



**EU
INNOVATION
HUB**

**ANNUAL REPORT
2023**

EU INNOVATION HUB FOR INTERNAL SECURITY ANNUAL REPORT

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The EU Innovation Hub for Internal Security Annual Report

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Contents

1. Introduction	3
2. The Innovation Hub's mandate	3
3. The Innovation Hub's resources	3
4. Summary of 2023 work – Base Tasks	3
4.1. Annual Event	4
4.2. Platform mapping report	4
4.3. Hub Team and Steering Group meetings	5
4.4. Topical activities.....	5
5. Projects.....	5
5.1. EU-coordinated Darknet monitoring to counter criminal activities.....	5
5.2. Accountability Principles for Artificial Intelligence (AI) used in the area of Freedom, Security and Justice: AP4AI.....	6
5.3. Study on High-Altitude Pseudo-Satellites	6
5.4. Technology Horizon Scanning on Key Enabling Technologies.....	7
5.5. Observatory report on encryption.....	8
6. Assessment of activities and the working model of the Hub.....	8
7. Conclusion.....	9

1. Introduction

This report provides a review of the progress achieved by the EU Innovation Hub for Internal Security ('the Innovation Hub') in 2023. The report was prepared by the Innovation Hub Team and is addressed to the Council's Standing Committee on Operational Cooperation on Internal Security (COSI) following endorsement by the Innovation Hub's Steering Group. This document is a retrospective report on the achievements of 2023; a description of the activities foreseen for the timeframe 2023-2026 can be found in a separate draft document entitled 'EU Innovation Hub for Internal Security – multi-annual planning of activities 2023-2026, including a detailed 'Draft Work Plan 2024 – addendum to the multi-annual planning of activities 2023-2026.

2. The Innovation Hub's mandate

In line with the Justice and Home Affairs (JHA) Council outcome of October 2019, the EU Innovation Hub for Internal Security was established by COSI on 18 February 2020. The Innovation Hub is a collaborative network of innovation labs. It is a cross-sectoral EU platform aimed at ensuring coordination and collaboration between all actors of the wider field of internal security. It is supposed to support the delivery of innovative cutting-edge products for citizens' security in the area of freedom, security and justice. The Innovation Hub should contribute to establishing a common innovation picture for internal security and promote the alignment of innovation and security research efforts across Europe.

The work of the Innovation Hub is coordinated by the Hub Team, which serves as the operational arm of the Hub. It is composed of representatives from the innovation labs or contact points of the JHA agencies – European Union Agency for Law Enforcement Training (CEPOL), European Union Agency for Asylum (EUAA), European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), European Union Agency for the Operational Management of Large-Scale IT Systems (eu-LISA), European Union Agency for Criminal Justice Cooperation (Eurojust), European Union Agency for Law Enforcement Cooperation (Europol), European Union Agency for

Fundamental Rights (FRA) and European Border and Coast Guard Agency (Frontex), together with the Commission (DG HOME and DG Joint Research Centre (JRC)), and the General Secretariat of the Council (DG JAI and the Office of the EU Counter Terrorism Coordinator (EU CTC)).

3. The Innovation Hub's resources

Throughout 2023, resources available for the work on the Innovation Hub remained limited. The Innovation Hub Secretariat at Europol in The Hague was composed of three (3) Europol staff members who were assigned to the Hub between 50 to 80% of their working time and two representatives seconded to the Hub Secretariat by eu-LISA (80%) and the French Police (50%). In 2023, eu-LISA remained the only agency that seconded a staff member to strengthen the Hub Secretariat, as requested by the Standing Committee on Operational Cooperation on Internal Security (COSI) in 2020.

The activities and work described in this annual report could not have been accomplished without the contribution from the Hub Team members who dedicated time to participating in the bi-weekly meetings, contributing to certain projects, and reviewing and providing comments to documents and reports produced by the Hub Secretariat.

4. Summary of 2023 work – Base Tasks

Despite the limitations that the Innovation Hub had to face, in particular the lack of a dedicated budget and limited human resources, throughout 2023, the Hub carried out a number of activities identified by COSI and beyond. In particular, the Hub Team continued to work on the base tasks identified by COSI in May 2020 and implemented several projects. The latter are described in Section 5 of this report. In addition, the Hub Secretariat carried out an internal assessment of the Hub's activities and mode of operation since its creation, and proposed a change in the mode of operation. This is described in Section 6 of this report.

4.1 Annual event

One of the tasks indicated by COSI was the organisation of an annual Hub event. The Innovation Hub Annual Event, funded by the Commission and organised in collaboration with the CERIS community¹, took place in Brussels on 3 October 2023. Attendance was by invitation only, with a focus on representatives of national authorities, academic experts and practitioners operating in the area of internal security. Both the participants and the discussion topics were selected following consultations within the Hub Team. In total, around 180 participants attended the in-person event.

The event opened with high-level keynote speeches delivered by the Executive Directors (EDs) of eu-LISA and CEPOL, with interventions by the Deputy Executive Directors of Frontex and Europol, as well as the Deputy Director-General of DG HOME. The core of the event was composed of four panels focusing on key enabling technologies, regulatory sandboxes, encryption, and the uptake of EU security research results. A summary report of the event will be available online. The feedback gathered from the participants in the aftermath of the event was very positive.

The following day was dedicated to an informal in-person meeting of the Hub Steering Group and the Hub Team.

4.2 Platform mapping report

Among other tasks assigned to it by COSI, the Hub was tasked with the setting-up of a common platform for exchange of information and dissemination activities among participating innovation labs and other relevant stakeholders. This task was taken up by the Steering Group of the EU Innovation Hub for Internal Security (SG), asking 'at its meeting on 8 November 2022 the Hub Team to first map existing communication platforms in the field of internal security and assess their suitability for the use of the Hub, to ensure to complement rather than duplicate

existing tools. Ideally the platform should be made available also to Member States (MS) and the JHA community at large as it could be useful to catalyse new projects.'

Following the tasking by the SG, the Hub Team mapped existing communication platforms in the field of internal security and assessed their suitability for being used by the Hub, with a view to complement rather than duplicate existing tools. The report was built primarily on online research, as well as inputs provided by the Hub Team, European Commission services and JHA agencies.

The main finding of this report is that no single platform currently fulfils all the envisaged purposes, scope and functionalities. On the basis of this conclusion, the Hub Team has identified three main options for further action:

- improvement of an existing platform;
- creation of a new platform;
- creation of a platform of platforms.

As a first step, and in order to address the need for a platform to support cooperation and information exchange within the EU Innovation Hub and with other relevant stakeholders, the Hub Team initiated a discussion with CEPOL on the potential use of its Law Enforcement Education (LEEd) platform for this purpose. The results of this discussion were presented at the Hub Steering Group meeting on 21 December 2023. The proposal to use LEEd as a solution to meet the needs of the Hub Team in the short to medium term was positively received by the Steering Group, and steps will therefore be taken in Q1-Q2 2024 to establish and populate the expected Hub space on LEEd.

4.3 Hub Team and Steering Group meetings

Throughout 2023, the Hub Team met fortnightly in a virtual format. The Hub Team coordinated all Hub activities, in particular proposing priority setting, knowledge management and project implementation, in cooperation with the

¹ Community for European Research and Innovation for Security (CERIS) is a platform, set up by the European Commission (DG HOME), which continues and expands the work of the CoU (Community of Users for Safe, Secure

and Resilient Societies, which was established in 2014 by the Commission and gathered around 1,500 registered stakeholders), in light of the forthcoming Horizon Europe developments 2021-2027.

respective EU Agencies, the Commission and EU Member States. It also prepared the meetings of and documentation for the Hub's Steering Group. The preparation of such topics was led by the Hub Secretariat. Certain activities were assigned to other Hub members, for example the coordination of expert panels at the annual event. The Hub Team was systematically consulted on all activities. Following COSI's confirmation of the composition of the EU Innovation Hub Steering Group (on 23 November 2021) and the rules of procedure, four meetings of the Steering Group took place in 2023. Three meetings (online meetings on 31 January, 22 June and 21 December) were formal and one (physical meeting following the Innovation Hub Annual Event in Brussels on 4 October) was informal with the participation of the Hub Team.

4.4 Topical activities

In 2023, the Hub members presented to the Hub Team various studies and shared the outcome of their work. One of the most discussed topics in the Hub Team meetings was **Artificial Intelligence**. Europol presented its work on artificial intelligence, including the AP4AI project, the report by the Europol Innovation Lab on Chat GPT, and the work on the draft AI Act performed by the Strategic Group on AI under the European Clearing Board. The Fundamental Rights Agency provided an overview of its current and planned activities relating to Artificial Intelligence, including research projects. DG HOME informed the Hub Team about the results of the study on the EU Security Data Space for Innovation (EUSDSI) and engaged the Hub Team in discussions regarding the possible next steps towards putting the EU SDSI in place.

Another prominent topic on the agenda of the Hub Team was **encryption**. In this area, DG JRC provided an update on their Darknet project, and Europol involved members of the Hub Team in the preparation of the Observatory Report on Encryption which is currently prepared jointly by Europol, Eurojust, eu-LISA, DG HOME and DG JRC.

Europol also presented the report on the impact of quantum computing on law enforcement prepared by the Europol Innovation Lab.

Members of the Hub Team provided updates on their **ongoing innovation activities**, such as the conference on innovative technologies for strengthening Schengen, co-organised by Frontex, DG HOME and Europol, Frontex Industry Days, the EUAA's Conference on Digital Innovation organised together with GDISC² and IGC³, Industry Roundtable events organised by eu-LISA, CEPOL's EU Strategic Training Needs Assessment (STNA) and other activities. The Hub Team also received presentations by research and innovation projects funded by the EU including iMARS⁴, CYCLOPES⁵, Multirate⁶ and LAGO⁷, and by the EU Agency for the Space Programme (EUSPA).

5. Projects

In 2023, the Hub members continued to work on collaborative projects.

5.1 EU-coordinated Darknet monitoring to counter criminal activities

Project leader: DG JRC of the European Commission

Project partners: EMCDDA, Europol

On 19 November 2020, the Commission adopted an Implementing Decision on the financing of the preparatory action on the EU-coordinated Darknet monitoring to counter criminal activities for 2020. DG JRC was working with a Steering Group composed of Europol, the EMCDDA and DG HOME on this preparatory action launched in May 2021 for 24 months.

As initially planned, the project continued its activities also in 2023; however, due to external constraints, such as the international shortage of hardware and difficulties in finding a profile with

² General Directors' Immigration Service Conference

³ Inter-Governmental Consultations on Migration, Asylum and Refugees

⁴ <https://imars-project.eu/>

⁵ <https://www.cyclopes-project.eu/>

⁶ <https://www.multirate.eu/>

⁷ <https://lago-europe.eu/>

appropriate expertise, the project was extended by 6 months until October 2023. The project completed the development of the platform for Darknet monitoring, which includes a data acquisition framework and a storage and analysis platform. In Q4 2023, the platform was in the final testing phase and discussions had started regarding how to organise the community of users for the platform. After a steering group meeting in January 2024, an extension of 5 additional months was granted to the project until June 2024, to ensure the legal and technical conditions for the hosting of the platform by the JRC, foster a community of developers that will enrich the platform, and ensure the conditions for the availability of the source code to Europol, the EMCDDA and Member States in the future.

5.2 Accountability Principles for Artificial Intelligence (AI) used in the area of Freedom, Security and Justice: AP4AI

Project leaders: Europol and CENTRIC (University of Sheffield)

Project team (contributors and supporters): Eurojust, FRA, CEPOL, EUAA, and eu-LISA

The Europol Innovation Lab, in cooperation with CENTRIC, supported by the project team, developed the Accountability Principles for AI (AP4AI) used specifically in the area of freedom, security and justice. The project aims to support security-relevant AI innovation in Europe, including by facilitating societal acceptability of future AI tools and capabilities in the JHA sector, in line with the proposed EU AI Act.

The project is based on a broad range of expert knowledge from law enforcement agencies, border guards, justice experts, legal AI experts, ethical AI experts, and technical AI experts, but also includes citizens' perspectives to define the principles from different perspectives. This resulted in 12 AP4AI Accountability Principles, including materiality thresholds, applicable laws, human rights and data protection impact assessment, and implementation guides.

Following the development and validation of the accountability principles, the AP4AI project is

currently developing the Compliance Checker for AI (CC4AI). CC4AI⁸ is an online tool intended to be freely available to all security and justice practitioners, covering several EU languages. It is operationally grounded and provides practical support to practitioners in all stages of the AI lifecycle (design, procurement, deployment, modification, etc.). Self-assessment reports can be generated whenever practitioners wish to evaluate their implementation of AI and machine-learning tools.

With CC4AI, the project will contribute to the practical implementation of the AI Act in the internal security domain. CC4AI will be further adapted to the requirements of the AI Act once the Regulation has been adopted by the legislators and published in the Official Journal.

5.3 Study on High-Altitude Pseudo-Satellites

Project leader: Frontex

Project contributors: DG JRC, Europol, FRA, EU SPA and EU SatCen

In 2022, Frontex launched a research study on high-altitude pseudo-satellites (HAPS), which gathered experts from Frontex, other members of the EU Innovation Hub such as DG JRC, Europol, FRA, and EUSPA and EU SatCen. HAPS are technological solutions that have attracted significant interest from the European Border and Coast Guard (EBCG) community and other stakeholders, due to their potential to address operational gaps and further enhance existing surveillance and communications capabilities. HAPS were identified as one of the emerging technologies of relevance for the EBCG community within the scope of a foresight study delivered jointly by DG JRC and Frontex.

The study explored the use-cases for the application of HAPS and the opportunities that such solutions can provide to the JHA community. The study identified three main use-cases for HAPS:

- **earth observation:** providing imagery, including live video feed, HD pictures and

⁸ <https://cc4ai.eu>

more sophisticated monitoring of a specific area, including the possibility for thermal sensing, allowing, for example, for more efficient and targeted search and rescue (SAR) missions.

- **telecommunication:** enabling condensed satellite-based telecommunication services, facilitating direct-to-device services everywhere, such as Apple's Emergency SOS or a 5G network.
- **navigation:** presenting an alternative for current positioning services such as GPS or Galileo (having a stronger and more precise signal than satellites), allowing the use of global navigation satellite systems (GNSS) in remote areas.

The study resulted in three deliverables:

- **HAPS market report**⁹, providing insights into the landscape surrounding the deployment of HAPS;
- **technological assessment report**¹⁰, offering a condensed overview and analysis of the HAPS platforms and associated technologies, including payloads currently under development by the main manufacturers.
- **HAPS preliminary assessment of the impact on fundamental rights**¹¹, identifying those fundamental rights that are particularly affected by the implantation of HAPS technology and their operations, and which will require more detailed assessments targeted at the specific use-case scenarios.

The final report¹² of the study integrated key insights and provides a comprehensive overview of all market, technical and fundamental rights aspects associated with HAPS.

5.4 Technology horizon scanning on Key Enabling Technologies (KETs)

Project leader: Frontex

Project partners: including eu-LISA, Europol, and DG JRC

The Hub Team members' main interests within the scope of the study were in the area of privacy-enhancing technologies (PETs), such as encryption and anonymisation, protection of data, minimisation of unauthorised access, and preserving privacy during processing and sharing of data. Implementing PETs effectively upholds data privacy, safeguards individual rights, and maintains public trust in the justice system, both in terms of information security and fair data use. The project focused on a set of KETs relevant for Frontex, the European Border and Coast Guard community, and the broader internal security community. During this project, six monthly reports, two quarterly reports and one Horizon Scanning report were delivered. The monthly reports highlighted key trends which surfaced in the platform, such as 6G, extended reality (XR), the metaverse and autonomous systems, while the quarterly reports highlighted trend shifts.

The study confirmed that KETs can have a positive impact on border operations, with technologies such as 6G, XR, the metaverse, and unmanned systems, having the potential to enhance autonomous border surveillance and training capabilities.

It is also important to acknowledge that keeping up to date with changing risks associated with the new KET landscape and emerging regulations such as the AI Act will be essential for the agency to properly adopt and utilise KETs. Key takeaways from the study were published in a booklet¹³.

⁹ <https://www.frontex.europa.eu/innovation/eu-research/news-and-events/research-study-on-high-altitude-pseudo-satellites-first-take-aways-MsHsdO>

¹⁰ <https://www.frontex.europa.eu/innovation/eu-research/news-and-events/high-altitude-pseudo-satellites-a-technological-assessment-report-ypRYEF>

¹¹

<https://www.frontex.europa.eu/assets/EUresearchprojects/>

[News/2023/HAPS_Preliminary_Assessment_of_the_Impact_on_Fundamental_Rights.pdf](https://www.frontex.europa.eu/assets/EUresearchprojects/News/2023/HAPS_Preliminary_Assessment_of_the_Impact_on_Fundamental_Rights.pdf)

¹²

https://www.frontex.europa.eu/assets/EUresearchprojects/News/2023/HAPS_Final_Report.pdf

¹³

<https://www.frontex.europa.eu/assets/EUresearchprojects/2023/Booklet.pdf>

5.5 Observatory report on encryption

Project leaders: Europol and Eurojust

Project partners: including DG JRC, eu-LISA and DG HOME

The observatory report on encryption provides an overview of the policy and legislative landscape at national, EU and international levels, and examples of court rulings concerning encryption of communications. The core of the report provides an overview of recent developments in a range of technologies where encryption plays a central role and the implications these technologies have for law enforcement. These technologies include quantum computing, cryptocurrencies, the use of encryption to protect biometric data, the Domain Name System (DNS) and DNS encryption, 5G telecommunications, machine learning and artificial intelligence in cryptography. The report will be published in Q2 2024.

6. Assessment of activities and the working model of the Hub

Since its creation in 2020, the operational model of the Hub and the Hub Team has not changed. The Hub is organised as a structure that assumes the engagement of all members on an equal footing. However, as mentioned previously, the activities of the Hub Team have been coordinated by the Hub Secretariat staffed by Europol, eu-LISA and France.

To improve the efficiency and effectiveness of the Hub and ensure the implementation of the Multi-Annual Plan for 2023-2026, in Q3 2023, the Hub Secretariat carried out an internal assessment.

On the basis of interviews conducted with the members of the Hub Team, this exercise provided valuable insights. For example, Hub Team members are generally satisfied with the Hub's performance and achievements despite the obvious limitations. Most Hub Team members felt that the Hub provides a better overview of innovation activities in other agencies, as well as a better understanding of the EU research and innovation ecosystem, than they could achieve

otherwise. Still, there are a number of challenges, such as the lack of aligned objectives and commonly shared prioritisation of tasks, as well as variable levels of innovation capabilities and expectations among the agencies involved. The limited overlap in terms of the agencies' mandates at times results in a limited interest in joint projects and may lead to a perceived lack of active involvement of some members within the Hub.

One of the key outcomes of this assessment was the creation of thematic working groups or clusters to allow all members to contribute on issues that are of most relevance to them. A thematic cluster is defined as a thematic priority for the Hub in which individual Hub Team members agree to work collaboratively with one of them being in the lead. The cluster leader will drive the work in the area while respecting the autonomy of the Hub members carrying out activities within the cluster, and report on the progress and results of activities on a regular basis to the entire Hub Team. All clusters will engage with relevant Horizon Europe and other EU or Member State funded projects to ensure information flow about topical developments. The cluster topics and activities may be updated during 2024 if necessary, reflecting the agile EU internal security innovation environment. The thematic clusters and their activities were included in the Work Plan for 2024. The topics of thematic clusters are:

- foresight and key enabling technologies;
- biometric recognition systems: data quality, evaluation and standardisation;
- artificial intelligence;
- encryption.

One of the main intended benefits of this approach is to allow Hub members to invest their time and resources in the most relevant topics for their respective mandates and work programmes. Beyond the thematic clusters, the Hub Team continues to work jointly on several topics of common interest related to innovation in the field of EU internal security, as well as on joint events.

7. Conclusion

This report presents the progress achieved by the EU Innovation Hub in 2023. In the absence of a dedicated budget for the Innovation Hub, having limited resources at its disposal and having in mind that the Agencies are not eligible to benefit from Horizon Europe funding, the work accomplished in 2023 by the Hub Members should be considered as a significant achievement. The lessons learned through the

delivery of the activities described above and the information gathered within the scope of the internal assessment have been taken into consideration in the drafting of the Hub's Work Plan for 2024, which will be annexed to the Multi-Annual Plan for 2023-2026. In this sense, 2023 could be seen as a year in which the Hub took stock of its achievements in its 'start-up' phase and adjusted its priorities and methods in order to meet the expectations of its stakeholders in the years ahead.



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