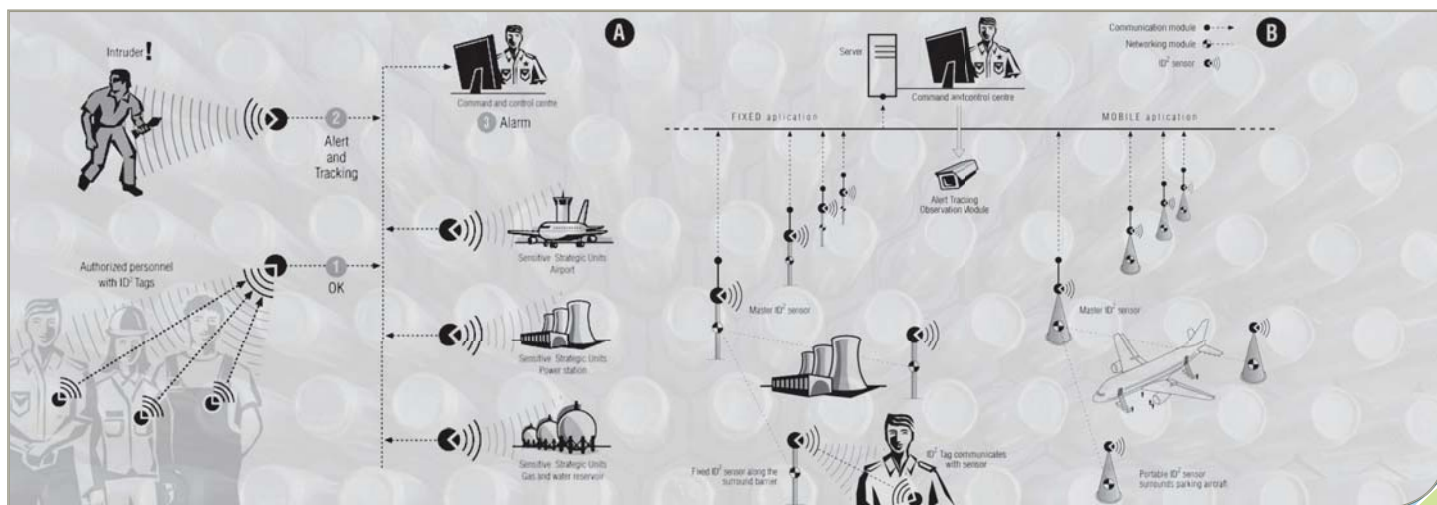# iDetecT 4ALL

Novel Intruder Detection and Authentication Optical Sensing Technology

Project objectives

The limited sensing capabilities as well as the very high costs of existing security equipment imposes a barrier to implement necessary security means for all critical infrastructures, especially those having budget constraints. The iDetecT goal is to develop innovative optical intruder sensing and authentication technologies that will significantly improve security systems performance, available at an affordable cost, leading to the widespread availability of affordable security, allowing more protection for infrastructures. The iDetecT project will develop a novel photonic sensing technology based on an innovative approach using ultra low cost electro-optical components. This technology allows both detection and authentication of objects by a single sensor, which dramatically improves the performance and reliability of the security system.

This innovative approach is enabled by recently invented very advanced digital signal processing (DSP) techniques that enable distance measurement using continuous modulated light signals (invisible to humans) and requires far less optical power than existing laser scanning technologies. The result will be increased performance with reduced cost for reliable intruder detection.

Description of the work

This technology will detect the presence of objects (human beings, vehicles, goods), inside or in the surrounding area of restricted critical infrastructures. It will identify authorized objects and will alert if an unauthorized object is found within the protected zone. For this purpose, the following Research and Technological Development (RTD) activities will be undertaken:

›› The development of ultra sensitive optical sensing and detection technology, using the same photonic methodology. This sensing technology will enable a highly robust indoor and outdoor remote intruder detection technique and remote scanning of optical tags. The sensor and tag will also use the common technology basis for optical communication between the tag and the sensor for authentication data exchange.

›› The research and development of optical tagging technology, that will be based on the above mentioned photonic methodology. These tags will be attached to objects for their remote identification and authentication.

›› The development of other technological components necessary to complement the sensing and tagging technologies including: alert tracking, networking and communication.

The work plan includes field trials using a prototype system combining the technology components that will be developed. The field trial will be carried out to verify and validate the usefulness and effectiveness of the technologies under real world conditions. The Field trial prototype system will present an "end to end" security application, integrating the following components:

›› An array of multiple ID2 sensors, capable of detecting intruder objects and reading the optical ID (OPID) tags within the field of view,

›› Multiple ID tags for identification, that will be attached to authorized objects;

›› Server hosting situational awareness algorithms and software capable of alerting predefined threats and tracking them;

›› An electro-optical alert tracking observation module that will be directed to any unauthorised object detected, and will be used to track and observe the object being identified as a potential threat;

›› Threat alerts display at a command and control room for the security operator;

›› Low cost communication and networking units, for the interconnections of the prototype components.

Expected results

The solution will have the following capabilities:

›› Remote detection of static and moving objects within a predetermined field of view.

›› Remote scanning and authentication of optical ID tags (OPID).

›› Threat identification, tracking and observation.

›› 24 hour operational capability in all lighting and weather conditions.

›› Inherent immunity to natural phenomena causing false alarms.

›› Minimal power consumption and therefore compatible and easily installable in existing security installations using existing infrastructure.

›› Maintenance free design.

INFORMATION

Acronym:
iDetecT4ALL

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EU Contribution:
€ 2,298,014

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Duration:
30 months

Coordinator:

Instro Precision Ltd.
15 Hornet Close
Pysons Rd Industrial Estate
Broadstairs, Kent, CT10 2YD

Contact:
William Caplan, MSE
Electro-optic Project Manager
Instro Precision Limited.
tel +44 (0) 1843 60 44 55 ext. 110
williamcaplan@instro.com

PARTNERS

NAME	COUNTRY
Instro Precision Ltd.	United Kingdom
ARTTIC	Belgium
Motorola Israel Ltd.	Israel
EVERIS Consulting	Spain
Cargo Airlines	Israel
3D s.a.	Greece
ANA Aeroportos de Portugal	Portugal
LACHS	Belgium
Azimuth Tecnologies Ltd.	Israel
S.C. PRO OPTICA S.A.	Romania