AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

MobilePass

Towards a better solution for Border Guards

D.I. Bernhard Strobl
Department 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

AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

MobilePass

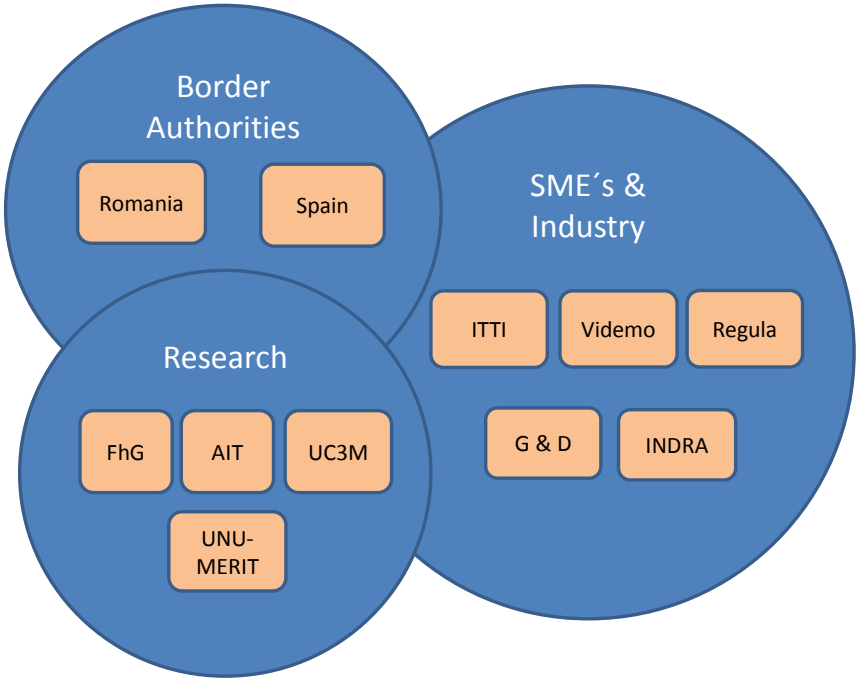
A

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

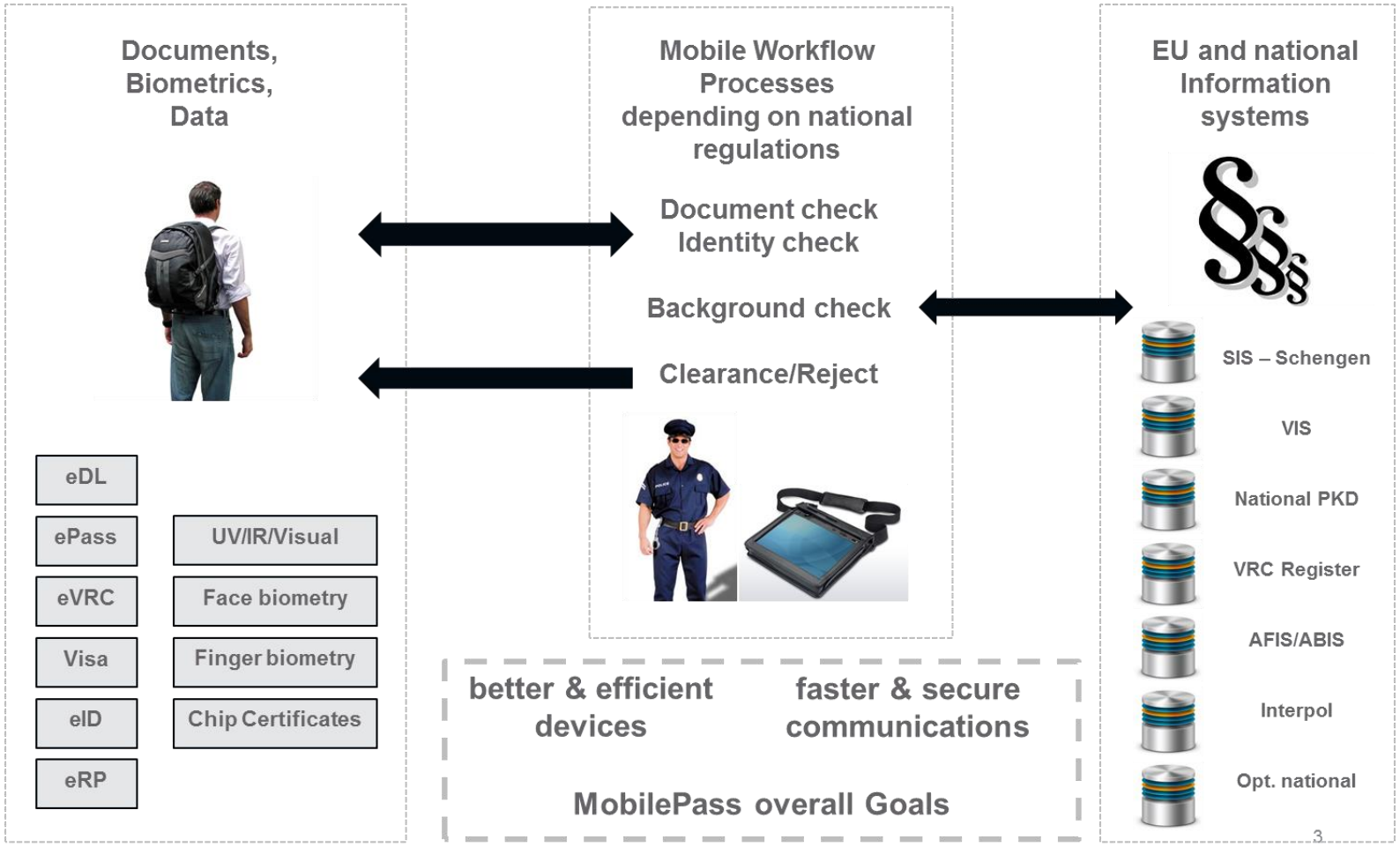
- University and Research Centers
  - AIT (Embedded systems, Architecture on mobile devices)
  - FhG (2/3D Capture and image enhancement)
  - UC3M (Identification technologies, Fingerprint Biometry, standards and evaluations)
- SMEs
  - Regula (Fullpage Passport Reader)
  - ITTI (communication systems)
  - 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

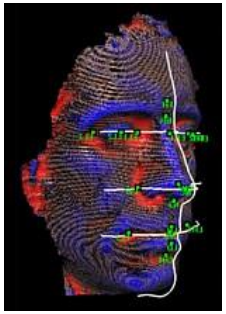

Documents, Biometrics, Data
Mobile Workflow Processes depending on national regulations
EU and national Information systems
Document check
Identity check
Background check
Clearance/Reject
eDL
ePass
eVRC
Visa
eID
eRP
UV/IR/Visual
Face biometry
Finger biometry
Chip Certificates
SIS – Schengen
VIS
National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

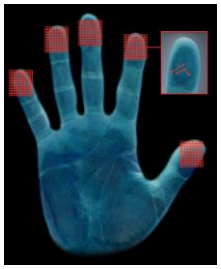
Status now

- 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:

AUSTRIAN INSTITUTE OF TECHNOLOGY





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

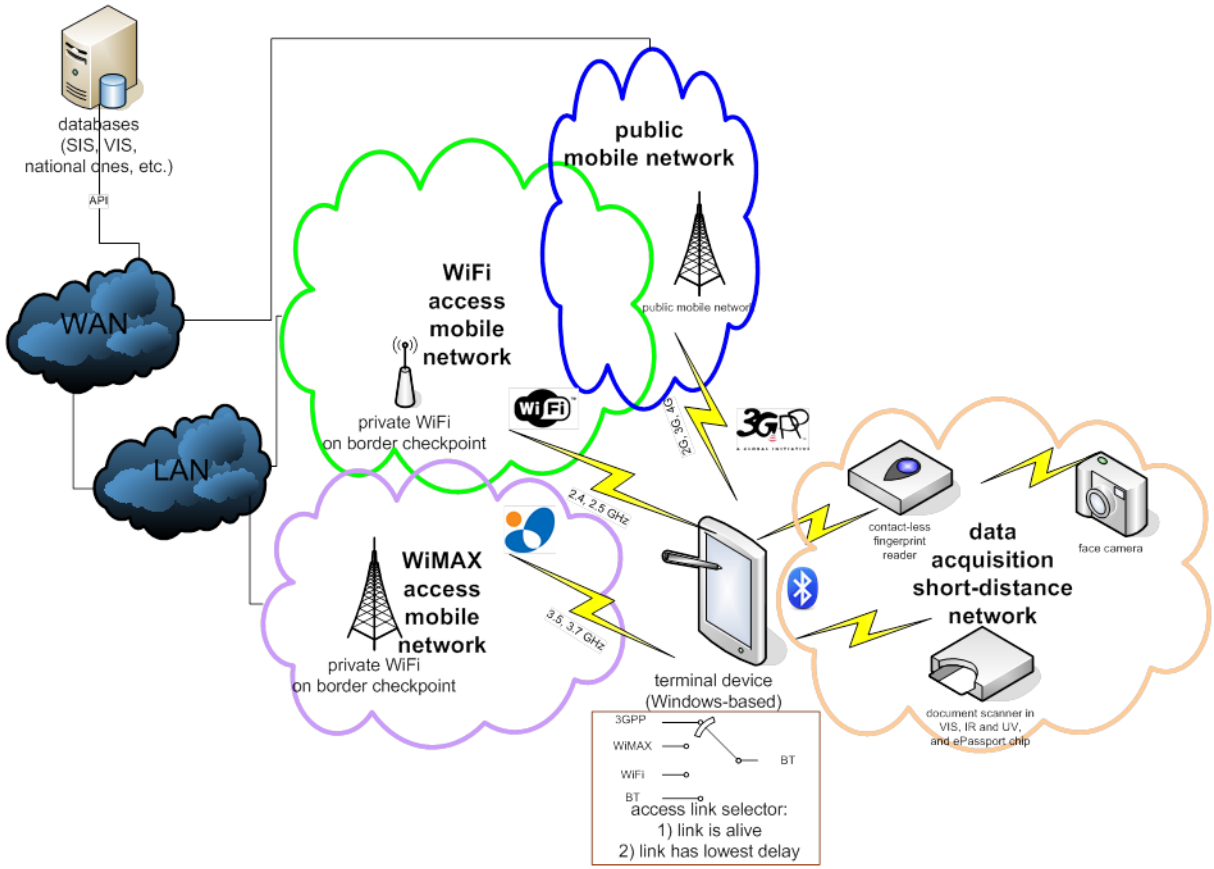
Display,
Communication &
Control Unit

Fullpage passport
scanning

Fingerprint capture unit

Vehicle Identification
Number

Device Connectivity



Pipelined Operation

Traveller 1
Read MRZ
Read ePassport (NFC)
Start database query
Wait for database results
…
…
…
Results available
Traveller 2
Read MRZ
Read ePassport (NFC)
Start database query
Wait for database results
…
…
…
Results available

Traveller 1	Traveller 2
Read MRZ	
Read ePassport (NFC)	
Start database query	
Wait for database results	Read MRZ
…	Read ePassport (NFC)
…	Start database query
…	Wait for Database results
Results available	…
	…
	…
	Results available

Pipelined Operation
(advanced device GUI capabilities)

Travellers Name	MRZ	eMRTD	SIS	Interpol	VIS	Fingerprints captured	Face captured
Mr. Test Sample 1	✔	✔	✔	✔	✔	✔	✔
Ms. Test Sample 2	✔	✔	⌛	✔	✔	✔	✔
Mr. Test Sample 3	✔	✔	⌛	⌛	⌛	✔	✔
Mr. Test Sample 4	✔	✔	⌛	⌛	⌛	⌛	⌛

AIT Austrian Institute of Technology

your ingenious partner

D.I. Bernhard Strobl
Thematic Coordinator Intelligent Camera Networks
Department Safety & Security
AIT – Austrian Institute of Technology
bernhard.strobl@ait.ac.at
+43 664 815 78 42