HYPERMODELEX

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Hybrid AI for Legislation: from theoretical model to empirical use-cases

Prof. Monica Palmirani –
University of Bologna
CIRSFID-ALMA AI – Italy

24 July 2023, Ottawa

Outline

- eLegislation in AI Era
- Theoretical issues
- Methodological issues
- Empirical issues

THE TECHNOLOGY 202

ChatGPT is now writing legislation. Is this the future?

Analysis by Cristiano Lima
with research by Aaron Schaffer

January 23, 2023 at 8:55 a.m. EST

But in what may be a first, a Massachusetts state senator has used a surging new tool to help write a bill aimed at restricting it: ChatGPT, the artificial intelligence chatbot.

Speach with ChatGPT in the Senate of Italy

Parla il senatore che si è fatto scrivere un intervento in aula da ChatGPT

La provocazione dell'esponente di Azione-IV Marco Lombardo, che rilancia: "È adesso che bisogna parlarne"

Regular Articles

Artificial Intelligence (AI) in parliaments – preliminary analysis of the Eduskunta experiment

Fotios Fitsilis

Pages 621-633 | Published online: 10 Sep 2021

Download citation https://doi.org/10.1080/13572334.2021.1976947 Check for updates

GPT Takes the Bar Exam

December 29, 2022

Michael Bommarito II [1,2,3], Daniel Martin Katz[1,2,3,*]

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2 Bucerius Law School (Hamburg, Germany)
3 CodeX - The Stanford Center for Legal Informatics (Stanford, CA USA)

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Abstract

Nearly all jurisdictions in the United States require a professional license exam, commonly referred to as "the Bar Exam," as a precondition for law practice. To even sit for the exam, most jurisdictions require that an applicant completes at least seven years of post-secondary education, including three years at an accredited law school. In addition, most test-takers also undergo weeks to months of further, exam-specific preparation. Despite this significant investment of time and capital, approximately one in five test-takers still score under the rate required to pass the exam on their first try. In the face of a complex task that requires such depth of knowledge, what, then, should we expect of the state of the art in "AI?" In this research, we document our experimental evaluation of the performance of OpenAI's TEXT-DAVINCI-003 model, often-referred to as GPT-3.5, on the multistate multiple choice (MBE) section of the exam. While we find no benefit in fine-tuning over GPT-3.5's zero-shot performance at the scale of our training data, we do find that hyperparameter optimization and prompt engineering positively impacted GPT-3.5's zero-shot performance. For best prompt and parameters, GPT-3.5 achieves a headline correct rate of 50.3% on a complete NCBE MBE practice exam, significantly in excess of the 25% baseline guessing rate, and performs at a passing rate for both Evidence and Torts. GPT-3.5's ranking of responses is also highly-correlated with correctness; its top two and top three choices are correct 71% and 88% of the time, respectively, indicating very strong non-entailment performance. While our ability to interpret these results is limited by nascent scientific understanding of LLMs and the proprietary nature of GPT, we believe that these results strongly suggest that an LLM will pass the MBE component of the Bar Exam in the near future.

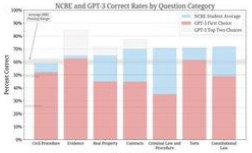

Fig 1. Summary of performance by question category for GPT-3.5 and NCBE-Reported Students

	GPT	GPT Top 2	GPT Top 3	NCBE
Evidence	63%	84%	98%	65%
Torts	62%	72%	93%	71%
Civil Procedure	52%	63%	79%	59%
Constitutional Law	49%	67%	87%	72%
Real Property	45%	72%	85%	65%
Contracts	45%	77%	86%	70%
Criminal Law & Procedure	35%	62%	86%	71%
AVERAGE	50%	71%	88%	68%

Table 2. Summary of performance by question category for GPT-3.5 and NCBE-Reported Students

NCBE vs. GPT Performance on the MBE

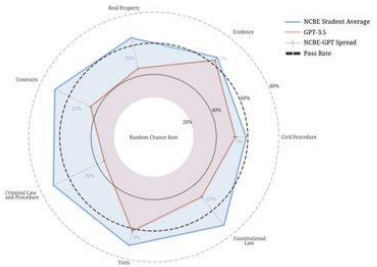

Fig 2. Accuracy by Question Category for GPT and Average Test-Takers

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ELSEVIER

Computer Law & Security Review
Volume 48, April 2023, 105772

Comment

Representing legislative Rules as Code: Reducing the problems of 'scaling up'

Andrew Mowbray [a], Philip Chung [b], Graham Greenleaf [c]

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Matthew Waddington

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Seguito da Legislative Drafting Office, Jersey, Pierpaolo Vivo e altri 27 che segui

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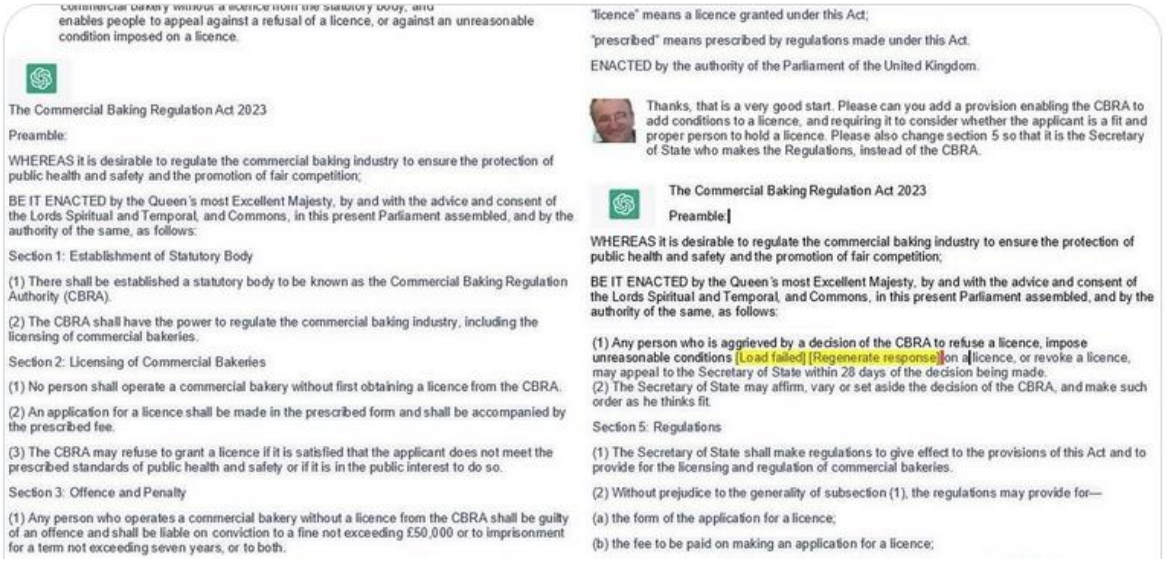
Matthew Waddington @mattwadd · 5 feb

I finally cracked- with encouragement from 1 of my daughters I signed up for #ChatGPT.
Asked it to draft some UK-style legislation - Act regulating bakeries, with 3 typical elements.
Plenty errors, but 1st go good & 2nd go improved- but just look at the sensible elements it added



commercial bakery without a licence from the statutory body; and
enables people to appeal against a refusal of a licence, or against an unreasonable condition imposed on a licence.

The Commercial Baking Regulation Act 2023

Preamble:

WHEREAS it is desirable to regulate the commercial baking industry to ensure the protection of public health and safety and the promotion of fair competition;

BE IT ENACTED by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Section 1: Establishment of Statutory Body

(1) There shall be established a statutory body to be known as the Commercial Baking Regulation Authority (CBRA).

(2) The CBRA shall have the power to regulate the commercial baking industry, including the licensing of commercial bakeries.

Section 2: Licensing of Commercial Bakeries

(1) No person shall operate a commercial bakery without first obtaining a licence from the CBRA.

(2) An application for a licence shall be made in the prescribed form and shall be accompanied by the prescribed fee.

(3) The CBRA may refuse to grant a licence if it is satisfied that the applicant does not meet the prescribed standards of public health and safety or if it is in the public interest to do so.

Section 3: Offence and Penalty

(1) Any person who operates a commercial bakery without a licence from the CBRA shall be guilty of an offence and shall be liable on conviction to a fine not exceeding £50,000 or to imprisonment for a term not exceeding seven years, or to both.

"licence" means a licence granted under this Act;

"prescribed" means prescribed by regulations made under this Act.

ENACTED by the authority of the Parliament of the United Kingdom.

Thanks, that is a very good start. Please can you add a provision enabling the CBRA to add conditions to a licence, and requiring it to consider whether the applicant is a fit and proper person to hold a licence. Please also change section 5 so that it is the Secretary of State who makes the Regulations, instead of the CBRA.

The Commercial Baking Regulation Act 2023

Preamble:

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(1) Any person who is aggrieved by a decision of the CBRA to refuse a licence, impose unreasonable conditions [Load failed] [Regenerate response]on a licence, or revoke a licence, may appeal to the Secretary of State within 28 days of the decision being made.
(2) The Secretary of State may affirm, vary or set aside the decision of the CBRA, and make such order as he thinks fit.

Section 5: Regulations

(1) The Secretary of State shall make regulations to give effect to the provisions of this Act and to provide for the licensing and regulation of commercial bakeries.

(2) Without prejudice to the generality of subsection (1), the regulations may provide for—

(a) the form of the application for a licence;

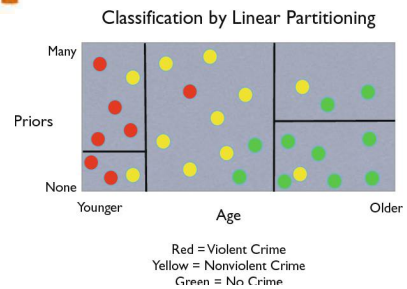
(b) the fee to be paid on making an application for a licence;

eLegal evolution

EUR-Lex

at4am

EU Open Data Portal




```
pragma solidity ^0.4.17;

contract SimpleStorage {
  uint storedData;

  function set(uint x) public {
    storedData = x;
  }

  function get() public view returns (uint) {
    return storedData;
  }
}
```

Publishing → Open Data → Workflow → Legal Analytics → AI and Smart Contract

1990s 2000s 2010s 2020s 2030s

AI and Law

Logic programming – symbolic AI

Semantic Web e Knowledge representation

ML, Classification, clustering, NLP, predict

Legal data analytics

Blockchain & Smart Contract

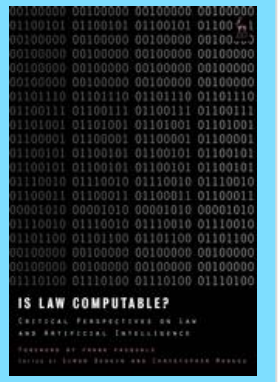
«Rule As Code»

From code to text

Several critical issues

- *Computational legalism*
- Democratic risks
- Ethical concerns

Integration of Legal Theory and ICT for a Legal Smart Legal Order



Legal Theoretical Framework

- Normativity and legitimacy in smart legal order
- Interpretation and legal theory using computational linguistics approach
- Explicability & Transparency using HCI

AI and Legislation Domain: critical analsysis

- Law is **not only rules** (e.g., principles and values).
- Norms have been adapted according to the **evolution of the society – dynamic model**
- '**artificial languages**' (e.g., programming language) is a subset of natural language (Chomsky 2006)
- Norms sometime are intentionally **vague** for implementing flexibility and interpretations (hermeneutic)
- **Prediction** based on the past should be mitigated to the new events (computational legalism)
- Predictions influence decision-makers and future human behaviour (Hildebrandt 2021)
- **Autonomy** and transparency are pillars of normativity (Günther 2021)
- The **right of disobey** as moment of creativity of new norms

Hallucination AI

Lawyer apologizes for fake court citations from ChatGPT

By Ramishah Maruf, CNN

Updated 3:28 PM EDT, Sun May 28, 2023

US judge orders lawyers to sign AI pledge, warning 'they make stuff up'

By Jacqueline Thomsen

May 31, 2023 8:56 PM GMT+2 · Updated 10 hours ago

Home / News / Technology / Artificial Intelligence / EU Commission issues internal guidelines on ChatGPT, generative AI

EU Commission issues internal guidelines on ChatGPT, generative AI

By Luca Bertuzzi | EURACTIV.com Est. 4min

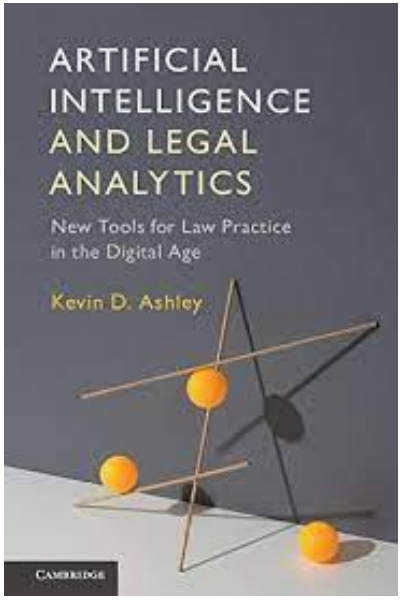
31 mag 2023

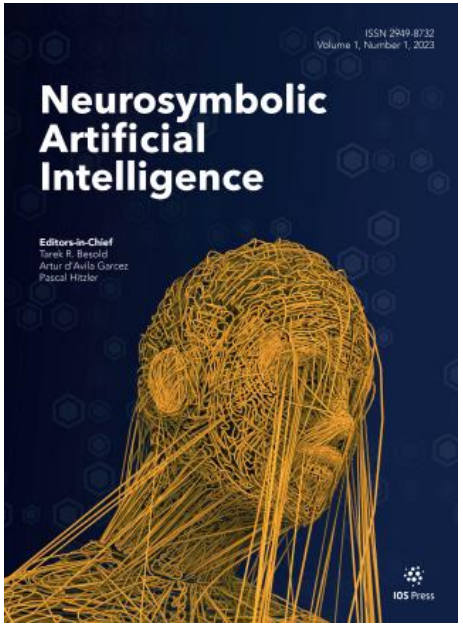
Different goals of AI in Parliaments

1. **Generation** of the legislation/amendment/debates/summary– ***ex-ante***
2. **Modelling**/representing/classifying/extracting the source of the law– ***ex-post***
3. **Prediction** of some output– ***pro-futuro***
4. **Executing**/reasoning rules– ***real-time***

Different applications

Summarization of debates	Transcript	Dossier	Preamble	Amendment
Consolidation	Definitions	Smart Legislative Drafting	Semantic annotation	Classification
Clustering	Analysis of impact	Analysis of effectiveness	Policy Checking	Simplification
Similarity in comparative law	Transposition	Check compliance	Detection of the needs	Prediction of the success of bill
	Prediction of the correlation	Smart Search Engine	Conversional Query	





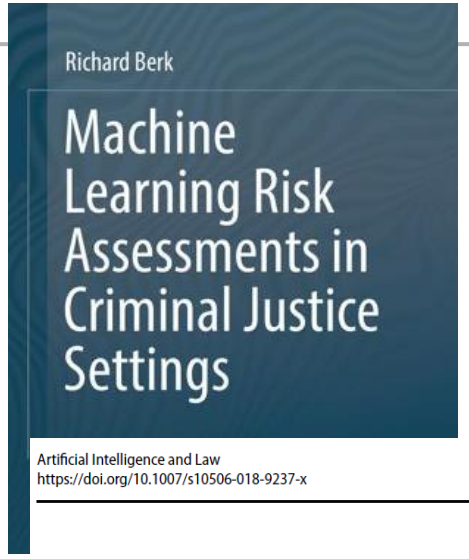
Klaus Günther

From Normative to Smart Orders?

Abstract: The increasing penetration of new digital technologies, especially artificial intelligence, into almost all areas of society's life has led to the emergence of smart orders. These are orders that are designed to minimize or eliminate deviations from their norms through intelligent design and algorithmic operations. The article explains some examples of smart orders and shows that, at least in principle, a distinction can be made between algorithmically optimized, norm addressee-oriented prevention and addressee-substituting pre-emption of deviant behavior by digital technologies. The focus of the article is then on the question of whether and, if so, in what sense smart orders are still normative orders at all. In the course of the analysis, it becomes apparent that while legal orders and other normative orders pursue the goal of effective enforcement of their norms, they do not pursue the ideal of complete non-deviance. It becomes clear that one of the essential aspects of normative orders is that they are addressed to persons who must embrace them as autonomous and, at the

Machine learning for Legal Domain

- **Regression** → to correlate phenomena and to predict future trends (e.g., legislative impact)
- **Classification**→ text classification (e.g., derogation), classification of the facts/persons (e.g., rights/obligations)
- **Clustering** → to group documents (e.g., convergent definitions)
- **Association**→ sociological analysis using the social media (e.g., social needs)
- **Control** → optimization of the order of the day in Parliament

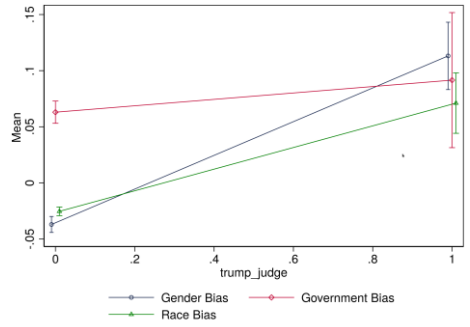


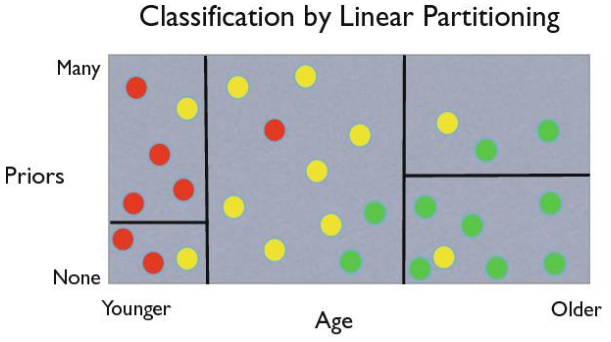
Artificial Intelligence and Law
https://doi.org/10.1007/s10506-018-9237-x

CrossMark

Judicial analytics and the great transformation of American Law

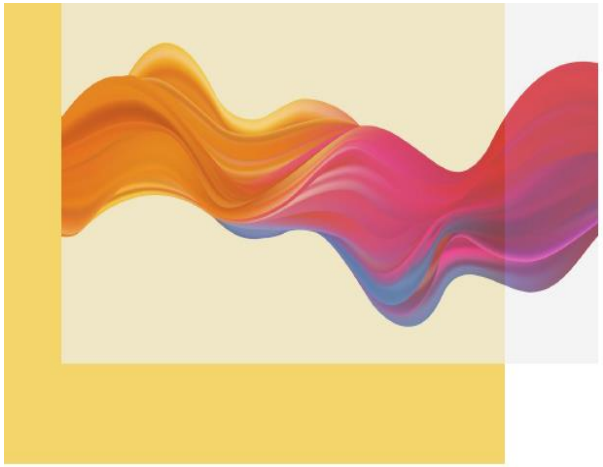
Daniel L. Chen[1]





AI in legislation

- Support the **drafting/translation/planning/definitions**
  - classification, reinforcement learning
- Support of the **decision /checking compliance/ implementation of the Directive/ implementing regulation/ delegation** acts
  - similarity, association, legal reasoning, neural netwrok
- Legal system **analytics/**
  - Clustering, regression
- Predict **predict/anticipate** of the needs from the society
  - Pro-futuro



Legal Drafting in the Era of Artificial Intelligence and Digitisation

European Commission

Directorate-General for Informatics
Solutions for Legislation, Policy & HR

Weakness of ML in legal domain

- **Granularity** vs. **Structure**: ML works at sentence level and this approach is not capable to link different parts of the speech semantically connected (e.g., obligation-exception, duty-penalty)
- **Content** vs. **Context**: ML loses the context (e.g., jurisdiction, temporal parameters)
- **Past** vs. **Future**: ML depends to the past data series (e.g., new brilliant solution has no historical series)
- **Internal** vs. **External** info: ML does not consider the normative and juridical citations.
- **Static** vs. **Dynamic**: The normative references evolve over time (e.g., “art. 3” is not the same forever)

Critical issues in legal domain

- **Temporal view**

New events respect the past:

  - Definition of “European Citizenship” → Brexit
  - Trends of travels → COVID-19

- **Institution view**

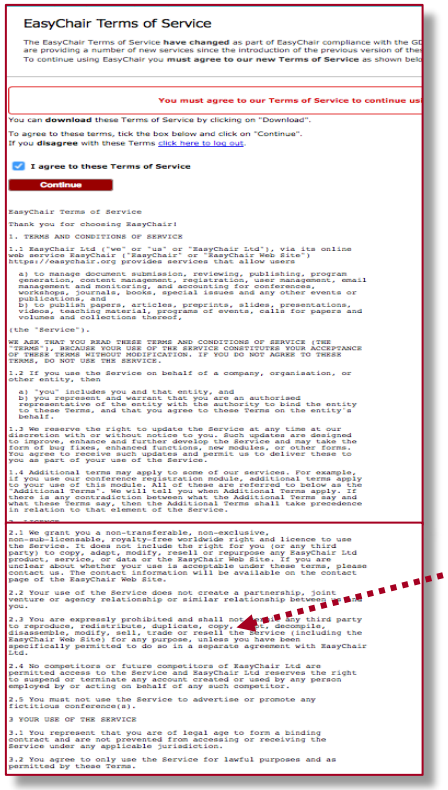
Political decisions:

  - End of life → each country defines different solutions

- **Values view**

  - Algorithms (e.g., ChatGPT), dataset, data training need to be customized to each legal system context and not to be used *as-is*
  - ***Transparency, Neutrality, Impartiality, Explicability***

Transparency: Black box risk in Legal Norms Modelling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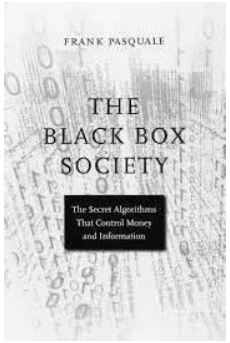

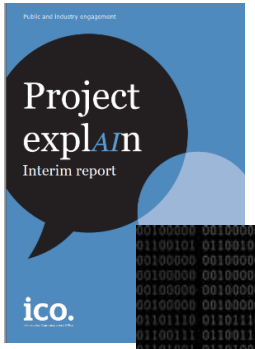

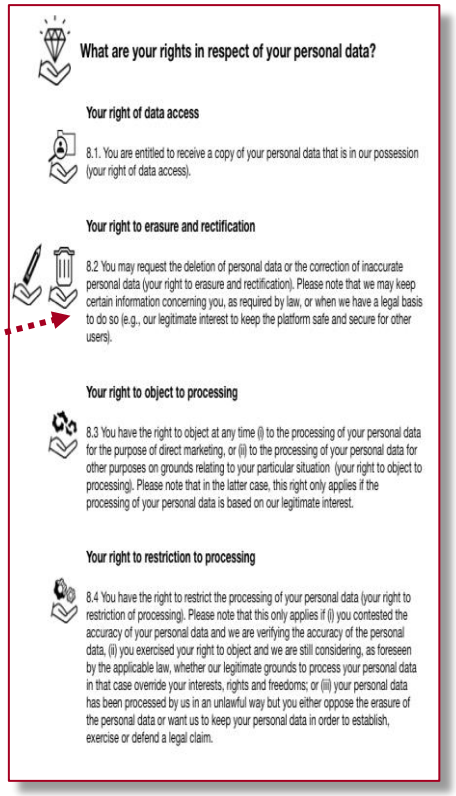
What are your rights in respect of your personal data?

Your right of data access

8.1. You are entitled to receive a copy of your personal data that is in our possession (your right of data access).

Your right to erasure and rectification

8.2 You may request the deletion of personal data or the correction of inaccurate personal data (your right to erasure and rectification). Please note that we may keep certain information concerning you, as required by law, or when we have a legal basis to do so (e.g., our legitimate interest to keep the platform safe and secure for other users).

Your right to object to processing

8.3 You have the right to object at any time (i) to the processing of your personal data for the purpose of direct marketing, or (ii) to the processing of your personal data for other purposes on grounds relating to your particular situation (your right to object to processing). Please note that in the latter case, this right only applies if the processing of your personal data is based on our legitimate interest.

Your right to restriction to processing

8.4 You have the right to restrict the processing of your personal data (your right to restriction of processing). Please note that this only applies if (i) you contested the accuracy of your personal data and we are verifying the accuracy of the personal data, (ii) you exercised your right to object and we are still considering, as foreseen by the applicable law, whether our legitimate grounds to process your personal data in that case override your interests, rights and freedoms; or (iii) your personal data has been processed by us in an unlawful way but you either oppose the erasure of the personal data or want us to keep your personal data in order to establish, exercise or defend a legal claim.

Lawyer-readable

Legal norms modelling without explicability

Human-readable

“White box” approach in AI


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2.2 Your use of the Service does not create a partnership, joint venture or agency relationship or similar relationship between us and you.

2.3 You are expressly prohibited and shall not permit any third party to reproduce, redistribute, duplicate, copy, reverse engineer, decompile, disassemble, modify, sell, trade or resell the Service (including the EasyChair Web Site) for any purpose, unless you have been specifically permitted to do so in a separate agreement with EasyChair Ltd.

2.4 No competitors or future competitors of EasyChair Ltd are permitted access to the Service and EasyChair Ltd reserves the right to suspend or terminate any account created or used by any person employed by or acting on behalf of any such competitor.

2.5 You must not use the Service to advertise or promote any fictitious conference(s).

3 YOUR USE OF THE SERVICE

3.1 You represent that you are of legal age to form a binding contract and are not prevented from accessing or receiving the Service under any applicable jurisdiction.

3.2 You agree to only use the Service for lawful purposes and as permitted by these Terms.

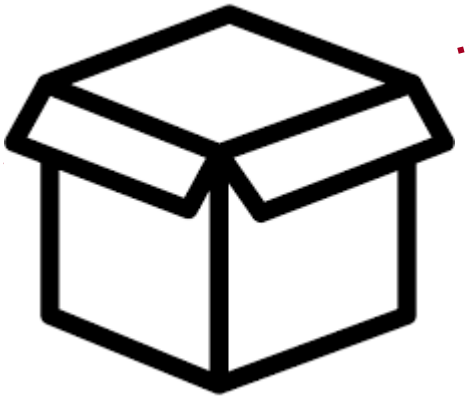
Lawyer-readable

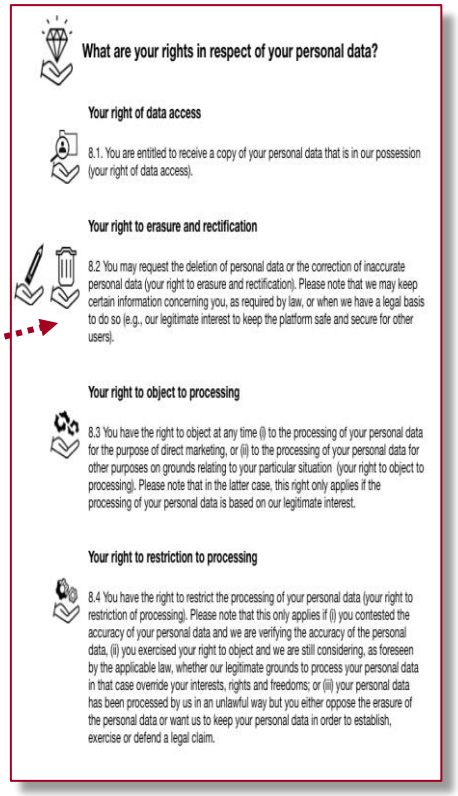
AKOMA NTOSO

Architecture for Knowledge-Oriented Management of African Normative Texts using Open Standards and Ontologies

OASIS LegalXML

LegalRuleML




What are your rights in respect of your personal data?

Your right of data access

8.1. You are entitled to receive a copy of your personal data that is in our possession (your right of data access).

Your right to erasure and rectification

8.2 You may request the deletion of personal data or the correction of inaccurate personal data (your right to erasure and rectification). Please note that we may keep certain information concerning you, as required by law, or when we have a legal basis to do so (e.g., our legitimate interest to keep the platform safe and secure for other users).

Your right to object to processing

8.3 You have the right to object at any time (i) to the processing of your personal data for the purpose of direct marketing, or (ii) to the processing of your personal data for other purposes on grounds relating to your particular situation (your right to object to processing). Please note that in the latter case, this right only applies if the processing of your personal data is based on our legitimate interest.

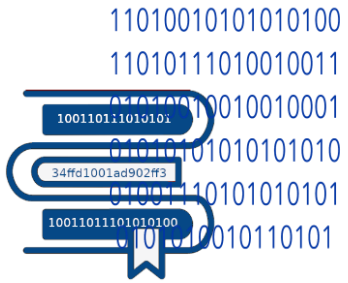
Your right to restriction to processing

8.4 You have the right to restrict the processing of your personal data (your right to restriction of processing). Please note that this only applies if (i) you contested the accuracy of your personal data and we are verifying the accuracy of the personal data, (ii) you exercised your right to object and we are still considering, as foreseen by the applicable law, whether our legitimate grounds to process your personal data in that case override your interests, rights and freedoms; or (iii) your personal data has been processed by us in an unlawful way but you either oppose the erasure of the personal data or want us to keep your personal data in order to establish, exercise or defend a legal claim.

Human-readable

Machine-readable

HyperModeLex Research Questions



What is the Law in digital era?

01 Go beyond post-reductionism textualism / normativism of philosophy of law for a new theory of eLegislation

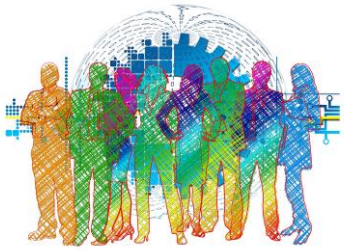
02 **How to model interpretation?** Analyse Legal Hermeneutic in eLegislation

03 **How to defend democracy?** Define Constitutional legitimacy of eLegislation and its e-enforceability

How to preserve legal language ?

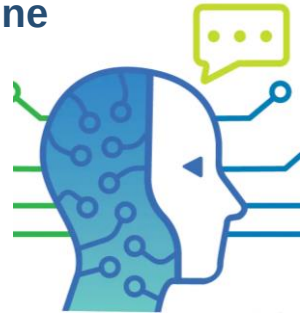
04 Integrate Legal language role in normativism with computational linguistics models

05 **How to keep autonomy ?** Implement *Better Regulation* with Legal Design and HCI



HyperModeLex: three sub-projects

1. Hybrid AI: Human and Machine



Pre-requirements

- Legitimacy
- Authoritativeness

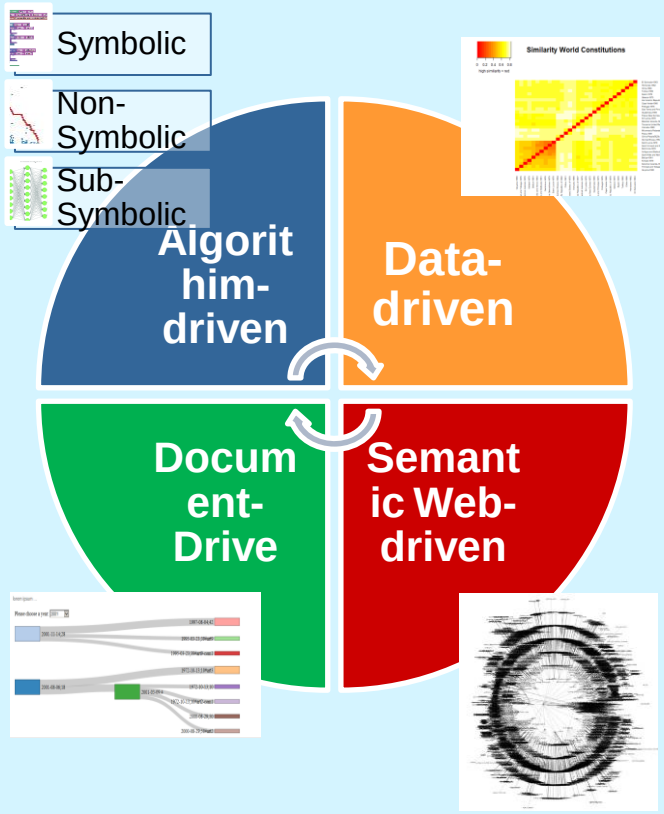
Theoretical grounding

- Institutional Theory
- Interpretation Theory

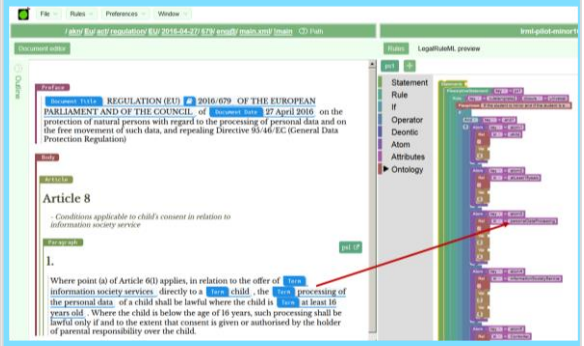
Principles

- Constitutional Law principles
- Democratic powers

2. Hybrid AI: Ecosystem

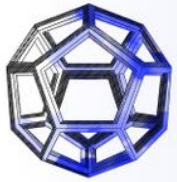


3. Hybrid AI: Explanation & Human-Computer Interaction



- Legal Design
- Explicability
- Autonomy
- Transparency

- Theory of law
- Constitutional issue
- Computational Linguistic/ Semantic
- AI/Logic/ LegalXML
- HCI

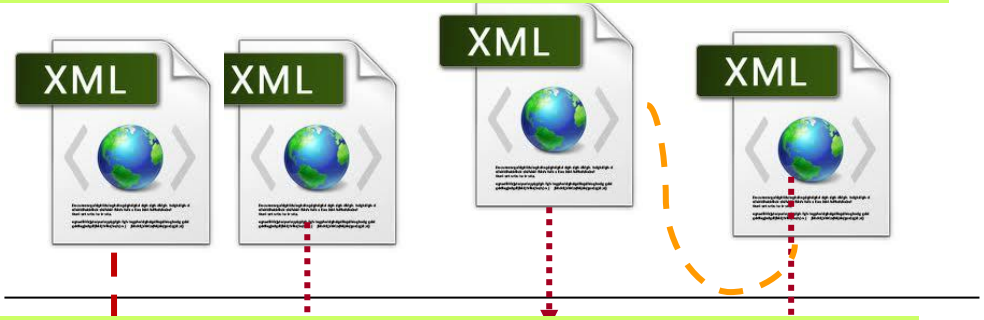




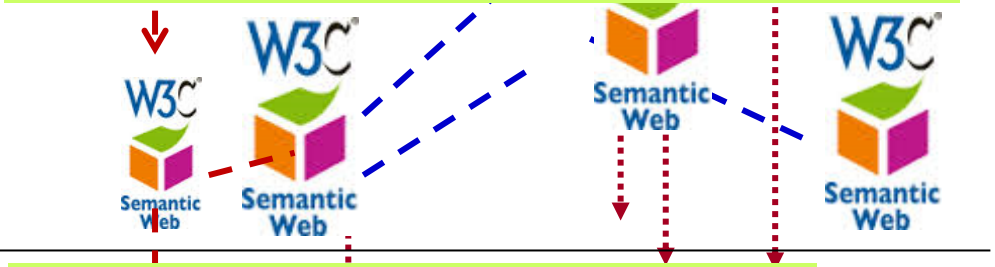
Sub-projects Macro-topics	Legal theory 4 eLegal System M1-M36	Technical advanced solutions 4 eLegal System M1-M48	Legal design 4 eLegal System M12-M48
Analyse post-reductionism/ textualism/ normativism of philosophy of law in infosphere	• Philosophy of Law • Constitutional Law • Legal informatics • Computer Science (Logic)		
Include Legal Hermeneutic in eLegislation		• Philosophy of Law • Legal informatics (AI & Law) • Computer Science (web Technologies/ AI/ML) • Computational Language	
Integrate Legal language role in normativism with computational linguistics models		• Philosophy of Law • Legal informatics (NLP) • Computer Science • Computational Language	
Define Constitutional legitimacy of the digital legal sources and its e-enforceability	• Philosophy of Law • Constitutional Law • Legal informatics • Computer science (Smart contract / DLT)		
Implement Better Regulation with Legal Design			RQ9 / RQ10 • Philosophy of Law • Legal informatics (Legal Design) • Computer science (HCI) • Computational Language (semiotic)

Legal Knowledge Modelling

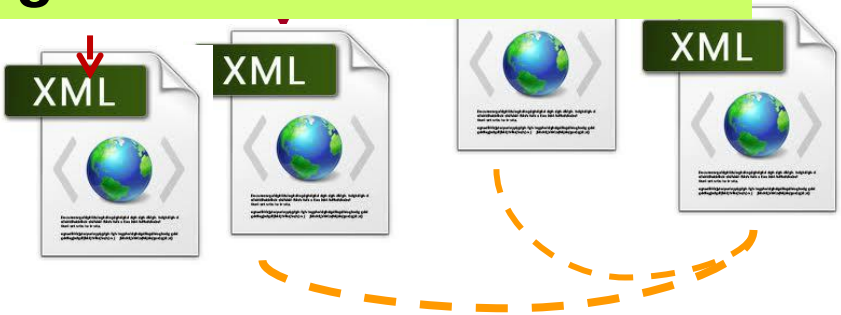
Legal document in XML - context



Legal Ontology – semantic level



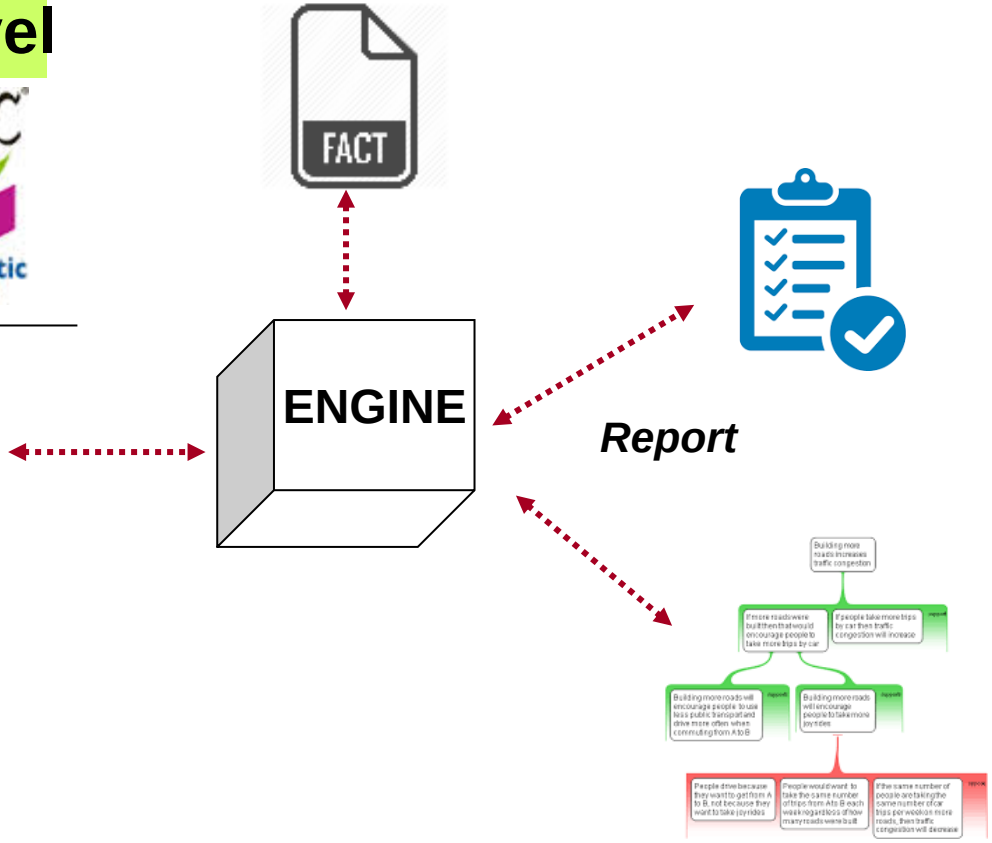
Logic Rules – deontic level



Argumentation/Justification

Services

- GOAL definition



Framework

Visualization/ Portals/Editor

Services of AI (support during drafting, classification, clustering, aggregation, correlation) - LLM

Workflow management

Advanced Ontology and Rule-base system

Extraction of the Legal Knowledge using AI

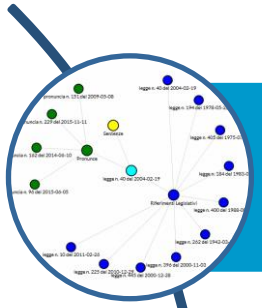
ELI/ECLI

AKOMA NTOSO – XML

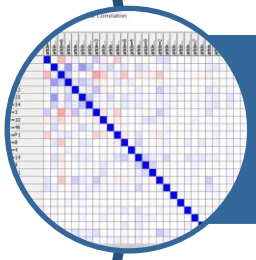
AI for Legislative drafting

Study on 'Drafting legislation in the era of AI and digitisation' with EU Commission – Directorate General Informatics Unit B2 – Solutions for Legislation, Policy & HR

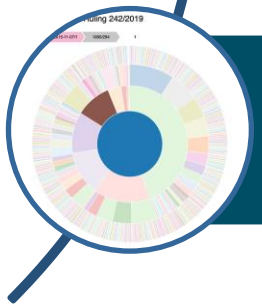
- **4 use-cases**



Legal Drafting supported by AI system for improving quality, effectiveness, efficacy, semantic annotation (e.g., Law as Platform)



Decision support System/AI for making better the legislative process and anticipating needs of the society (e.g., same-sex marriage, end of live, etc.)



Legal System data analytics for understanding the legislative hidden knowledge (e.g., patterns, frequent errors)

DEROGATION

Anatomy of a derogation

$R1_{t1}$ derogated to $R2_{t2}$

<action>

<normDerogated>

<jurisdiction>

<temporalParameter>

<scope>

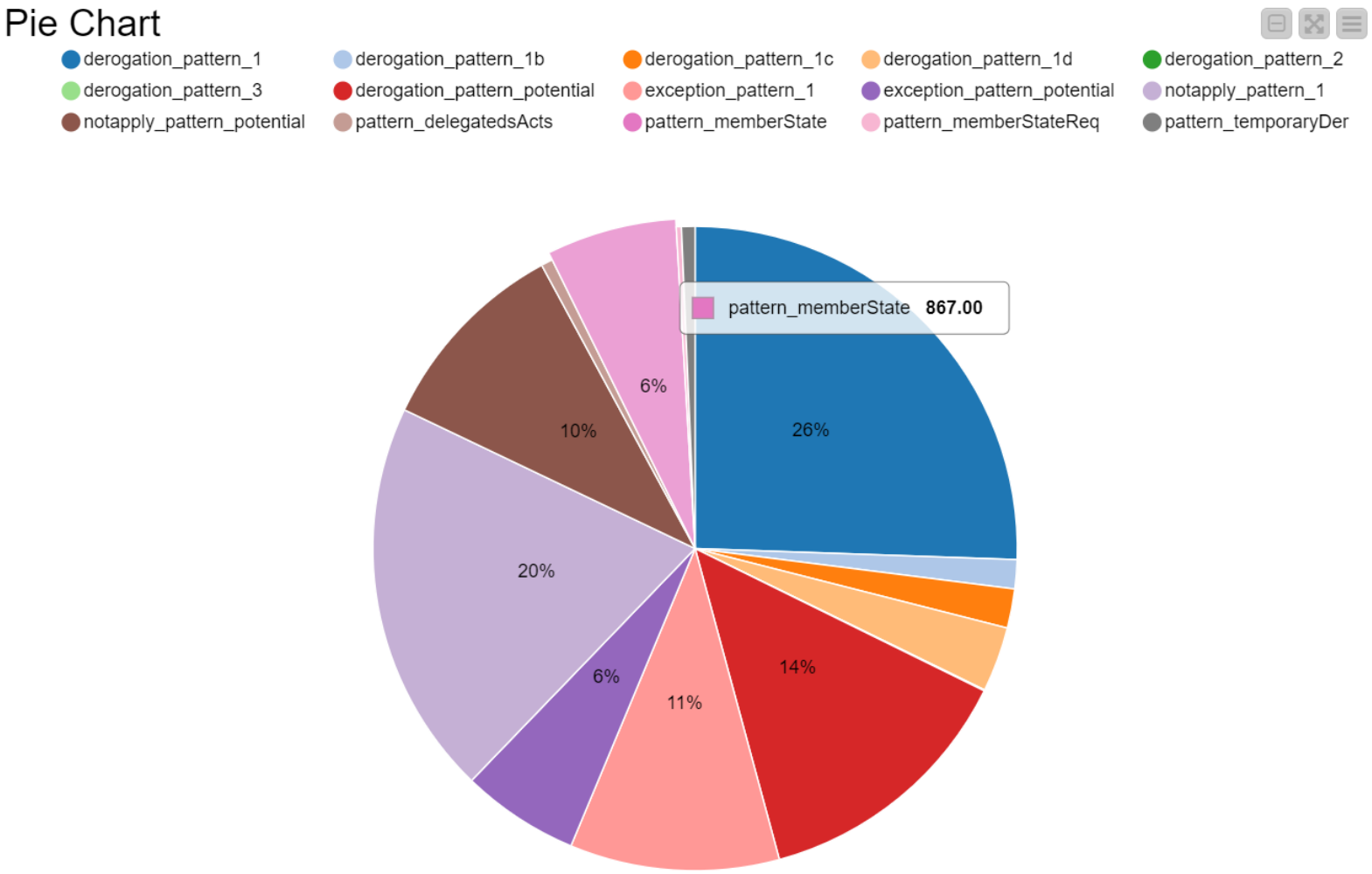
By way of derogation from paragraphs 1 and 2, in Cyprus, Croatia, Malta and Slovenia, the amount referred to in those paragraphs may be set at a value lower than EUR 500, but not less than EUR 200 or, in the case of Malta, not less than EUR 50.

Dataset

- The dataset is composed by legislative act in the span of time 2010-2020 for a total of 15.328 documents.
- Regulation, Directive, Implementation instruments
- The documents are converted in Akoma Ntoso in order to have the structure of the document and the context annotated
- We have extracted 13.587 partitions involved in the derogation using a preliminary taxonomy of “RegEx”

Study on "Drafting legislation in the era of AI and digitisation"

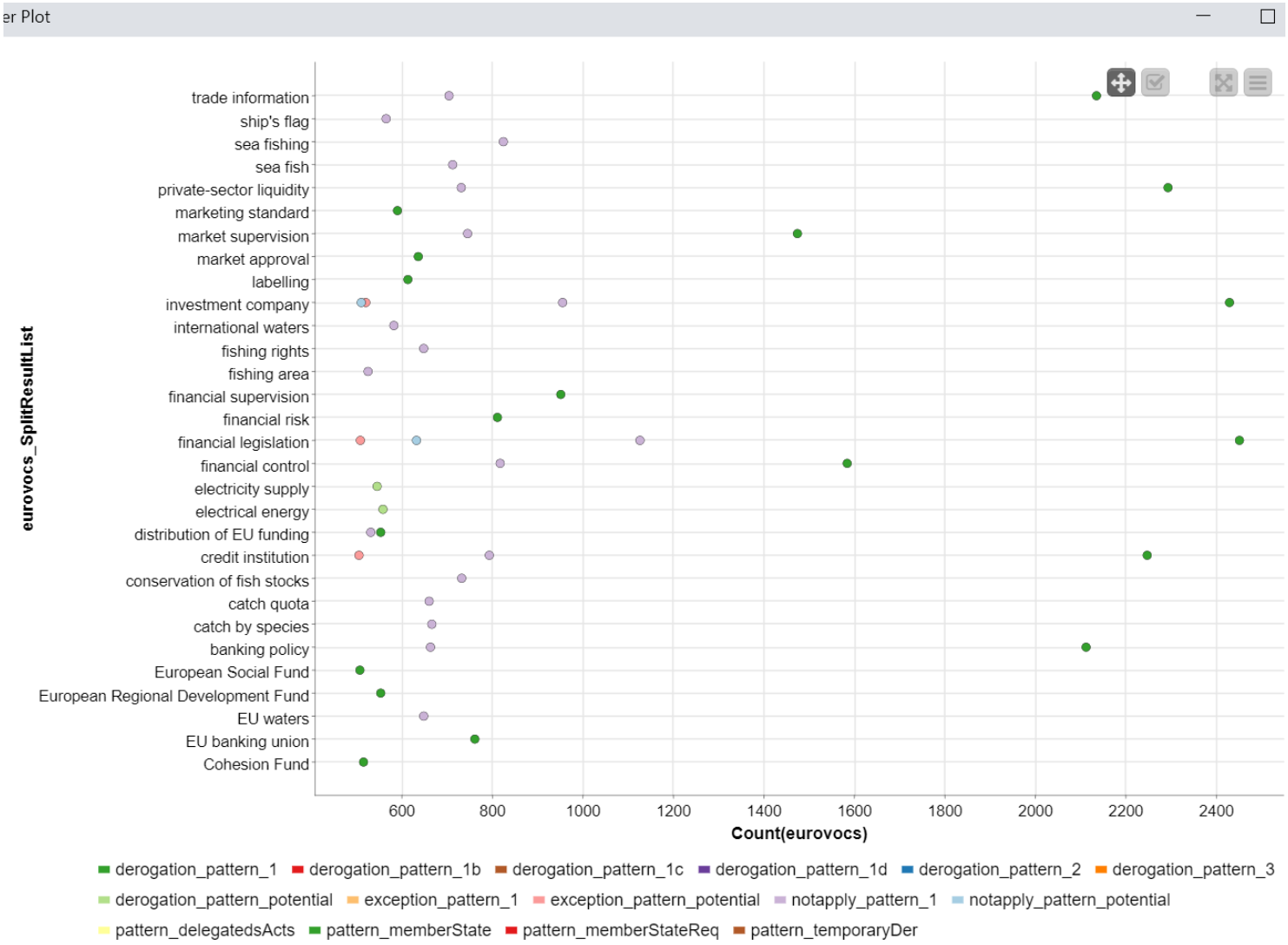
Manage the derogations: classification



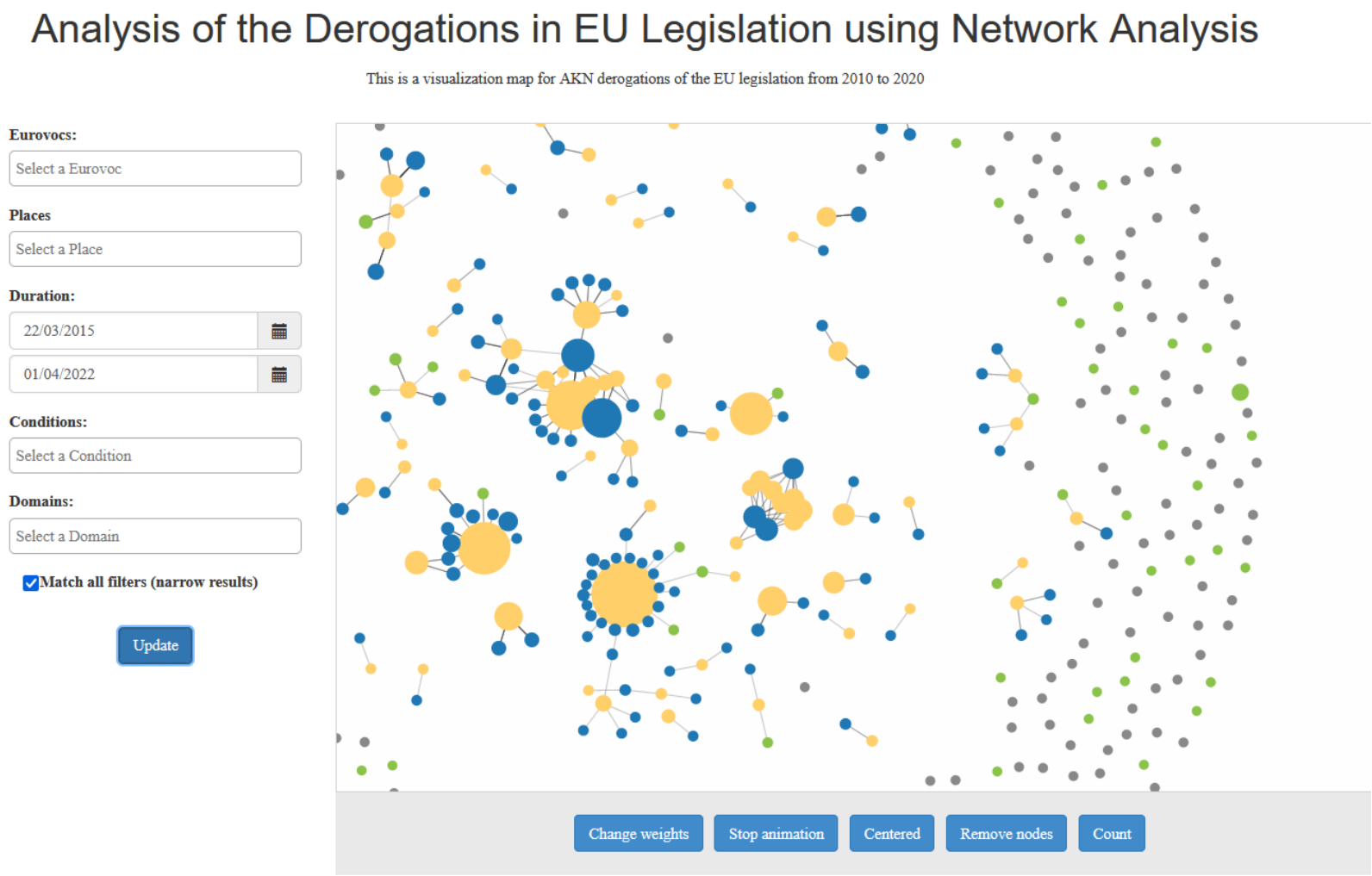
Akoma Ntoso: detection of knowledge

```
<alinea eId="body__art_2__al_3">
        <content eId="body__art_2__al_3__content">
          <mod eId="body__art_2__al_3__content__mod_1">
            <p>By way of derogation from the second paragraph, Member
States may
              choose not to apply the provisions of point ORO.FTL.205(e) of
              <ref eId="ref_1" href="href="/akn/eu/act/regulation/2012-02-
17/965-2012/!main/>annex_III">Annex
              III to Regulation (EU) No 965/2012 </ref> and continue to
apply the
              existing national provisions concerning in-flight rest until<date
                date="2017-02-17" refersTo="#derogationTime">17
February 2017</date>.</p>
          </mod>
        </content>
 </alinea>
```

Distribution of the derogations classification for thematic topic using Eurovoc



https://cirsfid.gitlab.io/derograph/



$$w = k * (\#ActiveDerogations + \#ReflexiveDerogations + \#PassiveDerogations)$$

DIGITAL READY

Positive list of word

Article 21

General requirements for the pharmacovigilance system master file

- 1. The information in the pharmacovigilance system master **file** required under Article 77(2) of Regulation (EU) 2019/6 shall be accurate and reflect the pharmacovigilance **system** in place.
- 2. The contractual arrangements between marketing authorisation holders and third parties concerning pharmacovigilance activities shall be clearly documented, detailed and up-to-date.
- 3.Marketing authorisation holders may, where appropriate, use separate pharmacovigilance systems for different categories of veterinary medicinal products. Each such system shall be described in a separate pharmacovigilance **system master file**.

electronic identification

electronic signature

electronic seal

electronic signature

web

electronic tickets

e-book

e-reader

non-cash payment

electronic payment

digital means of exchange

file

database

wifi

digital service

digital certification

digital content

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R0128

Negative list of word

«Article 4

Requirements for certificates for terrestrial animals and germinal products

1. *The official veterinarian shall complete certificates for consignments of terrestrial animals and germinal products in accordance with the following requirements:*

(omissis)

*(c) the **certificate** must consist of one of the following:*

*(i) a single **sheet** of **paper**;*

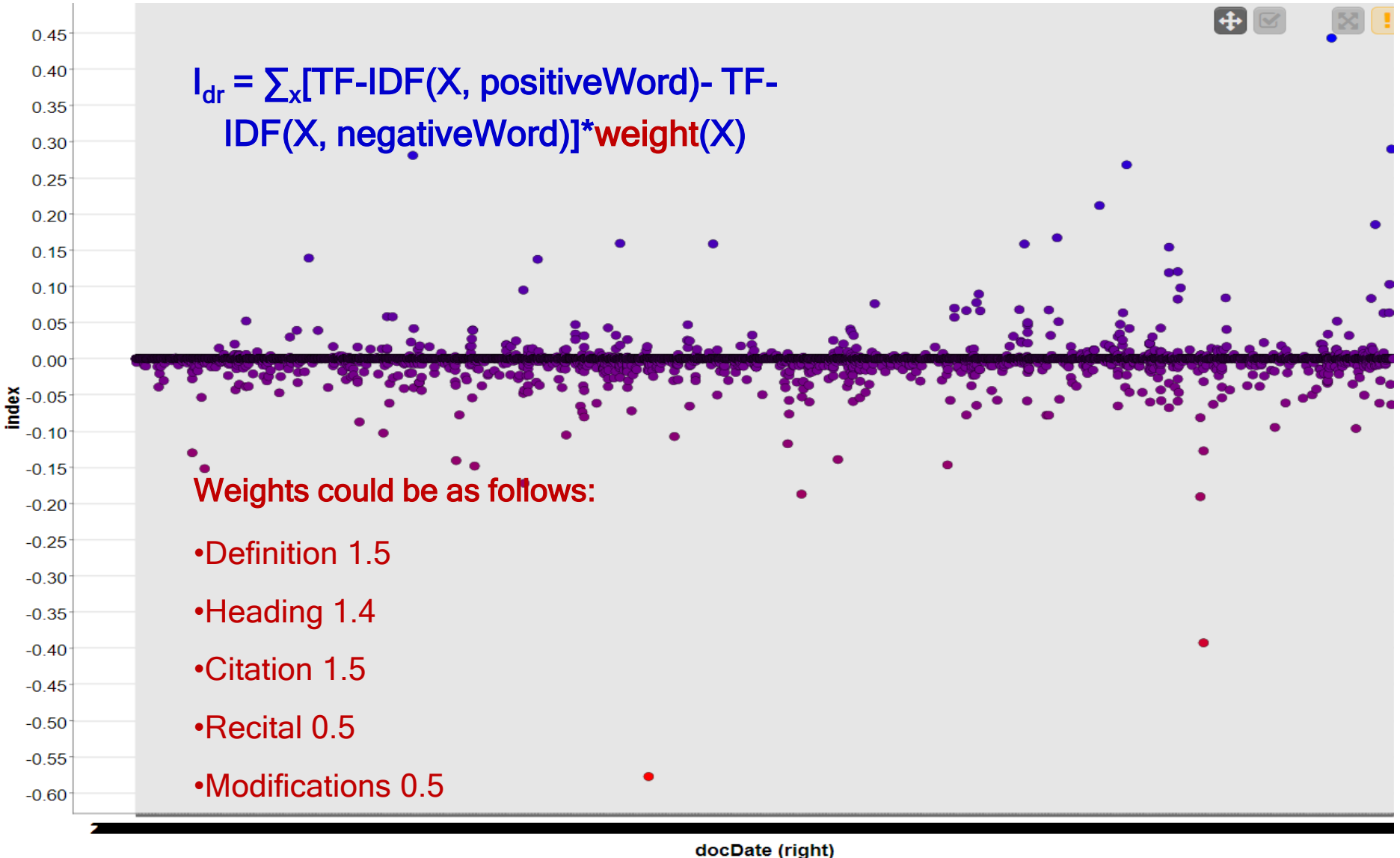
*(ii) several sheets of **paper** where all sheets are indivisible and constitute an integrated whole;*

*(iii) a sequence of pages with each page numbered so as to indicate that it is a particular **page** in a finite sequence; »*

http://publications.europa.eu/resource/cellar/267982c7-9218-11eb-b85c-01aa75ed71a1.0006.03/DOC_1

- Certified copy
- Cheque
- Courier
- Stamp
- Facsimile
- Fax
- Hard copy
- In writing
- Ink
- Mail
- Microfiche
- Newspaper
- Original copy
- **Paper**
- Pen
- Pencil
- Post
- Print
- Printout
- Scan
- Seal
- Telex
- Written
- Person identification
- Signature
- Paper documentation
- Paper tickets
- cash payment
- Digital service
- Durable medium

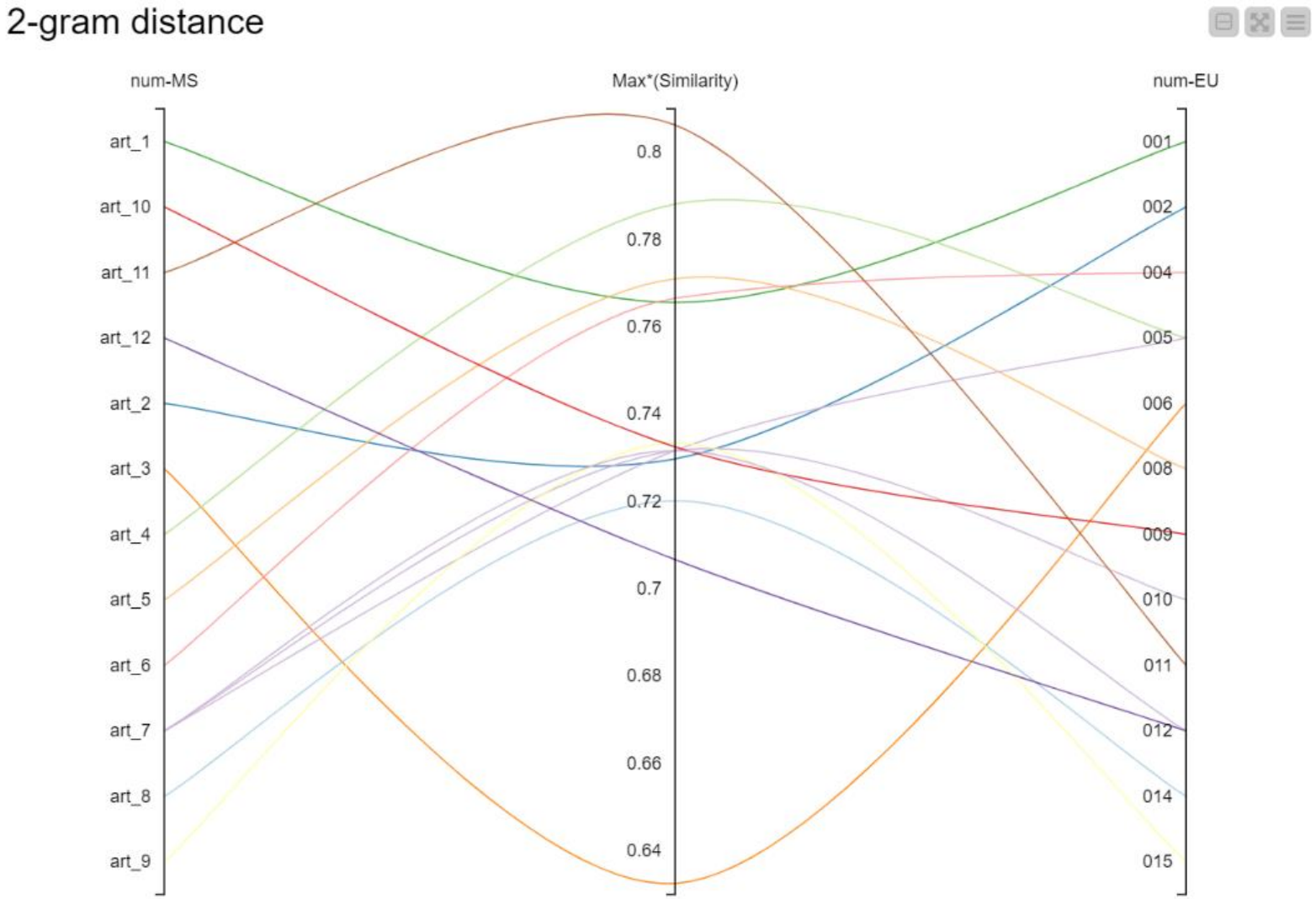
Digital-ready index in the EU legislation – TF-IDF at article level



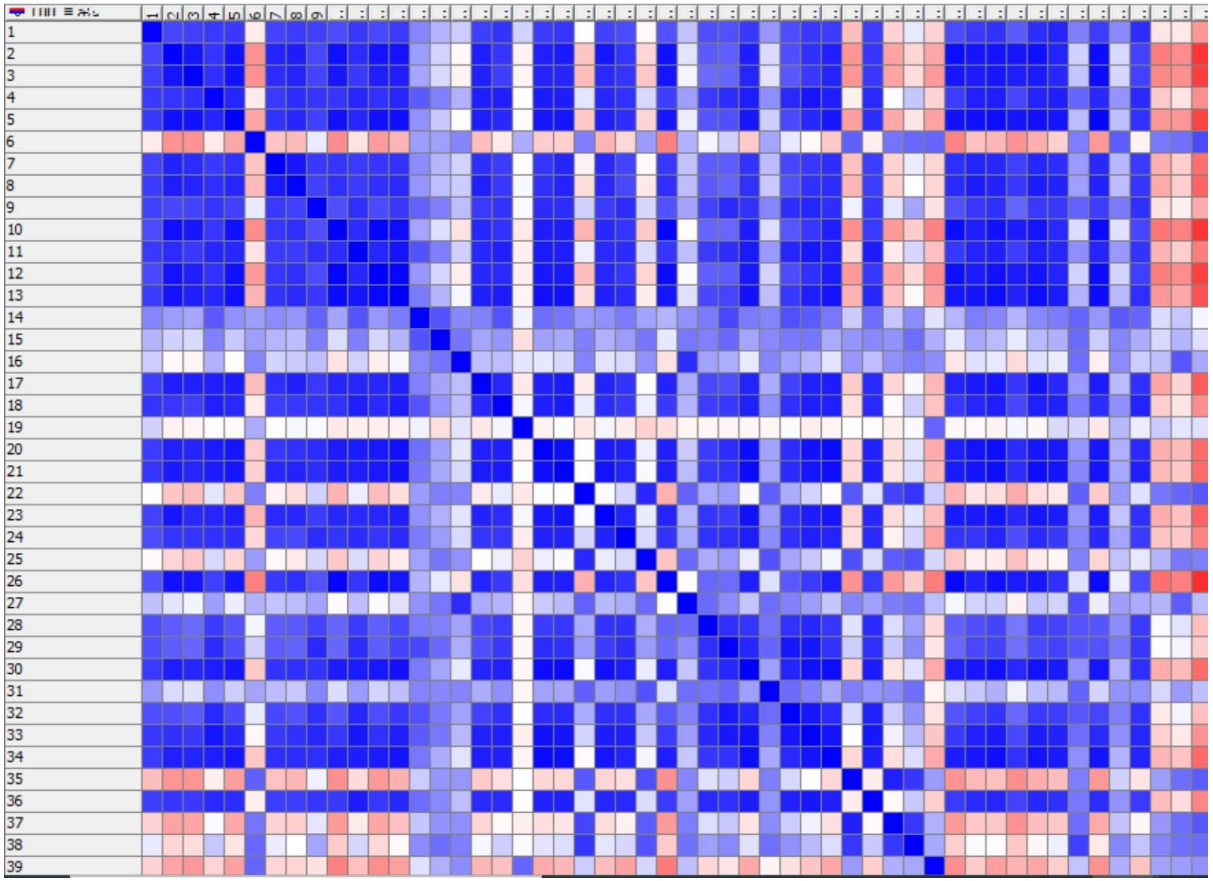
IMPLEMENTATION DIRECTIVE

Study on "Drafting legislation in the era of AI and digitisation"

Similarity between Italian implementation of Directive and the EU Directive



Similarity index and correlation with EU directive articles

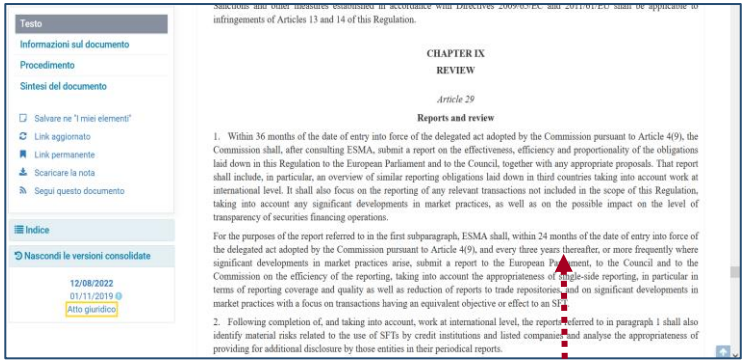


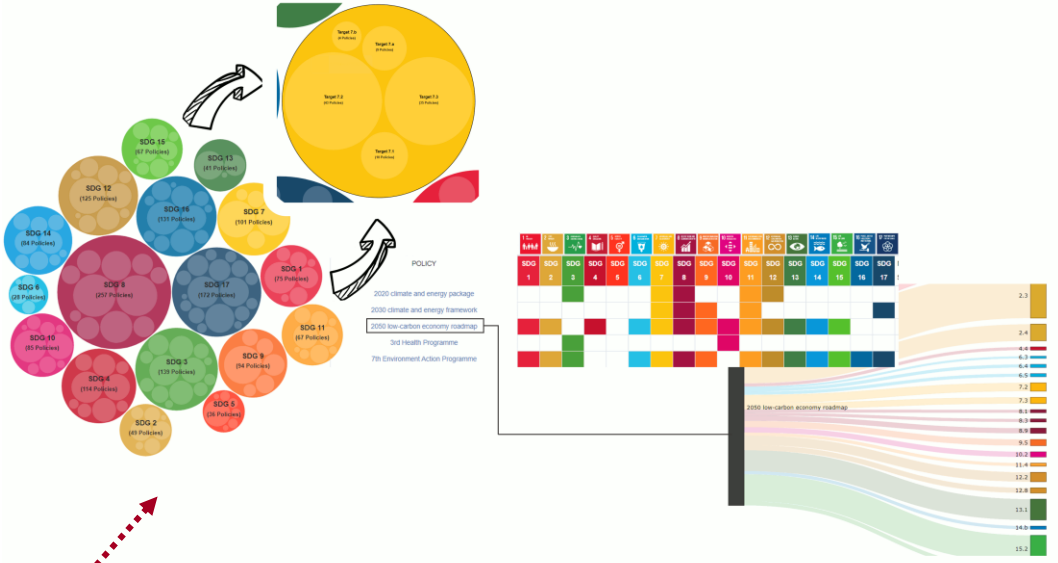
POLICY MAKING

Measuring the Policy

AKOMA NTOSO

Architecture for Knowledge-Oriented Management of African Normative Texts using Open Standards and Ontologies





Obbligations

Policy

LegalRuleML

Legal Text

Machine-readable metadata

Integration

Regulation (EU) 2016/1011 on indices used as benchmarks in financial instruments and financial contracts

Art. 54

2. Review the evolution of international principles applicable to benchmarks and of legal frameworks and supervisory practices in third countries concerning the provision of benchmarks and report to the European Parliament and to the Council every five years after 1 January 2018. That report shall assess in particular whether there is a need to amend this Regulation and shall be accompanied by a legislative proposal, if appropriate.

Reports

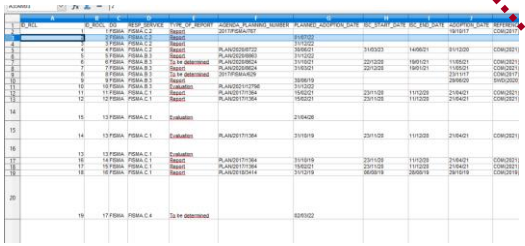
2023 2028 2033 etc.

Managing the decisions and the policies

ROD

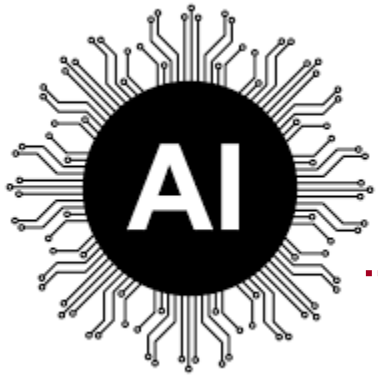
LegalRuleML

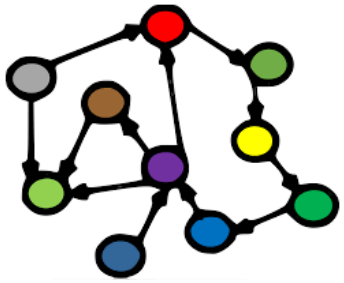
KOEL



AKOMA NTOSO

Architecture for Knowledge-Oriented Management of African Normative Texts using Open Standards and Ontologies





Classification
Extraction

Training

Annotated information

Baseline

New Law

Conclusions

- Standard like AKN provides a good annotated corpora for AI application
- AI without semantic and structure is problematic (e.g., hallucination)
- Transparency, explicability and accountability are crucial for Parliaments (e.g., democratic principles)
- Legitimacy and Rule of Law should be included *by-design* in the AI projects

Human-in-the-loop

Human-on-the-loop

Human-in-Command

thank you
for your attention

Monica Palmirani – monica.palmirani@unibo.it