



A project of the European Anti-Cybercrime Technology Development Association (EACTDA)



EACTDA National Nodes (NNs)

Report on the MVP PoC and on the validation in the operational environments of the NNs



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1. Executive Summary

This deliverable reports on the validation of the Minimum Viable Product (MVP) solutions and the piloting of the EACTDA National Nodes (NNs) within operational and non-operational environments. It summarises the progress made, the comparative maturity of the pilot National Nodes in Lithuania, Spain, and France, and outlines key findings, challenges, and recommendations for scaling and sustaining the Tools4LEAs model across the EU.

The Tools4LEAs project, coordinated by the European Anti-Cybercrime Technology Development Association (EACTDA), aims to bridge the gap between EU-funded security research and real-world operational deployment in the fight against cybercrime. By piloting National Nodes, the project tests a decentralized framework for the localized uptake, validation, and operational use of innovative tools by Law Enforcement Agencies (LEAs).

Key outcomes include:

- Successful validation and piloting of tailored tools addressing specific cybercrime challenges
- Development of structured governance models within each NN to coordinate stakeholders, refine tools with end-user input, and facilitate operational integration.
- Establishment of effective feedback loops and cross-node collaboration mechanisms, enabling shared learning and harmonization of methodologies.
- Identification of common challenges, including the need for permanent funding, fully formalized governance structures, and expanded stakeholder engagement, especially with national-level decision-makers and policy owners.

National Nodes assessment have been organized in two steps, - main assessment have been made by June, 2025 and in addition extra validation was conducted during the end of year 2025, to capture actual progress and additional activities carried out by all three national nodes during the second half of the year, at the same time giving most recent perspective of developments and challenges still to address in future periods.

The comparative maturity assessment demonstrates that each National Node has achieved critical milestones: Lithuania leads with practical tool deployment experience; Spain has reinforced institutional alignment through its Ministry-led approach; and France is piloting an innovative thematic cluster model to mobilize stakeholders around priority topics such as cryptocurrencies and IoT.

Lessons learned from these pilots confirm that the NN concept is a viable and flexible model to support Member States in translating EU-level security research into operational capabilities. To secure its sustainability and real adoption, the next steps include formalizing governance frameworks, establishing dedicated funding pathways, scaling successful pilots, and encouraging the establishment of new NNs in other Member States.

2. Introduction

2.1. Overview of the Tools4LEAs project

EACTDA, the European Anti-Cybercrime Technology Development Association, is a private, non-profit organization based in San Sebastian, Spain. Its members include EU public entities combating cybercrime, research institutions, universities, private companies, and other key stakeholders in the EU's security research and innovation ecosystem.

EACTDA coordinates the **Tools4LEAs** initiative-projects directly awarded under the ISFP programme-designed to accelerate the adoption of innovative technologies by EU public authorities fighting cybercrime. The initiative focuses on enhancing and operationalizing tools originating from previous EU-funded security R&D projects, offering them license-free and with open-source access to eligible public entities.

The **first Tools4LEAs project (v1)**, running from July 2021 to June 2023, concentrated on building the necessary infrastructure, governance mechanisms, and delivering a first batch of operational-ready tools via Europol's Tool Repository. Of the 11 tools developed, 3 did not meet the required quality threshold for release. An **End-User Advisory Board (EUAB)**-established in July 2023 with 23 members from 14 EU countries and co-chaired by Europol's EC3 and Innovation Lab-was created to guide priorities and exercise veto rights over tool development decisions.

The **second Tools4LEAs project (v2)** (July 2023 - June 2025) aims to double the number of delivered tools. It will expand the tool repository created in v1 to also host outcomes from other relevant EU-funded cybercrime research projects, with EACTDA acting as the custodian. Technical, IPR, and administrative frameworks will be established for this purpose.

Project v2 focused on:

- Pilot limited support and maintenance services for selected tools,
- Test the establishment of **EACTDA National Nodes (NNs)** in Lithuania, France, Spain, and potentially more countries,
- Launch a platform for end-user tool evaluation,
- Further develop the Tools4LEAs stakeholder community and promote the adoption of blueprints and best practices.

2.2. Objectives of T5.3 Validation Task

Report on the validation in operational environments and on the adoption, roll-out and use of the NNs. The objective defined are:

- To evaluate and validate the operational effectiveness of the National Nodes (NNs) within real-world environments, and, upon successful validation, to deploy and integrate these nodes into operational use.
- Piloting the **Minimum Viable Product (MVP)** developed within each **National Node (NN)** tailored to the specific cybercrime challenges faced by law enforcement agencies (LEAs).
- The objective also includes capturing lessons learned, developing recommendations for future enhancements, and
- Facilitating the creation and implementation of additional NNs in new Member State locations.

This deliverable addresses these objectives by (i) documenting the operational validation activities and inter-node collaboration events (Section 4.1.1), (ii) providing a comparative progress view across LT/ES/FR based on the latest survey iteration (Section 4.2) and a comparative maturity view using the

self-assessment framework (Section 4.7), (iii) summarising node-specific findings and piloting evidence to support roll-out decisions (Sections 4.3–4.5 and 4.12), and (iv) consolidating lessons learned and actionable next steps to strengthen and scale the NN model beyond the pilot nodes (Sections 5 and 6).

2.3. Background on EACTDA National Nodes

National Nodes (NNs): Enhancing Local Adoption and Operational Impact

The National Node (NN) concept was introduced within the Tools4LEAs framework to strengthen the local uptake of cybercrime-fighting innovations across EU Member States. Each NN functions as a national-level consortium bringing together key stakeholders-law enforcement agencies (LEAs), research organizations, and industry partners, who collaborate to operationalize and integrate innovative tools into their domestic ecosystems.

NNs act as local innovation hubs, supporting the testing, piloting, validation, and deployment of advanced technological solutions. While operating under the governance principles established by EACTDA, they maintain the flexibility to adapt tools and methodologies to their national operational, legal, and technical contexts ensuring solutions meet the real-world needs of domestic LEAs.

The pilot phase, implemented under Tools4LEAs v2, includes the establishment of nodes in Lithuania, France, Spain, and potentially additional countries. These pilot NNs are expected to play a critical role in bridging the gap between EU-level innovation and local operational deployment by refining tools in close cooperation with end-users before broader implementation.

2.4. Relation to other deliverables

This deliverable is closely related to the following deliverables:

- D5.1 Design of the NNs overall solution: Deliverable D5.1 presents the NNs maturity model approach, which is used in this self-assessment form.
- D5.2 Report on the MVP PoC and on the validation in the non-operational environments of the NNs.
- EACTDA NN Exploitation Strategy.

2.5. Structure of the deliverable

This deliverable is structured to provide a clear and logical flow from context to results and future actions.

- **Section 1: Executive Summary** - Provides a concise overview of the deliverable's purpose, key findings, and strategic implications for stakeholders.
- **Section 2: Introduction** - Describes the background of the Tools4LEAs project, objectives of the validation activities under Task T5.3, the National Node concept, its relation to other deliverables, and this document's overall scope and purpose.
- **Section 3: Deliverable Scope and Goals** - Defines the scope of the MVP piloting and validation activities, the objectives of the operational validation, and the main actors and stakeholders involved.
- **Section 4: Validation in Operational Environments** - Details the piloting activities, validation processes, and comparative maturity and progress reports for the pilot National Nodes in Lithuania, Spain, and France.
- **Section 5: Governance Framework for NNs** - Describes the proposed governance structures, operational deployment model, and organizational change management aspects necessary for successful integration of validated solutions.

- **Section 6: Preparation for Tool Integration** - Outlines technical and organizational steps for integrating validated tools into existing law enforcement operational environments.
- **Section 7: Feedback Loop and Lessons Learned** - Summarizes insights gained during piloting and inter-node collaboration, and highlights key lessons learned to improve future deployments.
- **Section 8: Conclusions and Next Steps** - Presents the main conclusions drawn from the validation activities and outlines clear recommendations and planned actions to strengthen the NNs and expand the approach to additional Member States.
- **Section 9: Annexes** - Provides supporting information, including a list of acronyms, reference documents, and additional technical or administrative materials relevant to the deliverable.

3. Deliverable Scope and Goals

3.1. Description of operational NNs

The Minimum Viable Product (MVP) developed within each National Node (NN) represents the first iteration of innovative tools tailored to the specific cybercrime challenges faced by law enforcement agencies (LEAs). These tools integrate advanced technologies such as data analytics, machine learning, and digital forensics to enhance LEAs' capabilities in cybercrime detection, investigation, and prevention. The scope of Task T5.3 covers the validation of these MVPs in operational environments, focusing on their technical functionality, usability across diverse law enforcement contexts, and compliance with relevant technical and regulatory standards. The validation process also includes a critical assessment of the governance structures and procedural frameworks evolution and feasibility, established within each NN, ensuring they are robust enough to support future adoption and operational use.

Following MVP initial validation phase, the operational validation objective is to evaluate and validate the NNs themselves in operational environments, assessing their performance as platforms for deploying cybercrime-fighting innovations. Upon successful validation, the project aims to roll out and integrate the NNs into actual operational contexts, by running national project and following full end-to-end process, while collecting lessons learned and developing recommendations for improvement. Furthermore, the project will support the creation and setup of additional NNs in other Member States, fostering broader EU-level adoption and sustainability of the approach.

3.2. Key Involved Actors and Stakeholders

Task T5.3 focuses on the **validation of National Nodes (NNs)** through the active involvement of a diverse set of stakeholders, each contributing to a robust and multidimensional evaluation process:

- **Law enforcement agencies** act as primary end-users, offering critical feedback on operational needs and assessing the tools' effectiveness in addressing real-world cybercrime challenges.
- **RTO and technology providers** support this process by refining the tools in response to LEA feedback, ensuring alignment with both technical specifications and operational requirements.
- **EACTDA**, at the **inter-node level**, coordinates the overarching governance structure, facilitates collaboration between NNs, and ensures coherence across validation activities. It also plays a strategic role in integrating **external innovative solutions** into the validation process, enabling a broader comparison and assessment beyond the each node.

This **multi-layered, collaborative validation framework** establishes feedback loops at both intra-node and inter-node levels, fostering continuous improvement and iterative refinement of the tools. The approach ensures that all solutions are tested and enhanced in line with the practical demands and expectations of end-users across the EU.

4. Validation in Operational Environments

National Node-Initiated Solution Selection and Adoption Process

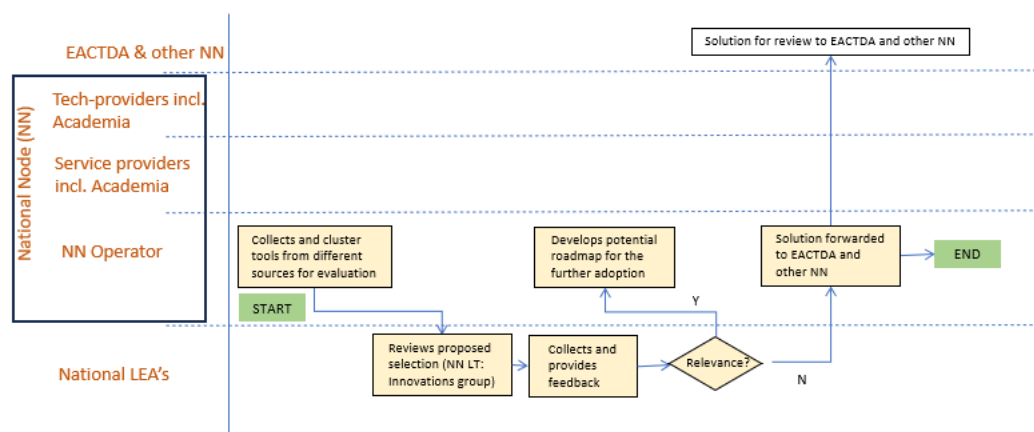
The entire National Node (NN) ecosystem is engaged in a broad range of activities that may generate outputs relevant to law enforcement agencies (LEAs). These activities include participation in national and EU-funded projects, academic research, and the development of new or adapted solutions by industry. Many of these outputs may be of significant interest to LEAs.

The NN operating entity plays a critical role in this process by collecting, organizing, and clustering information about emerging solutions. This includes identifying synergies or overlaps among tools that offer similar or complementary functionalities. Once this clustering is completed, the NN operator prepares an initial list of potentially relevant innovations, which is then aligned with designated LEA representatives for review and prioritization.

Evaluation of Preselected Solutions

The preselected and LEA-aligned innovations are formally reviewed by LEA representatives. This typically takes place through presentations or live demonstrations. For instance, in the Lithuanian NN, innovations are reviewed by the Innovations Group of the National Police Department. In other NNs, the reviewing body may differ, depending on each NN's governance structure and the participating LEAs. Following the review, the LEA provides feedback on the relevance and suitability of each presented solution:

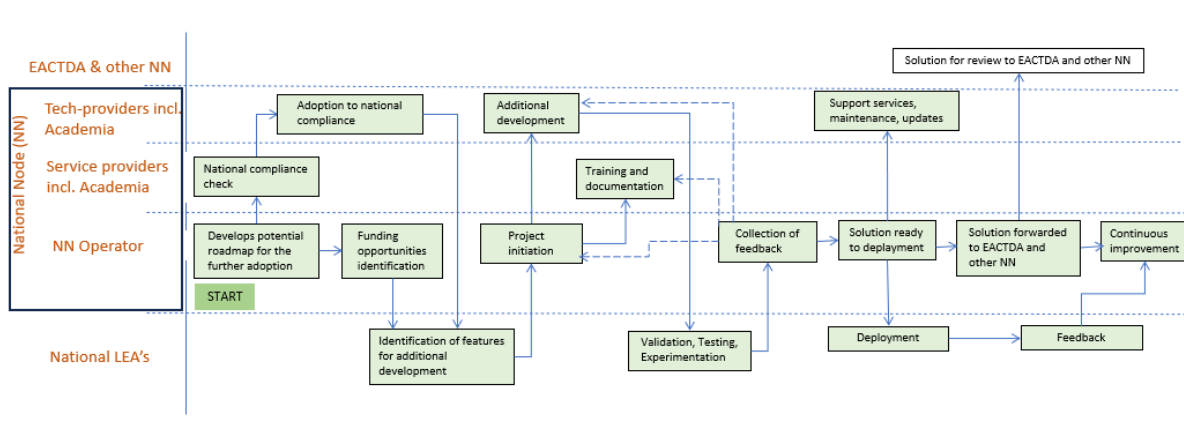
- If the solution is not relevant, the process ends for that solution within the current NN.
- If the solution is not relevant for local use but is considered technically mature, it may be forwarded to EACTDA or another NN for further consideration.
- If the solution is relevant and of interest to the LEA, the process proceeds to further development and adoption.



(Figure 3 - NN-Initiated Solution Selection Process)

Adoption and Development Roadmap

When a solution is deemed relevant by an LEA, the NN operating entity initiates the roadmap for further development and national adoption.



Although the steps may vary in sequence and detail, the general process includes the following phases:

1. Identification of Funding Sources

The first critical step is to identify potential funding opportunities, which may include:

- National innovation or security funds
- Internal LEA budgets
- Regional or EU-level funding instruments

If no suitable funding is available, the development process may be postponed.

2. National Compliance Assessment

In parallel with funding efforts, the solution undergoes a national compliance check. Depending on the NN structure, this may involve:

- Legal or regulatory experts within the NN
- Academic institutions
- External evaluators for specific analyses (e.g., use-case compliance, ethical considerations)

If minor compliance adjustments are required, the solution developer implements them.

If significant modifications are needed, development will proceed only if supported by adequate funding.

3. Definition of Development Features

LEAs define specific features or adaptations necessary for national adoption. These may include:

- Language localization
- Integration with national data systems
- Legal and regulatory modifications
- Interface or performance adjustments

4. Project Initiation and Implementation

The NN operator launches a **project** to guide further development. This may include:

- Additional technical development
- Creation of documentation, user manuals, or training materials
- Coordination of efforts among technology providers, service partners, and LEA users

5. Testing, Validation, and Experimentation

Once the solution is developed, it proceeds to the testing and validation phase, led by the LEA and supported by NN partners (e.g., scenario design, data provision, technological infrastructure).

The NN operator collects structured feedback from these activities, which may lead to further development cycles and repeated testing. This iterative process can be repeated multiple times depending on available funding or additional financing opportunities.

6. Deployment and Operational Use

After successful testing, the solution is deployed into the LEA's operational environment. Post-deployment, feedback continues to be collected in a structured manner to support continuous improvement.

7. Maintenance and Support

The solution provider is responsible for ongoing maintenance, updates, and support services, ensuring long-term usability and sustainability.

4.1.1. Implementation of Node validation

At the end of 2024, beginning of 2025, the LT and FR National Nodes engaged in a joint meeting focused on NN operational validation.

Event	Inter-Node Collaboration
2024.12.06	EACTDA NN concept review, LT NN Establishment in Lithuania (Vilnius)
2025.01.08	EACTDA NNs Meeting in France (Paris)
2025.01.28-29	Starlight innovating workshop and EACTDA new solutions validation
2025.05.07	EACTDA solutions onboarding presentation in Baltic Miltech '25
2026.01.09	EACTDA NN Event of innovations uptake in Vilnius

Taken together, these inter-node events established a shared baseline for National Nodes operationalization: we aligned on the NN concept, compared early national implementation choices, and collected practical constraints that later led to the comparative progress and maturity analysis. In practice, the meetings functioned as best practice exchange and “alignment checkpoints” where nodes validated not only selected tools experimentation in the scope of NN, but also the feasibility of EACTDA routines, stakeholder engagement experiences, and onboarding challenges for innovations uptake.

4.2. Comparative Progress Report: EACTDA National Nodes - Lithuania, Spain, France

This section consolidates the latest “Status & Progress” survey iteration for the three pilot nodes (LT/ES/FR) into a single comparative view. We use the same category structure across nodes (establishment, solution validation, challenges, limitations, and support outlook) to make gaps and dependencies visible on general level. The intent is to support prioritisation of support actions and to highlight where nodes are ready to move from experimentation to real operational roll-out.

4.2.1. General Status of Establishment

Aspect	Lithuania (L3CE)	Spain (SGSICS)	France (DCIS)
Official Establishment	In progress	In progress	In progress (expected: 01/06/2025)
Governing Entity	L3CE	Subdirectorato General of Information and Communications Systems for Security (SGSICS)	Directorate for International Security Cooperation (DCIS)
Legal/Organizational Form	Dedicated organization	Public entity	Public entity
Governance Structure	In development	In development	In development
Milestones Achieved	Team setup, mission/vision defined, 1st project launched	3 official NN meetings held	Thematic cluster model designed, awaiting LEA approval

4.2.2. Solution Validation

Aspect	Lithuania	Spain	France
Solution Name	NiceVoice	Person Detection and Re-Identification	Not specified
Description	Voice evidence processing	Video-based person detection and re-ID	Not provided
Target End-Users	Criminal Police	National Police, Guardia Civil	Not provided
Validation Stage	Functional evaluation	Initial testing	Not started
External Tools Used	Yes (EACTDA experts involved in project preparation phase)	Yes (experts involved in EACTDA tool review)	Not specified

4.2.3. Challenges Encountered

Aspect	Lithuania	Spain	France
Stakeholder Engagement	Difficulty promoting the concept	Internal communication barriers to reach decision-makers	LEAs unfamiliar with PPP innovation model
Legal/Regulatory Hurdles	No specific mention	Not mentioned	Yes
Funding Limitations	No permanent funding	Not emphasized	Yes
Governance/Coordination	Incomplete framework	In progress	In progress

4.2.4. Current Limitations

Aspect	Lithuania	Spain	France
Human Resources	Yes	Yes	Yes
Technical Infrastructure	Yes	Not stated	Not mentioned
End-User Engagement	Yes	Yes	Yes
Access to Funding	Yes	Not emphasized	Yes
Regulatory Restrictions	Not indicated	Not indicated	Yes

Governance Framework Incomplete	Yes	Yes	Yes
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4.2.5. Support Needs & Strategic Outlook

Aspect	Lithuania	Spain	France
Support Needed	Dedicated infrastructure, permanent team funding	Continued EACTDA support for internal comms to boost LEA engagement	National-level ambassadors; build on national initiatives gradually
Role of EACTDA	Actively supporting tool validation and technical resources	Support appreciated, especially in upcoming internal communication efforts	Support acknowledged, but national mobilization is emphasized as the critical success factor

4.3. Lithuanian NN

4.3.1. Progress of National Node (NN)- Lithuania (L3CE)

As part of the Tools4LEAs initiative, the Lithuanian National Node (NN), coordinated by L3CE, is in the process of establishment. Key milestones achieved include stakeholder engagement, team onboarding, defining the mission, vision, and objectives, launching the first project, and setting up the project pipeline. The NN is governed by L3CE and structured as a dedicated organization. A formal governance framework is currently being developed.

For solution validation, the NN selected NiceVoice, a tool for voice evidence processing and analysis, targeting the Lithuanian Criminal Police. The solution is presently in the functional evaluation stage, with EACTDA tools integrated into the validation process.

Key Challenges Identified:

- Lack of experience in public-private partnership formation
- Difficulty in promoting the concept at the national level
- Absence of permanent funding for the NN team

Main Limitations:

- Limited human resources and technical infrastructure
- Incomplete governance framework
- Restricted access to funding

Support Needed:

To overcome these barriers, dedicated infrastructure and sustainable funding mechanisms for the NN team are required. Additionally, a new initiative to further operationalize National Nodes is recommended.

4.4. Spanish NN

4.4.1. Progress of National Node (NN) Status - Spain (SGSICS)

The Spanish National Node, coordinated by the Subdirector General of Information and Communications Systems for Security (SGSICS) under the Ministry of the Interior, is in the process of

being established. Progress includes the organization of three formal NN meetings (April 2024, May 2024, and January 2025), indicating active stakeholder engagement and structural development.

The NN is structured under a public governing entity, with a formal governance framework currently under development.

Solution Under Validation:

- **Name:** Person Detection and Re-Identification
- **Description:** A tool for identifying individuals in video feeds, generating unique descriptors for re-identification across databases.
- **Target End-Users:** National Police and Guardia Civil
- **Validation Stage:** Initial testing

Some NN experts are involved in the EACTDA/Tools4LEAs tool approval process, ensuring alignment with EU-level efforts.

Key Challenges Identified:

- Difficulty in internal communication about the tools and services provided by Tools4LEAs
- Need to raise awareness beyond innovation units to reach decision-making levels

Current Limitations:

- Limited human resources
- Incomplete governance framework
- Need for improved internal engagement

Support Required:

The Spanish NN has benefited from ongoing support by EACTDA, and is preparing targeted communication efforts to increase engagement across all organizational levels.

4.5. French NN

4.5.1. Progress of National Node (NN) Status - France (DCIS)

The French National Node is currently in the process of establishment, with an official launch expected by 1 June 2025. The initiative is led by the Directorate for International Security Cooperation (DCIS), which acts as the national Single Point of Contact (SPOC) for EACTDA.

DCIS has proposed organizing the French NN into thematic clusters (e.g., IoT, Cryptocurrencies) to structure stakeholder engagement and facilitate capability-driven collaboration. Approval is pending from the National Police, while feedback is awaited from the Gendarmerie. A formal governance structure is still in development.

Solution Validation Status:

- No specific solution has yet been named or described.
- The validation process stage is not specified.

Key Challenges Identified:

- Difficulty in promoting the public-private partnership (PPP) model within traditional LEA structures, which are more familiar with procurement-based or internally developed innovation.
- EACTDA's approach represents a paradigm shift in LEA innovation, requiring cultural and organizational adaptation.

Current Limitations:

- Lack of human resources
- Incomplete governance framework
- Insufficient funding and end-user engagement

Support and Strategic Outlook:

While EACTDA is viewed as actively supportive, the French NN emphasizes that national-level commitment and internal champions (NN ambassadors) are essential for success. Building on national initiatives and demonstrating value over time is seen as the key to establishing a sustainable and impactful node.

4.6. Key Comparative Insights

- All three NNs are still in the establishment or transition phase, with governance and stakeholder engagement as common gaps.
- Lithuania leads in practical tool validation (Nice2Voice), followed by Spain (early-stage testing), while France has yet to specify a validation case.
- End-user engagement and sustainable funding are shared concerns across all nodes.
- France uniquely promotes a clustered thematic ecosystem model and emphasizes the need for cultural change in LEA innovation approaches.
- Spain and Lithuania rely more directly on EACTDA's tools and coordination, while France stresses national initiative and ambassador roles.

4.7. Comparative Maturity Report: EACTDA National Nodes - Lithuania, Spain, France

The maturity comparison complements the progress analysis by focusing on “capacity to execute continuously” rather than single outcomes. We use NN maturity self-assessment structure (strategy & leadership, stakeholder engagement, funding & sustainability, legal & compliance, and innovation uptake capabilities) to understand whether each node can sustain a pipeline of tools and uptake of innovations’ into end-users’ operational environment over long period of time, not just run one-off pilots.

4.7.1. General Maturity Overview

Category	Lithuania (L3CE)	Spain (SGSICS)	France (DCIS)
Maturity Phase	Developing with partial structure	Operational but internally constrained	Early-stage, conceptual with soft launch planned (2025)
Legal Entity	No (represented by L3CE as virtual organization)	Yes (Ministry of the Interior)	No (avoided deliberately for flexibility)
Governance Defined	Informal, partially documented	Partially defined, formal lead by SGSICS	Not yet formalized; cluster-based coordination planned

4.7.2. Strategy and Leadership

Aspect	Lithuania	Spain	France
Vision & Objectives	Clearly defined, validated in Dec 2024	Defined during NN kick-off meeting	Defined via thematic cluster concept
Governance Body	Planned, informal collaboration in place	Centralized via SGSICS	To be shared across thematic clusters
Management Process	Partial, driven by project-based logic	Partial, through internal documentation	Not formally defined
Leadership Model	L3CE-led, stakeholder coordination	SGSICS-led	Cluster leaders + DCIS coordination

4.7.3. Stakeholder Engagement

Aspect	Lithuania	Spain	France
Stakeholder Coverage	LEAs, academia, tech providers involved	Primarily public sector	Intends to engage all sectors
Formal Membership Rules	No	Partially informal, institution-based	No
Key Gaps	Weak engagement from policymakers	Delayed engagement beyond innovation units	Unfamiliarity with PPP models in LEAs

4.7.4. Funding & Sustainability

Aspect	Lithuania	Spain	France
Funding Model	Project-based only	Project-based only	No central fund; future dependent on clusters
Income Generation	Not present	Not present	Not defined
Financial Planning	No long-term plan	Not established	Not established

4.7.5. Legal & Compliance

Aspect	Lithuania	Spain	France
Legal Representation	None	Ministry provides legal identity	None (intentionally)
Legal Services	Ad hoc, voluntary	Limited access, internal legal structures	Not defined
Compliance Framework	Not established	Partial	Not defined

4.7.6. Innovation Capabilities

Aspect	Lithuania	Spain	France
Infrastructure for Validation	Limited, project-specific	Limited, partially available via members	Not in place yet
Dedicated Innovation Resources	Absent	Not available	None (future plans linked to clusters)
Access to Tools and Testing	Through EACTDA and EU projects	Some member capacity (e.g. Guardia Civil labs)	Anticipated in future, informal access expected

4.7.7. Strategic Achievements & Challenges

Category	Lithuania	Spain	France
Notable Success	Deployment of NiceVoice tool with multi-LEA cooperation	Internal coordination and multi-agency NN setup	Stakeholder alignment around thematic cluster model
Main Challenges	Lack of funding, governance, infrastructure	Communication gaps, limited decision-maker engagement	Cultural resistance to PPP, lack of internal champions
Unique Features	Clustering methodology piloted around end-user tools	Formal national coordination via ministry	Modular, cluster-based innovation strategy

The key highlight is that maturity does not track only “how active” a node is, it tracks whether the node can consistently resolve the non-technical gaps (legal basis, IT security, integration ownership, budgeting) early enough to avoid stalled pilot projects. In that sense, Lithuania shows the strong evidence of end-to-end execution, Spain has the strong end-user institutional anchor, and France’s cluster model is conceptually strong, but depends on success of converting a concept into operating model.

4.8. Summary: Lithuania National Node Maturity Self-Assessment

The Lithuanian National Node (NN), coordinated by L3CE, has demonstrated moderate maturity across several core capability areas, while highlighting both structural achievements and critical areas for growth.

Vision, Strategy & Governance

- A clear Mission, Vision, Strategy, and Objectives have been defined and agreed upon during a stakeholder meeting (December 2024).
- The NN operates as a virtual organization represented by L3CE. Governance structures are informally defined through stakeholder collaboration, with plans for formalization underway.
- Key governance mechanisms like KPIs, decision-making bodies, and rights/responsibilities documentation are still under development.

Management & Leadership

- Management processes are partially documented and led by L3CE.
- Leadership is built on both formal roles and institutional credibility.
- A culture of continuous improvement and stakeholder coordination exists, though strategic benchmarking and corrective process loops remain informal.

Membership

- All major stakeholder categories (LEAs, academia, tech and service providers) are represented, though engagement with policy-makers remains limited.
- Membership rules are currently based on informal network-driven participation and individual applications, with no formal onboarding/offboarding framework in place.

Funding

- The NN is funded on a project-by-project basis. It lacks long-term, stable financial planning, and has no centralized fund pool.
- Income generation relies on external project participation, and financial management is limited to basic planning.

Legal & Regulatory Compliance

- No dedicated legal entity exists for the NN. Compliance activities are currently managed informally by the L3CE team.
- Legal service capabilities exist but are limited and provided voluntarily by internal members.

Innovation Uptake Capabilities

- A partial process exists for identifying innovation infrastructure needs, but sustained uptake would require a permanent team and dedicated infrastructure.
- Access to testing and validation facilities is limited and project-dependent. Some innovation services are provided voluntarily by members, but not under formal commitments.

Strategic Activities and Piloting Impact

- The NiceVoice tool pilot marked a major achievement, with Lithuania NN coordinating a successful “last-mile” development and fostering end-user ownership across Lithuanian and Danish police forces.
- Kaunas University of Technology’s involvement was strategically critical in reducing administrative bottlenecks.
- The project demonstrated the NN’s value in mentoring, facilitating coordination, and aligning stakeholders from project inception to implementation.

Key Challenges and Recommendations

- Persistent challenges include limited capacity, weak end-user engagement, and insufficient cross-NN collaboration.
- The Lithuanian NN emphasized the need for mentoring support, improved visibility of NNs, and simplified EACTDA procedures.
- A clustering strategy-aligning complementary EU project tools around end-user needs-was successfully piloted in the NiceVoice case, offering a model for integrated innovation adoption.

4.9. Summary: Spain National Node (SGSICS) - Maturity Self-Assessment

The Spanish National Node, led by the Ministry of the Interior (SGSICS), has made measurable progress across several maturity domains, while still facing structural and communication-related challenges that limit full operationalization.

Vision, Strategy & Governance

- A mission, vision, and strategy were presented and agreed upon during the NN’s kick-off meeting.

- Governance mechanisms exist, with SGSICS designated as the point of contact with EACTDA, though internal decision-making requires member approval.
- The NN has a formal legal representation through the Ministry of the Interior.

Management & Leadership

- Management processes are partially documented, supported by official meeting minutes and internal communications.
- Leadership is exercised by SGSICS, leveraging its formal authority and role in managing security-related R&D at the national level.

Membership

- The NN includes partial representation from key stakeholder groups, with plans to gradually expand membership (e.g., academia and industry) based on NN activities.
- Membership is institutionally assigned, with informal rules around application and termination.

Funding

- The NN currently lacks a formal financial management structure.
- There is no clear capability to generate income or maintain centralized funding.
- Individual project participation is the primary funding approach, with gaps in long-term financial planning.

Legal & Regulatory Compliance

- Legal and regulatory obligations are partially defined but not fully formalized or systematically implemented.
- The node has limited or informal access to legal support, relying on internal Ministry structures where needed.

Innovation Uptake Capabilities

- A partial process exists for identifying and acquiring innovation-related infrastructure.
- The NN has limited access to facilities for testing and validation, though in specific cases, members (e.g., National Police or Guardia Civil) can provide access.
- No dedicated infrastructure or permanent innovation resources have been established yet.

Strategic Outlook and Challenges

- Key benefits include providing LEAs access to EACTDA tools and gradually building a stronger national cybersecurity innovation ecosystem.
- The main challenge is internal communication and engagement across Ministry units, compounded by the lack of a national “success story” to build momentum.

4.10. Summary: France National Node (DCIS) - Maturity Self-Assessment

The French National Node, coordinated by the Directorate for International Security Cooperation (DCIS), is in the early development phase, with a proposed structure centered around thematic clusters (e.g., IoT, cryptocurrencies, ransomware). This flexible model aims to mobilize trusted public-private partnerships

across LEAs, academia, and industry, while aligning with broader national and EU-funded innovation frameworks.

Vision, Strategy & Governance

- A clear vision and mission have been conceptually defined through the cluster approach, although formal governance mechanisms are still pending validation by the French National Police and Gendarmerie.
- The NN does not have a dedicated legal entity, as the current experimental model avoids this to maintain agility and minimize resistance from decision-makers.

Management & Leadership

- Management processes remain informal, aligned with a cautious rollout strategy sensitive to organizational culture within French LEAs.
- Leadership will be shared across cluster leaders, with DCIS offering centralized support for coordination, funding, and EU cooperation.

Membership

- Stakeholder engagement is underway, with an initial meeting held in March 2025. The structure is designed to incorporate all relevant actors but lacks formal membership rules and sector-specific onboarding criteria at this stage.

Funding

- The NN intends to support mobilization of national and EU funds, but currently lacks a financial management framework or central fund.
- Income generation capabilities are not yet defined, and funding remains theoretical until the cluster structure is activated.

Legal & Regulatory Compliance

- Legal obligations and services are not yet defined. No dedicated legal capacity exists within the node, and reliance on internal member capabilities is expected.

Innovation Uptake Capabilities

- Innovation-specific processes and infrastructure access are not yet in place. These are expected to evolve as the thematic clusters mature.
- Members may offer testing and validation support on a voluntary basis, but no formal access agreements or shared resources are established.

Strategic Outlook and Challenges

- The NN is envisioned as a strategic tool to structure France's R&I ecosystem in the security domain and to position the node as a provider/consumer in the EACTDA network.
- Challenges include cultural resistance within LEAs and limited familiarity with public-private collaboration, which is not a standard approach in national operations.

4.11. Key Comparative Insights

- Lithuania leads in practical piloting and tool integration, showcasing tangible results (e.g., NiceVoice).
- Spain has the strong institutional foundation, but faces internal communication challenges limiting operational maturity.
- France offers innovative governance concept, using thematic clusters, but remains at a conceptual/strategic stage.

All three NNs recognize the need for:

- Dedicated funding
- Formal governance and membership frameworks
- Legal clarity and permanent infrastructure for sustainable innovation uptake

4.12. Comparative Piloting Report: EACTDA National Nodes - Lithuania, Spain, France

4.12.1. Piloting the Minimum Viable Product developed within LT National Node (NN) tailored to the specific cybercrime challenges faced by law enforcement agencies (LEAs).

The Tools4LEA project is primarily aimed at facilitating the practical integration of innovative solutions into the operational practices of LEAs.

As a foundational step toward this goal, Tools4LEA developed and implemented a standardized innovation governance and uptake process - a structured framework designed for adoption across all NNs to guide their activities in a consistent and coordinated manner.

In this context, LT NN carried out pilot activities involving two distinct scenarios (NiceVoice and FiusionSec / LEAD-PRo platform). These 2 pilots served to assess the effectiveness of the established process, identify any gaps or challenges, and generate recommendations for further refinement. Our insights will contribute to mature the overall process, ensuring it is robust, effective, and supportive throughout each stage of the innovation uptake pathway, culminating in successful implementation.

4.12.1.1. NiceVoice

In this chapter, we outline how LT NN succeed to pilot a “last-mile” development project following the process developed and established by EACTDA and NN. It is important to note that, in the context of LT NN, there were minor deviations from the standard process. These included the introduction of several additional steps aimed at ensuring that the developed innovations were fully aligned with the specific needs and priorities of national end users.

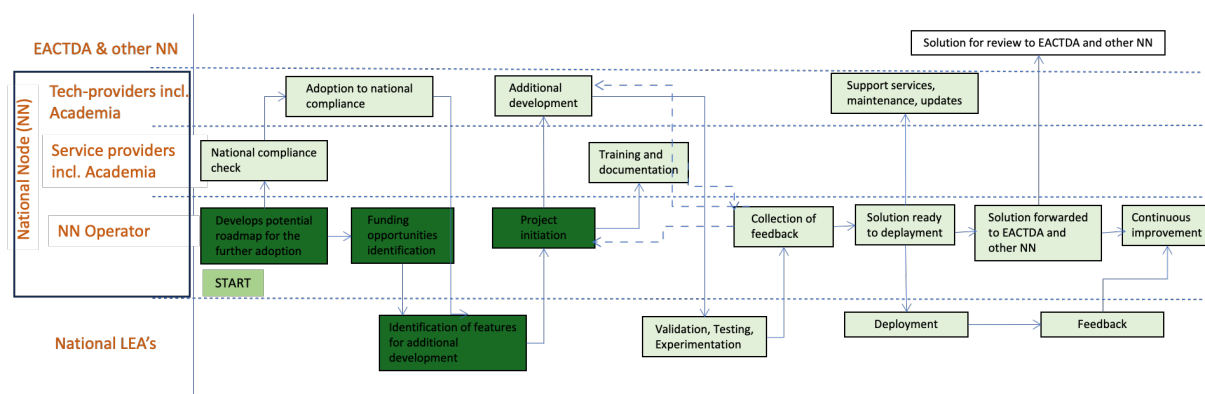


Diagram: Illustrates the progress achieved by NiceVoice project

Step 1: End-User Needs and Gaps Analysis Workshops

L3CE as the NN Operator facilitated the process of identifying and collecting the needs of end users. A series of workshops were organized to gather insights and requirements from various national security stakeholders.

Output: potential innovations roadmap to guide future adoption efforts. List of national end-user needs and capability gaps identified and documented as valuable foundation for the development of a potential innovations roadmap.

Step 2: Market Research

Building on the previously identified end-user needs and capability gaps, NN conducted market research. This involved review of multiple sources, including the EACTDA portfolio of tools, EU-funded research projects, outcomes from national R&D initiatives, and tools created by LEAs. The objective was to identify most relevant innovation that address the operational requirements of the security stakeholders.

Output: Selected innovation for piloting by NN. Prototype of tool for criminal investigations *NiceVoice* was identified by the Lithuanian Criminal Police Bureau (LKPb) as a strong candidate for piloting. This selection was primarily driven by LKPb commitment to actively participate in the co-creation process as an essential prerequisite for the successful deployment in operational environments.

Step 3: Funding opportunities identification

Preliminary discussions with the EACTDA team confirmed that *NiceVoice* aligns with EACTDA's established policies and complies with the strategic priorities of EAB. As a result, the solution is considered a qualified candidate for inclusion as a 'Last Mile' project.

Output: Tools4LEA cascade funding instrument was considered for the advancement of NiceVoice project.

Step 4: Identification of features for further development.

During this phase, NN facilitated the formation of project team. Kaunas University of Technology was chosen to lead the project because of its strong experience in NLP technologies. To ensure the solution addressed real operational needs, experts from LKPb and Danish Police were engaged as key contributors to the development team. KTU led the effort to define the essential features of the tool.

NiceVoice development was planned in two phases:

- Phase 1 focused on the development of the key features of the solution.
- Phase 2 included extra features to meet a wider range of needs specified by LEAs.

The EACTDA team supported the entire process, giving guidance and helping the team prepare and finalize the Project Proposal, making sure it followed the established rules and fit to the process of the Tools4LEA.

Output: Initiated project - EACTDA team approved the RFPP, Project Proposal finalised and submitted for approval by EACTDA Board.

Current Status:

To date, 4 steps of the process have been successfully completed, demonstrating steady progress toward project completion.

Next Steps:

Following the formal approval of the PP by EACTDA board, a collaboration agreement will be signed between EACTDA and KTU. This agreement will officially authorize the Kick-start of the development phase.

Phase 1 Kick-off of *NiceVoice* project is scheduled on July 21, 2025, with completion anticipated by December 30, 2025.

4.12.2. Fusion Sec -LEAD-PRO platform

It is important to note that NN's role extends beyond the FCT focus areas, encompassing a broader mandate to address a wider spectrum of needs of national security stakeholders.

In this context, a need to enhance the security of public spaces during crisis situations was identified by Lithuania's first responders, including the National Police, Fire and Rescue Services, Border Guard, and Municipal authorities.

Recognizing a wide-ranging applicability of the potential solution, the NN assumed responsibility for mentoring the innovation development from the Proof-of-Concept stage. The process involved multiple cycles of development, validation and funding, culminating in the solution's readiness for full-scale implementation.

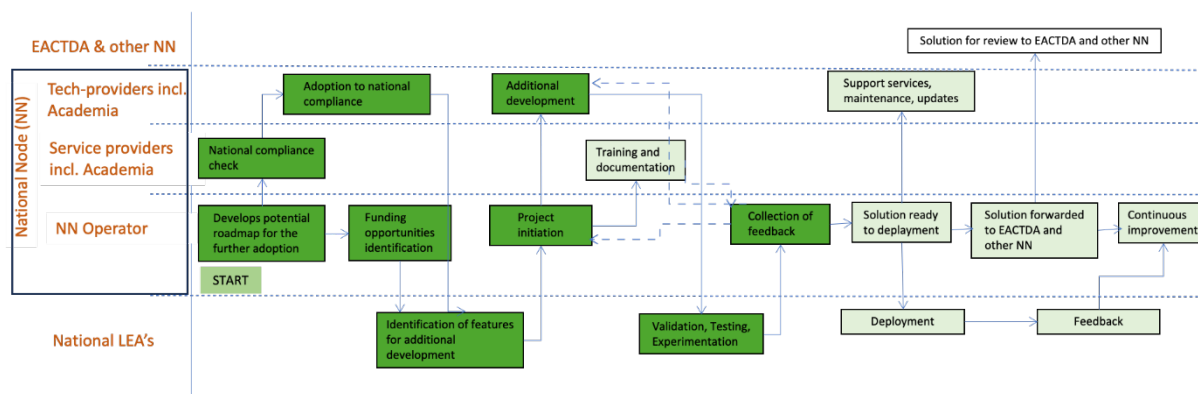


Diagram: Illustrates the progress achieved by the Tool project

The process was structured into two stages:

- **Stage 1:** Proof of Concept and Prototype Development (*FusionSec*)
- **Stage 2:** Advancing Prototype Development and Scaling (*LEAD-PRO*)

Stage 1: Proof of Concept and Prototype Development (*Fusion Sec*)

During this stage, NN played a pivotal role in facilitating and guiding the prototype development process, which was based on the PoC developed by LT Police. The EU-funded project SecureIT (<https://securit-project.eu>) through its cascade funding mechanism facilitated the launch of the small scale project titled: *FusionSec*

NN provided support through the following services:

- Facilitate a matchmaking sessions to establish a consortium of SMEs capable of developing the prototype.
- Access to funding. SecureIT cascade funding instrument was used for prototype development.
- Mentoring prototype development process, ensuring alignment with end user expectations.
- Conducting tool assessments and provide ELSA consultations.
- Supporting pilot implementation in real-world settings to validate solution under operational conditions.

Outcome: FiusionSec platform prototype (TRL6)

FiusionSec key facts: Project duration 12 months, project budget 80KEUR, achieved TRL6. Consortium of 2 SMEs: UAB Iterato(LT)&NUUK Technologies (ES)

Stage 2: Advancing Prototype and Scaling Collaboration (*Tool*)

This stage followed the process previously established by EACTDA-NN, with minor adjustments. Following successful testing and validation of the prototype the primary objective was to secure appropriate funding to further develop and mature FiusionSec platform.

The *HORIZON-CL3-2023-SSRI-01* funding instrument was identified as a suitable mechanism to enable the next phase of development. NN facilitated application development, and upon successful award, the further advancement of the prototype commenced under the framework of the LEAD-PRO project. To pilot and test cross-NN collaboration strategy, the Valencia Police was invited to join the consortium.

Key facts: Duration 24months, budget 1.5MEUR, Technical partners (UAB Iterato (LT), NUUK Technologies (ES), 3 LEAs.

Current Status: Preparation for Operational Deployment

The LEAD-PRO platform is currently approaching readiness for deployment in operational ecosystems. Two pilot demonstrations, aligned with national use cases, are planned to take place in Lithuania and Spain:

- Lithuanian Use Case: Response to a simulated terrorist attack at Darius & Girėnas Stadium.
- Spanish Use Case: Emergency response to a flood disaster in the Valencia region,

In parallel, supporting documentation is under development to facilitate and foster uptake process, This includes operational framework, user manuals, training plan and training Materials.

High-level management within the Lithuanian Police has already committed to deploying the solution. Preliminary discussions have been initiated with the legal and IT departments, representing critical prerequisites for implementing the solution as a national platform.

Outcome: Ready for use solution. The full scale deployment anticipated by the end of 2026.

Lessons learned:

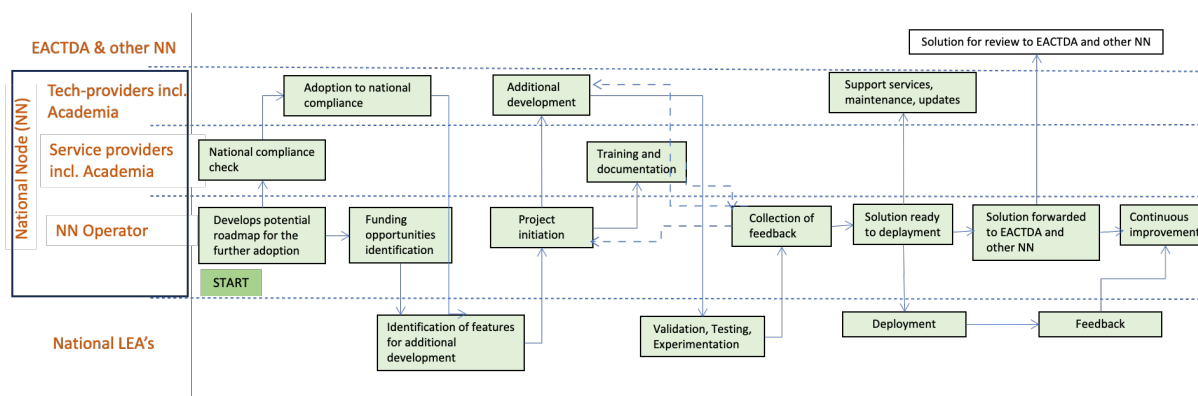
The LEAD-PRO platform represents a specialized solution designed to align with the specific processes of national emergency response teams. Due to its complexity and national customization, the platform cannot be easily uploaded into centralized repositories such as the EACTDA Tools Repository or Europol's ETR and immediately reused or adopted by other EU LEAs.

Nonetheless, EACTDA has developed effective innovation uptake process designed to support replication across other security domains (e.g. DRS and Border Security).

This process emphasizes practical engagement mechanisms such as hands-on demonstrations, hackathons, and interactive events organized by individual NNs but involving end users from across the broader EACTDA NN ecosystem.

A success factor in this approach was the systematic collection of end-user feedback, ensuring that innovation remains operationally relevant and user-centric.

4.12.3. Piloting France National Node (DCIS)



The French National Node is currently being established, with an official launch expected by 1 June 2025. The initiative is led by the Directorate for International Security Cooperation (DCIS) from the French Ministry of Interior, which acts as the national Single Point of Contact (SPOC) for EACTDA.

DCIS has initiated an organisation of the French NN around thematic clusters (e.g., IoT, Cryptocurrencies) to structure the stakeholder engagement and facilitate a capability-driven collaboration. The heads of the Ministry of the Interior (National Police and Gendarmerie) have expressed their interest in this approach and their readiness to commit to it. Two formal agreements are now required from them.

The formal governance of the NN will be set up later on, when the concerned organisations are sufficiently familiar with how the NN works. In practice, a structuring theme for the French NN has already been decided. This is crypto-currencies. A meeting held on 01.07.2025 between the DCIS and ComCyberMI resulted in the endorsement of this thematic cluster, whose members (FMI components, research and industry) and ways to operate will be decided after the holiday.

Solution Validation Status:

- No specific solution has yet been named or described.
- The validation process stage is not specified.

Key Challenges Identified:

- Difficulty in promoting the public-private partnership (PPP) model within traditional LEA structures, which are more familiar with procurement-based or internally developed innovation.
- EACTDA's approach represents a paradigm shift in LEA innovation, requiring cultural and organizational adaptation.

Current Limitations:

- Lack of human resources
- Incomplete governance framework
- Insufficient funding and end-user engagement

Support and Strategic Outlook:

While EACTDA is viewed as actively supportive, the French NN emphasizes that national-level commitment and internal champions (NN ambassadors) are essential for success. Building on national initiatives and demonstrating value over time is seen as the key to establishing a sustainable and impactful node.

4.12.4. Piloting Spain National Node (SGSICS)

4.12.4.1. Identification and prioritization of tools of interest resulting from Research Projects

The process was structured into two main stages:

- Stage 1: Identification and Prioritization of Tools resulting from projects with the participation of the Ministry of the Interior and deemed relevant to operational units.
- Stage 2: Advancing Prototype Development and Testing.

To initiate the activities of the Spanish National Node in a practical and result-oriented manner, a small working group was established with representatives from both Guardia Civil and National Police. The node decided to build on the outcomes of a project already known and valued by both organizations-GRACE, to ensure continuity and tangible progress.

Following a prioritization exercise carried out by operational units on the tools developed within the GRACE project, EACTDA contacted the owners of the prioritized tools to assess their availability and willingness to collaborate in further development. Based on resources availability, the following tool was selected:

- Person Re-Identification Tool - Vicomtech (Spain): The PersonREID tool is a forensic, non-biometric identity search system based on visual appearance. It allows multi-query searches using visual identity extracted from an image, visual identity extracted from a video, or avatar-based descriptions defined by the user. The tool detects individuals in images (bounding boxes) and extracts visual appearance information, focusing primarily on clothing shape and color. Person re-identification across different camera views is conducted by comparing these visual characteristics. For re-identification within a single camera view, the system also incorporates geometric and motion-related data.

This tool was considered a strong candidate not only because of the promising results obtained during the GRACE project (reaching an output TRL of 6) but also because it continued evolving within the PREVENT PCP project-where it reached the final stage. The ongoing development emphasizes non-biometric person search and re-identification, including search functionality based on text descriptions (avatar-based), which significantly enriches the capabilities demonstrated in GRACE. This evolution positions the tool as a more attractive and operationally relevant solution for law enforcement units.

Current Status: The tool is currently under development, with project efforts targeting completion by June 2025.

4.12.4.2. Monitoring and Traceability of Cyber Tools of Interest

As part of the ongoing work of the Spanish National Node, continuous monitoring and traceability activities are carried out to identify cyber tools currently under development in active projects that may be of particular interest to LEAs. The objective is to facilitate and accelerate the integration of such tools through the Tools4LEAs project when appropriate.

One relevant example comes from the STARLIGHT project, which includes developments of significant interest to the members of the National Node, such as: Tattoo Detection Tool, a trainable framework designed to detect tattoos in images or video sequences (both video files and streams). The tool is user-friendly and highly valuable for law enforcement officers when inspecting large volumes

of multimedia data. It is optimized for easy adaptation to new tattoo patterns and offers three main functionalities:

- Tattoo Localization: Detecting the location of a tattoo on a specific part of a suspect's body within a dataset.
- Tattoo Search: Scanning confiscated media for a specific tattoo.
- Tattoo Recognition: Identifying the presence of a specific tattoo in surveillance video footage.

This tool is currently under development, with project milestones targeting completion by March 2025.

Another notable example includes cyber tools developed under the national public procurement programme funded by INCIBE (Spanish National Cybersecurity Institute), which are supported by the Ministry of the Interior through feedback and testing. If the outcomes prove to be satisfactory, some of these tools could become strong candidates for inclusion in EACTDA's portfolio. One such tool is CRYPTOTRACK, still under evaluation, represents a promising cyber capability that could be integrated into future law enforcement support mechanisms, pending successful development results.

4.12.4.3. Actions to Increase the adoption of Tools4LEAs Tools at operational level

One of the key priorities for the Spanish National Node fully aligned with the objectives of EACTDA is to promote the real adoption of Tools4LEAs tools by the intended end users, with a particular focus on increasing engagement among a wider number of operational units.

To achieve this, specific actions are being undertaken to ensure that the tools are not only known but actively tested and integrated into the workflows of relevant law enforcement entities. This includes:

- Promoting hands-on use and operational validation on premises of the tools by end operational experts to move beyond awareness and into practical implementation.
- Expanding the information of operational units, ensuring a broader and more diverse base of feedback and use-case testing.

A significant effort has also been made to increase dissemination and communication activities. These actions are aimed at raising awareness, sharing success stories, and highlighting the operational value of the tools. The goal is to foster a more dynamic and user-driven adoption process.

4.12.4.4. Consideration of EACTA as an exploitation pathway since the beginning of the innovation cycle

One of the core objectives of EACTDA is to help ensure that a greater number of R&D project results in the field of cybercrime can complete the innovation cycle and reach full operational maturity.

A key strategy to achieve this involves encouraging and promoting that project consortia, in which Spanish National Node or its stakeholders participate, explicitly include during the proposal phase the possibility for selected outcomes to be further developed through EACTDA/Tools4LEAs until reaching a high Technology Readiness Level (TRL 8-9).

The proposed model involves introducing a pre-agreement, either in the proposal itself or in the Consortium Agreement (CA) signed at the start of the project. This agreement would facilitate the smooth transition of promising results-from the typical research TRL 6-7 stage-directly into "last-mile" development projects under Tools4LEAs, leading to TRL 8 or higher. From there, the tools could be included in repositories such as the Europol Tool Repository (ETR) and the EACTDA repository, where they would be accessible to any interested European Law Enforcement Agency (LEA) under favorable terms (e.g., no license fees, open access).

In short, the goal is to leverage our influence within project consortia to proactively establish the EACTDA/Tools4LEAs exploitation channel as early as the proposal phase. This would help avoid or reduce complex negotiations at later stages and ensure that promising tools can continue along a clearly defined path to operational use. Naturally, this approach is only applicable to projects that deliver solutions or technologies with potential application in the cybercrime domain.

This strategy has been fully integrated by the Spanish National Node since last call of the HE Programme and will be maintained in the upcoming calls/applications.

5. Status and progress update during 2025 Q3-Q4 period

5.1. Summary: Lithuania National Node - Status and Progress (Survey Dec 2025)

The Lithuanian National Node, coordinated by L3CE, remains in the establishment phase, with formalization expected by December 31, 2026 (forecasted). Despite not being fully official yet, the node has made substantial operational progress. Key milestones include team setup, mission and vision re-definition, launch of the first project, and the creation of a projects pipeline. Stakeholder collaboration is active, ongoing and growing.

The NN is structured as a virtual organization under the governance of L3CE, and the governance framework is under development. While improvements have been made in funding access and internal processes, the formal resource commitment and governance of the node remain incomplete.

The primary solution under validation is NiceVoice, a voice evidence processing tool targeting use by the Criminal Police. It is currently in the iterative improvement stage, with validation supported by EACTDA experts and Lithuanian LEAs.

Key Challenges:

- The most significant challenge has been the complexity and time demands of onboarding solutions into operational environments.
- Limitations persist around technical infrastructure, funding access, human resources, and the absence of a finalized governance framework.

Strategic Needs:

L3CE suggests that assigning a leadership mandate for coordinating the National Node would significantly accelerate its maturity and growth, helping to stabilize operational roles and ensure long-term sustainability.

5.2. Summary: Spain National Node - Status and Progress (Survey Dec 2025)

The Spanish National Node, coordinated by SGSICS (Ministry of the Interior), is officially established and has made structured progress through a series of three multi-stakeholder meetings and two solution-specific sessions with national LEAs (National Police and Guardia Civil).

The NN operates under a virtual organizational model, legally governed by SGSICS, with a formal governance structure still under development.

Two solutions have been selected for validation:

1. Person Detection and Re-identification Tool - allows identification and tracking of individuals in video feeds.
2. Trainable Logo Identification Tool (TLI) - enables automatic logo detection (e.g., on clothes, vehicles), combining results from the STARLIGHT and EMPOWER projects.

Both tools are currently undergoing iterative improvement based on end-user feedback and are being evaluated by national LEAs. Spain's NN experts are also engaged in reviewing other Tools4LEAs solutions across the network.

Challenges and Limitations:

- Operational limitations include incomplete governance, funding gaps, resource constraints, and limited technical infrastructure.
- The main challenge remains ensuring full engagement from national end-users, especially at legal and operational levels.

Support and Outlook:

EACTDA's support has been consistent and positively acknowledged. Further national-level coordination with LEAs is underway to consolidate Spain's NN as fully functional.

5.3. Summary: France National Node - Status and Progress (Survey Dec 2025)

The French National Node, led by the Directorate for International Security Cooperation (DCIS), is in an early implementation phase, with official establishment expected by March 2026. Current model remains bottom-up and thematically clustered, with topical groups (e.g., deepfakes, cryptocurrencies) being formed around specific innovation areas. While the model has conceptual support from stakeholders, formal institutional endorsement and full structural buy-in remain limited.

The node operates as a virtual collaboration network, coordinated by DCIS but without a dedicated legal entity. A governance structure is still under development, and the operational ecosystem remains fragmented across independent actors.

The validation phase is still in planning. The node intends to:

- Select two tools for validation and pre-operational adoption in 2026.
- Identify both EU-level tools (e.g., from EACTDA) and nationally developed solutions, addressing integration, legal constraints, cybersecurity compliance, and end-user training.

Key Challenges Identified:

- Technical complexity of tools is a primary barrier. LEAs are unaccustomed to navigating legal, cybersecurity, integration, and training demands involved in adopting externally developed solutions.
- End-user engagement is low, partly due to unfamiliarity with collaborative innovation models.
- Other barriers include resource limitations, lack of a governance framework, and limited infrastructure.

Strategic Perspective:

DCIS suggests that the best support for France would not be additional resources, but rather a strong success story from another National Node. Lithuania's deployment of NiceVoice is identified as a compelling precedent that could help build momentum internally.

For 2026, France's NN aims to validate one EACTDA tool and one national innovation, demonstrating the NN's value and unlocking political will for full-scale deployment.

5.4. Way Forward Perspectives

Lithuania (LT NN)

Lithuania frames the NN as a practical way to bridge the “valley of death” between successful research outputs and operational deployment, by aligning researchers, innovators, and LEAs around real constraints (data, infrastructure, compliance, maintenance, training), using real world end-users scenario and combining different financing instruments.

The NiceVoice last-mile pilot is highly promising and is a good candidate to become successor of the innovation uptake and operationalization process, that afterwards will build valuable reference case for NN processes organization and overall initiative moderation principles:

- early and constant end-user involvement built ownership and put the background for complete alignment with operational needs;
- research partner collaboration reduced technical execution risk
- daily and strong facilitation helped navigate complex initiation procedures.

The plan for near future period – to keep consolidating a more “streamlined” last mile development and operationalization pipeline by aligning Tools4LEAs last-mile tools repository with national end-user operational needs and building pipeline of possible projects by leveraging different financing options.

Spain (ES NN)

Spain emphasises direct value for LEAs: predictable access to EACTDA/Tools4LEAs tools and services, and gradual strengthening of the national cybercrime innovation ecosystem. They improved communication internally and engage all the relevant actors within the Ministry. The remaining challenge for the next period is to achieve a first success story arising from an internal, bottom-up need that can trigger the activity to become much more dynamic.

On the way forward the important lesson learned: involving the legal and financial departments of the organizations that are part of the NN, in order to complete the full development cycle.

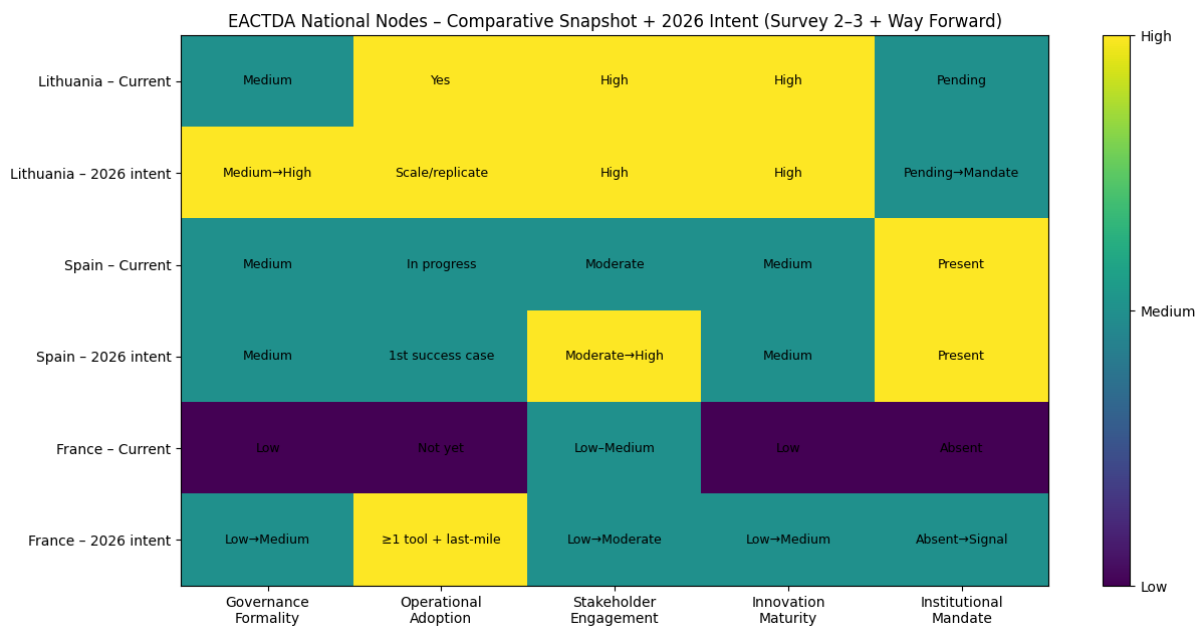
France (FR NN)

As the experience showed, LEAs tend to follow two pathways for innovative solutions adoption. The first is the acquisition of off-the-shelf solutions, which are sometimes very expensive and/or not satisfactory (efficient but not sovereign, sovereign but not efficient, built for non-LEA purposes, etc.). This option should facilitate deployment as part of the package sold by the supplier. The second option involves internal development by LEAs using their own resources. This approach is perceived as cost-effective (not considering the salary costs of those involved in development) and well adapted to operational needs. This pathway also allows full control of all stages of the process (development, testing and trials, consideration of the GDPR and AI Act, legal framework, training, etc.). A third approach, involving agile collaboration with scientific or industrial partners, is still struggling to find its place between the first two because it requires a profound paradigm shift. On the one hand, a NN is a lever to shift the mindset of LEAs when discussing innovation; on the other, it is an objective to achieve and a goal in itself. Near future enablers to facilitate the progress are identified to have a good reference for successful full cycle innovation uptake and to advance with improved and clear IPR policy that will facilitate the higher involvement of potential innovative SMEs.

In 2026, the French national node will focus on two initiatives: adoption and development. This means that the French national node will experiment with the selection, adoption and deployment of at least one tool (more if possible) to demonstrate the feasibility of EACTDA's offer. The second initiative will focus on proposing at least one last-mile development project. The main objective is to have success stories to promote the model.



Observed Trends (Mid → End 2025)



- **Lithuania** leads in operationalization, successfully piloting NiceVoice and applying legal/AI compliance in context. Have built strong pipeline of perspective solutions while running set of dedicated thematical workshops with different stakeholders.
- **Spain** shows structured institutional capacity, continues with two innovationns in the current uptake initiatives but lacks dynamic coordination across national units.
- **France** remains in conceptual mode; no institutional mandate or funding structure, but strong coordination potential via DCIS.
- **All nodes** identify succesc story as main driver forward while improved governance and mandate would help to better coordinate activities.

6. Conclusions and Next Steps

6.1. Conclusions

The validation and piloting activities carried out within the Tools4LEAs project confirm the added value of the EACTDA National Nodes (NNs) as a framework to accelerate the practical uptake of innovative cybercrime-fighting solutions across the EU. The comparative assessment of the Lithuanian, Spanish, and French National Nodes demonstrates measurable progress in operationalizing the NN concept, despite context-specific challenges and differing levels of maturity.

Key conclusions on structural level:

- **Proof of concept demonstrated:** The MVPs piloted-such as *NiceVoice* in Lithuania and *Person Re-Identification* in Spain-show that tailored solutions can be successfully selected, further developed, and prepared for operational deployment through a structured NN governance model and close end-user engagement.
- **Governance frameworks evolving:** While governance structures remain at varying stages of formalization, all three nodes have taken critical steps to define stakeholder roles, coordination mechanisms, and validation pathways that align with national contexts.
- **Strong engagement from end-users:** Early and continuous involvement of LEAs as end-users is a clear success factor, ensuring that tools are developed to meet real operational needs. The Lithuanian and Spanish experiences highlight the importance of co-creation and national customization.
- **Challenges remain common:** Despite progress, all NNs face similar obstacles, including limited sustainable funding, incomplete legal frameworks, governance gaps, and the need to institutionalize inter-node collaboration and knowledge transfer.
- **Thematic clustering and integration pathways:** The French NN's thematic cluster approach represents a promising model to organize innovation efforts, mobilize stakeholders, and align national and EU-level priorities.
- **Inter-node coordination adds value:** The comparative exercises and cross-node workshops demonstrate that sharing lessons learned, technical resources, and piloting outcomes strengthens the collective maturity and increases the potential for broader EU adoption.

Several survey iterations confirms that the National Node (NN) model is not just a coordination concept on paper; it is an operational mechanism that can move tools from “available” to “actually adopted” when the node has enough convening power, a repeatable uptake process, and consistent end-user ownership. The Lithuanian and Spanish cases show that even with limited resources and only partially formalised governance, NNs can run credible validation cycles and translate feedback into concrete tool improvements and deployment preparation.

What we see more clearly after the latest survey round is that “tool readiness” is only half of the story. The harder part is the surrounding adoption workload: legal constraints (GDPR/AI Act interpretation in context), IT security reviews, integration/API work, HMI fit, training, and the practical question of who maintains the tool after deployment. France describes this explicitly as the core friction for 2026 adoption planning, and it matches what the other nodes experienced in practice even when they were further along.

The comparative evidence also strengthens one of the earlier hypotheses: success stories are a primary accelerator for NN maturation. Lithuania's NN last-mile piloting experience gives the network a concrete reference case for how to run the full cycle, while Spain NN is close to that “first national win” threshold and it as the trigger for making participation more dynamic across internal units. France, in parallel, frames success stories as the main lever to unlock institutional buy-in for a model that sits between classic procurement and internal development pathways.

Last iteration also showed that a dedicated governance and process moderation (even can be informal) is needed. Absence of it is the limiting factor once the node moves beyond a small innovation cycles/projects. And it is the missing bridge between innovative tool validation results and additional developments needed for sustainable integration of that innovation in end-user organization: without that bridge, the same issues reappear project after project (unclear ownership, ad hoc resourcing with limited dedication, slow or no approvals).

Across all nodes, the pattern is consistent: project-based activity can take a tool to pilot stage, but long-term operational uptake requires a clear pipeline, NN mandate to moderate the process and stable resourcing. Lithuania highlights the need to consolidate a streamlined operationalisation pipeline and keep building a project pipeline around national needs, and Spain points to earlier involvement of legal and financial units as a success condition to complete the full cycle.

Finally, the inter-node dimension is starting to behave like a real network rather than three separate pilots. Cross-node exchanges, shared validation discussions, and the emerging “reference cases” are already making it easier to explain the NN value internally to LEA stakeholders. The next step is to make those knowledge loops more systematic, so the network can scale without each new node relearning the same lessons from scratch.

6.2. Next Steps

Looking forward, the next phase should be treated as a transition from “pilots that worked” to a repeatable operating model. In practice, that means we stop relying on informal coordination and ad-hoc heroics, and we make the delivery pathway predictable enough that an LEA unit can say yes without taking risk of uncertainty. The survey evidence and the operational validation point to the following set of priorities:

- **Improve governance so decisions can be made quickly and owned clearly.** Each NN should come up with the governance package that formally or informally have been developing for some time: decision process, role of process participants, mandate, and basic agreements with key national stakeholders. France, in particular, needs to activate the thematic clusters approach, while Lithuania and Spain could look into stronger inter-NN coordination routines so tool uptake is not limited to a single MS.
- **Move from purely project-based activity to a funding mix that can sustain uptake cycle.** The pilots show that project funding can get you to prototype/TRL progression and even last-mile work, but it does not reliably cover the “trivial but essential” parts: required target infrastructure, SOPs, operational security, support, paper work around the technology and training. The next step is to design a practical mix (national lines + EU instruments + cascade funding where relevant) that ensures these points are delivered in planned manner.
- **Expand end-user engagement beyond the initial champions, and do it deliberately.** Where uptake progressed, it was because end-users were involved early, repeatedly, and with enough ownership to shape priorities. The immediate next step is to broaden this involvement to additional units, using demonstrations, exchange visits, and replication of success cases as a deliberate strategy, - not as an afterthought once the tool is “ready”.
- **Make inter-NN collaboration more systematic, not occasional.** Cross-node exchange already proves to be important component for trust development, that innovative can be operationalized. The next step is to make it more systematic: regular joint workshops, shared feedback loops, and, where feasible, cross-node pilots. This is also where a shared “service portfolio” can start to emerge (what NNs can reliably provide to each other).
- **Continue tool refinement, but align it with operational integration constraints from day one.** Iteration should remain end-user driven, but the refinement backlog needs to include the real

blockers that show up during operational integration validation/check: legal interpretation in local context, end-users environment security perspectives, required additional APIs, integration patterns, user interface fit, and training.

- **Use thematic clusters and “success stories” as scaling instruments.** France’s cluster model is a useful organising mechanism for priorities, but the broader network lesson is simpler: visible success stories create momentum faster than any policy memo. Lithuania’s NiceVoice experience already plays that role; Spain’s next trigger is a first national “win” arising from a bottom-up operational need.
- **Treat operational integration and capacity building as part of the product.** To avoid repeating the same friction in every delivery attempt, NNs should package integration into workflows as a standard track: deployment plans, SOP updates, training materials, and clear maintenance/support procedures. Without that, tools remain “available” but not sustainably used.
- **Monitor impact in a way that is light enough to run, but concrete enough to learn from.** A small monitoring and evaluation loops (surveys tied to adoption and use, structured feedback, corrective actions) will help prioritise what to fix next and provide evidence for end-users’ and other stakeholders’ decision-makers. This also supports the argument for commitment to next project: it becomes easier to defend when impact is structured and measured. At the same time it will guide continuous improvement and inform future EACTDA strategy and funding priorities.

6.3. Further activities plan

Workstream	What “done” include	Lithuania (LT)	Spain (ES)	France (FR)	Target window
1) Governance package	Decision process, roles, membership, and moderation routine agreed and usable	Convert current informal coordination into a lightweight mandate and predictable approval route (still virtual, but less ad hoc)	Keep SGSICS lead, reduce internal constraints by clarifying approvals and engaging legal/finance earlier	Secure institutional endorsement so NN and thematic clusters can operate in practice	2026
2) Tool portfolio + selection	Shortlist aligned to end-user needs + realistic operationalization constraints	Keep building the solution pipeline from national needs workshops and EACTDA repository	Continue with the two current uptake initiatives and focus to a “first success case” track	Select ≥1 EACTDA tool (more if possible) and define local constraints (legal/IT sec/API/UI/training)	2026
3) “Non-technical constraints” staging gate development	Legal basis (GDPR/AI Act fit), security, data access, integration ownership clarified before development start	Reduce onboarding drag by standardising early compliance validation + faster solutions onboarding (this is where LT reports the time cost)	Formalise the step where legal/financial units participate before pilots “lock in”	Explicit project initiation constraints analysis (already frames 2026 this way)	2026
4) Integration & deployment planning	Deployment plan, interfaces, hosting or other model, SOP/training plan drafted	Package the “NiceVoice”-style last-mile pathway into a reusable template (to repeat next time)	Produce first ES “deployable package” for a selected tool to trigger the first national win	Build first deployment package for the selected tool to prove feasibility	2026
5) Operational validation cycle	Pilot run + structured feedback loop + next iteration plan	Continue iterative improvement with tighter feedback to have more practical next improvements	Run targeted demos/operational pilot with National Police/Guardia Civil to convert reviews/tests into operational trials	Run at least one tool demo/validation; Start one last-mile development project in parallel	2026
6) Sustainability basics	Maintenance/support expectations, update initiatives, owner of operations defined	Identify how maintenance/support in operations is financed (this as one of the core “valley of death” issues)	Decide who maintains what and under what budget line once a tool is adopted	Make visible other NN success stories to argue for commitment/resources/mandate	2026
7) Inter-node learning loop	Regular exchange + shared artifacts (checklists, templates, lessons learned)	Share NiceVoice operationalisation artifacts (templates/checklists)	Share ES experience and ES uptake “playbook”	Share clustering approach lessons	2026

7. Annexes

7.1. List of Acronyms

Acronym	Meaning
AI	Artificial Intelligence
API	Application Programming Interface
DCIS	Directorate for International Security Cooperation (France, Ministry of the Interior)
EACTDA	European Anti-Cybercrime Technology Development Association
EC3	European Cybercrime Centre (Europol)
ES	Spain (country code used in consortium / partner country notation)
ETR	Europol Tool Repository
EUAB	End-User Advisory Board
FR	France (country code used in node notation)
GDPR	General Data Protection Regulation
IPR	Intellectual Property Rights
ISFP	Internal Security Fund – Police (EU programme referenced as ISFP in the deliverable)
KTU	Kaunas University of Technology
L3CE	Lithuanian Cybercrime Center of Excellence for Training, Research and Education (coordinating entity of the Lithuanian National Node)
LEA	Law Enforcement Agency / Law Enforcement Agencies
LKPB	Lithuanian Criminal Police Bureau
LT	Lithuania (country code used in consortium / node notation)
MVP	Minimum Viable Product
NN	National Node / National Nodes
NLP	Natural Language Processing
PoC	Proof of Concept
PPP	Public–Private Partnership
RTO	Research and Technology Organisation
SGSICS	Subdirector General of Information and Communications Systems for Security (Spain, Ministry of the Interior)
SME	Small and Medium-sized Enterprise(s)
SPOC	Single Point of Contact
TRL	Technology Readiness Level

7.2. List of References:

- Tools4LEAs v2 Technical Description (PART B)
- EACTDA National Nodes Conceptual Model Document
- National EACTDA NN Reports 2025, June (France, Lithuania, Spain)
- National EACTDA NN Reports 2025, December (France, Lithuania, Spain)