

# FastPass

## A reference system for next-generation ABC systems

Dr. Markus Clabian

AIT Austrian Institute of Technology  
Senior Engineer, Coordinator FastPass

# Motivation

## Challenges :

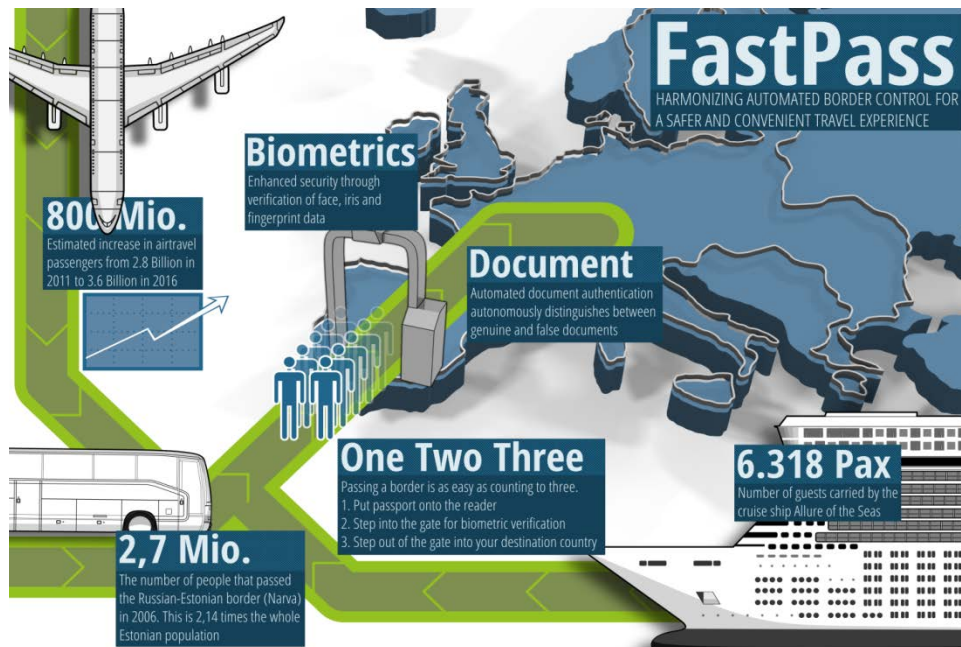
Passenger flow

Requirements on  
the border control process

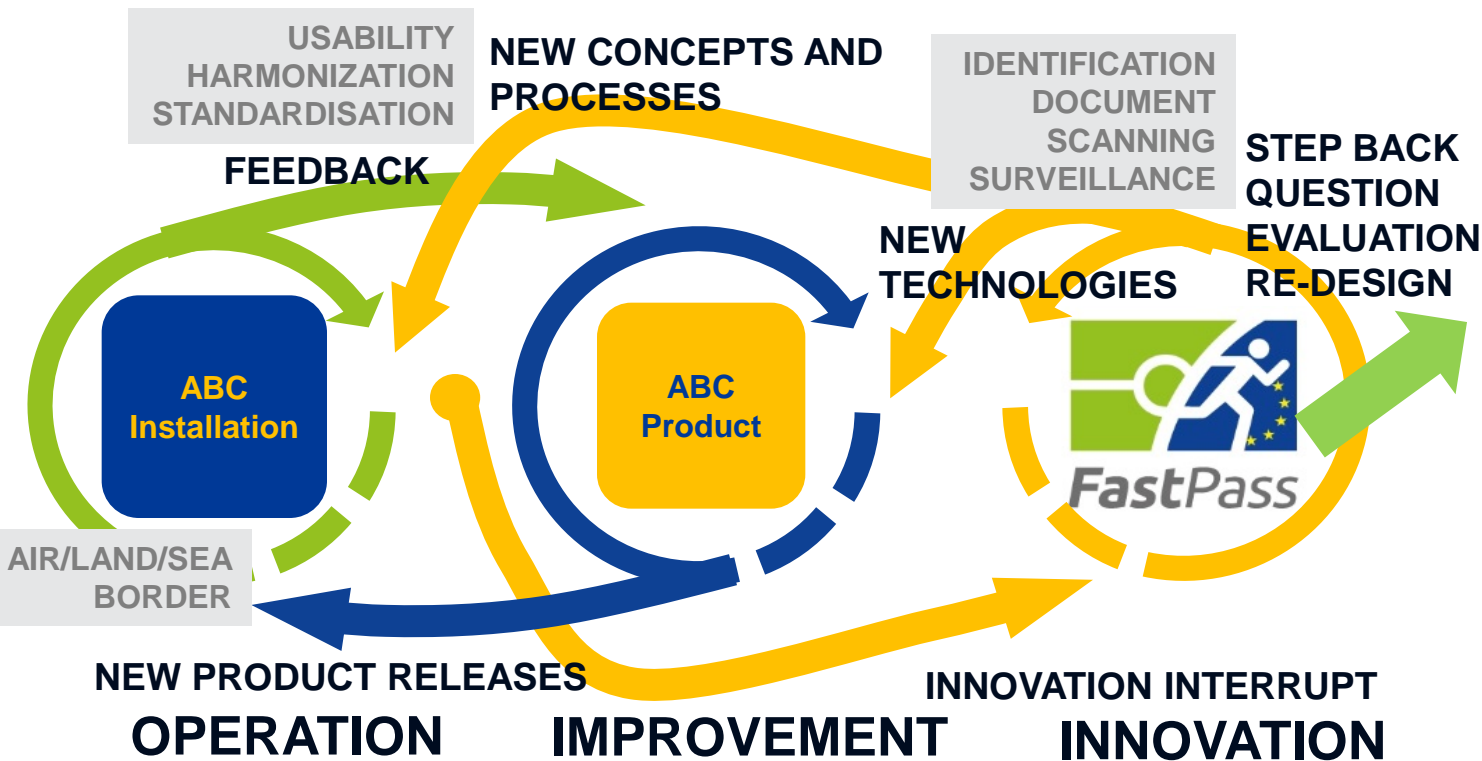
System risk assessment

Harmonization

Variety in usage



# Science to solution – Expected outcome



**Funded by EU 7FP**

**27 partners**

- 3 border authorities
- 4 infrastructure operators
- 11 industry partners
- 5 applied research centers
- 4 universities

**Coordinated by  
AIT**

# FastPass Objectives

## Integration with EES and RTP

Extend usability to  
TCN

Evaluate the value  
of RTP for EU  
citizens

## Harmonized ABC Usability

Usage of passport  
scanners

Usage of kiosks

Instantaneous  
„Go Through“

Usage of  
Fingerprint

## Supporting Innovative Border Crossing Concepts

Airborder:  
Comparison of  
classical method  
with kiosk biometric  
token

Landborder:  
Process  
with/without  
registration

Cruise ship:  
Enhance nominal  
list with biometric  
information

## Architecture Based on Innovative Technologies

Reference  
Architecture with  
open interfaces

Advanced  
Technology  
Modules (Passport,  
Identification, Video  
Surveillance)

Security evaluation

## European cooperation

Liason with  
commission, EP,  
Frontex, eu-LISA,  
FRA

Liason with other  
European  
Research Projects

Liason with industry

Liason with BG  
authorities



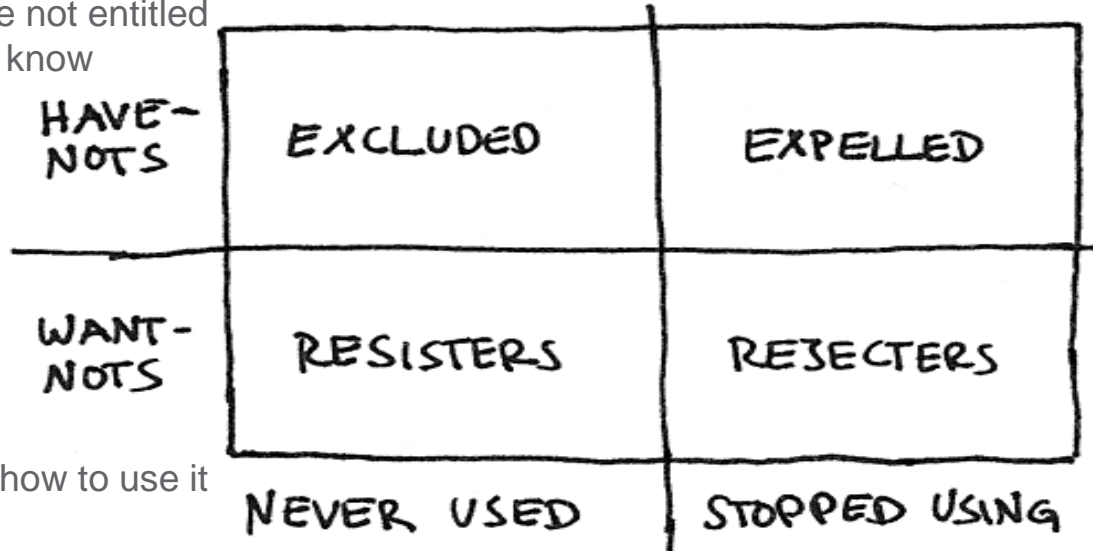
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## Non-Users of ABCs

8% say, they are not entitled  
4% even don't know



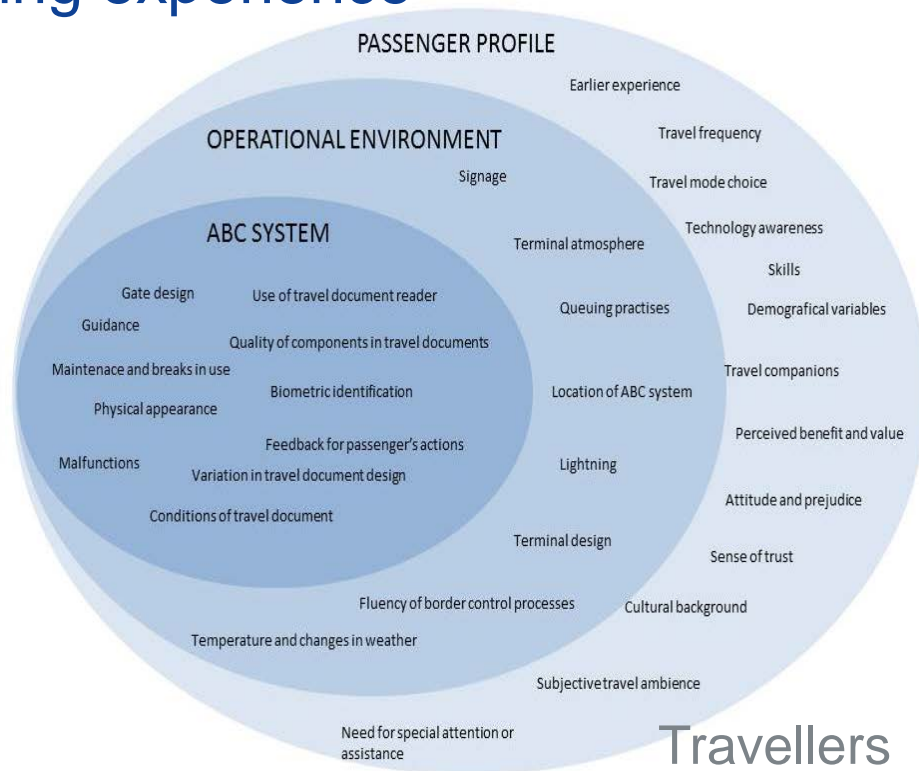
3% prefer manual control

26% don't know how to use it

Matrix illustration of the taxonomy of non-use as described by Wyatt, Thomas and Terranova (2002).

## Largest group (57%) are the ,Unawares‘

# Factors affecting experience



**Border guards**

**Travellers**



# Most common challenges in use of ABC

## Passenger

- Lack of awareness:
  - ABC concept in general
  - Possibility to use ABC
  - What is necessary to use ABC
- Challenges in use:
  - When to enter/exit the gate
  - How and where to insert the passport
  - How to behave during the face capturing phase

## Border guard

- Amount and quality of information:
  - Correction of passenger errors
  - Number, position and quality of information sources
- Poor ergonomics and uncomfortable working conditions
- Limited possibility for profiling

## Results in

- Inactivity/inefficient in use
- longer processing time
- increased number of no-match, rejection and retries
- reduced satisfaction
- reduced productivity.



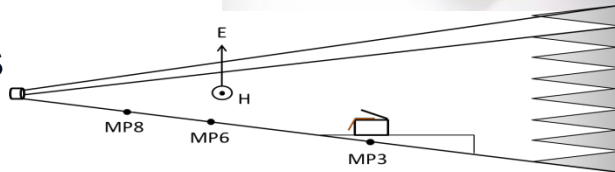
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## Advanced Passport Inspection

- **New methods for improved feature checking**
- **Robust to presentation attacks**
  - Device mimicking a passport
- **Passport Simulator as testing tool**
  - Black-box testing of whole ABC gate
  - Automated simulation of large quantities of passports
  - Testing robustness against the active display
- **Robust to IEMI**
  - Vulnerability of electronic document readers against High Power Electromagnetics



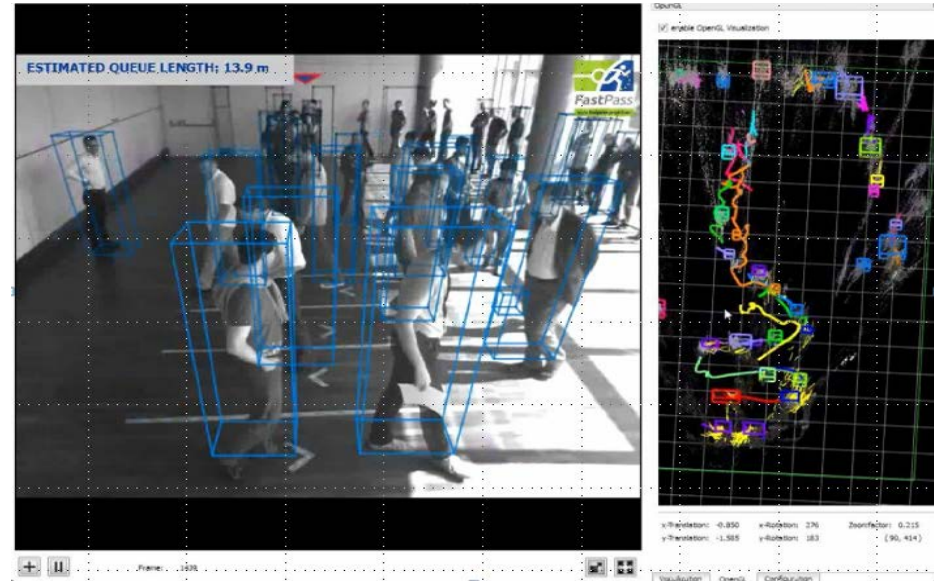
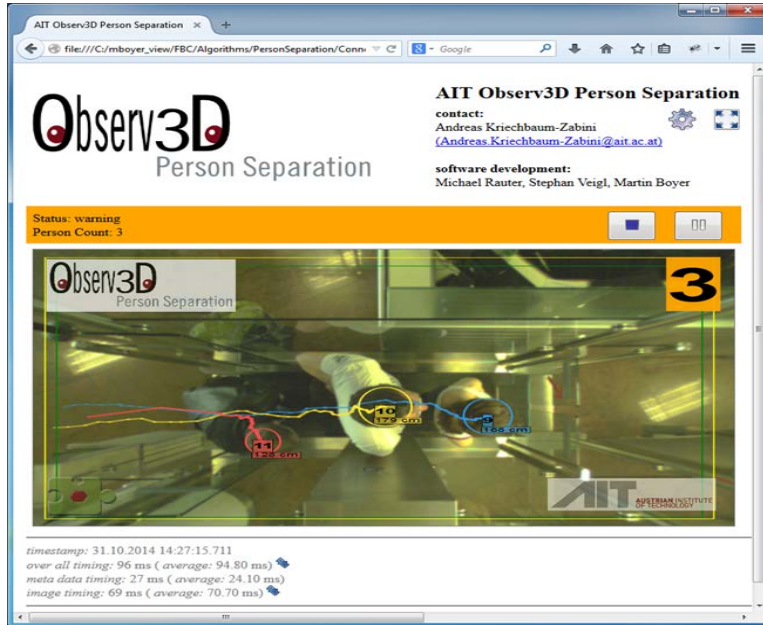




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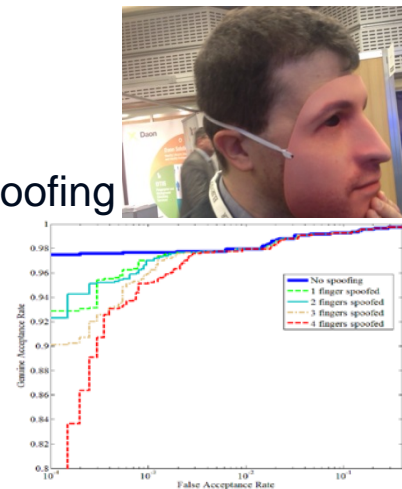
# Advanced video surveillance

- Person separation
- Queue analysis (length, dynamics)  
to get waiting time



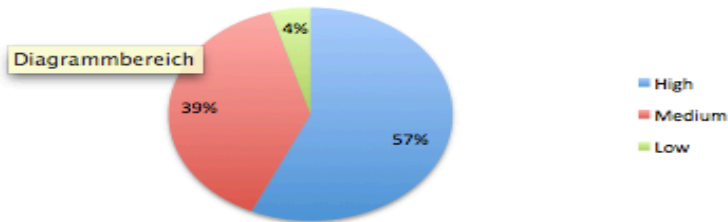
## Advanced Identification Methods

- **Mirror based system for instantaneous face capture**
  - Resistent to latest attacks on document scanner, to biometric spoofing
  - Risk Assessment, Security Assessed by dedicated methodology
- **Face antispoofing methods**
  - In cooperation and checked by Tabula Rasa (EU FP7)
- **Multi modal biometrics**
  - **Problem:** often a single spoofed modality can lead to false acceptance
  - **Target:** retain biometric security if  $m$  out of  $n$  fingerprints are spoofed
  - **Achieved:** Novel 1-Median filtering method to detect outliers, accepted at IJCB 2014 (the main biometrics research conference)

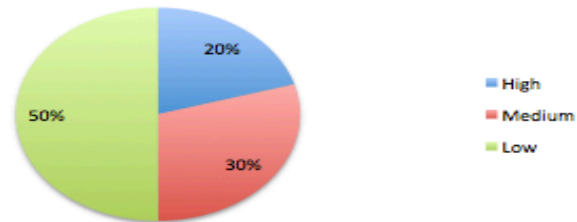


# Vulnerability analysis – Threat Visualization

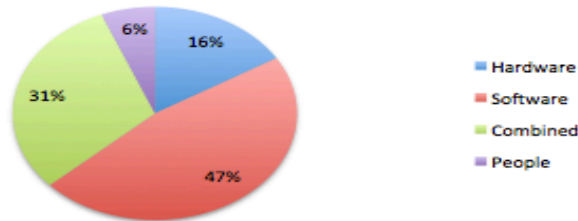
**Damage Potential**



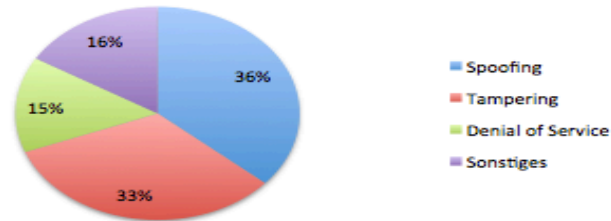
**Exploitability**



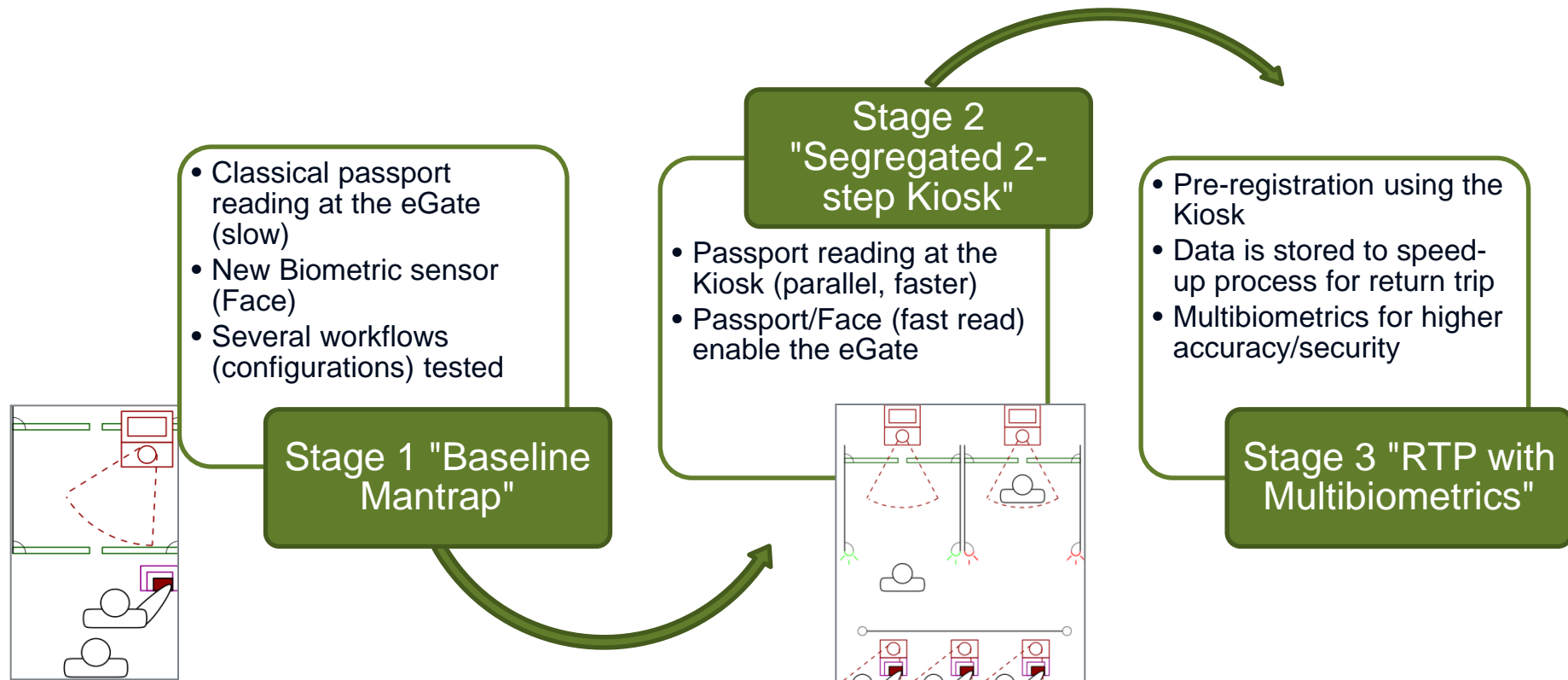
**Affected Components**



**Threat Category**

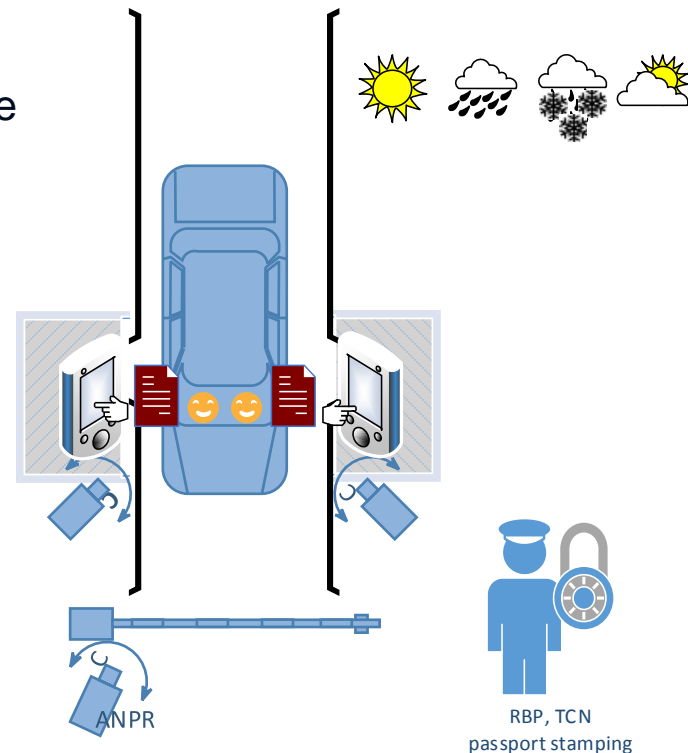


# FastPass – Air border scenario



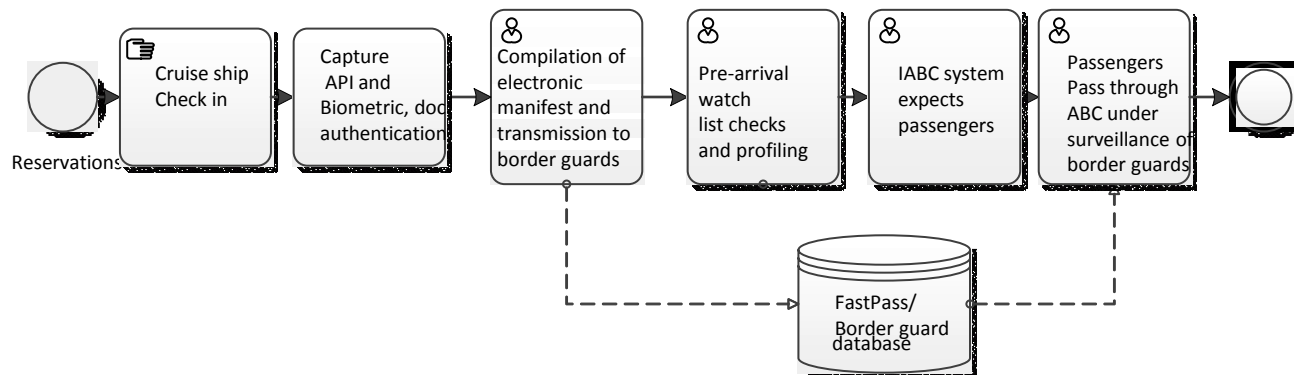
# FastPass – Land border scenario

- Land border traffic increasing steadily
- New processes and infrastructures needed to handle the traffic
- Both EU citizen and TCN
- Definitive portion of regular travellers
- No land border ABC in EU exists
- Existing land border solutions use RTP type solutions



## FastPass – Cruise ship scenario

- Carriers collect API from passenger travel
- Special provisions in the Schengen Borders Code for cruise ships
- Facial images are collected for ship management
- Cruise ship passengers are considered low-risk for *passport* control
- Cruise ship companies demand fast, flexible and convenient disembarkation/re-embarkation (mission critical)





# FastPass – the system/technology, that

- **...is secure**
  - Resistent to latest attacks on document scanner, to biometric spoofing
  - Risk Assessment, Security Assessed by dedicated methodology
- **...you like**
  - UI developed with extensive feedback from different European border guards
  - Process and procedures developed with extensive evaluation from traveller groups
  - Respects privacy and data protection (Data protection impact assessment – DPIA)
- **...is harmonized – and shows new processes and scenarios**
  - ONE reference architecture serving many processes
  - First European solution for cars at land border with ABC
  - First solution for cruise ships
  - Real comparison of different approaches on an airborder crossing point



**FastPass**

## FastPass partner at PTF



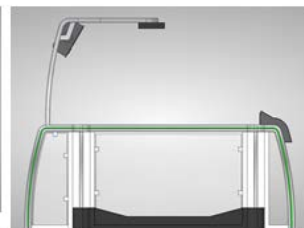
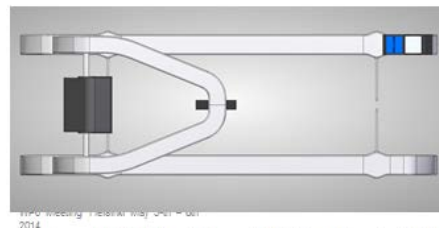
- **Regula**

- stand number is 6032



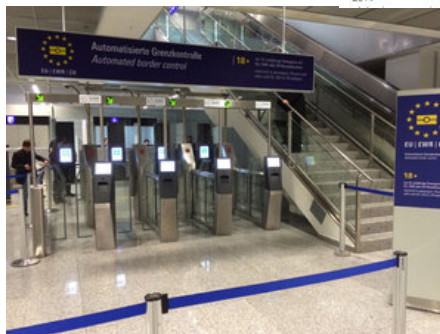
- **Gunnebo**

- stand number is 3060



- **Secunet + Magnetic**

- stand number is 6065



# Thank You !

## Contact information

[www.fastpass-project.eu](http://www.fastpass-project.eu)

Email: [FastPassCoordinator@ait.ac.at](mailto:FastPassCoordinator@ait.ac.at)

