iBorderCtrl: Intelligent Portable Control System

FLYSEC event, Brussels, 28 June 18

About iBorderCtrl

Project Grant Agreement No. 700626

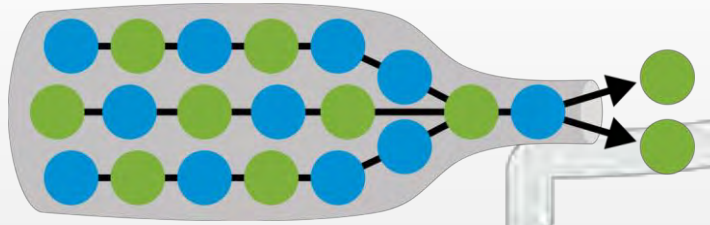
Budget: 4.5 M Euro
Grant: 4.5 M Euro

Start: 1 Sep 2016 (M1)
End: 31 Aug 2019 (M36)

13 Partners, 9 Countries

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 700626.

Problem & Implications



Bottleneck

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THE PHENOMENON: The large-scale population movements of 3nd country nationals to EU.

THE PROBLEM: The **large volume** and high intensity land border crossings **with invalid documents and identifications of travelers, vehicles and freights**.

Invalid Docs

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THE IMPLICATIONS:

- **Long Waiting** time (Arrival-Leaving BCP)
- Long Control time (Start-End Check)
- **Unplanned & High Workload** (H.R Utilization)
- Current Technology Gaps (Tech Utilization)
- **Limited Qualitative** checks (Reliability)
- **Uninformed travelers** prior to arrival (Information)
- **Illegal crossings** & entries to EU countries (Security)

Invalid Identifications

Year	Land border passengers in Schengen area	Average for land border
2015	90 575 281	104 460 269
2016	110 337 008	
2017	112 468 517	

The Project - Core Objective

The iBorderCtrl project

- Relies on a multitude of technical innovations that would enable a more robust and efficient land border control platform.
- introduces the concept of a two-stage border control procedure, as well as the concept for Schengen bonafide travellers.
- employs existing and proven technologies as well as novel ones (interoperable architecture) to empower border agents
  - ***increasing*** the ***accuracy*** (sensitivity- ability to identify problematic crossings that should be halted, and specificity – ability to identify valid crossings)
  - ***efficiency*** (throughput while reducing the average per traveller cost) of border checks.

The Project - Core Objective

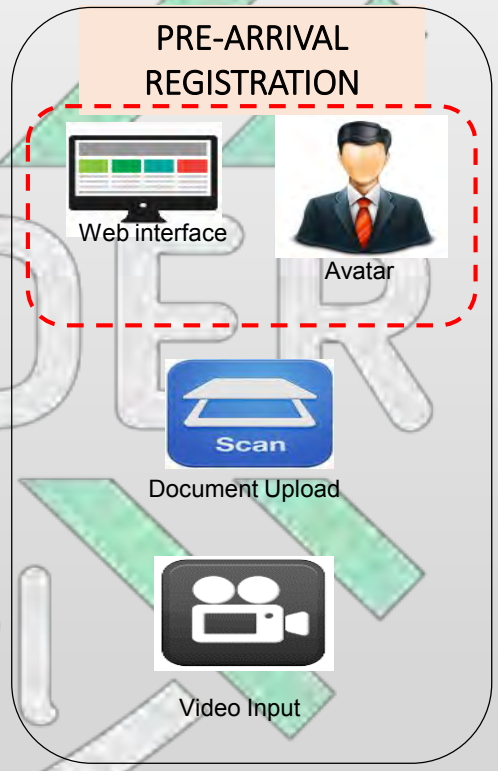
The key aspects are

- the utilization of novel and existing ***technologies***
  - ***before the border crossing*** by the travellers,
  - ***at the border crossing*** by providing a ***wearable platform*** that empowers -through technology- the border guard,
- a ***centralized advanced analytics*** platform that controls the secure collection, flow and analyses of data that helps both increase the accuracy at the individual crossing level as well as prediction of events and resource utilization,
- a ***risk-assessment*** routine to take advantage of the different steps/checks outcomes, to finally classify travellers in terms of risk, thus supporting the decision-making of the border guard.

→**Speed** up the crossing for valid travelers, highlighting travellers that must be further checked

→Beyond biometrics - **quantifies the probability of deceit**

Pre-arrival Registration Phase

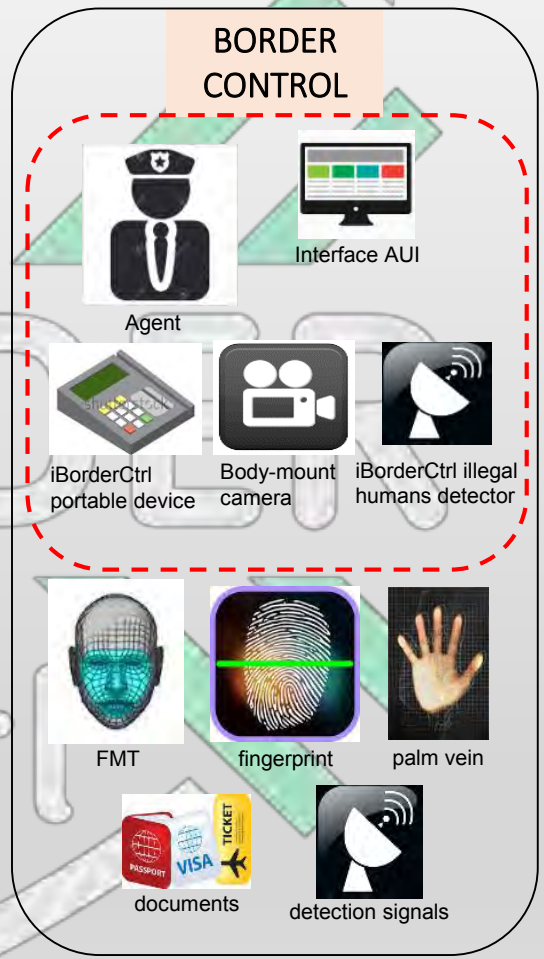


Enables the automation of deception detection, document authentication, external database correlation, face matching and advanced risk modelling methodologies.

Travelers self-report at the comfort of their own home through an **on-line system**

- collects all relevant data
- helps them to fulfil their obligations and get familiar to entry conditions and their rights
- allows for all automated checks (more computationally expensive) to take place in advance,
- provides an early risk assessment
- Gives feedback to the traveller (acceptance/ refusal, limited information)

Border Crossing Phase



- Provides key technology to the border guards introducing mobility concept (also for existing installations)
- Supports agents in both an overall evaluation of the traveller, as well as highlighting specific potential issues the agent should focus on at a per traveller case.
- Enables re-evaluation of documents and registered information needed to cross the border in their original hard form
- Use of advanced biometric technologies for high-risk travellers.
- All analytic results from each technology are brought together to identify risks

Intelligent processing of information

iBorderCtrl collects a wealth of information at the traveller level

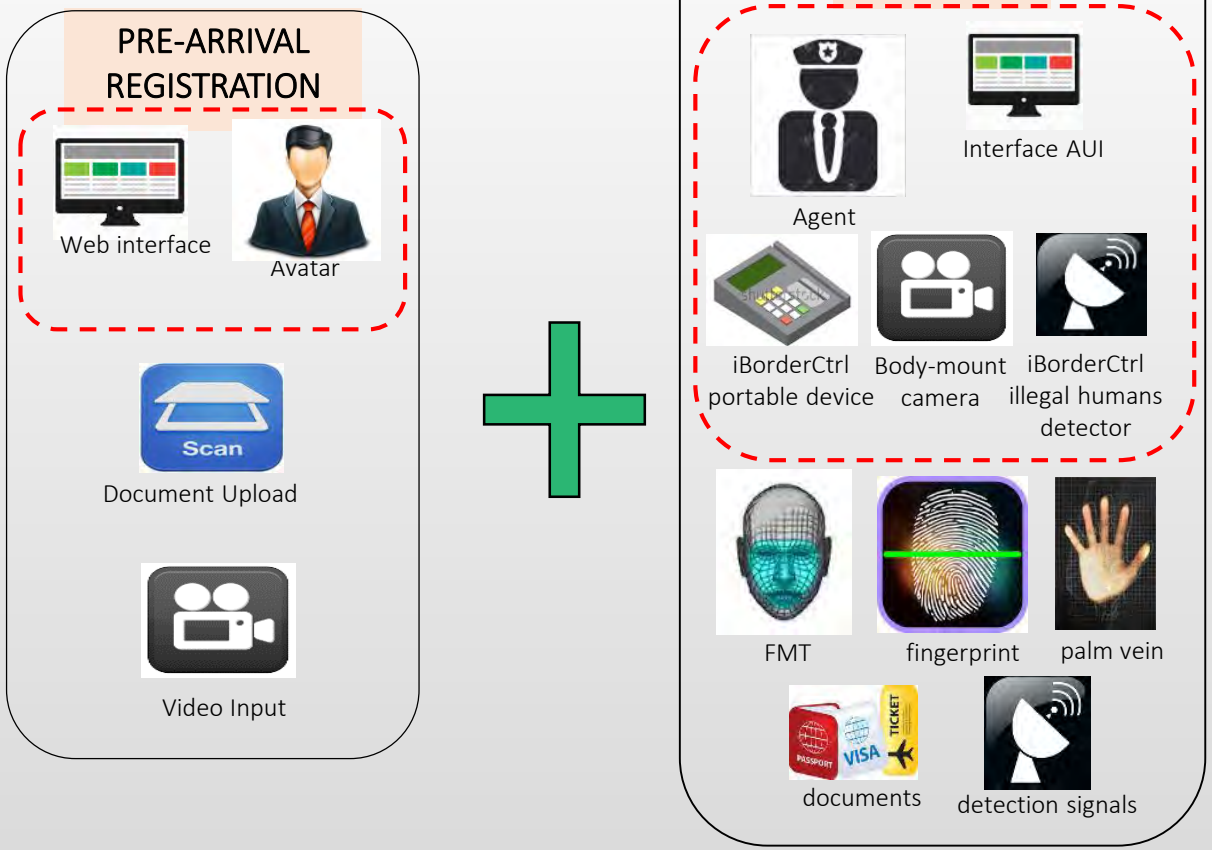
- at the two stages and through links to publicly available data,
- This information is analysed (risk scores) for different aspects of travellers → overall risk probability model for each traveller

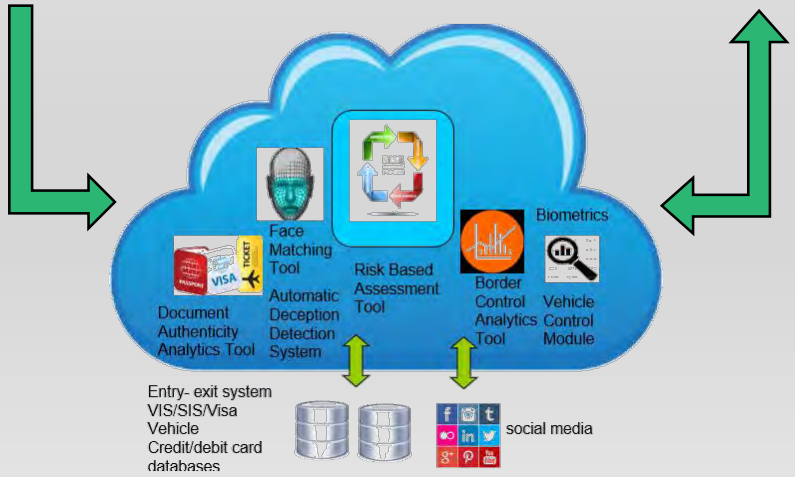
(declutter the information provided to the agent by compressing all data into meaningful actionable risk scores that help the agent at the border target any follow up checks and questioning to the traveller)

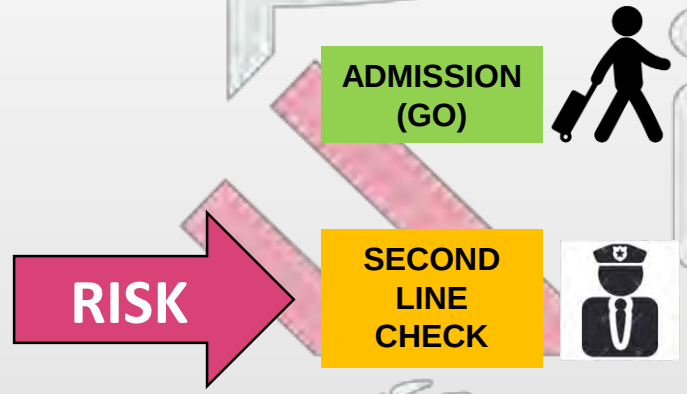
- Risk models are meta-analysed and improved

(allow for their automated customization to specific crossings and traveller characteristics, for prediction of trends in general, and expected average risk at the population level for future events)

iBorderCtrl Concept





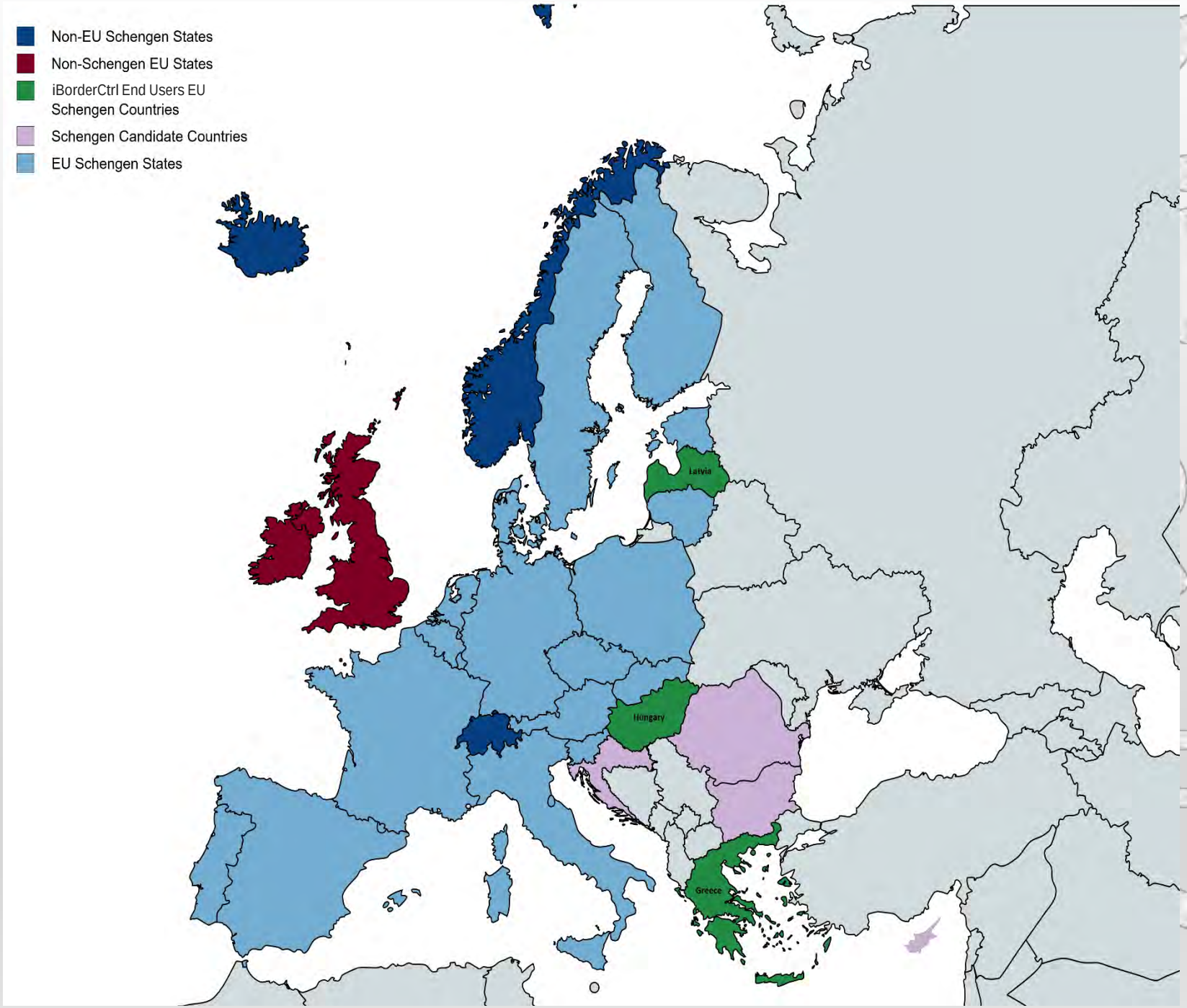


Pilots Experiments

Diversity of challenges and operations

Geographical interest (key entrances to Schengen zone)

- **Hungarian Border**
- **KEMEA- Greek borders**
- **TRAINOSE-Greek railway**
- **Borders of the Republic of Latvia**

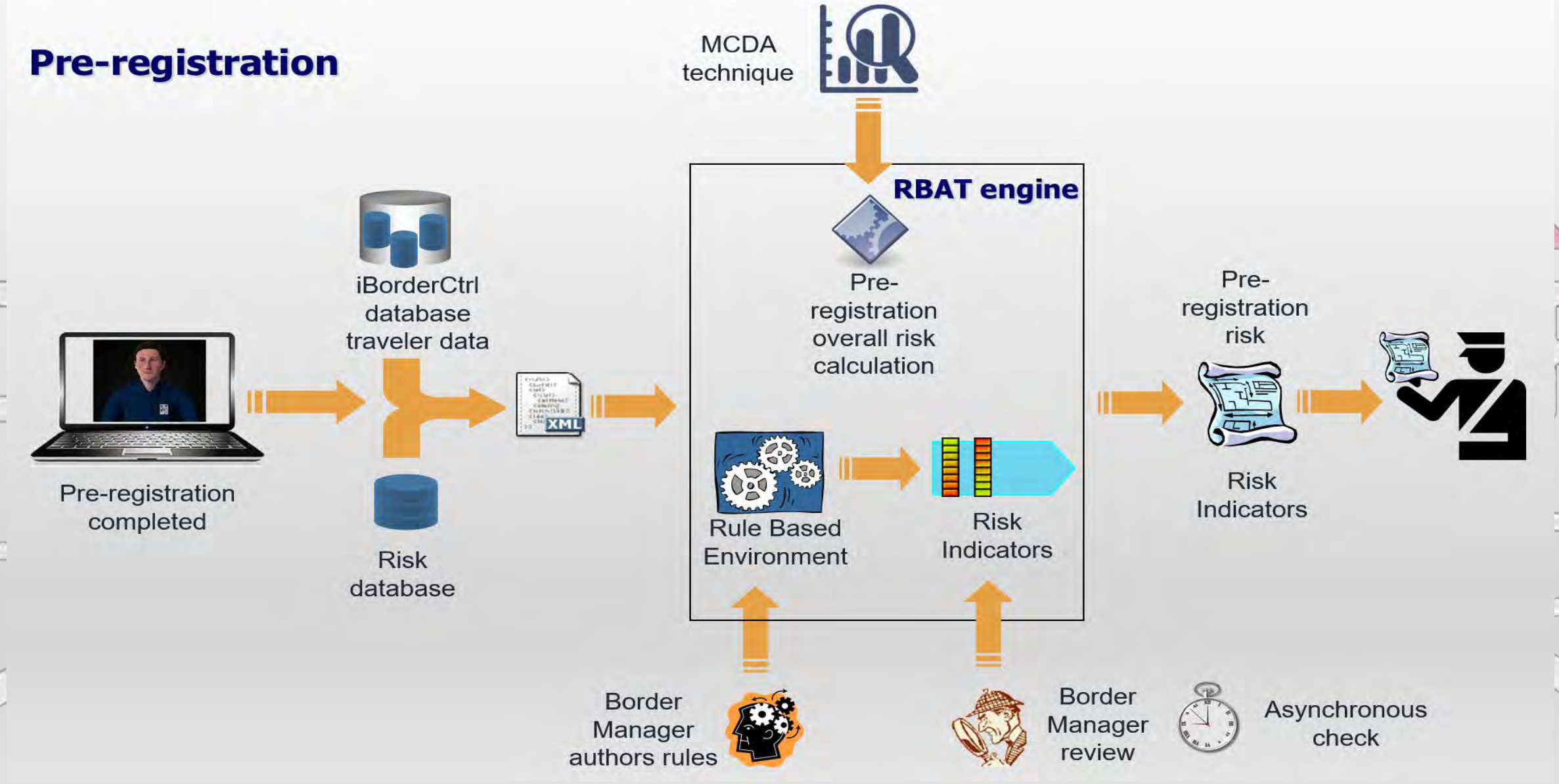


Novel concepts – Risk based screening

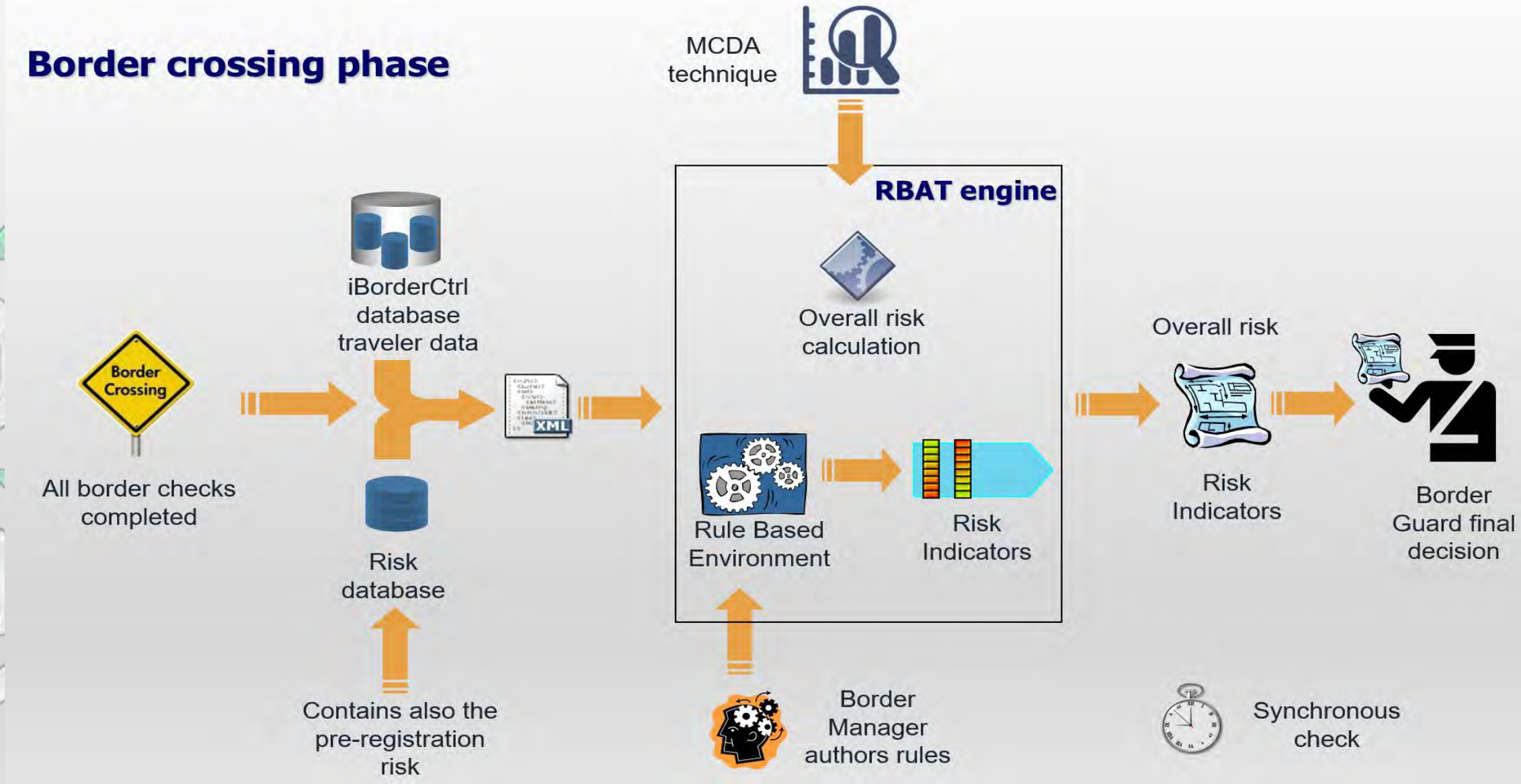
Risk-based Assessment Module (RBAT) has a two-fold functionality:

1. **Weight Based Algorithm**:
   - Calculates the **overall risk** of each traveler crossing the borders based on individual risk scores produced by other iBorderCtrl modules/tools and the weight of each tool
2. **Rule Based Evaluation**:
   - **Gets feedback by the Analytics module** on potential risk patterns (examining the history of records and travelers' data)
   - Enables Border Managers to **author rules** based on previously identified "Risk objects" and traveller's data in order to automatically **produce risk indicators**
   - **Issues alerts** to the Border Guards to pay extra attention in specific cases or/and travelers.

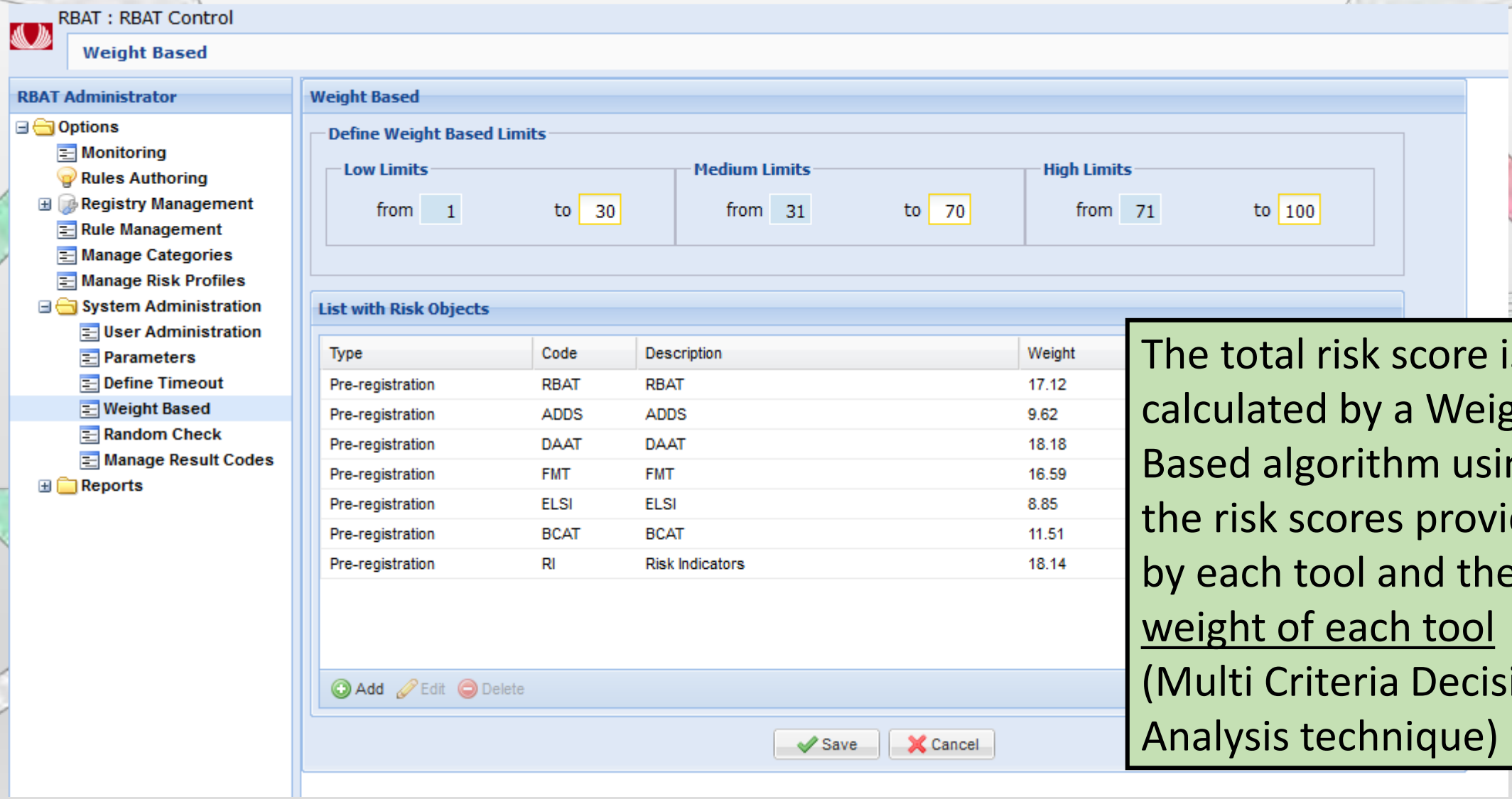
RBAT - Preregistration



RBAT - Border Crossing

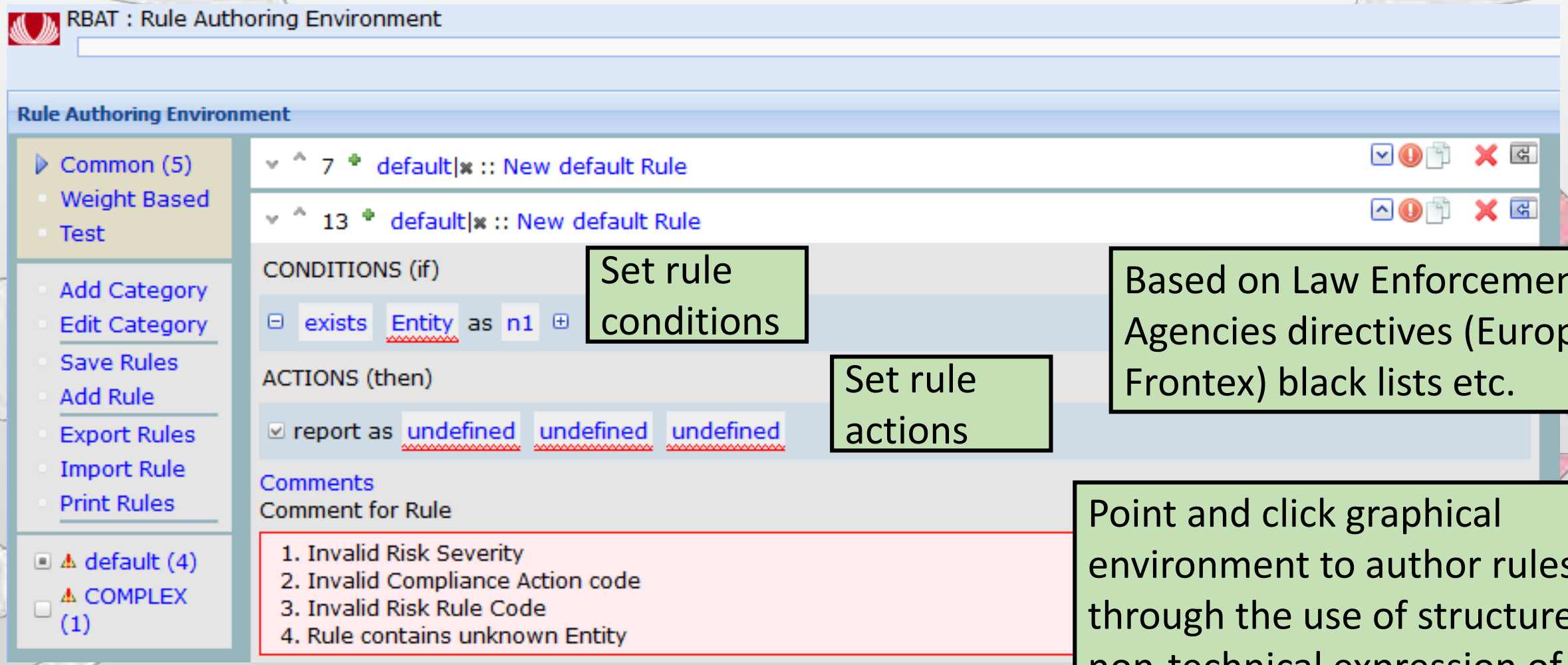


RBAT - Weight based definition



The total risk score is calculated by a Weight Based algorithm using the risk scores provided by each tool and the weight of each tool (Multi Criteria Decision Analysis technique)

RBAT - Rule authoring environment



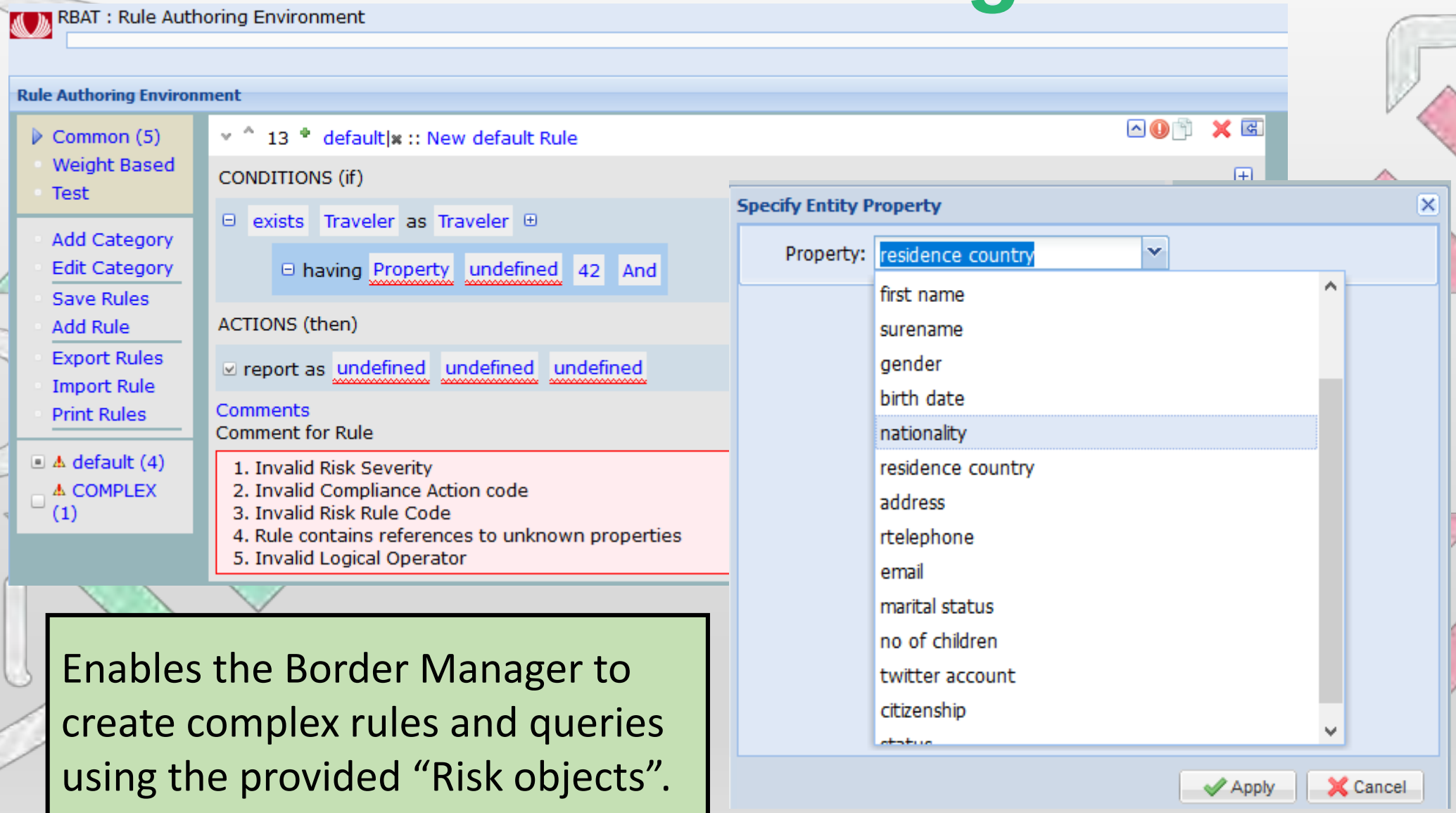
Set rule conditions

Set rule actions

Based on Law Enforcement Agencies directives (Europol, Frontex) black lists etc.

Point and click graphical environment to author rules through the use of structured, non-technical expression of logical interactions between “Risk objects”.

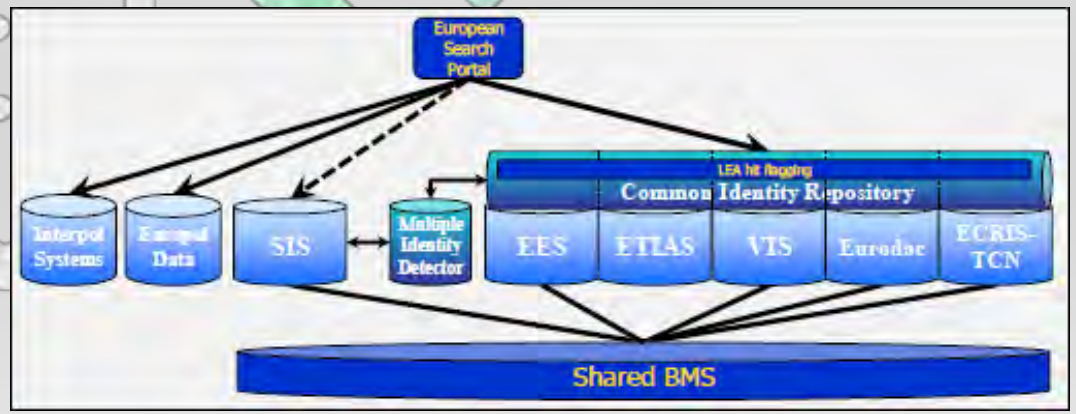
RBAT - Rule authoring environment



Enables the Border Manager to create complex rules and queries using the provided “Risk objects”.

Novel concepts – Connection with EU Directives and Strategies

- **Interoperability of EU systems for security, border and migration management**
  - (EC proposal in COM(2017) 794 final – December 2017
    - Related to EU systems for police and judicial cooperation , asylum and migration
  - (EC proposal in COM(2017) 793 final – December 2017)
    - Related to EU systems for border and visa
  - Technical components operational by 2020/21
  - Data sharing in line with access policies for each EU system



- *introduce interoperability among the existing SIS, VIS, EURODAC, Interpol's Stolen and Lost Travel Documents (SLTD) database, Europol data and the future EES,ETIAS, ECRIS-TCN*
- *Message exchange among systems will be standardised based on the Universal Message Format (UMF) currently in scope of the Europol's SIENA application*
- *Interoperability to be realised via four technical components*
  - A European Search Portal (ESP)
  - A shared Biometric Matching Service – BMS
  - A Common Identity Repository – CIR
  - A Multiple Identity Detector (MID)

  Additional element: Central Repository for Reporting and Statistics (CRRS)

Novel concepts – Connection with EU Directives and Strategies

- **Entry/ Exit System (EES)**
  - (EC proposal in COM(2016) 194 final – April 2016)

- **European Travel Information and Authorisation System (ETIAS)**
  - (EC proposal in COM(2017) 344 final – June 2017)

- *EES*
  - Collection of identity/ travel docs for non- EU nationals planning short state
  - Aimed in facilitation of border crossings of bona fide travellers and identification of over-stayers
  - Adopted by parliament in November 2017
  - Scheduled operational: 2020
  - Participants 21 MS (Denmark still to decide) plus Switzerland, Norway, Iceland, Lichtenstein

- *ETIAS*
  - Intended to pre-travel security and irregular migration screening of visa-exempt non-EU nationals
  - Proposal currently under on-going co-decision procedure (introduced in EU Parliament in October 2017), expected adoption early 2018.
  - Participants 25 MS (Denmark still to decide) plus Switzerland, Norway, Iceland, Lichtenstein
  - Scheduled operational: 2020

Impact

- ✓Shorten passengers queues - Reduce travelers waiting time - **Increase throughput** (Traffic)
- ✓**Reduce** Border Gate Control **time** for crossing **passenger/vehicle/train** (Time)
- ✓Plan & Reduce Workload – **Free up manpower to cope with illegal migration** more effectively (HR Utilization)
- ✓Fill the existing Technology Gaps (**Tech Utilization**)
- ✓**Perform** objective & Qualitative with automated and **technology based checks** (Reliability)
- ✓**Inform & Advice travelers** prior to arrival **discouraging also any illegal intentions** (Online Travelers Information Guide)
- ✓**Fewer Illegal crossings**, entries and transports to EU countries (Security)

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