to new conditions, thereby introducing intelligence into security governance and closing the security policy loop.

**SOFTWARE SUITE FOR SMART REASONING**

The intelligent mechanisms developed in this ITEA 2 project ensure that security policy not only becomes and stays efficient but also incorporates contextual information to enable the policy to be dynamically refined on a continuous basis. The new policy and reasoning languages developed by PREDYKOT enable the specification and interpretation of security policy to be simplified while the software suite of models created within the project dynamically improve security policy and keep it on track, using:

- reasoning engines on user activities, policy changes and contextual information;
- smart nodes as actuators or sensors for the information system;
- interfaces with security-information and event-management systems;
- fusion of distributed data and data management;
- workflow and security portal for feedback on the policy; and
- steering dashboard.

This highly innovative complete and coherent ecosystem of security-policy modules along with an application methodology can be considered a brand new product for the security intelligence market: a unique eco-system of interoperable, exchangeable modules that will continuously adapt security policies to changes in the risks inherent in administration, user activities or context, and react to reports to modify the policy in real-time. In addition, the methodology guidelines will enable the PREDYKOT ecosystem to be realistically and pragmatically deployed.

**REAL PROGRESS AND IMPACTFUL RESULTS**

The project partners used case studies to evaluate existing security management standards, or propose extensions to those standards, in the domains of semantic representation of a policy, security metrics, policy deployment methodology such as ISO 27001 or EBIOS, and reasoning languages. PREDYKOT also worked in close cooperation with the ITEA EASI-CLOUDS project, which is developing a new cloud-computing infrastructure based on European and open standards, using the EASI-CLOUDS environment to test a number of key security policy capabilities, and thus prove the effectiveness of its approach. Indeed, other newer ITEA projects are already using some of the results of the PREDYKOT project: ADAX (contextual reasoning), Web of Objects (reasoning engine).

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**PREDYKOT**  
(ITEA 2 - 10035)

**Partners**
- C2Tech
- Cassidian Cybersecurity
- Evidian SA
- Gemalto SA
- Innovalia
- Institut de Recherche en Informatique de Toulouse (IRIT)
- Institut Mines-Télécom
- Intelligence Power
- LISSI
- Netman Oy
- Nextel
- Nixu
- Pohtio
- Thales
- University of Jyväskylä
- ZIV GRID AUTOMATION, S.L.

**Countries involved**
- Finland
- France
- Spain
- Turkey

**Project start**
- October 2011

**Project end**
- March 2014

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Project Results

Progress was achieved in the area of standardisation with collaboration taking place with several ISO/IEC standardisation bodies. For example, the Finnish consortium partners worked with ISO/IEC 27000 series and IEC standards through FISMA and SESKO, and contributed to the revision of the ISO 27000 series standards while Thales presented the PREDYKOT principles to the French Standardisation Office for the standardisation of aeronautics and space along with proposed improvements to OASIS for the XACML 3 standard.

There were three demonstrations: Professional Mobile Radio (PMR), Smart Grid, Identity and Access Management (IAM). The PMR demonstrator concerned malware through the USB key and was illustrated via virtual machines. The Smart Grid demonstrator focused on video and access rights policy including single sign-in on multiple devices and the IAM demonstrator explored three banking use cases in a running demo.

Real-life deployment of PREDYKOT results was made possible thanks to standards and manual reasoning. The reasoning rules have now been fully implemented and can adapt to new conditions, and software that can respond intelligently and dynamically, adapting to new conditions, and be able to develop security strategies and exchangeable modules, organisations are so benefit from intelligent security and smart access control for online networks.

PREDYKOT has responded to the real industrial and societal need of growing dependence on online access and all the concurrent dangers this poses. By creating a unique eco-system of interoperable, exchangeable modules, organisations are able to develop security strategies and software that can respond intelligently and dynamically, adapting to new conditions, and so benefit from intelligent security and smart access control for online networks.

DEMAND-DRIVEN EXPLOITATION

In early 2015, Evidian plans to release a new option or Access Intelligence in the next version of its Identity and Access Management product. This same year, Cassidian expects to provide a full decision-support solution in the Security Management area with a call for tenders in the Middle East and requests in Sweden, France, and the Netherlands. Gemalto also anticipates the completion of technologies for Trusted Service Management products in 2015. Thales is convinced that the results of the PREDYKOT project will be beneficial to crisis management solutions, cloud IAM solutions and XACML developments (optimisation, cloud) while a commercial alliance between ZIV and Nextel will focus on making smart grid operation cheaper, targeting international markets (Mexico, US). SMEs have also benefited from the developments and results of the project as they look to enhance their product portfolios.

Major project outcomes

DISSEMINATION

- 20 publications in international top-ranked journals
- 5 briefings to US and European analyst companies 2011 - 2014
- 30 presentations at conferences and fairs, among which:
  - Panel discussions and presentations at the European Identity & Cloud conferences 2013 & 2014
  - Panel discussion at the 6th International Forum on Cybersecurity FIC 2014
  - Presentation and demo at the French Standardization Office 2014

EXPLOITATION (SO FAR)

- New products:
  - Policy-driven portal for end-users to request access to applications and managers to approve them (Evidian I&AM version 9 new offer)
  - Business Intelligence platform for governing security policy and managing risks (Intelligence Power ODBIS new offer)
- New services:
  - Security-as-a-Service components for SMEs to assess, evaluate and improve overall security of ICT environments (Net Man)
  - New services to enforce compliance management (Nixu)
- New systems:
  - Commercial alliance for Smart Grid smart devices operation and maintenance (Nextel – ZIV)
  - Security management solution with intelligent decision-support (Cassidian Cybersecurity)

STANDARDISATION

- Active participation to 7 standardisation bodies, with 3 major contributions:
  - YVL.A.12 Information Security Management of a Nuclear Facility
  - Revision of the ISO 27000 series standards
  - Guides related to cyber-security of industrial systems at ANSSI