University of Reading

H2020 PROTECT

Pushing boundaries of identity: aiming to prototype contactless, free-flowing border control systems using advanced but appropriate technology

[redacted]

ITTI sp. z o.o.

European Commission

Introduction

PROTECT – **P**ervasive and Use**R** F**O**cused Biome**T**rics Bord**E**r Proje**CT**

Duration: 3 years
Start: 1st September 2016
Budget: 5M€

- To build an advanced biometric-based person identification system that works robustly across a range of border crossing types and that has strong user-centric features
- A balanced consortium: technical suppliers, academics, government agencies, border control experts and stakeholders, representing a breadth of experience

Consortium

10 partners from 6 countries

Academic research

University of Reading

UNIVERSITÄT SALZBURG

UNIVERSITÉ DE NAMUR

WAT

Applied research

EURECOM

Industry

VERIDOS
IDENTITY SOLUTIONS

Consultancy

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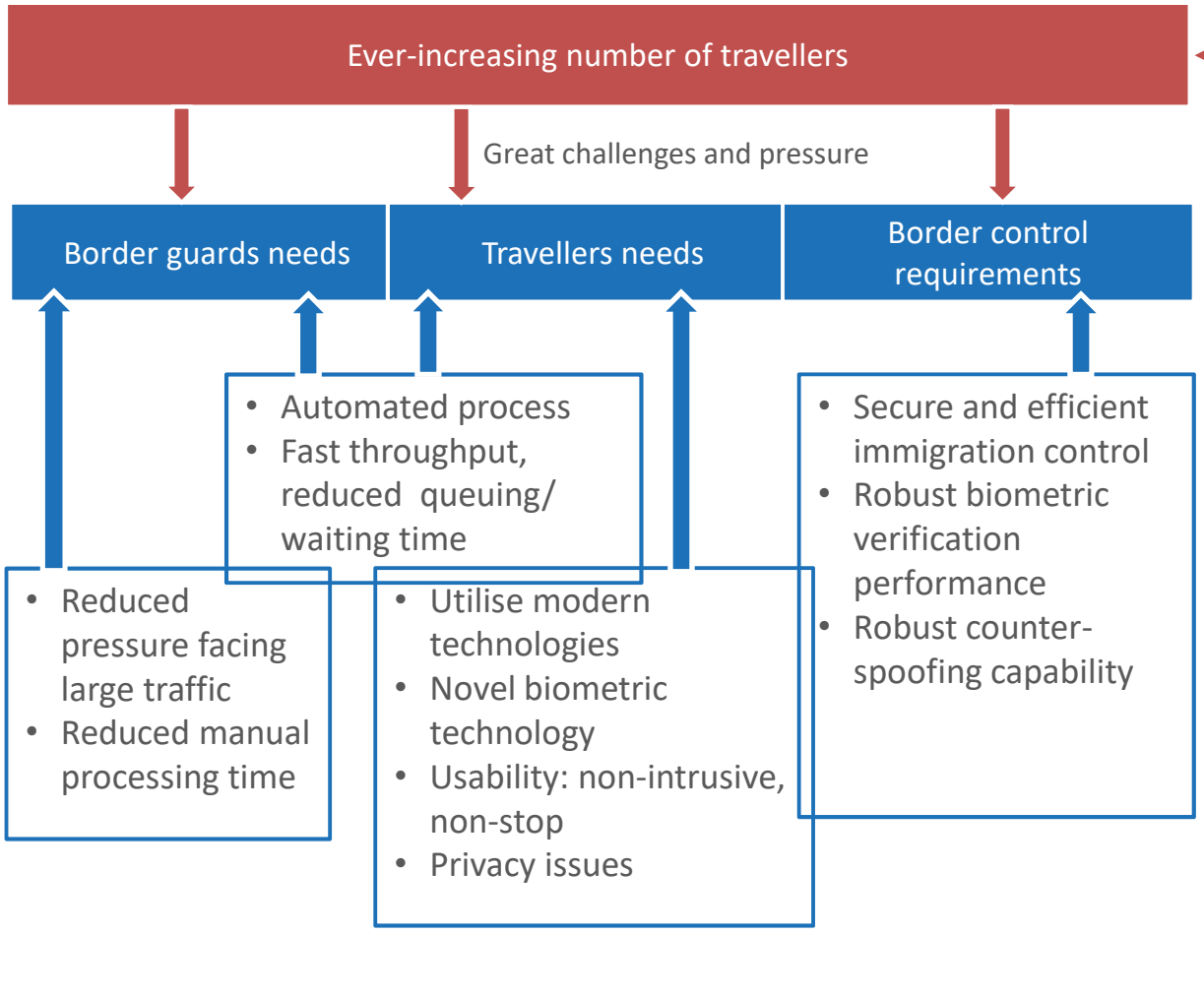
Intrepid Minds
The art of the possible

End users

Home Office

Motivation



EC estimated that by 2025:

- 302 border crossings and 76 million Third Country National (TCN) travellers,
- 55% increase from 2014

Technology innovation needs:

- Overcome current challenges/limitations
- Facilitate future demands
- Novel biometrics
- More secure, fast verification process

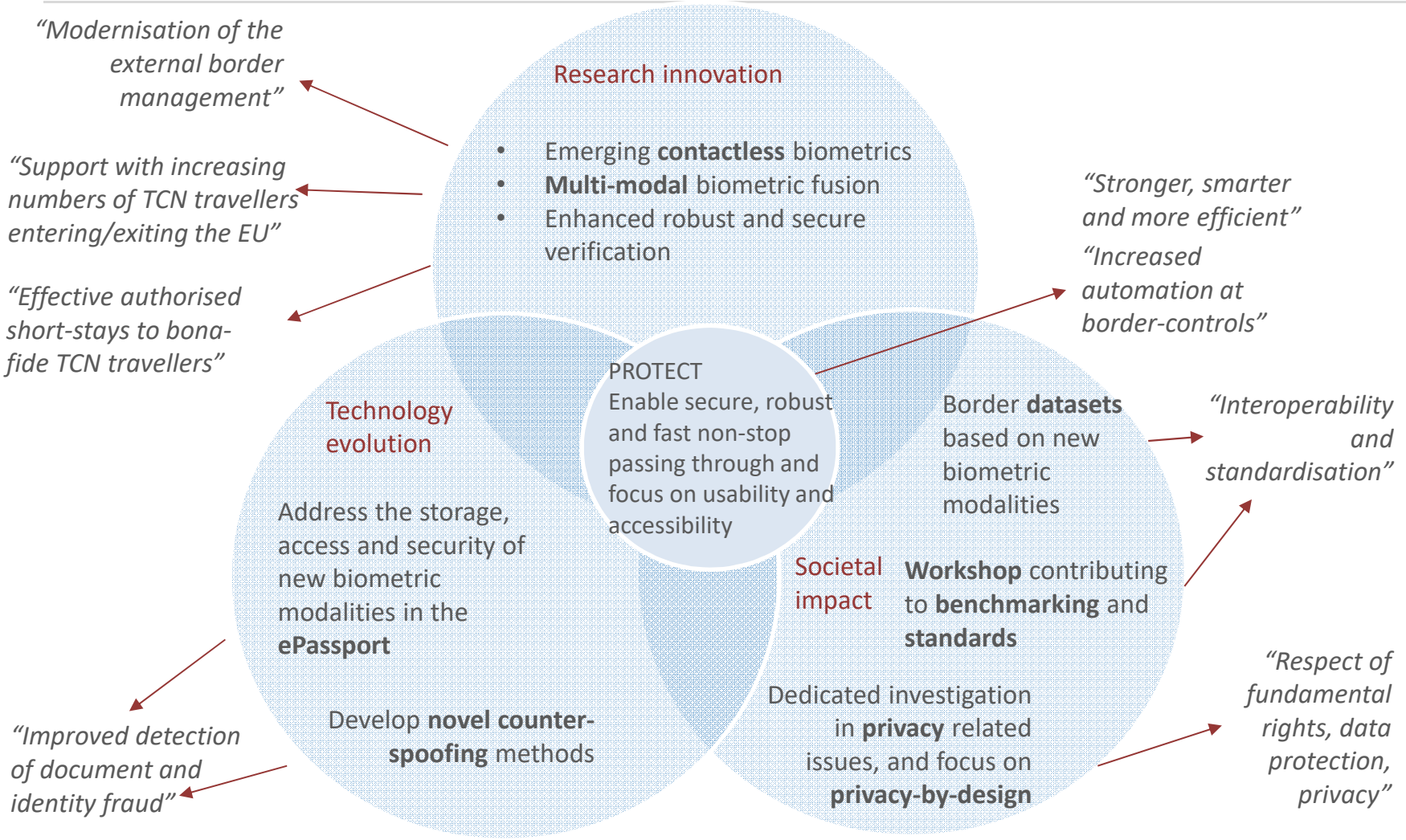
System-wide needs:

- Privacy issues not yet addressed properly
- Standardisation
- Interoperability
- User-centric

PROTECT to answer

- Biometrics and related technology innovation to facilitate crossing of EU external frontiers
- Optimisation of security, effectiveness and integrity of the immigration control
- How non-intrusive can we make identity confirmation systems for the border?
- How fast and usable can we make these systems?
- What are the limits of the use of these technologies in terms of cost-effectiveness and human rights?

Close link to Smart Borders Package



High-level objectives

1. Research current and emerging biometric technologies and methods for promising alternative technologies to those mandated by ICAO in order to break the constraints presented by those modalities.

2. Prototype concepts developed as a result of PROTECT research in a safe and controlled environment but using real locations with live subjects – to prove their security, accessibility and acceptability.

3. Offer the research, specifications and experience from the prototypes to European border and law-enforcement agencies, to European technology suppliers, having first established the legal and social propriety of such initiatives

S&T objectives

Research and innovation

Contactless biometric sensor suite	Performance	Privacy and ethical aspects	Prototype, evaluation and demonstration	Datasets and standardisation
1. Enable pervasive, minimally-intrusive, rapid and usable identity confirmation systems at borders	2. Improve accuracy and reliability of person verification	3. Investigate and handle legal, ethical and societal issues regarding biometric technology application	4. Provide a demonstration of enhanced biometric verification at two different border-crossing types	5. Produce benchmark datasets and contribute to standards

Scenario 1 – Biometric corridor

Concept

A sensor network configuration that spans a corridor performing reliable person identification while the travellers are ‘on the move’

- Lightly supervised multi-modal contactless biometric sensor network
- Research and development of emerging contactless biometrics
- Enable non-intrusive, non-stop robust and rapid passing through
- CCTV-based tracking of travellers to limit number of biometric templates to match against

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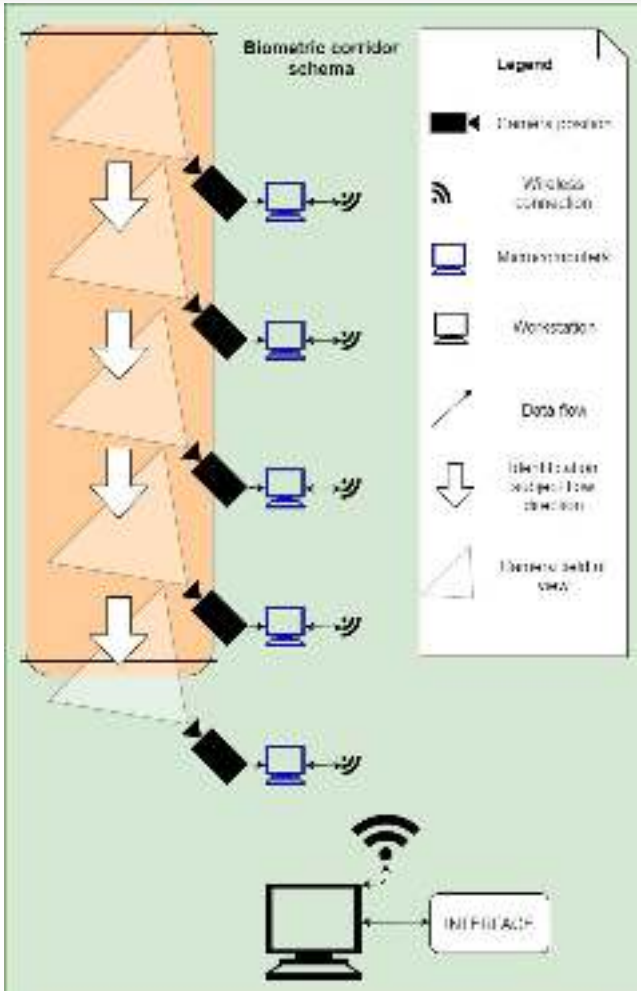
On the move biometric recognition

The solution and concept

- „On the move” person identification/verification system
- Comprising network of sensors, pre-processing layer and data fusion
- Heterogeneous sensors for robustness, accuracy and anti-spoofing
- Both physical and behavioural biometric features included in the identification pattern
- The system can be easily expanded by additional sensors and/or biometrics

Prototype System - Overview

- A network of sensors concept
- Robust and stable communication between the system components
- Service-oriented and modular architecture in order to ensure system scalability and expandability



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Prototype System – Biometric Corridor

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Scenario 2 – Mobile devices

Concept

Utilisation of traveller's mobile devices to perform biometric template storage and transmission to enable fluent identification process and analysis of potential for usage of mobile device sensors for biometric data acquisition

- Modernise travel experience utilising rapid innovation and adoption of smartphone technologies
- Use Bluetooth/NFC to alert a biometric system
- Use smartphones to capture data (biometric/document)
- Passenger position in the corridor (e.g. iBeacon)

Scenario 3 – ePassport/e-Security

Concept

Greater exploitation of data held within next-generation future travel documents, to enable storage and access of other/enhanced biometrics in the ePassport chip

- Research new ways of providing biographic and biometric data to the verification system
- Research in new access and transmission modes to electronic passports to increase efficiency
- Research new technologies to enhance storage capabilities
- Enforce data security and privacy while enabling data transmission over greater distances by using technology like Wi-Fi or Bluetooth Low Energy

Demonstration and evaluation

Field trials at two end user sites:

- Medyka **land border crossing:** between Poland and Ukraine (TBD)

- An **air or sea border crossing** site in the UK to be determined during the project execution in consultation with UK Home Office