Intelligent Portable Control System

Project Presentation
About iBorderCtrl

Project Grant Agreement No. 700626

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13 Partners, 9 Countries

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## iBorderCtrl Consortium

### Coordination (+Tech Provider)
- European Dynamics Luxembourg SA., LUX

### Tech Providers
- Institute of Communications and Computer Systems of NTUA, EL
- Stremble Ventures Ltd, CY
- Manchester Metropolitan University, UK
- iTTi, POL
- Everis Aerospace and Defence, ESP
- Biosec Group, HU
- JAS Technologies, POL

### Pilot Users
- Hungarian National Police, HU
- KEMEA, EL
- TRAINOSE, EL
- State Border Guard of the Republic of Latvia, LAT

### Ethical, Legal
- Leibniz University Hannover, DE
The Project - Core Objective

- **Significantly increase the efficiency and security** in terms of traveller throughput and fewer illegal crossings respectively;
- **Reduced time at the border** by utilising the portable traveller devices and portable units;
- **Utilise a pre-registration step** to better inform travellers of their rights, the travel procedures, data collected and analysed as per EU and national legal requirements;
- **Reduce the subjective control** and workload of human agents;
- **Increase the objective control** with automated means that are non-invasive and do not add to the time the traveller has to spend at the border;
- **Create a fifth tier** for the four-tier access control model of the Integrated Border Management System involving bona fide travellers and regular travellers into a Schengen-wide frequent traveller programme.
Pre-arrival Registration

- **Securely accessible web interface**
  - provided for travellers to register
  - guide them to provide the required information for the pre-arrival control

- **Mobile Application**
  - reflect the interaction of the travellers and the border agent
  - will enable the travellers to rapidly recall information already uploaded to the system
  - will acknowledge them with the next steps or any parallel information needed before, through and after the border check procedure.
  - is referring to all travellers, from different countries, different ages and cultures

- **Avatar**
  - a short, automated, non-invasive interview, subject to lie detection
  - Improve performance in comparison to human agents, as it correctly adapts to travellers profile
Border Control

- **Portable hardware iBorderCtrl unit:**
  - **dedicated portable travel document scanners** → to capture the travel documents (e-tickets, passports, ID cards, etc.)
  - **biometric scanners** → capture state-of-the-art biometrics such as fingerprints, faces, veins, etc.
  - **body mounted cameras** → capture and process non-verbal features required for lie detection at the crossing point

- **Human border control portable Agent User Interface (AUI)**
  - visualises (real time) the quantified metrics resulted from the sub-system analytics
  - guides the processing required
  - allows the agent to correlate the result with his own perception of the traveller
Key Components of iBorderCtrl Technological Framework

- **Hidden Human Detection Technology (HHD tool)**
  - detection of people crossing land borders hidden inside vehicles or trucks and trains containers or open cargo wagons.
  - CW radar and acoustic life detector

- **Automatic Deception Detection System (ADDS)**
  - analyse Non-Verbal Behaviour provide an estimated level of deception based on analysis of the video-recorded question-answer session
  - Questions will be unpredictable by the traveller and will target issues based on the traveller’s data and profile analyses

- **Document Authenticity Analytics Tool (DAAT)**
  - straightforward verification of travel documents

- **Biometric Analytics (BIO)**
  - process the biometrics captured by the related devices of the portable hardware unit

- **Face Matching Tool (FMT)**
  - captures the face of the traveller at each stage \(\rightarrow\) correlates it with data in the travelling documents
Key Components of iBorderCtrl Technological Framework

- **Vehicle Control Module (VEHC)**
  - controls and process the vehicle registration against cloning, alteration, theft and unauthorized use

- **Integrated automated border control Risk-Based Analytics Tool (RBAT)**
  - utilizes risk based approaches to intelligently fuse all data collected and risk estimated
  - classify travellers to facilitate the human agent task.

- **Intelligent Border Control Analytics Tool (BCAT)**
  - evaluates the performance of iBorderCtrl systems
  - discovers key patterns in the data that would help quickly identify False accept/rejects of travellers
  - based on advanced algorithms (machine learning, neural networks, statistical approaches)

- **Wireless connectivity with ensured QoS through radio network (wireless mobile and satellite techniques)**
- **Cloud-based dealing with all privacy/security issues**
iBorderCtrl Concept

PRE-ARRIVAL REGISTRATION
- Web interface
- Avatar
- Document Upload
- Money Proof
- Audiovisual Input

BORDER CONTROL
- Agent
- Interface AUI
- iBorderCtrl portable device
- Body-mount camera
- iBorderCtrl illegal humans/goods detector
- FMT
- fingerprint
- palm vein
- documents
- detection signals

RISK
SECOND LINE CHECK

ADMISSION (GO)

REFUSAL (NOGO)
• Hungarian Border
• TRAINOSE-Greek railway
• Borders of the Republic of Latvia
• KEMEA- Greek borders
iBorderCtrl Exploitable Results

Agent User Interface (AUI)
Vehicle Control Module (VEHC)
Automatic Deception Detection System (ADDS)
Intelligent Border Control Analytics Tool (BCAT)
Integrated automated border control Risk-Based Analytics Tool (RBAT)
Document Authenticity Analytics Tool (DAAT)
Biometrics (BIO)
Face Matching Tool (FMT)
Humans/Goods detection tool

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