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# Deep dive Regulatory Reporting Requirements: Hybrid AI to Model Legal Drafting Templates

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# Introduction of the problem

- “Reporting Requirements” are particular legislative provisions that command some institutions to prepare a report, plan, budget, opinion, or standard to address other institutions for monitoring the quality of the legislation.
- The RRs are a tool:
  - to implement the Better Regulation
  - to monitor the impact of the legislation
  - to detect new needs
  - to manage Digital-Ready Policies



Review clauses in  
EU legislation  
adopted during the  
first half of the  
ninth  
parliamentary  
term (2019-2024)

A rolling check-list

STUDY



EPRS | European Parliamentary Research Service  
Author: Peter Hedberg  
For Parliament 2019  
EP | 2019-10-10 | October 2019

EN



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# Example of Reporting Request

<http://data.europa.eu/eli/dir/2014/65/2019-12-31>

	Temporal parameter
	Agent
	Action
	Topic

- Art. 33 - 9. The Commission shall set up an expert stakeholder group by 1 July 2020 to monitor the functioning and success of SME growth markets. By 1 July 2021, the expert stakeholder group shall publish a report on its conclusions.
- This text is in English.
- It belongs to a specific temporal version 2019-12-31.

# Introduction of the problem

- The number of the RRs in the EU legislation is increased, and the complexity of the linguistic formulations make it difficult to monitor them over time.
- 60% of EU legislation includes at least one RR with an annual report to submit.
- Additionally, the legislation evolves, and to have an updated situation of all the RR mandates is becoming a very time-consuming task.



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# Why Reporting Requirements Matter

- Reporting Requirements (RRs) are *meta-norms* enabling monitoring, evaluation, and coordination in EU legislation
- Their number and complexity have grown significantly
- Fragmented tracking hinders Better Regulation and consistent implementation

**Need for a structured, automated, and standardised approach.**

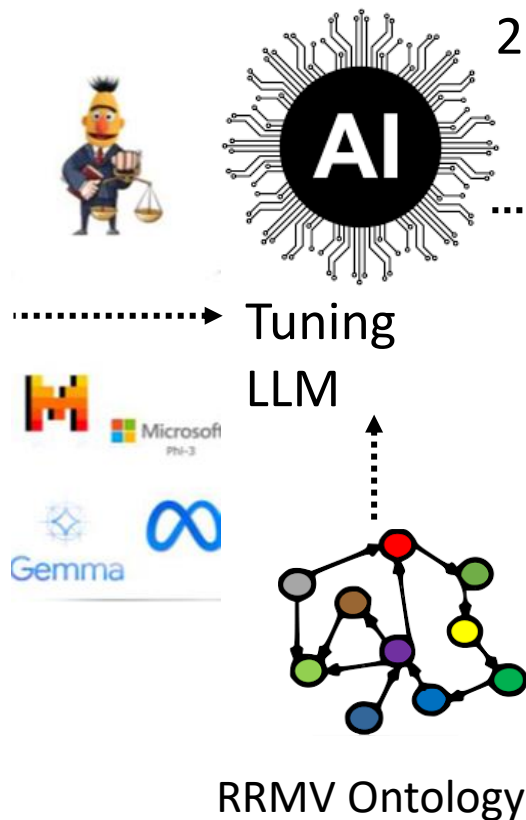
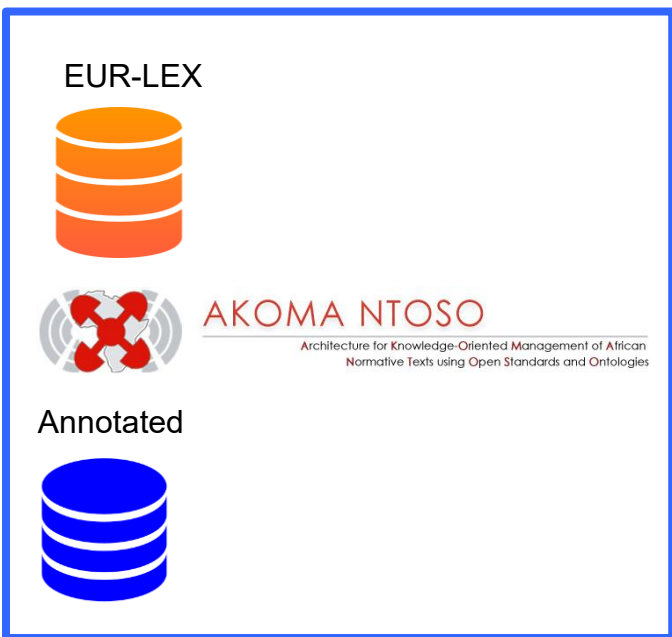
**Objective: to create template in LEOS and automatic extraction of the RR**

# Solution and Methodology

- Create a common metadata standard RRMV capable to extract, represent, monitor the RRs
- Ontology reused:
  - ELI (European Legislation Identifier), AKN4EU – FRBR, Web Annotation Data Model, UNDO, CCCEV (analysed but not used)
- Source from EU Commission and EU Parliament Reports
- Legal Analysis of a real dataset (about 100 RRs on thousands of acts)
- Statistical Analysis
- Linguistic Analysis
- Definition of templates and variants
- Integration in LEOS



# Extraction and Validation



1. Binary Classification
2. Extraction Entities

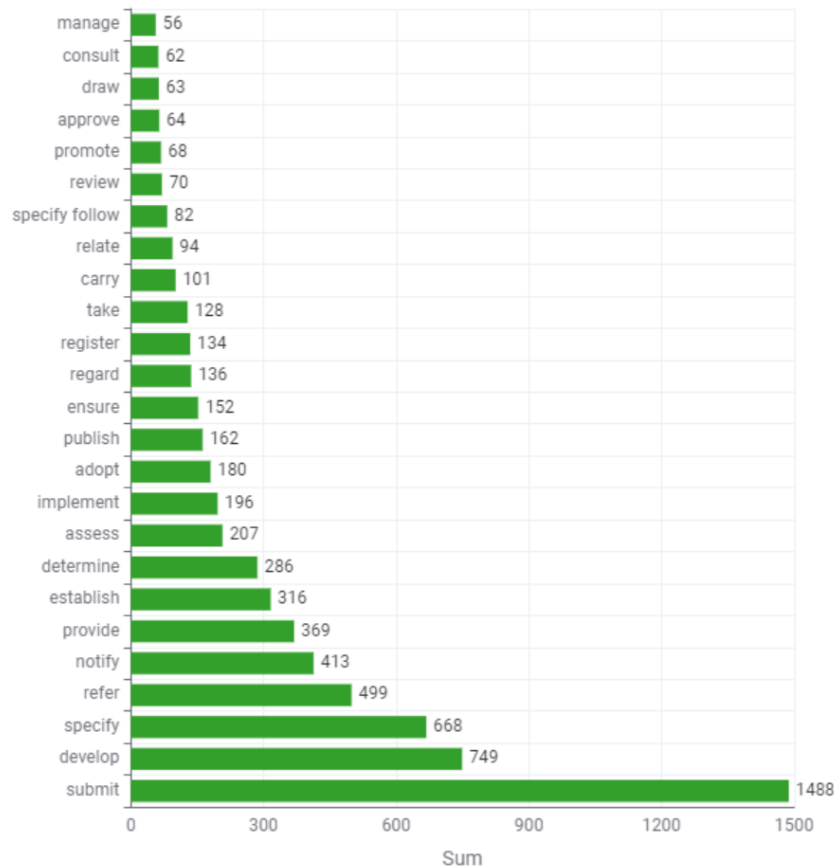


**Reporting Requests  
Modelling in European  
Legislation with a Hybrid  
AI Approach, ACM, 2025**

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Generoso

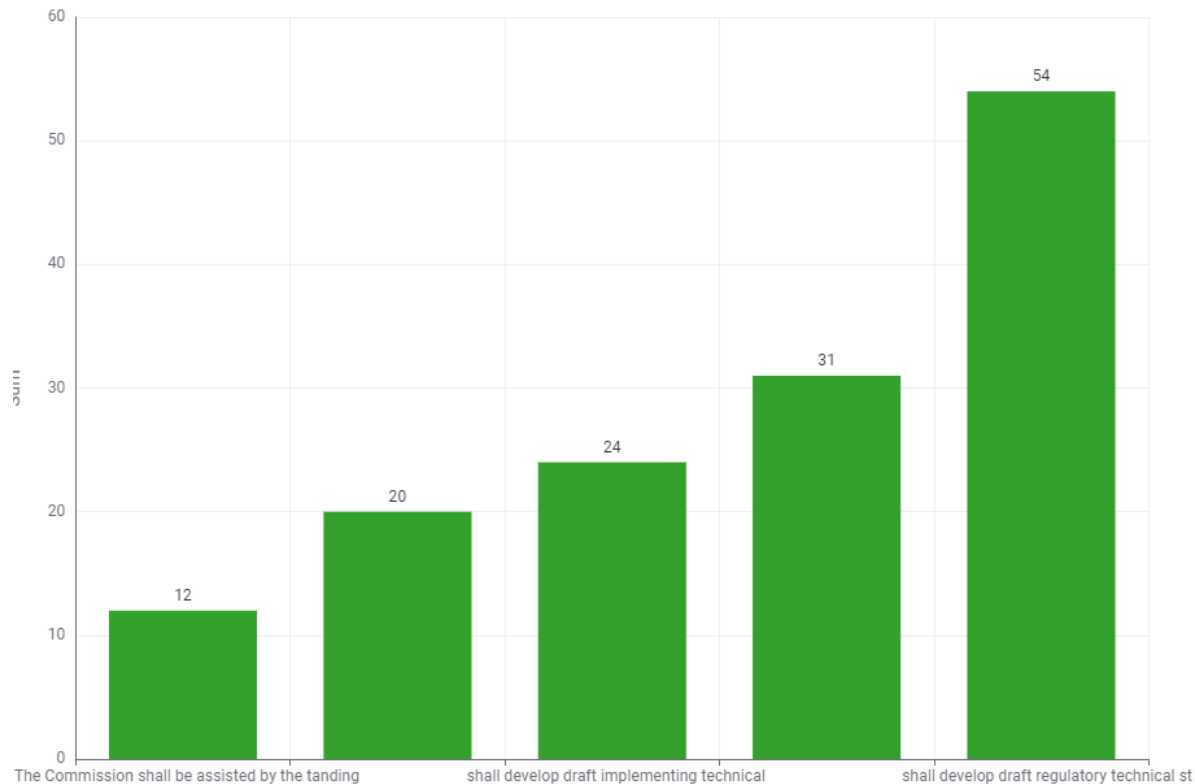
# Statistical Analysis of the verbs

- 891 RRs analysed → clear recurring structures
- Frequent verbs: *submit*, *develop*, *specify*, *notify*, *provide*, *establish*

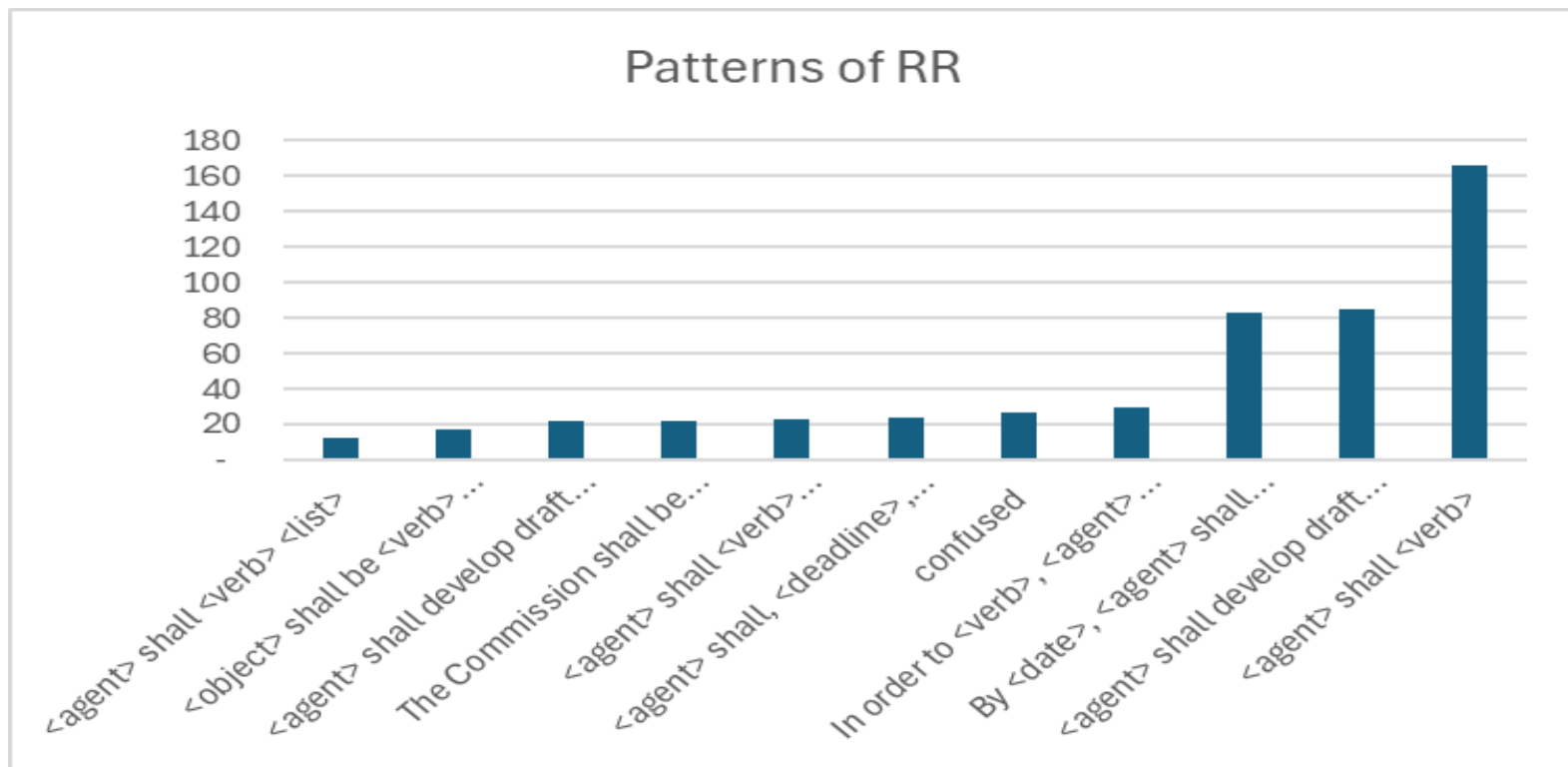


# Linguistic analysis of the sentences

- Shall develop regulatory technical
- As soon as
- Shall develop draft implementing
- The Commission shall be assisted



# Patterns of RR



## Variants of same pattern

- <agent> shall <verb> to <agent> <objective> of <topic> by <date>
- By <date>, <agent> shall <verb> <object> to <agent> on <topic>
- By <date>, and subsequently every <duration> <unit> thereafter, <agent> shall <verb> a <object> to <agent> on <topic>

# Deep dive - Regulatory reporting requirements

## Templates in LEOS

- Drafters select “Reporting Requirement” as provision type.
- System proposes validated RR templates based on data-driven patterns.
- Automatic extraction of agents, actions, dates, objects, topics.
- Generates machine-readable **RRMV-compliant RDF** embedded in **AKN4EU**.

# RR Taxonomy playing the role in the legal drafting perspective

- **EU Implementation**: reporting requirements for implementing EU legislation;
- **Member State Compliance**: reporting requirement that involve Member States to comply with the EU legislation;
- **Evaluation/Monitoring/Assessment**: reporting requirements that aim to monitor, determine, evaluate, or assess;
- **Plan/Strategy/Coordination**: reporting requirements that aim to provide plan, strategy, coordination between institutions;
- **Transparency/Accountability/Notification**: reporting requirements that aim to notify, inform, provide opinion, communicate or record information;
- **Budgetary/Financial Analysis**: reporting requirements that define actions concerning budgetary or financial outcomes; and
- **Solution/Achievement/Accomplishment**: reporting requirements that aim to design, implement, document a solution or to provide achievement or accomplishment.

# Deep dive - Regulatory reporting requirements

The screenshot displays the LEOS web application interface. The browser address bar shows the URL <http://u2.cirsfid.unibo.it/leos-pilot/ui/document/bill>. The application header includes the LEOS logo, navigation links (Home, Support), and a user profile section labeled "DEMO Demo". The main content area is titled "v1.0.1 - last edited by DEMO Demo (CNECT) on 01/10/2025 20:13". Below the header, there is a toolbar with buttons for "Save", "Import from OJ", "Exports", and "Search". To the right of the toolbar are toggle switches for "See user guidance", "Enable track changes", "Enable ACM search", "See track changes", and "Enable drafting review". The main editing area contains a document titled "Article 2 Requirement". The document text includes: "Template 1 The Commission shall [verb] to the European Parliament and to the Council a [object] of [topic or title] by [dd month year]", "Template 2 By [dd month year], the Commission shall [verb] a [object] to the European Parliament and to the Council on [topic or title]", and "Template 3 By [dd month year], and subsequently every [duration] [unit] thereafter, the Commission shall [verb] a [object] to the European Parliament and to the Council on [topic or title]". Below the templates, it states "This Regulation shall be binding in its entirety and directly applicable in all Member States." and "Done at Brussels,". The bottom of the document shows signature lines for "For the European Parliament" and "For the Council". On the left side, a "Navigation Pane" lists the document structure: "Preface", "Preamble", "Enacting Terms", "Article 1 - Scope 1. Text...", "Article 2 - Requirement This Regulation shall en...", and "Signature". On the right side, a vertical sidebar is labeled "ACM | Annotations & document notes".

Evaluation/Monitoring/Assessment

# Deep dive - Regulatory reporting requirements

## Benefits

- More consistent, standardised drafting of RRs
- Automatic classification and avoidance of duplication
- Interoperable semantic metadata for monitoring and analysis
- Supports implementation of better regulation and future digital-by-design drafting

**Thanks for your attention**

Hybrid AI to enhance legal drafting with  
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