



IPSC
Institute for the Protection and Security
of the Citizen

Stephan Lechner

IPSC Director



The mission of the IPSC is to provide research results and to support EU policy-makers in their effort towards global **security** and towards **protection** of European citizens from **accidents, deliberate attacks, fraud and illegal actions against EU policies**

- **Information Technologies:** satellite image processing and analysis, web technologies, open source information acquisition and analysis, wireless communication equipment testing, systems interoperability, geomatics;
- **Complex Systems:** modelling and statistical analysis;
- **Engineering:** structural mechanics, radar and sensors (including optical), risk assessment, accident analysis, nuclear safeguards, non proliferation, nuclear security.

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Support to External Security	Agriculture	Maritime Affairs	European Laboratory for Structural Assessment	Sensors, Radar Technologies and Cybersecurity	Traceability, Vulnerability and Risk Assessment	Nuclear Safeguards	Statistics and Econometrics
Delilah al Khudhairy	Jacques Delince	Thomas Barbas (act.)	Michel Geradin	Alois Sieber	Andre Poucet	Willem Janssens	Andrea Saltelli

Remote sensing and data analysis

Modelling, simulation & testing

Nuclear

Statistical

Crisis Management Tools

- Web-based interactive info exchange and **coordination systems**
- Rapid, standardised, **damage & needs assessment**
- Early warning/alerting systems and **models**
- Geospatial infrastructure



Monitoring Security Threats & Anti-Fraud Statistics

- **Open source** intelligence/analysis tools
- Media/OS **gathering and aggregation** tools
- **Social network** analysis
- Techniques for monitoring **conflict resources**
- Techniques for **urban monitoring** and characterisation



Key Expertise

- Geo-spatial intelligence and analysis
- Web Mining and intelligence
- Information technologies and numerical modelling
- Statistical Data Mining

Satellite based Field Monitoring

- **Rapid field visit** independent from farmers
- Detection of **ineligible land use**
- Efficiency in **field measurements**
- Climatic effect analysis on **crop yield**

Key Figures on Farmer Payments

- Over **9 million** of beneficiaries
- **250.000 on-the-spot-checks** by remote sensing
- More than 700 HR images and **140.000 Km² VHR** imagery ordered yearly
- Total of EU Payment scheme is approx. **35 Bn EUR**



Key Expertise

- Satellite image interpretation and analysis
- GPS
- Crop Forecast, based on climatic indicators and statistical methods
- Food Security (third countries)

Maritime Surveillance

- Maritime **surveillance systems** & concepts
- **Data fusion** techniques & systems integration
- Security/safety of **vessel traffic**
- **Accident** reporting platforms

Compliance monitoring

- **Vessel detection** / monitoring techniques and systems
- IT tools for collecting, protecting, validating and analysing data in **fisheries management**

Container security

- **Route-based** risk analysis techniques and systems



Key Expertise

- Unmanned vehicles (UAVs)
- Space technologies:
Observation, Communication
- Navigation
- Risk analysis, GIS, Data mining

Radar and Telecommunications for Security

- Certification of new technologies (e.g. **SDR**) and communications requirements for security **applications**

Cybersecurity and Critical Infrastructures

- Modelling, assessment and simulation of **cybersecurity**
- **Security test-beds** of control systems
- **SCADA** security: standards and information exchange

Support to Border Security

- **ePassports** conformity and interoperability
- Assessment of detection **systems** for **border control**
- Privacy and usability of **biometrics** for identification
- **Detection of** landmines and other **explosives**



Key Expertise

- Information and Communication Technologies
- Test-beds in a wide range of wavelengths
- Security assessment

European Laboratory for Structural Assessment

EUROCODES

- **Pre-normative research** in support of Eurocodes and in support of **standards for new construction materials** (e.g. fiber reinforced composites)
- Support to CEN TC250 together with other International Scientific and Technical Organizations on issues resulting from **application of Eurocodes**

Large Experimental Facilities

- Creation of 'distributed laboratory' linking structural engineering research sites across Europe
- Large Reaction wall for hybrid analysis approach



Key Expertise

- Construction engineering
- Earthquake engineering and earthquake damage assessment
- Modeling/simulation
- Risk analysis

High security seals and traceability systems

- Nuclear Ultrasonic seals and identification systems
- Active/passive RFID, “Smart Containers”

Vulnerability and risk assessment

- (Petro)chemical accidents: data analysis, risk assessment methods
- Methods for land use planning and territorial risk mgmt.
- Risk management for transport of dangerous goods

Food chain

- RFID based livestock tracing and “farm to fork” concepts
- TEMPEST test lab: Performance, conformance & compatibility



Key Expertise

- Risk assessment and risk management
- Information technologies and numerical modelling (e.g. consequence models)
- Geo-spatial intelligence and analysis
- Tracing and tracking technologies

Nuclear Safeguards

- training of **nuclear inspectors**
- 3D identification **and verification** technologies
- **non-destructive** nuclear measurements
- **GIS based portal** for safeguards information

Nuclear Security

- Test & Validation of **Border Radiation Monitoring Equipment (IAEA, US, EU)**
- Assistance to implementing Safeguards in countries of **Russian Federation**
- Nuclear techniques for the **Detection of Explosives**



Key Expertise

- Non-Destructive Measurement of Nuclear Materials
- Verification Technologies in Nuclear Security
- Proliferation Resistance and System Analysis
- Modelling of the Nuclear Fuel Cycle
- Analysis of Open Source Information

- Innovation and competitiveness issues with the development of the European Innovation Scoreboard
- Publication of Environmental Performance Index in Davos with WEF, Yale, Columbia. Review of composite indicators in use in the EC in progress.
- CRELL, the Centre for Research on Lifelong Learning



Key Expertise

- Statistics
- Econometrics
- Modelling
- Composite indicators