Final Version of the Pilot Tool

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1. Document History

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1.0	27/10/2025	Hristo Konstantinov, Dilyana Bozhanova, Lilia Kachoreva, Boicho Georgiev, Vasil Oreshenski	APIS	First draft
2.0	31/10/2025	Alessia Fidelangeli, Piera Santin, Federico Galli	UNIBO	Review and final draft

2. Contributors

Partner	Name	Role	Contribution
APIS	Vasil Oreshenski, Hristo Hristov, Daniel Traikov, Lyboslav Krastev	WP Participant	Development of the Pilot Tool's final user interface and features
UNIBO	Giulia Grundler, Marco Billi, Davide Audrito, Paolo Torroni	WP Participant	Development of the JIFs extraction functionality of the Customised Detection Module
UNITO	Rachele Mignone, Ivan Spada, Luigi di Caro	WP Participant	Network and similarity analysis

Disclaimer: On behalf of APIS EUROPE, the present deliverable has been drafted by Hristo Konstantinov, Dilyana Bozhanova, Lilia Kachoreva, Boicho Georgiev, and Vasil Oreshenski.

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5. List of Acronyms

CJEU	Court of Justice of the European Union
JIF(s)	Judicial Interpretative Formula(s)
ML	Machine Learning
VAT	Value Added Tax
WP	Work package

6. Executive Summary

This deliverable presents the final version of the POLINE Pilot Tool. It offers a concise overview of the new, enhanced, and refined features integrated into the online platform following the release of the demo version. The core legal content and functionalities of the Pilot Tool were already described in detail in Deliverable 4.1 "Technical Specifications" and Deliverable 4.2 "Demo Version of the Pilot Tool."

Accordingly, the focus of this document is on the updates and improvements in the platform's functionality introduced after the demo version's launch. Section 7 provides a brief overview of the updated legal content, while Section 8 outlines the newly added, modified, or enhanced features across the three modules of the Pilot Tool.

The final version of the POLINE Pilot Tool is publicly accessible at https://www.poline-tool.eu/.

7. Update of the Legal Content

The Legal Database Module of the POLINE Pilot Tool provides access to a database of:

- *Judicial Interpretative Formulas (JIFs)* [1] – the JIFs collection is focused on two subdomains of VAT law – "Exemptions" and "Taxable Amount";
- *Case law of the CJEU and the supreme courts of Italy, Sweden and Bulgaria* – a link to the full text of the respective judgement is provided in each JIF extracted from its text;
- *VAT legislation* – the full texts of the main applicable instruments of the EU, Italy, Sweden and Bulgaria in the VAT domain are published in section "Legislation" of the Pilot Tool.

In the 7-month period after the launch of the demo version of the Pilot Tool, the partners in the POLINE project significantly enriched the collection of JIFs. The latter increased more than twofold – from 1,394 to 3,863 JIFs. This increase was primarily due to substantial improvements in the methods for automated extraction of JIFs, which were applied to the newly identified cases. The distribution of JIFs in the final version of the Legal Database Module among the four project jurisdictions is as follows:

- European Union – 1358
- Bulgaria – 445
- Italy – 1589
- Sweden – 471.

The majority of these JIFs (3,451) were automatically extracted from court decisions, whereas 412 were identified and annotated manually by legal experts.

[1] For the purposes of the POLINE project "judicial interpretative formulas" are those parts of a judicial decision providing for the interpretation of a rule or a legal principle or their application to a concrete case. During the course of project's implementation, the partners in POLINE project decided to replace the initial concept of "judicial principles of law" (JPOLs) with this more precise and methodologically sound term, which reflects better the perception of the judicial community.

8. Extension of the Functionality of the Platform

8.1. Legal Database Module

The final version of the Pilot Tool introduced the following modifications and enhancements to the functionality of the Legal Database Module:

1) Throughout the platform, the term "judicial principles of law" (JPOLs) has been replaced with "judicial interpretative formulas" (JIFs).
2) A new, significantly extended and refined version of the POLINE Ontology has been integrated into the platform.
3) The legal database was fully updated, not only to include the newly introduced JIFs, but also the newly generated interlinks between them, created using an enhanced methodology for semantic and network analysis.
4) User-friendly visualisation of the citation index resulting from the network analysis is now provided through colour-coded thermometer icons displayed in the JIF lists.

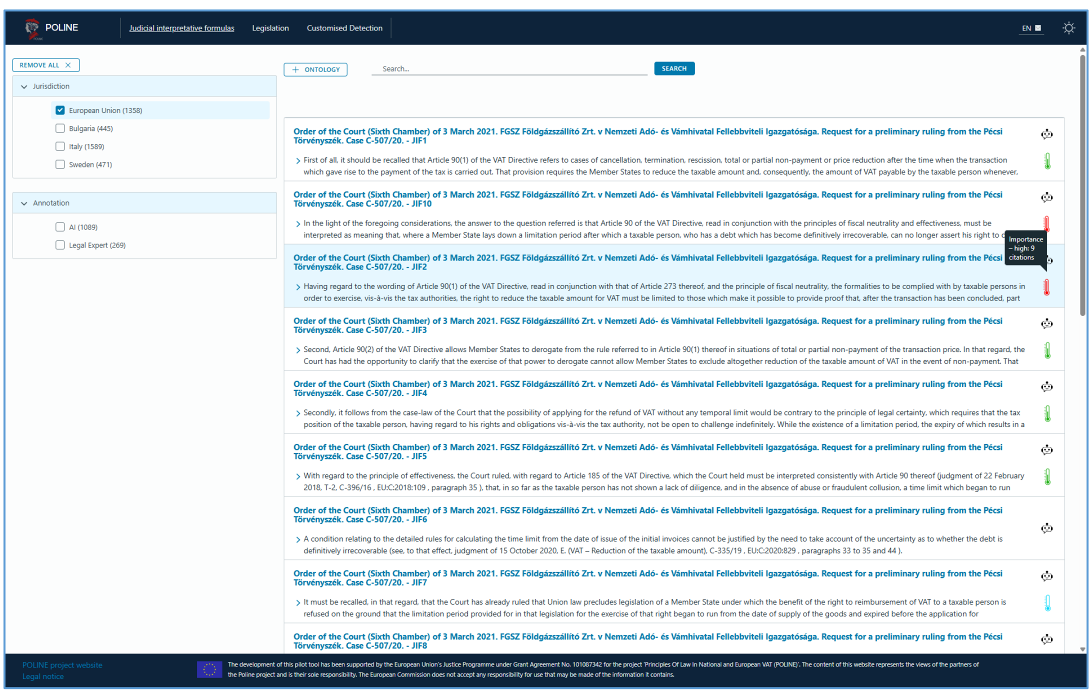

Figure 1. *Visualisation of the citation index through colour-coded thermometer icons in a JIFs' list*

5) A dedicated icon for “social care activities” enables users to identify JIFs labelled with the ontology concept “exemption for public interest” or its sub-level terms in the JIF lists.

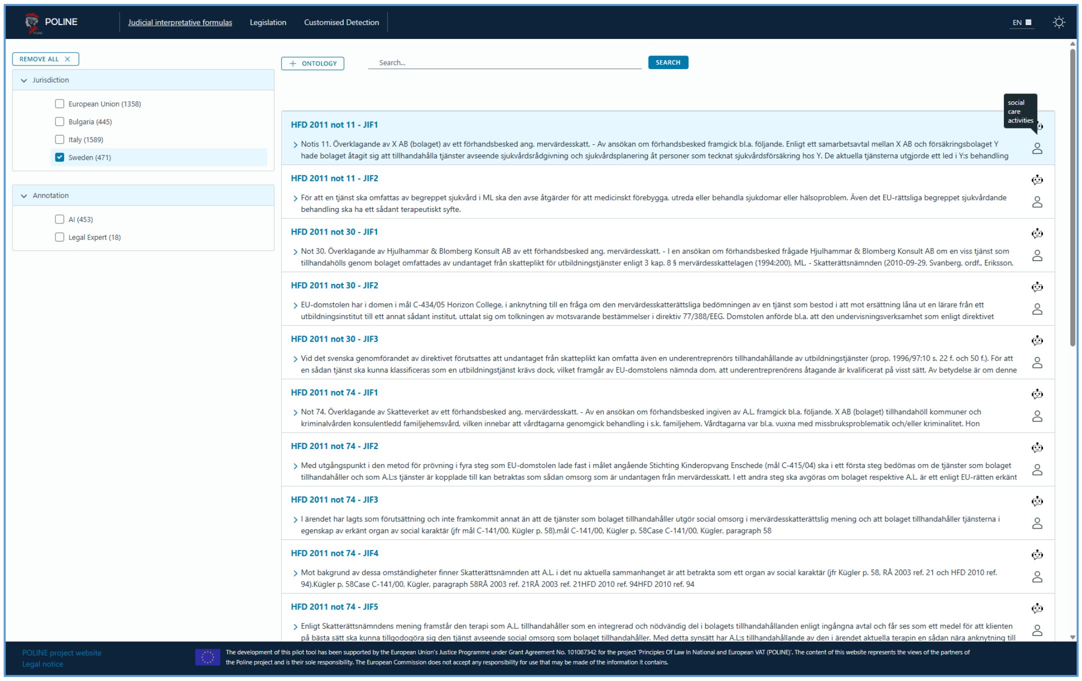

Figure 2. *Example of JIFs labelled with an icon for “social care activities” in a list of JIFs*

6) Several improvements were made to the keyword search functionality, and errors in the highlighting of matched terms within JIF texts were corrected.

8.2. Link Visualisation Module

Although the demo version of the Pilot Tool showcased the main features of the platform based on the semantic and network analysis implemented within Work Package 3, the full functionality of the Link Visualisation Module is available only in the final version of the system. This is due not only to the fact that the legal content of the platform has since doubled, but also because a substantial part of the semantic and network data analysis was completed after the launch of the demo version.

he final version of the Pilot Tool introduced the following modifications and enhancements to the functionality of the Link Visualisation Module:

1) The visualization of similar JIFs has been divided into two separate lists: “Similar JIFs by Text” and “Similar JIFs by Citation.” The first list was already present in the demo version; however, in the final version, the similarity algorithm was significantly improved. It now displays all JIFs with a similarity index of at least 0.4. The second list includes JIFs that cite the same legal documents and/or their structural elements (e.g. articles, paragraphs, points).

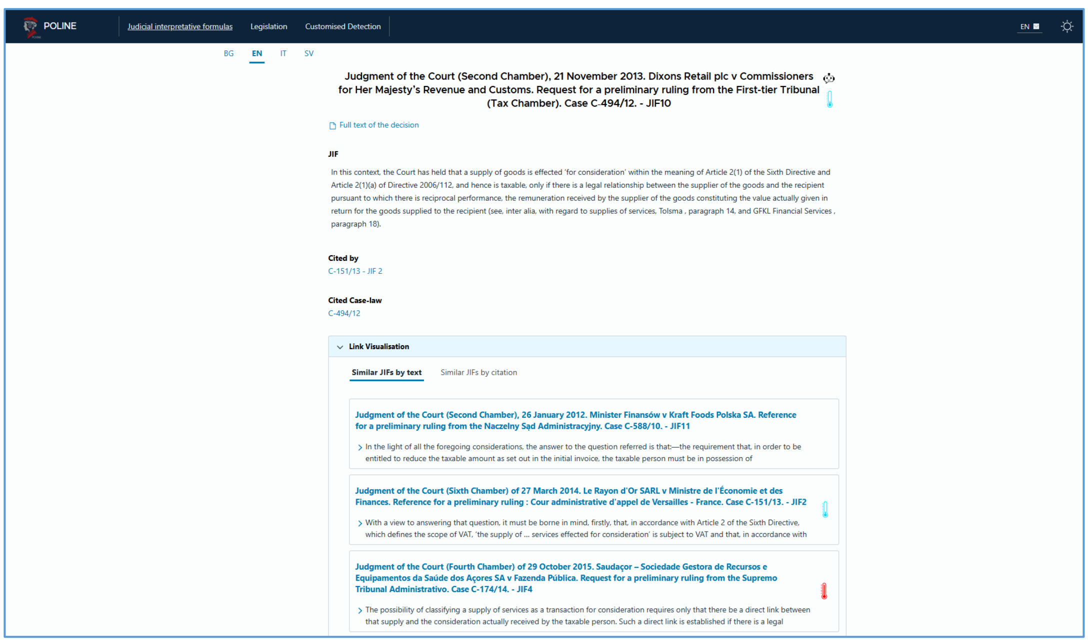

Figure 3. *Link visualisation of similar JIFs – by text and by citation*

2) The list “Relevant Decisions” has been removed, as the relationship between the given JIF and decisions derived from citing or similar JIFs is indirect and often vague

or ambiguous.

3) Based on the conducted network analysis, a new sub-section titled “Cited by” has been added to the metadata section beneath each JIF’s text cited by other documents. It lists and links to court decisions referring to the respective JIF.

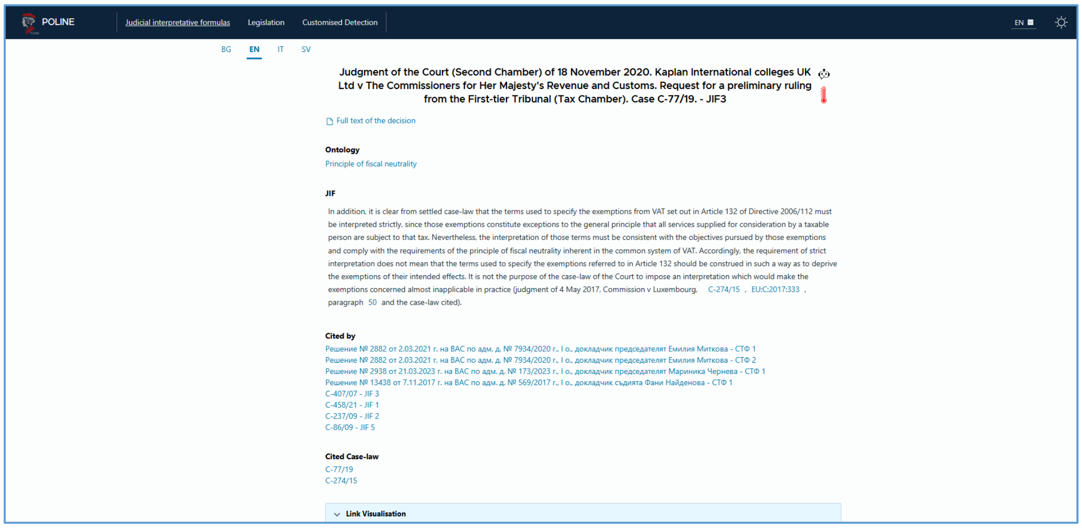

Figure 4. *Example of a JIF cited by judgments of the CJEU and the Bulgarian Supreme Administrative Court*

4) The citation score produced through network analysis is now visually represented by color-coded thermometer icons, illustrating the relative importance (relevance) of JIFs. Four importance levels have been introduced based on the number of in-citations (i.e. incoming citations from other documents):

- *High*: 4 or more citations (red thermometer icon)
- *Relatively high*: 3 citations (orange icon)
- *Medium*: – 2 citations (green icon)
- *Low*: 1 citation (blue icon).

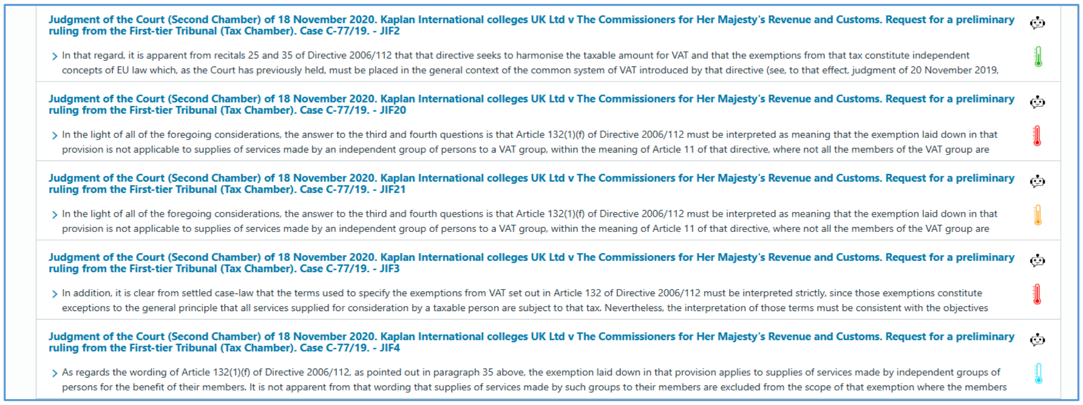

Figure 5. *Example of a list of JIFs with colour-coded thermometer icons*

8.3. Customised Detection Module

The demo version of the Pilot Tool included only a mock-up of the Customised Detection Module, designed to illustrate its intended functionality. For this purpose, the mock-up featured a pre-selected sample text – a judgment of the CJEU in *Case C-174/11 Finanzamt Steglitz v. Ines Zimmermann*. When the user clicked the "SEND" button, the mock-up simulated interaction with a machine learning (ML) model and, after a few seconds, displayed a list of JIFs supposedly extracted by the model from the judgment text.

The final version of the Pilot Tool now provides the full functionality of the Customised Detection Module, as described in the platform's Technical Specifications. The module enables users to copy and paste the text of any court decision into the input field and, upon clicking "SEND", to receive a customised legal analysis of the JIFs automatically identified and extracted from the text. A detailed description of the underlying ML model is available in Deliverable D3.4 "Public POLINE Code Repository."

Furthermore, the Customised Detection Module allows users to search for semantically similar JIFs corresponding to each identified and extracted JIF within a court decision (by clicking the link "Similar JIFs by Text"). This feature enables users to assess the correspondence and alignment of the extracted JIFs with existing ones at both the national and EU levels.

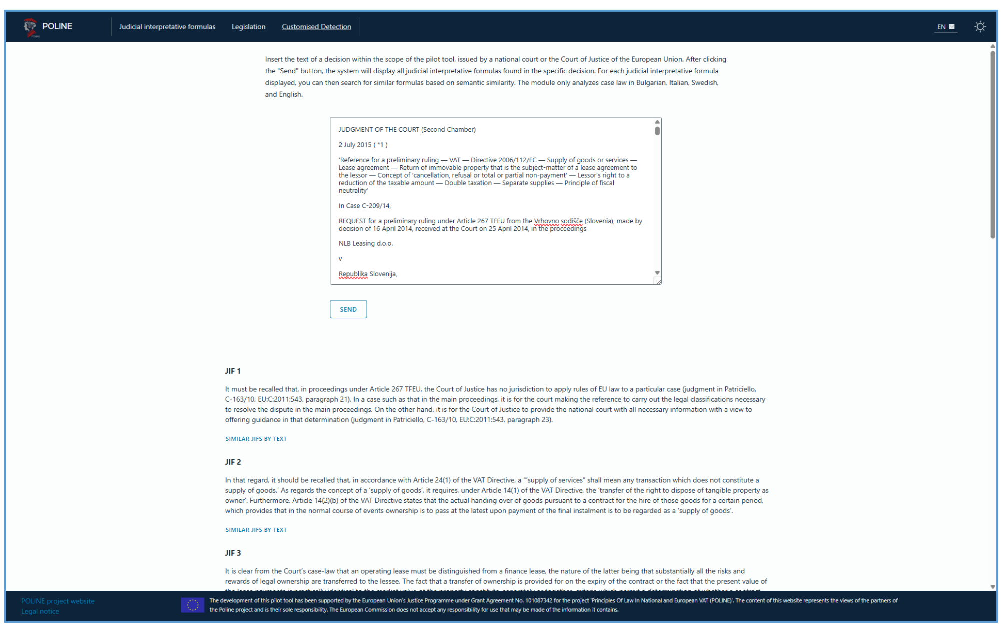

Figure 6. *Example of JIFs extracted by the Customised Detection Module from a CJEU judgment*