



The Fraunhofer Institute for Technological Trend Analysis INT provides scientifically sound assessments and counseling on the entire spectrum of technological developments. On this basis, the Institute conducts Technology Forecasting, making possible a long-term approach to strategic research planning. Fraunhofer INT constantly applies this competence in projects tailor-made for our clients.

Over and above these skills, we run our own experimental and theoretical research on the effects of ionizing and electromagnetic radiation on electronic components, as well as on radiation detection systems. To this end, INT is equipped with the latest measurement technology. Our main laboratory and large-scale appliances are radiation sources, electromagnetic simulation facilities and detector systems that cannot be found in this combination in any other civilian body in Germany.

For more than 40 years, INT has been a reliable partner for the Federal German Ministry of Defense, which it advises in close cooperation and for which it carries out research in technology analysis and strategic planning as well as radiation effects. INT also successfully advises and conducts research for domestic and international civilian clients: both public bodies and industry, from SMEs to DAX 30 companies.

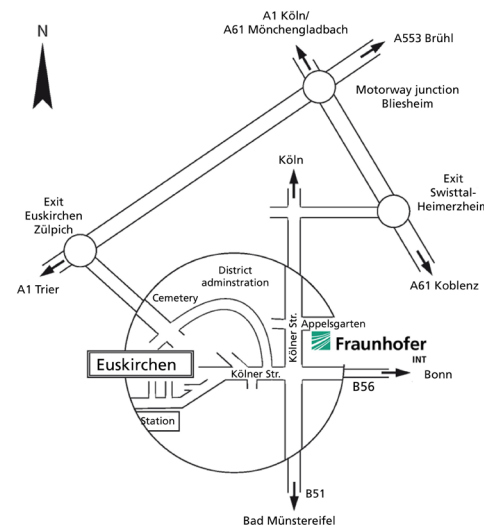
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## BUSINESS UNIT NUCLEAR SECURITY POLICY AND DETECTION TECHNIQUES





The Fraunhofer INT's Business Unit »Nuclear Security Policy and Detection Techniques« has extensive experience in detecting nuclear and radioactive material in-situ. This leads to the ability to assess and analyze nuclear and radiological threats based on non-peaceful activities.

This capability is based on theoretical simulations and experimental measurements with systems for the verification of radioactive and nuclear material. The detection systems are gamma detectors, as well as neutron detectors. Amongst others, active interrogation with neutrons by means of a portable neutron generator and the possibilities of mobile neutron radiography are investigated.

Further activities in this unit are studies on scientific and technological aspects of nuclear security policy and arms control, particularly of nuclear weapons and potential proliferation aspects. On this subject the Fraunhofer INT advises and supports national and international security authorities.

Furthermore our institute operates a precision mechanical workshop and an electronic laboratory. This enables us to adapt or integrate equipment for our needs or partly build new equipment.

## PROFILE

- Non-destructive nuclear measurement techniques for the detection and identification of radioactive and nuclear material on-site
- Design and operation of mobile measurement systems (system integration)
- Support and advice of national and international security authorities
- Theoretical and experimental research on potential nuclear proliferation and verification
- Physical and technical aspects of nuclear test stop and nuclear disarmament
- Possibilities and dangers of illicit use of nuclear or radioactive material for non-peaceful purposes (including terrorism, blackmailing)
- Participation and consortium lead in various projects such as: German-French Projekt ANCHORS „UAV-Assisted Ad Hoc Networks for Crisis Management and Hostile Environment Sensing“, EU FP7 Project EDEN „End-user driven Demo for cbrNe“, EU Project ITRAP+10 „Illicit Trafficking Radiation Detection Assessment Program“ as experts

## EQUIPMENT & FACILITIES

- Measurement vehicle DeGeN for searching and identifying radioactive and nuclear material
- Transportable nuclear detection system NaNu for global employment, consisting of a container with working places and modular design for radiation measuring equipment
- Gamma detectors with high resolution for identification of radioactive and nuclear material as well as mobile gamma spectrometry techniques for on-site applications including portable and hand-held devices
- Neutron detectors with high efficiency for localization and identification of nuclear material
- Spatially resolved gamma radiation detector with overlaid optical image (gamma camera)
- Radiation portal monitor
- Neutron generators (one portable) for active measurements like neutron radiography or neutron activation for the detection of fissile material
- Operation of an Isotope Laboratory