



Migration monitoring and preparedness at EU level

Multi-stakeholder cooperation

*Deep Dive “Migration 4.0” on
“Forecasting”
5 November 2020*

Building on the past...

EU Integrated Political Crisis Response (IPCR) web platform: allows for the exchange of information, including the ISAA report and facilitates the gathering of information for the ISAA reports through questionnaires

Integrated Situational Awareness and Analysis (ISAA): an **analytical report**, distributed to a **limited number of decision-makers and policy-makers** and produced weekly by the Commission and the EEAS. It analyzes **quantitative data on migration flows** and reports migration-related developments in the political arena to form a strategic overview of the current situation.

... with an eye to the future

New Pact on Migration and Asylum



Early warning and forecasting

Communication:

*„The effectiveness of response can be improved through **preparation and foresight**. This needs an **evidence-based approach**, to increase anticipation and help to prepare EU responses to key trends.“*

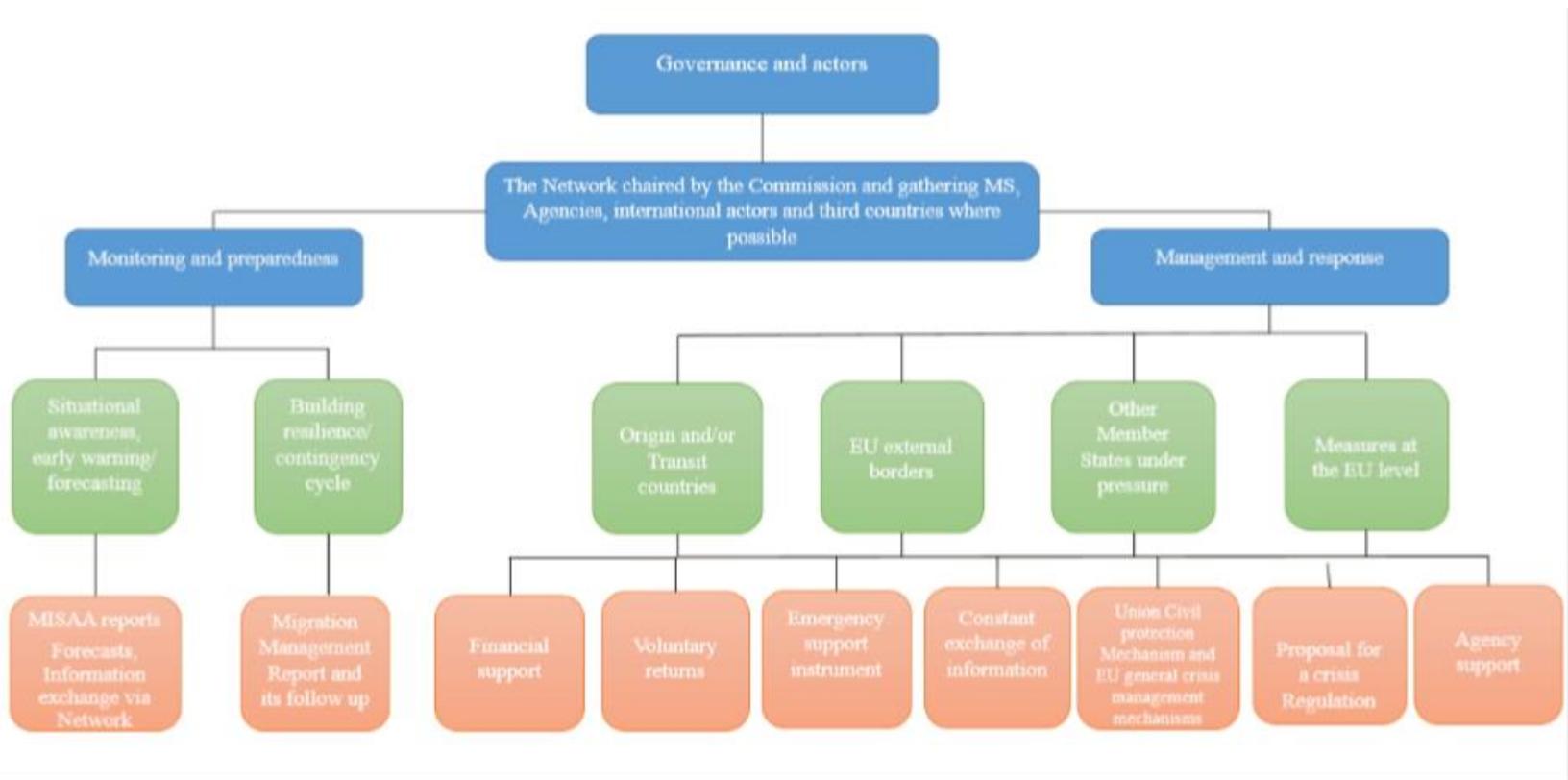
Migration Preparedness and Crisis Blueprint:

*“...to **help move from a reactive mode to one based on readiness and anticipation**. It will bring together all existing crisis management tools and set out the key institutional, operational and financial measures and protocols which must be in place to ensure preparedness both at EU and national level.“*

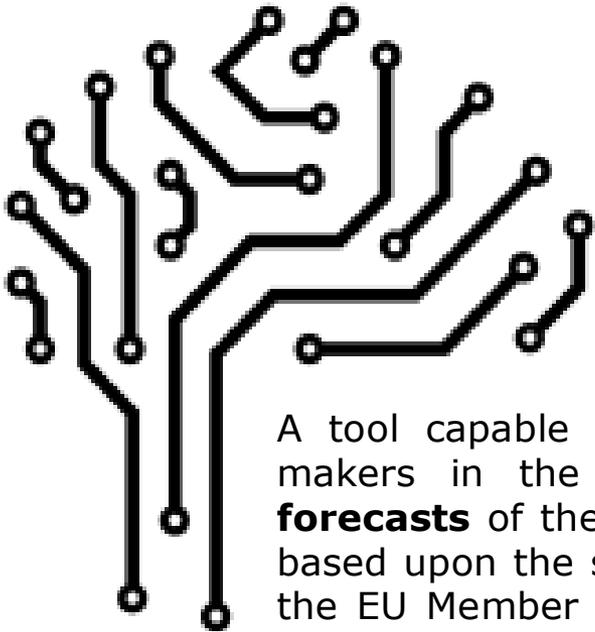


European
Commission

Preparedness and crisis management Blueprint



First steps for an integrated EU forecasting system



Feasibility study on a forecasting and early warning tool for migration based on Artificial Intelligence technology

A tool capable of supporting the work of policy-makers and decision-makers in the Commission and JHA Agencies by providing **better forecasts** of the irregular migratory pressure at the external EU borders, based upon the situation in countries of origin, transit and the situation in the EU Member States, in the short term (1-4 weeks) and medium-term (1-3 months).

Integrated EU-wide forecasting system

Principles

- One element of a complex package
- Multi-agency approach
- Well-defined objectives
- Awareness of the impact

Challenges

- EU institutional framework
- Broad consensus
- Combination of existing tools
- Actions to take

Study description

- Assess the feasibility of a forecasting and early warning AI tool for migration and the associated risks

General assessment - Assess the feasibility of developing an AI-based tool for migration forecasting for the Commission and EU Agencies, taking into account similar projects at the EU and national level.

Risk assessment - Develop a risk assessment related to the use of AI to feed into technical, operational and political considerations based upon standard methodology.

Legislative assessment - Identify gaps and weaknesses (legal and policy framework) at EU level.

Operational assessment - Assess the capabilities and capacities (personnel and financial), including availability, for implementing, running, managing and maintaining the AI tool.

Organisational assessment - Analyse possible organisational structures, taking the current organisational structure into account, for the successful incorporation of the AI tool.

Trustworthiness assessment - Assess the trustworthiness of the AI-based tool (human agency and oversight, technical robustness and safety, transparency, accountability).

- Submit evidence-based and practical recommendations
- Case – study approach: exemplify how the AI tool would work in practice

Research activities conducted so far

Inception Phase

- Desk and literature reviews
- Scoping interviews with relevant stakeholders in the Commission and EU Agencies and experts in AI and IT systems
- Closed- doors seminar
- Inception report



Interim Report

- State of play of the research after the initial desk research phase, the stakeholder interviews and the Closed-Doors consultative seminar
- A comprehensive summary of the preliminary findings and the initial recommendations
- A comprehensive mapping and initial assessment of traditional and innovative data sources



Final Report



General assessment

➤ Gaps, needs and priorities

- Variables related to **irregular arrivals at the EU external borders** in **various time periods**
- **Personal, identifiable data should under no circumstances be used**, need for accurate and timely data
- Improved **cooperation at the EU level on migration data sharing** and **accesses – reduce data fragmentation**
- Fill the **gaps in the quality of data sources, in the data reporting timeframes and in the data registration**
- For the AI-Tool to be useful, its immediate and end-users should have **multiple opportunities to provide feedback**
- Provide **extensive training** for policymakers and decision makers

➤ Comparative analysis of current AI tools

- No current migration forecasting AI tool exists. Existing AI tools are directed towards **operational preparedness**.
- There are **no data sources optimised for the types of prediction that the feasibility study is exploring**. This suggests that a more ambitious scenario for the AI tool would require investment in data sources explicitly structured to support it
- The **quality, frequency and timing of the data used in similar AI-tools**, especially those coming from open sources, often present challenges
- **Forecasts' timeframe**: the longest the period of time covered, the vaguest the prediction

➤ Comprehensive data source assessment

- **39 data sources** deemed as particularly relevant, and further analysed them based on their **content, scope, legal feasibility, relevance and other criteria**
- **The data sources were sorted into the three identified prediction categories A, B, and C**, each of which seeks to forecast different events in different locations, at different points in time along with migratory movements from the country of origin to the destination country.

General assessment

➤ General recommendations

- Need for **expert knowledge and training** of the AI tool to build the capacity of end-users if they are not analysts
- Need to build a **governance structure for operating and managing the AI tool** and information it would produce
- Need for a **quality monitoring and assurance system** to process the data coming in and out of the AI tool
- There may be a need for **enabling legislation** and almost certainly a formal definition of agency roles and responsibilities in relation to the AI tool. This framework should define access restrictions to the AI tool and information it produces, knowledge dissemination settings, hosting and management rights and coordination mechanisms
- Analytical and interpretation processes should provide for **contestability**. One particular challenge will be to create a process of **validating the accuracy of the AI tool's predictions**.
- Start early in **building the capacity of immediate and end-users**.

Operational assessment

➤ Scenarios for the operationalisation of an AI tool to forecast migration flows

Three scenarios need to be considered based on different levels of **functional availability**; **resources availability** (human and financial); **data availability**.

Low-level ambition scenario

- Reasonable option if the tool is integrated into a currently existing system
- Low performance and reliability
- Structured data

Medium-level ambition scenario

- Multiple models for each of the different predictions that would be required
- Pre-existing data management infrastructure into which the tool could be integrated.
- Structured and semi-structured data

High-level ambition scenario

- A whole tool that would include the whole
- Structured, semi-structured and unstructured data

➤ Challenges for the implementation of the AI tool

- **Alignment between all stakeholders** on the **scope of the AI tool** in terms of functionalities for each scenario
- Alignment between all stakeholders on the **responsibility for the AI tool management**
- Decide where to **host the servers**
- Decide who will be **in charge of the AI tool maintenance**.

Legislative assessment

➤ Existing legislative framework – preliminary findings

- The EU primary legislation does provide a **legal basis** for the AI tool in question, in particular, **Art. 77 of the TFEU but it might need to be expanded** further depending on the type of modelling the AI tool is intended to do.
- The development and operation of an AI forecasting tool by any of the **EU Agencies** should be aligned with EU primary legislation
- The adoption of the **New Pact on Asylum and Migration** pact might have an impact on the AI-tool.
- EU **secondary legislation** needs to be duly considered in the design of the AI tool's functionalities and algorithms

➤ Data sources and data types – legal considerations

- Statistical data ➡ risk of **discrimination, bias and violation of the right to asylum** and humanitarian protection
- News ➡ risk of **disinformation** and fake news, personal bias
- Analysis ➡ some of the identified data sources are of **limited dissemination** and require clearance
- Border-crossing related data ➡ variety of personal data, the data sets should undergo **anonymization**
- Social media ➡ publicly available but **not usable** for forecasting of migration flows
- Satellite photos ➡ **limited dissemination**
- Google Trend Index ➡ No legal considerations were identified

➤ Legal recommendations

- **Human oversight** is to be guaranteed, and **no fully automated decision-making will take place**
- The AI tool design **should be fair** as to fully comply with the fundamental legal principles of the EU
- The AI tool should support **appropriate accountability mechanisms** that allow for actions traceability
- The AI tool should provide **different access levels** depending on the role and clearance of the variety of potential users
- **Working arrangements** establishing the cooperation and information exchange between the relevant EU agencies should be far **more specific and definite**
- **Control/monitoring/oversight mechanism** to be put in place to ensure/guarantee the adequate and proportionate functioning of the tool

Organisational assessment

➤ Requirements for hosting the AI tool

• Operations:

- ✓ Data sources the AI tool will need to access, on what timeframe, and whether any of these data sources are listed as restricted
- ✓ Technical skills
- ✓ Legal framework - additional working agreements to facilitate data access and data sharing, especially if the AI tool will be operated jointly

• Analysis:

- ✓ Capacity to analyse the data produced by the AI tool, which requires migration expertise

• Dissemination:

- ✓ Familiarity with data-sharing regulations, especially in a context where sensitive and/or restricted data are being used, and a firm grasp of what information is needed by different stakeholders, including policymakers
- ✓ Capacity to present the output in different forms for different audiences

➤ Organisational recommendations

• Define the scope of the AI tool, its timeframe, and which data sources it could access

- Identify what **coordination mechanisms** would need to be in place, depending on the potential location of the AI tool and the data sources it would access
- Identify the **incentives for stakeholders to use the AI tool and cooperate** on its operation, including analysis and dissemination
- Develop a **governance structure for the AI tool** since there are synergies between different stakeholders already in place, such as information-exchanges and joint risk analyses, but the **frameworks and legal bases for governing an AI tool are still missing**

Risk assessment

➤ Risk classification

- Business
- Organizational
- Technology

➤ Risk magnitude of cost impacts

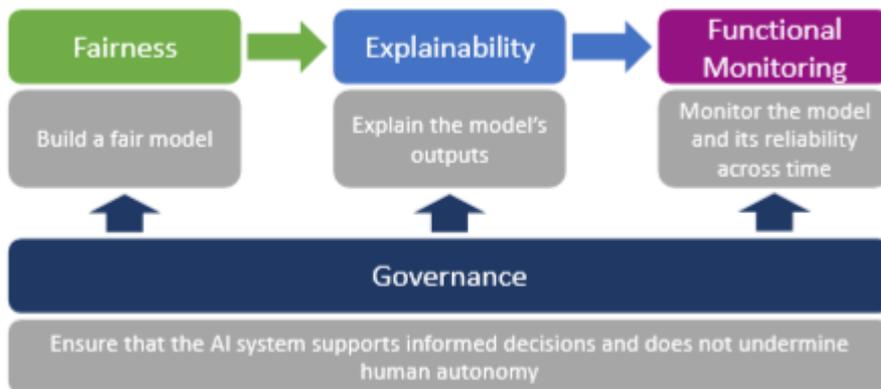
- **High impact:** infers **critical financial loss** that could result in more than one line of business leading to a loss in productivity and no return on investment
- **Medium impact:** infers a **minor financial loss** in a line of business and a reduced return on investment on the IT investment
- **Low impact:** infers a **minimal financial impact** on a line of the business' ability to deliver services and/or products

➤ Risk likelihood

- **Frequent:** likely to occur often and/or continuously over the course of a transformation cycle
- **Occasional:** occurs sporadically
- **Unlikely:** will probably not occur more than once during the course of a transformation cycle

Trustworthiness assessment

➤ Trustworthiness assessment framework



▪ **Fairness:**

The system should **ensure the data is not biased** against any particular attribute like nationality, race, gender, age or religion, otherwise, the algorithm would perpetuate discriminatory trends.

▪ **Explainability:**

The use of artificial intelligence explainability (XAI) enables users to understand and trust model predictions without contesting the model and/or tampering with its learning performance.

▪ **Functional Monitoring:**

Proactively detect the changes over time in the distribution of the input variables present in the training, test and production dataset

▪ **Governance:**

It is important for human oversight to be a fundamental element taken into account when designing it, and the development of the AI tool should be done with the idea of analysts being the ones dealing with the output of the AI tool before these are distributed to the end-users

Questions for the next steps

- 1. Levels of access:** In a scenario where the AI-Tool uses restricted data, could DG HOME envision the AI-Tool offering different levels of access to its outputs?
- 2. Scope to increase capacities:** Is there scope to invest in additional operational or analytical capacity to host the AI-Tool?
- 3. Hosting the AI-Tool:** Is there scope to invest in additional operational or analytical capacity to host the AI-Tool?
- 4. Data/information sharing:** Which coordination mechanisms are in place to share new data or information on migration trends with different operational and policy actors (within the EU, between the EU and Member states, etc.)? How frequently is information being shared through these mechanisms?
- 5. Existing tools:** How are existing risk analyses, e.g. ISAA reports, which share data on migration trends, used? Do they influence policy-making and operational decision-making, or are they more seen as an information-sharing tool?
- 6. Cooperation:** What is the incentive landscape among different stakeholders to share data and use the AI-Tool's outputs for daily policy and operational programming, bearing in mind their – sometimes varying – needs and preferences? Are there any concerns among these stakeholders about cooperating, especially where there might be overlapping mandates?
- 7. Ownership of information produced by the AI-Tool:** Who will own the information produced by the AI-Tool? How may these ownership influence requirements for additional working arrangements, as well as the willingness of stakeholders to invest resources (budget, staff capacity) to help design and operate the AI-Tool?



Thank you for your attention

**Situational Awareness, Resilience and Data Management
DG HOME**

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