Institute of microelectronic applications (IMA s.r.o) within EUREKA

Tomáš Trpišovský (Prague, Dec2015)

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Agenda

- Highlights of IMA activity

- IMA's participation on Eureka programme

- Eureka Eurostars E!8221 LSU
  (Large Scale UMTS Location Based Service)
    - submission
    - implementation
    - commercialization
    - follow up

Highlights of IMA activities

1. Identification and access systems

2. Research & Development

3. Commercialization

Market position

- IMA is the leading supplier of ID and access systems in the Czech Republic. **IMA systems** are in long-term use by **3 of the 3 most successful companies in the 2014 Czech Top 100** (www.czechtop100.cz) - **SKODA Auto**, AGROFERT (**Kostelecke uzeniny**) and **CEZ**, as well as by **FOXCONN** or **North Czech Mining Company**.

Certification

- The Company holds security clearing from the National Security Authority of the Czech Republic. Its main **product, the IDSIMA 4-PRO**, is certified **one the highest level**.
- ISO9001-2009 quality certificate

Human resources

- **70 highly qualified** and dedicated specialists with appropriate levels of education

International overlap on R&D projects

- Since 2006 the Company has participated in almost **40 R&D projects** (more than **65% of which** have been international) in which it demonstrated its expertise in applied microelectronics in particular.

Financial stability

- Even though more than 40% of the Company's activity is focused on R&D, IMA is capable of financing its development needs itself. It joint-finances its R&D activities with help from European grants.

Selected customers

IMA systems are in long-term use by the most important Czech companies and also by the foreign ones.

CEZ GROUP

- For the CEZ energy company - the largest energy group in the Czech Republic and within the whole of Central and South-east Europe – IMA implemented **a single ID, access and meals system** based on contactless chip cards from INDALA/MOTOROLA and MIFARE.
- This comprehensive system also contains solutions for bus transport, vending machines, vehicle monitoring (a solution from the RADIUM company) and print reporting (a solution from the YSOFT company).
- In total, **more than 40 000 ID cards** and 1 300 sensors have been installed in more than 70 facilities.
- PKI, NFC, biometric and other technologies have been used.
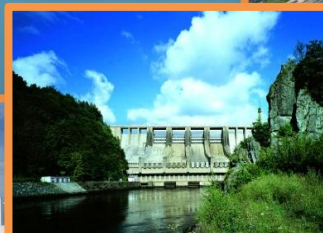- Links were established between the IDSIMA 4-PRO system and SUN ID management.

Power plants

Prunerov, Chvaletice a další (celkem 11)

Hydropower plants

Dlouhe Strane, Dalesice and other (9 in total)

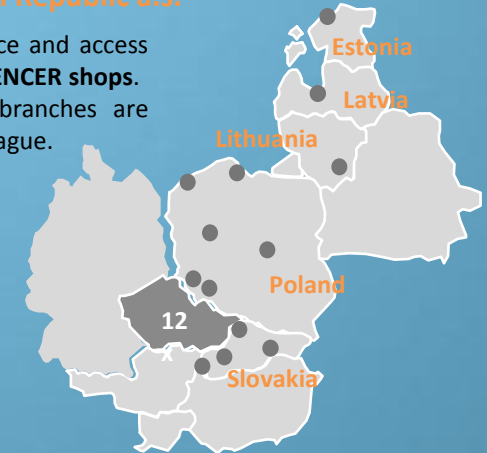### Nuclear power plants

Temelin
Dukovany

SKUPINA ČEZ

MARKS & SPENCER Czech Republic a.s.

- IMA supplied its attendance and access system to **25 MARKS & SPENCER shops**.
- Czech and international branches are managed centrally from Prague.

57 000
loyalty cards

Estonia
Latvia
Lithuania
Poland
12
Slovakia

MARKS & SPENCER

SKODA AUTO a.s.

- The IDSIMA 4-PRO access system has been in use in the SKODA AUTO factories in Mlada Boleslav, Cesana, Vrchlabi and Kvasiny since 2004.
- The number of registered cards has reached more than **30 000**. More than 180 readers have been installed and c. 35 instances of PCMaster LEGIC technology.
- Currently the e-Vstup (e-Entry) project is underway (turnstiles & barriers).
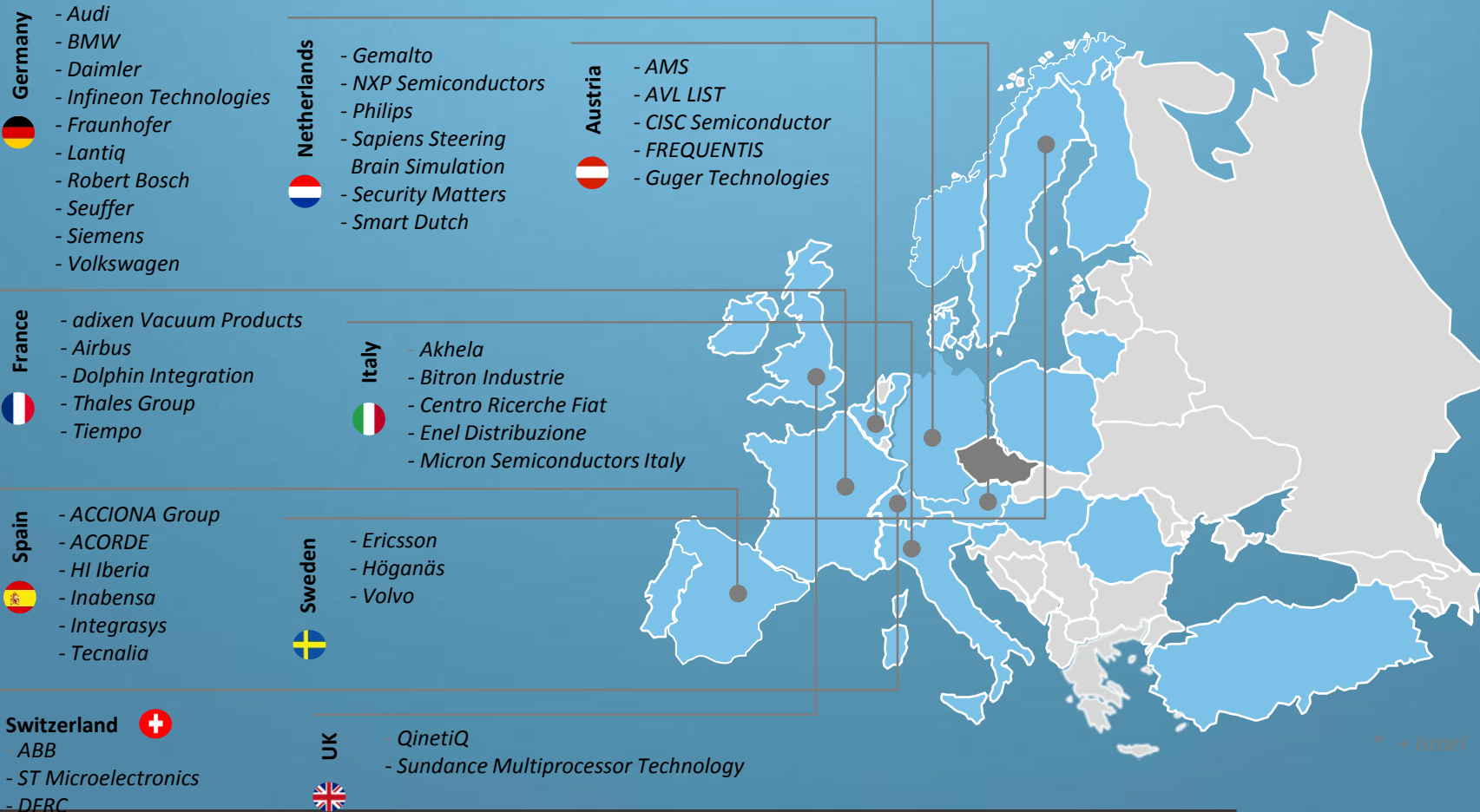
ŠKODA

R&D partners

In 2014, the Company **worked on R&D projects with more than 250 partners**. More than 2/3 of these partners made up a trading company, with the remaining 1/3 from universities, research institutes and other academic institutions.

Selected business partners

Germany
- Audi
- BMW
- Daimler
- Infineon Technologies
- Fraunhofer
- Lantiq
- Robert Bosch
- Seuffer
- Siemens
- Volkswagen

Netherlands
- Gemalto
- NXP Semiconductors
- Philips
- Sapiens Steering Brain Simulation
- Security Matters
- Smart Dutch

Austria
- AMS
- AVL LIST
- CISC Semiconductor
- FREQUENTIS
- Guger Technologies

France
- adixen Vacuum Products
- Airbus
- Dolphin Integration
- Thales Group
- Tiempo

Italy
- Akhela
- Bitron Industrie
- Centro Ricerche Fiat
- Enel Distribuzione
- Micron Semiconductors Italy

Spain
- ACCIONA Group
- ACORDE
- HI Iberia
- Inabensa
- Integrasys
- Tecnalia

Sweden
- Ericsson
- Höganäs
- Volvo

Switzerland
 ABB
- ST Microelectronics
- DFRC

UK
 QinetiQ
- Sundance Multiprocessor Technology

* - Israel

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Academic partners

Selected academic partners

Czech Republic
- Charles University *(First Faculty of Medicine)*
- CVUT - Czech Technical University in Prague
- Brno University of Technology *(Institute of Microelectronics, CEITEC)*
- Technical University Liberec

Germany
- Eberhard Karls University Tübingen
- Fraunhofer Institute
- Friedrich Alexander University Erlangen
- Hochschule Amberg-Weiden
- Leibniz University Hannover
- TU Braunschweig
- TU Dortmund
- TU Kaiserslautern
- TU Darmstadt
- TU Dresden

United Kingdom
- Royal Holloway and Bedford New College, University of London
- Science and Technology Facilities Council
- The University of Bristol
- The University of Manchester
- The University of Sheffield
- University of Sussex

Netherlands
- Eindhoven University of Technology
- The Delft University of Technology
- University Medical Center Utrecht

Israel
- Technion, Israel Institute for Technology

Latvia
- Riga Technical University

Greece
- Harokopion University of Athens

Slovenia
- Jožef Stefan Institute

Norway
- University of Oslo

Italy
- Universita Di Bologna
- Università del Sannio
- Università di Perugia
- University of L'Aquila
- Politecnico di Torino
- Sapienza Universita di Roma
- Universita Degli Studi di Firenze
- Universita Degli Studi di Pavia
- Universita Degli Studi di Cagliari
- Universita Degli Studi di Genova

Spain
- Fundacion Tecnalia Research & Innovation
- Instituto Tecnologico de Informatica
- Universidad de Seville
- Universidad Politécnica de Madrid
- Universitat Autonoma de Barcelona
- Universitat Politecnica de Catalunya
- Universtitat de Girona

Austria
- Austrian Institute of Technology
- FH Joanneum
- TU Graz
- TU Vienna

Portugal
- Instituto de Telecomunicacoes
- Instituto Superior de Engenharia do Porto
- INESC-ID LISBOA

Sweden
- Chalmers University of Technology
- KTH Royal Institute of Technology
- Lulea University of Technology

Romania
- Institutul de Cercetare-Dezvoltare si Inovare POLITEHNICA

Finland
- University of Eastern Finland
- University of Oulu

Denmark
- Technical University of Denmark

Poland
- Gdansk University of Technology
- Warsaw University of Technology

IMA's engagement in Eureka

- **Eurostars:** 2009 InSider (Eurostars Success Story),
  2013 In3DG,
  2014 CityFlow,
  2015 LSU
  ongoing **Face2Phone** Fusion between video analytics and mobile phones for large-scale scenario

- **CATRENE:** 2015 EM4EM (CATRENE Innovation Award 2014)

  ongoing **CORTIF** Coexistence Of RF Transmissions In the Future **&**
  H2O Human to Objects "Easy Interactions in the Smart City"

- **EURIPIDES:** missing national budget

Eurostars LSU - Case Study

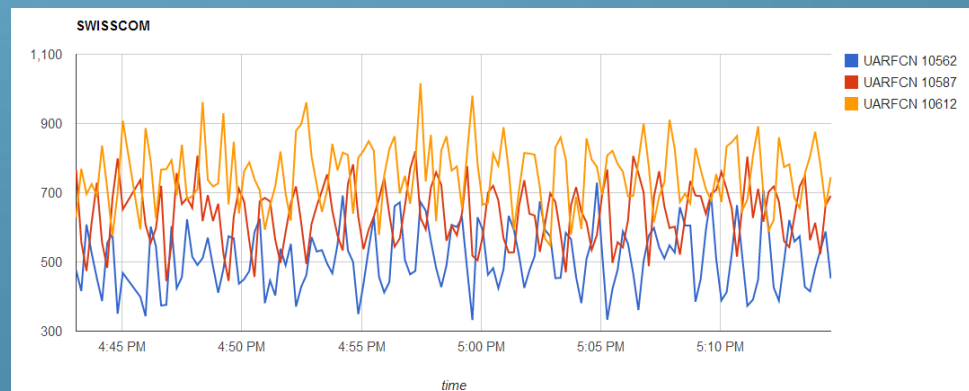Project: Large Scale UMTS Location Based Service

Submission / Prerequisites:

- DFRC (Swiss), IMA (CZ), Red Ninja Limited (GB)

- Eurostars CityFlow follow up

- ECO system: **FP7** MATTHEW, **ECSEL** GALAXY (concept),
  TAČR ALFA Secure Systems for Electronic Services User

- In line with IMA's internal Research road map

- Clear vision of implementation

- Tangible exploitation & spill over effect

LSU

Goal & Implementation:

- LBA UTMS sensor
- LBAsense mobility API
- Date acquisition server
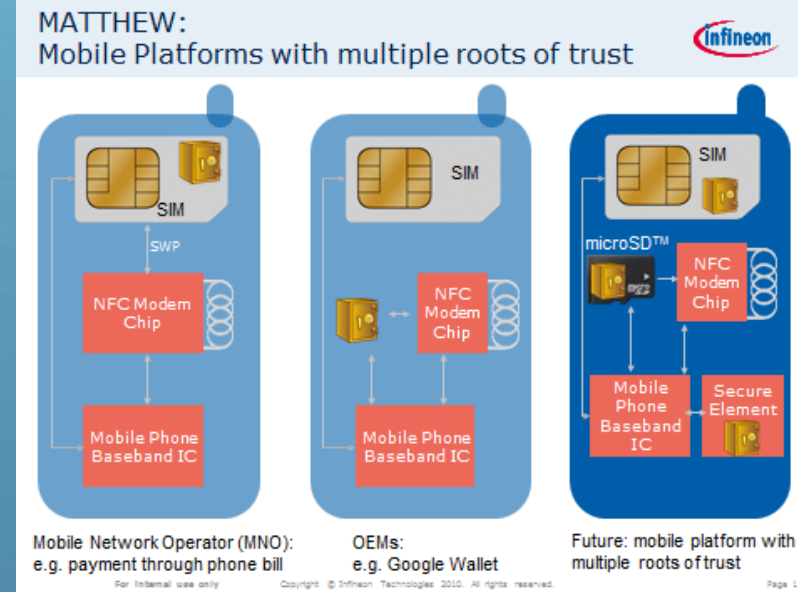- Generic data analyser
- Data2application API

LSU versus „wireless"

Within IMA security / access control systems

- **Wireless sensors** detect only limited set of mobile devices and fit for proprietary IDM. The device takes the role of add on identifier...

- **LSU sensors** shall bring an other security factor due the holistic performance across the whole mobile fleet

- IMA entered the development of two tools in order to foster exploitation:
  - **NFC Porter PRO** (with remote enrollment)

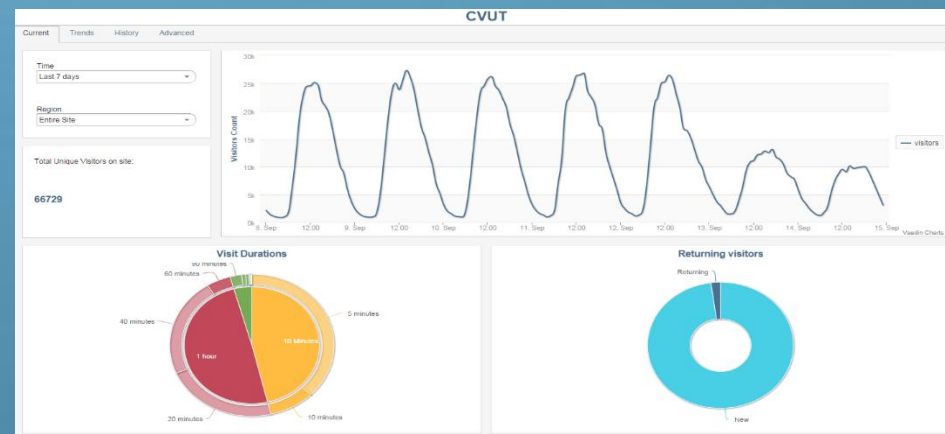 - Independent **SD security module** for mobile phones (FP7 MATTHEW)

MATTHEW: Mobile Platforms with multiple roots of trust

Mobile Network Operator (MNO): e.g. payment through phone bill

OEMs: e.g. Google Wallet

Future: mobile platform with multiple roots of trust

LSU

Synergies: IMA RSW04 readers (RFID,NFC,BLE)

Exploitation & spill over effect :

TECHNICAL ISSUES

❖ Extension of IDSIMA K4 in terms of management of outdoor location data.

❖ Tracking and alerts mechanism for access control systems.

LSU

Exploitation & spill over effect :

NON - TECHNICAL ISSUES

❖ Assessment of LSU compliancy with regulatory base across EU.

❖ Support for public LSU service acceptance.

❖ Data acquisition, behaviour profiling, security improvement, business intelligence based on LBA
   https://www.youtube.com/watch?v=-txAoL4donQ#t=10

Envisioned LSU pilot sites

- Development and testing site at IMA HQ
- Real-life and load testing site at CVUT (35.000+ active users)
- Industrial site in North Bohemian coalmine / ČEZ

Thank you
for your attention

www.ima.cz