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MobilePass

Towards a better solution for Border Guards

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Department Digital Safety and Security

MobilePass

A secure, modular and distributed mobile border control solution for European land border crossing points

Proposal	MobilePass - 608016
Funding	Security Call, 7th Framework Programme
Topic	SEC-2012.3.2-3: Mobile Equipment at land border crossing points
Type	CP – Capability Project
Duration	2.5 Years
Budget	~ 4.2 M€
	Develop new technologies needed in mobile scenarios and embed them in the actual border crossing workflow. Bring together system- and component producers, research institutions and governmental authorities. The entire innovation process, from development to integration, will continuously be evaluated by border guard authorities.
Coordinator	MobilePassCoordinator@ait.ac.at; +43 (0) 664 815 78 42

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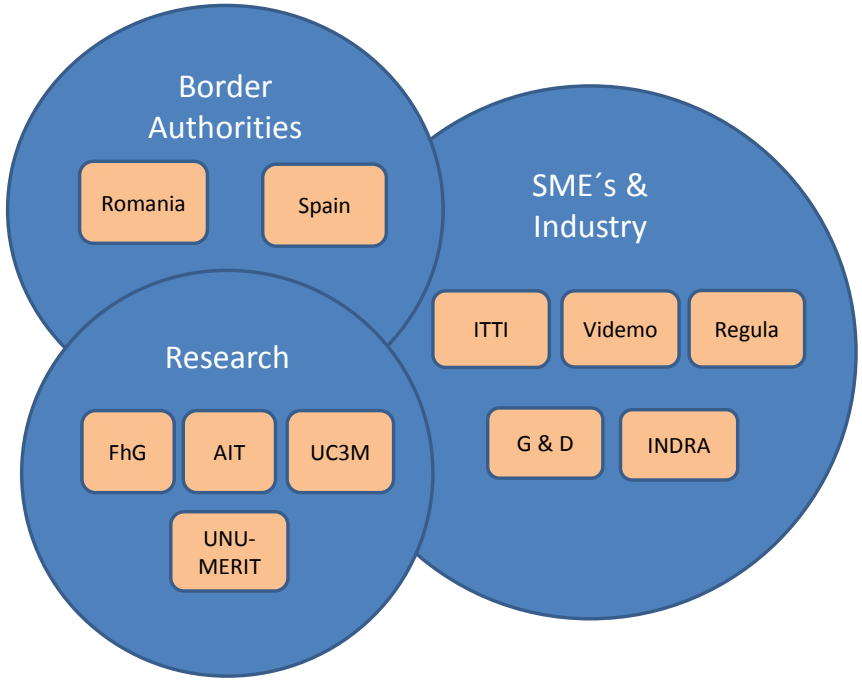
A

secure, (TPM, re-engineering, remote attestation, access control)
modular, (embedded hardware, used only as a scanner, interfaces, API´s)
distributed, (communication, wireless connectivity, nat./int. DBs, certificate stores)
and mobile (usability, battery, robustness, HMI, requirements)
border control solution (processes, workflows)

for European land border crossing points.

Consortium

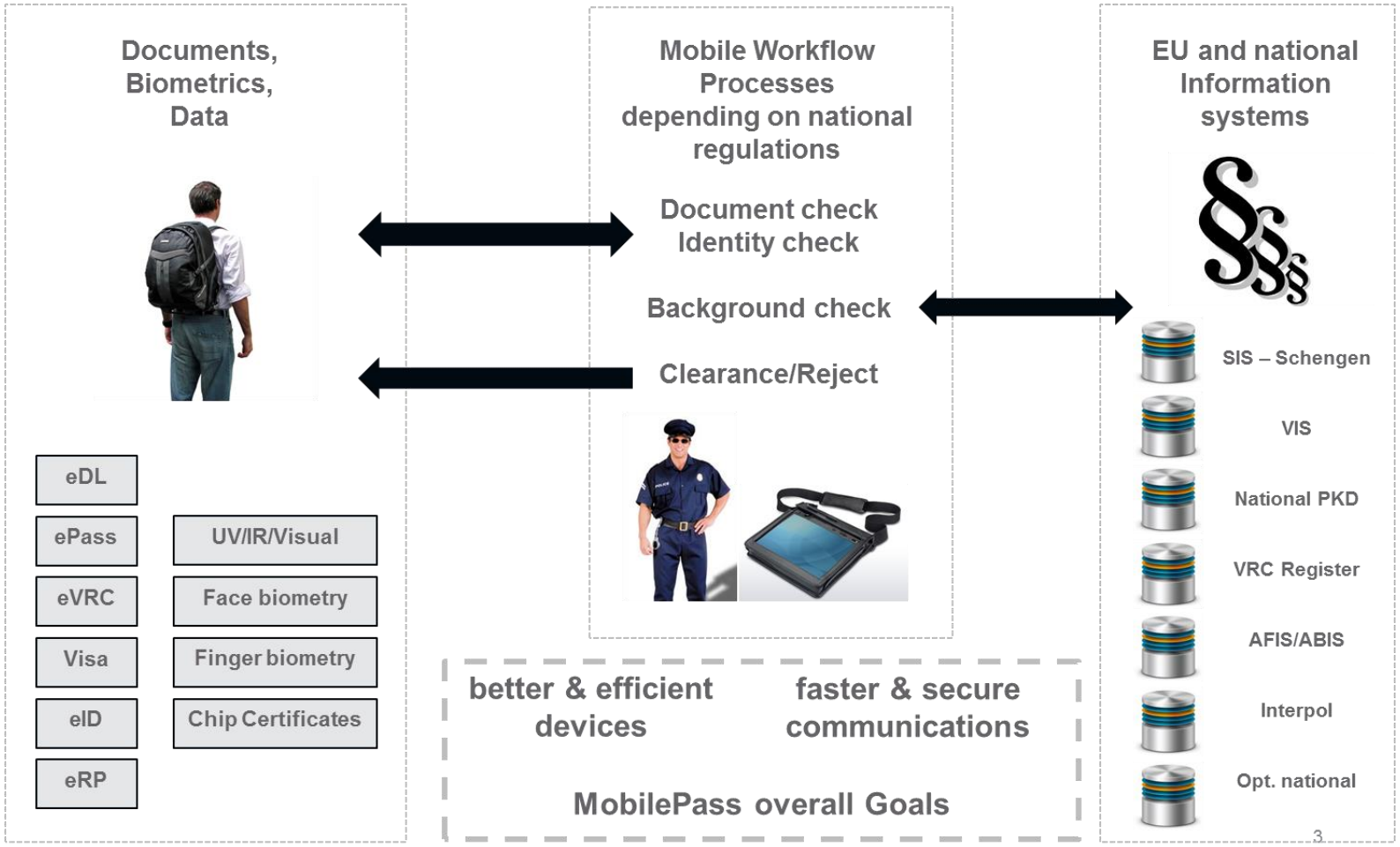
- University and Research Centers
  - AIT (Embedded systems, Architecture on mobile devices)
  - FhG (2/3D Capture and image enhancement)
  - UC3M (Identification technologies, Fingerprint Biometry, standards and evaluations)
- SMEs
  - Regula (Fullpage Passport Reader)
  - ITTI (communication systems)
  - UM-MERIT (Ethics)
  - VIDEMO (Face Biometry)
- Industry
  - G&D (Integrator)
  - INDRA (Integrator)
- National Service Provider, National Authorities
  - RBP Rumanian Border Police
  - SBP Spanish Border Police



The Problem

- Where stationary systems can’t be used
  - Cars, busses, trains
  - Control in the outback, manhunt, Interpol
  - Additional mobile systems at airports
- Requirements of the EU tender:
  - Better technical mobile equipment for identity check
  - Secure wireless transmission
  - Optimized workflow for officers
  - Respect legal, ethical and social factors
  - Increase of security and passenger flow

Overview


Documents, Biometrics, Data
Mobile Workflow Processes depending on national regulations
EU and national Information systems
Document check
Identity check
Background check
Clearance/Reject
eDL
ePass
eVRC
Visa
eID
eRP
UV/IR/Visual
Face biometry
Finger biometry
Chip Certificates
SIS – Schengen
VIS
National PKD
VRC Register
AFIS/ABIS
Interpol
Opt. national
better & efficient devices
faster & secure communications
MobilePass overall Goals
3

Status now

- While there are advances in ABC systems, mobile solutions lag behind
- Partial mobile solutions available
- No practical & fast mobile fingerprint scanners
- No real mobile face biometrics verification system
- No mobile full page document scanners
- Reliable, fast & secure data transmission to information systems is to be improved
- Technical challenges:
  - robustness & handling
  - adaptable
  - speed
  - IT-security

Modular System Architecture
Objective: 1
Objectives for MobilePass:

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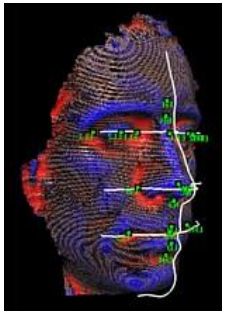
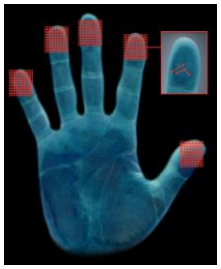




Fast, Mobile
UV/IR, fullpage
Passport scanner

Fast, Mobile
face verification
camera

Fast, Mobile, contactless
fingerprint
scanner/camera

Advanced Components, Objectives: 2,3,4

Terminal Devices

Information systems

Fast, Reliable, Secure communication Objective: 5

Device approach (birds eye view)

Symbolic image

- Camera for MRZ, OCR-B Text (at a distance)
- Face Capture & Verification (integr. Illumination)
- Fingerprint Capture & Verification (contactless)
- 2-way connectivity
  - 3G,4G,LTE : Information Systems
  - BT,WIFI: other Scanners
- NFC ePassport Reader
- Trusted Platform Module (e.g. encrypted boot)
- Pipeline Operation
- Zero - handed Operation
- Open API´s

Device approach

The “optimal” Device ?

Face capture unit

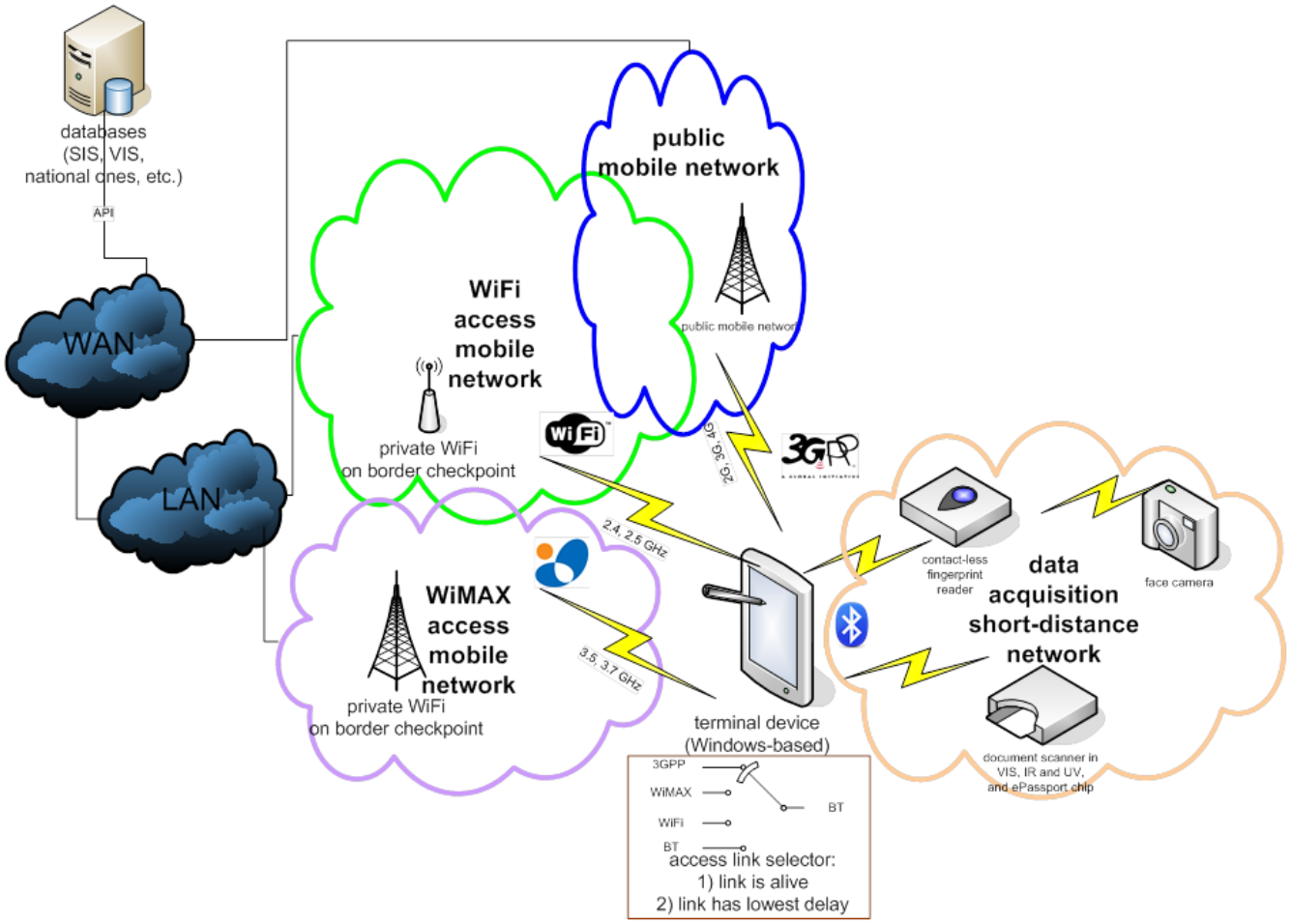
Display,
Communication &
Control Unit

Fullpage passport
scanning

Fingerprint capture unit

Vehicle Identification
Number

Device Connectivity



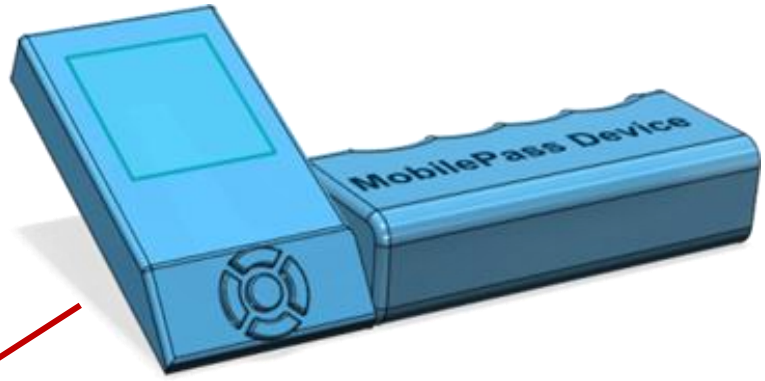
Distributed Szenario

- Use of already available existing COTS devices
- Wrist worn
- Ruggedized, 10h operation
- Display capture process, results of checks

- Fullpage UV/IR Reader
- Hip worn
- MRZ + Visa scanning
- eMRTD scanning

- works in combination with main device

Device Aproach



- MobilePass Device
- Wrist worn
- Shows potential of camera
  - MRZ + Visa scanning at a distance
  - Contactless fingerprint scanning
  - Fast facial capture
- Uses modern powerful “handy” components

- works in combination with main device
- Potential to replace main device

Device Aproach

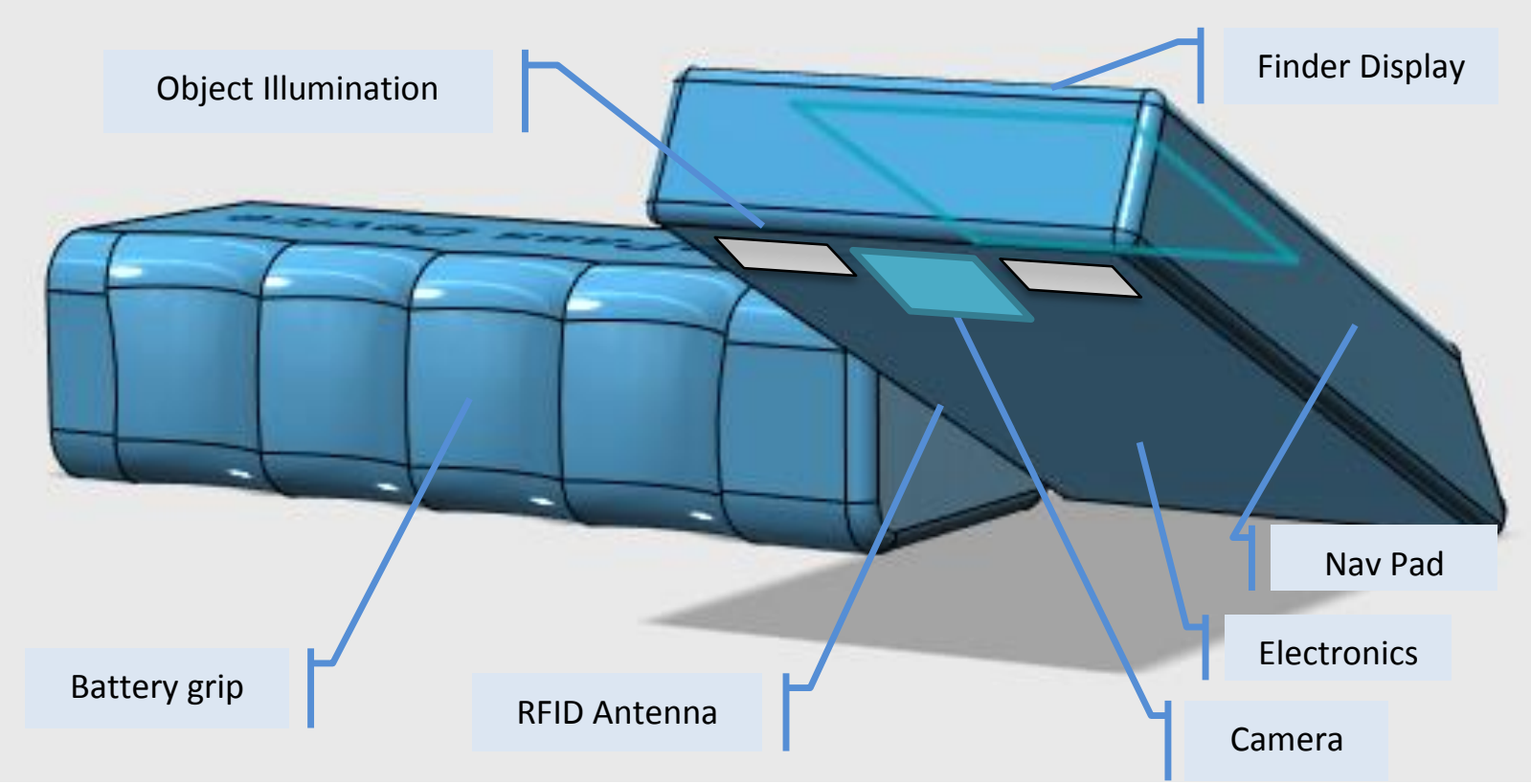
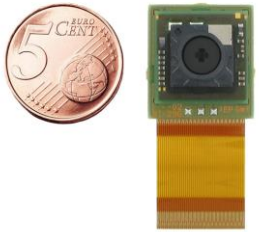
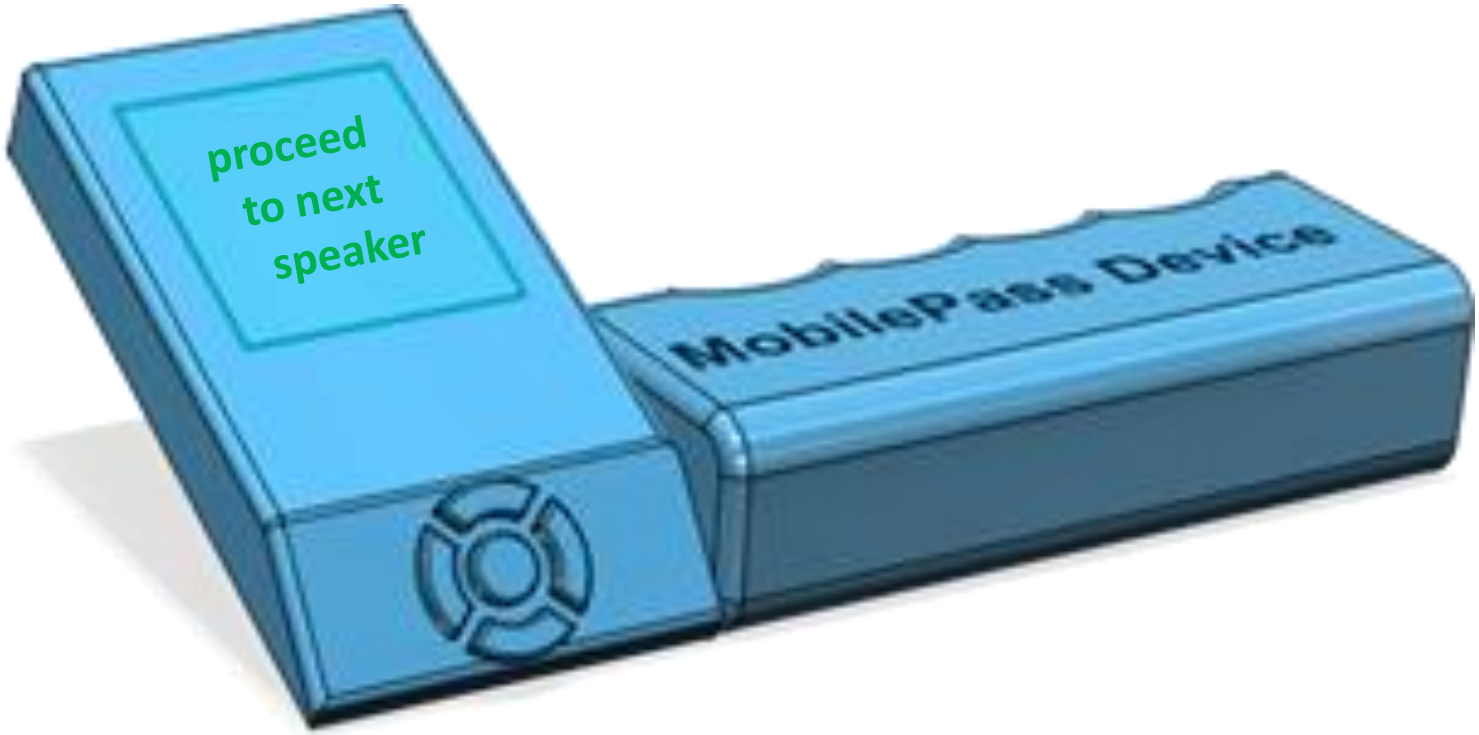


Figure 1: Design study of a future border control device.

Very Advanced Device Elements



- MA-130 Sony camera block
  - HDTV + 13 Mpx snapshot
  - Industrial grade, availability
  - Build in face finder
  - AF and AE can be set to ROI (e.g. fingertips)
- Standard mPCIe compliant radio modules
  - WIMAX, 2G/3G/4G
- CPU Module (5x7 cm)
  - NVIDIA TEGRA TK1
  - 4x 2.2 Ghz ARM + 1x ARM LowPower
  - CUDA Cores for image processing
- TPM Trusted Platform Module
  - Bind and seal data in TPM
  - Temper detection (FIPS 140-2)
  - Cryptographic capabilities

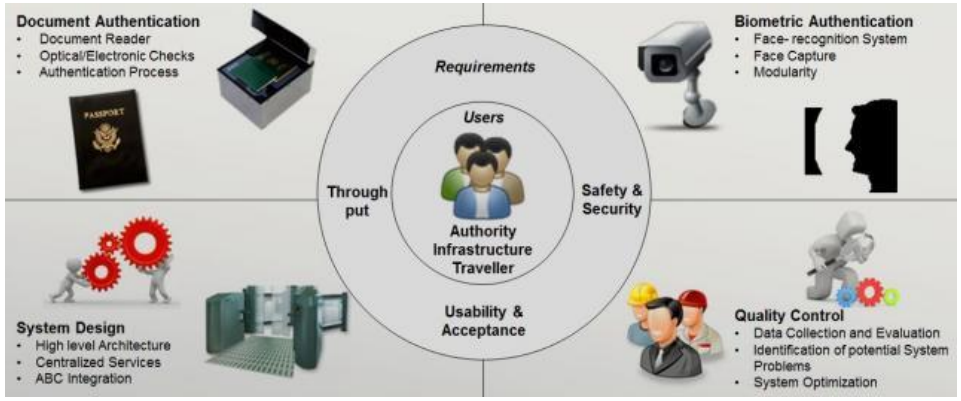

proceed
to next
speaker
MobilePass Device

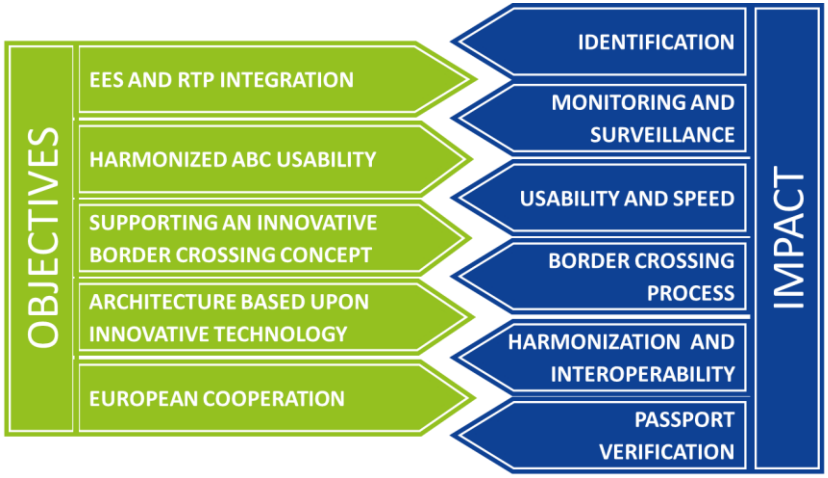
The FastPass Project

FastPass develops:

- a harmonized, modular reference system for all automated border crossing points
- by an user-centric approach and
- serves as an industry standard for the implementation of ABC

- Project start: 1.1.2013
- Project duration: 4 years
- Funding: EU FP-7 Security
- Coordinator: AIT Austrian Institute of Technology, 27 partners
- Further info: www.fastpass-project.eu or mail FastPassCoordinator@ait.ac.t





Key element: The users are in the center of innovation!

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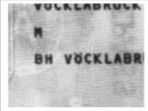
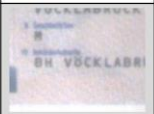
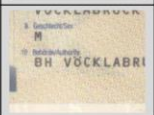
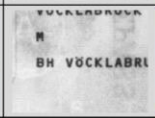
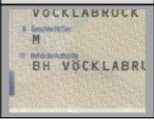
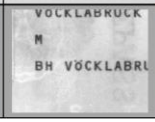
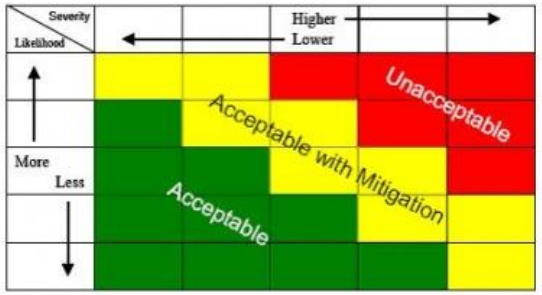
FastPass
… the secure system

- **… develops new security technologies:**
  - Answering new attack scenarios in automated document checking
  - Face spoofing detection
  - Improved video-based tailgating/piggybacking detection

Active display device	PPI	Pixel arrangement	White	IR	UV
HTC Desire with no additional filters	252	PenTile			
HTC Desire with 220 grit ground glass diffuser	252	PenTile			
OPPO Find 5 with no additional filters	441	Traditional RGB			
Images of a genuine document	n/a	n/a			

- **… develops methods for:**
  - risk assessment and security management for ABC systems



28.01.2015

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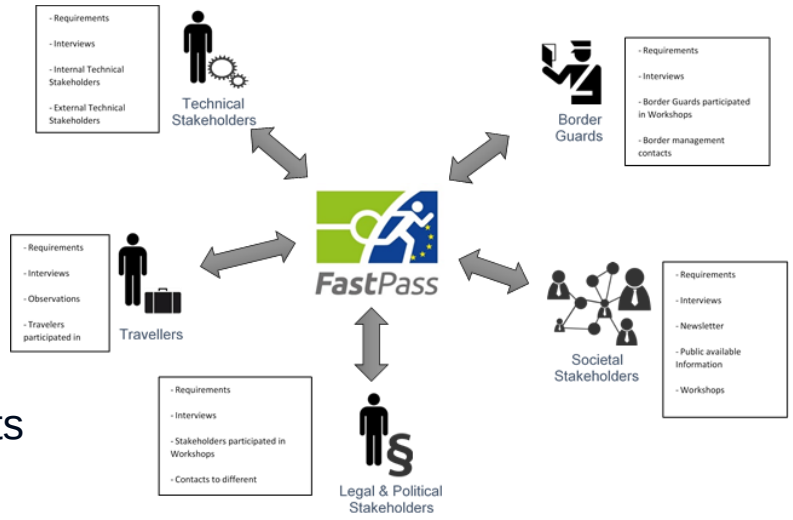
FastPass
… the system you like



- **… develops based on**
  - interviews from border guards and traveller groups
  - stakeholder needs and common requirements
- **… develops**
  - new interfaces with exensive feedback from travellers and border guard of different member states
- **… is a privacy friendly project**
  - respects privacy and data protection
  - applies new frameworks for data protection privacy impact assessment

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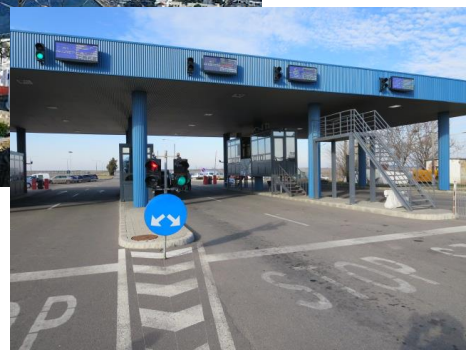
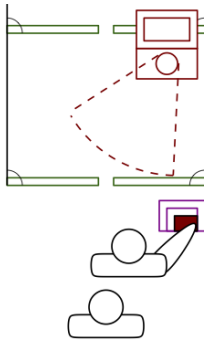
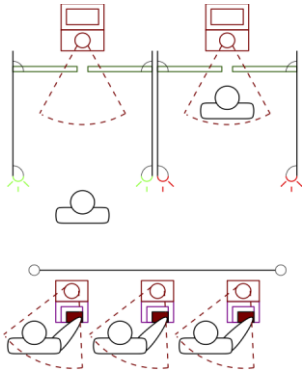
FastPass
… the system for all types of borders

- **… develops:**
  - ONE reference architecture serving various ABC-processes
  - European solution for cars at land border with ABC
  - solution for cruise ships
  - solution for segrated two step process with specific biometric token



- **… provides**
  - real comparison of different ABC approaches on the same spot





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