Objectives

BODEGA project will investigate and model Human Factors in border control to provide innovative socio-technical solutions for enhancing border guards’ performance of critical tasks, support border management decision-making, and optimize travellers’ border crossing experience.

BODEGA will develop a PROPER toolbox which integrates the solutions for easy adoption of the BODEGA’s results by stakeholders in border control.
Human Factors

“The scientific discipline concerned with the understanding of the interactions among humans and other elements of the system and the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance.”

https://www.iea.cc

Ergonomics helps harmonize things that interact with people in terms of people’s needs, abilities and limitations.
Field studies

- 7 Countries
- 4 Border types
- 14 BCPs
- ~100 Interviews and/or observations
- Traveller interviews and observations
A Decision-making challenge

BORDER CHECKS
Art. 8 SBC
(Regulation 2016/399)

Persons with the right of freedom of movement (EU/EEA/CH)

Third Country Nationals

Verify VALIDITY of travel doc (including visa/residence permits)
Verify AUTHENTICITY of travel doc (including visa/residence permits)
Verify ELIGIBILITY (examination of entry/exit stamps)

Verify IDENTITY on the basis of the travel doc
Verify IDENTITY on the basis of the travel doc

Verify point of departure and destination (supporting documents)
Verify PURPOSE of stay (supporting documents)
Verify possession of sufficient means of subsistence
Verify person is NOT A THREAT to internal security, public policy, intl relations, public health (KNOWN)
Verify person is NOT LIKELY TO JEOPARDIZE internal security, public policy, intl relations, public health (KNOWN + UNKNOWN)

TRAVEL DOCUMENT
ELIGIBILITY
IDENTITY
PURPOSE
THREAT
Model of organisation: Interaction

- In manual check

Main results
- Team work
- Direct interaction with travellers and documents
- Tools (scanner/database check) integrated in the activity
- Tight interaction with management
Model of organisation

- With eGates

Main changes on the model of organisation:
- New stakeholders in the organisation
- No direct contact with travellers (only remote vision) and documents
- Team work/work in pair
- Interaction/co-habitation with other stakeholders
- Impact on management (techno provider)
Part of a broader mega trend - Digitalisation with automated processes and self-service
HF issues

Social and cultural environment
Legal environment
Organisational environment
Border Guard
Performance
- Decision making
- Human error
- Customer service

System Performance
- Facilitation
- Security
- Cost-effectiveness
- Fairness
- Well-being

Operational environment
Task
Technology & Tools
Border guard

Workload
Motivation
Skills
Trust
Situation awareness

Border Guard Performance

HF issues
Human factors to support future effective and efficient border checks

Optimised performance: the process and technology development and implementation fully support the first line work and decision-making

- Change management
- Indicators development
- Control Processes
- Tools and equipment
- Resources, skills
- Decision support tools

- Intelligent analysis
- Situational awareness
- Risk and threat analysis
- Innovative interactions between technology and Human
- Ergonomics
BODEGA Traveller UDL Framework

Context

Technology

Affective Engagement

Pedagogy

After the traveller has passed the border control

At the precise moment the traveller is being controlled at the border

When the traveller arrives to the BCP and before being at the border check

At home or in a hotel while preparing for the trip knowing they will cross a BCP

UDL=Universal Design for Learning
TOOLS

BODEGA DSS
Decision-Support System for Border Guards managers to assess the potential impact of improving different human factors in a Border Crossing Point.

BodeGame
Simulation type education game running in web-browser. BodeGame was created in this project as proposal for using games in the education of border guards.

PASS
PASS is a hybrid card game about border crossing. You can challenge your friends into a card game anywhere you want or test your knowledge about border crossing with the digital online stories.

Identity Verification with Fingerprints
In the Border Control Process, fingerprints are being used to perform identity verification (i.e. inspect travellers' identity), based on fingerprints stored on electronic travel document or databases (i.e. the Visa Information System), and thus allows for precise and fast identification of travelers.

HMI Design for Mobile Border Control Solutions
In the Border Control Process, a border guard has to perform multiple checks on a traveler. These include identity verification (based on the photos/fingerprints) stored on a travel document, or based on fingerprints stored in a central database like the VIS), background checks (i.e. via accessing policing databases like the SIS or Interpol databases).

Checklist for utilising e-learning in border guard training

RECOMMENDATIONS, GUIDANCE AND OTHER DOCUMENTS

Human factors recommendations
under construction

Technical recommendations on border guard equipment
under construction
Thank you!