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Norm Engineering Conference 2026

# Use Cases in Norm Engineering



**Geert Rensen**  
Be Informed



**Ronald Heller**  
Be Informed

*A Back to the Future  
Moment - Flashback  
to 2008*



# A Vision of the Future from 2008

## Use cases for machine readable regulations



Policy and Rulemakers

- Improve quality of regulations
- Improve the regulatory process
- Simulate and predict regulatory effects



Government Agencies

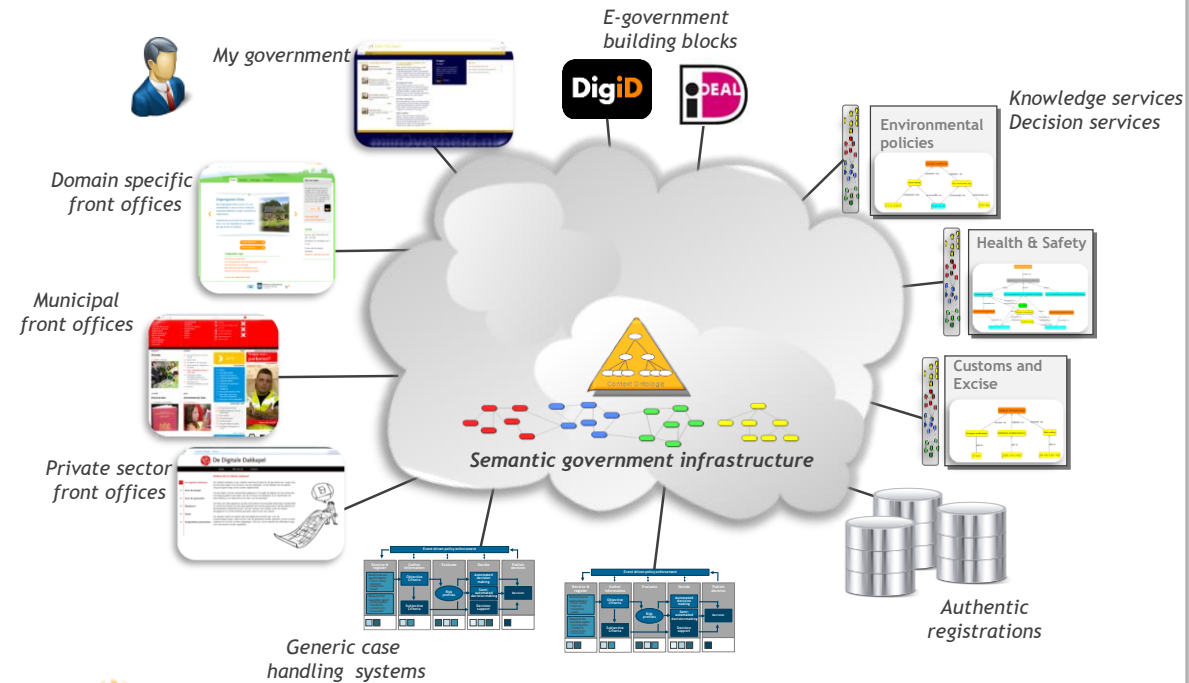
- Reduce implementation costs for new regulations
- Ensure the correct implementation and execution of regulations
- Explain and justify decisions



Regulated entities

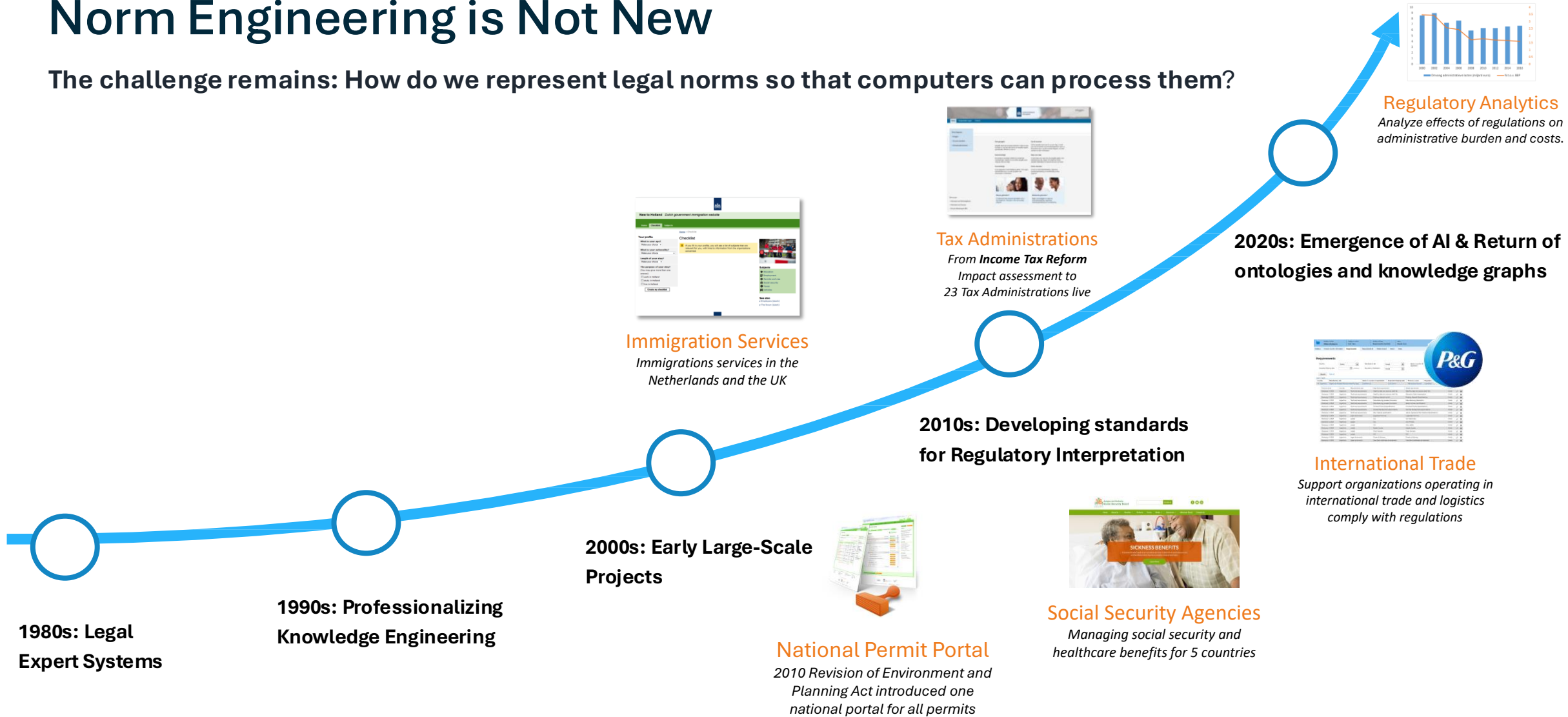
- Understand impact of new regulations
- Understand the regulatory context of business initiatives
- Reduced cost of compliance
- Empower citizens in relation to government (politics / services)

## Towards citizen centric services and a transparant government Using machine readable interpretations of natural language regulations



# Norm Engineering is Not New

The challenge remains: How do we represent legal norms so that computers can process them?



# What Limited the Adoption of Norm Engineering?



## People & skills gap

*Norm Engineering required  
'Unicorns' that combine legal,  
domain and modeling expertise*



## Absence of standards

*Fear of vendor lock-in, only  
limited reuse and no ecosystem  
of shared interpretations*



## Low productivity

*~2 days per page of regulation represents  
a too high upfront investment, despite  
positive business case*

# This is Now Finally Changing



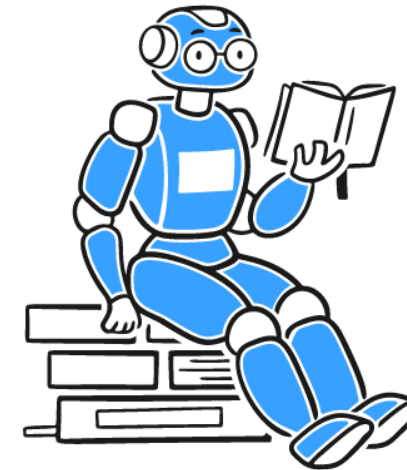
## Collaboration Platform

*Platforms enable legal experts, domain experts and engineers to collaborate in their own language*



## Open Standards

*The field is converging on standards for a common legal grammar for interpreting norms*

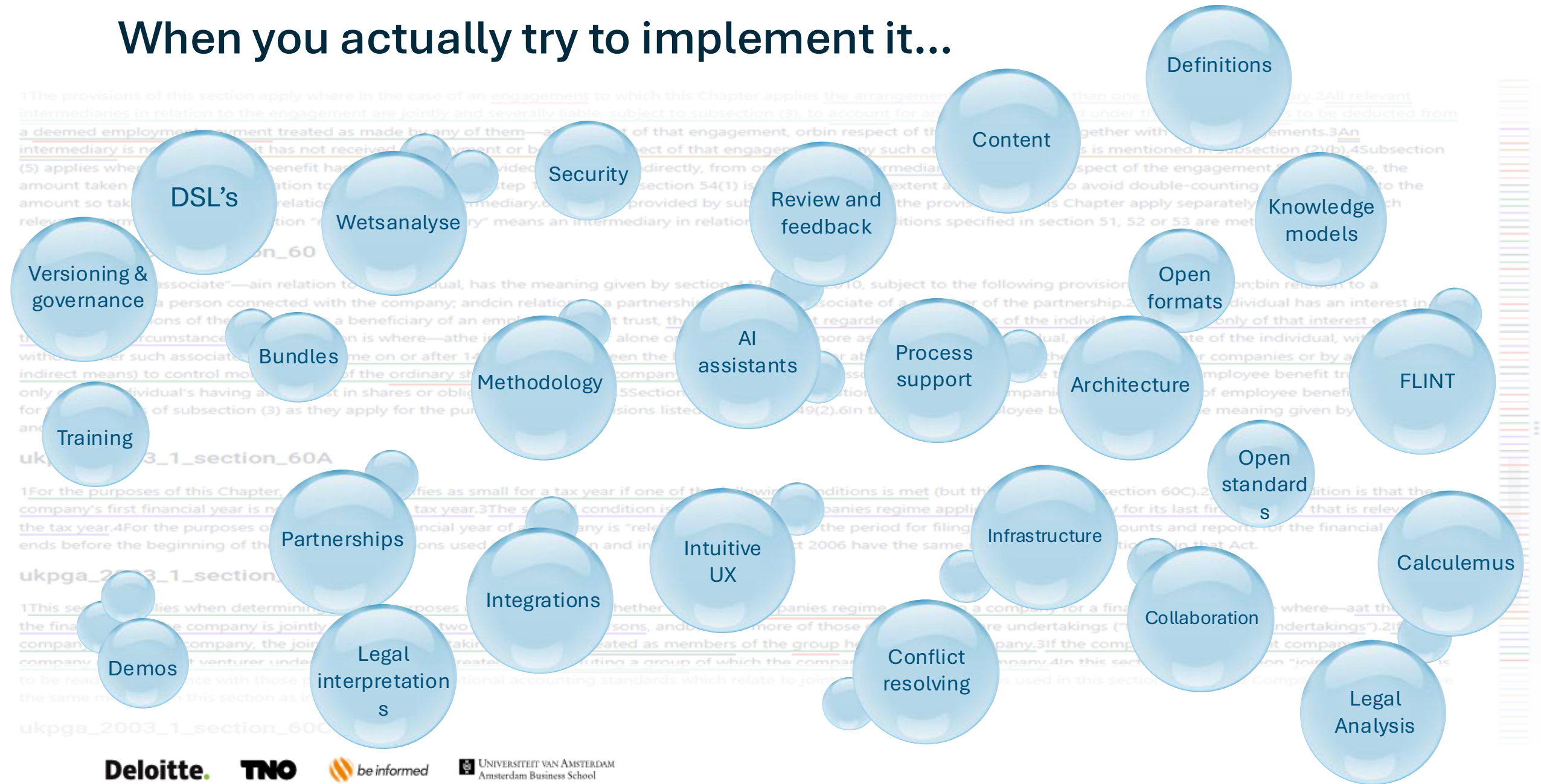


## AI Drives Productivity

*AI radically improves the productivity of interpreting regulation and building regulatory models.*

**The three bottlenecks are disappearing.**

# When you actually try to implement it...



# Implementing the vision

## Legal & Policy work

Legal interpretation  
Policy modelling  
Knowledge graphs

## Formalization

DSL specific modelling  
Rule formalization  
Validation  
Open standards

## Collaboration

Messaging on frames  
Expert reviews  
Conflict resolution

## Norm engineering

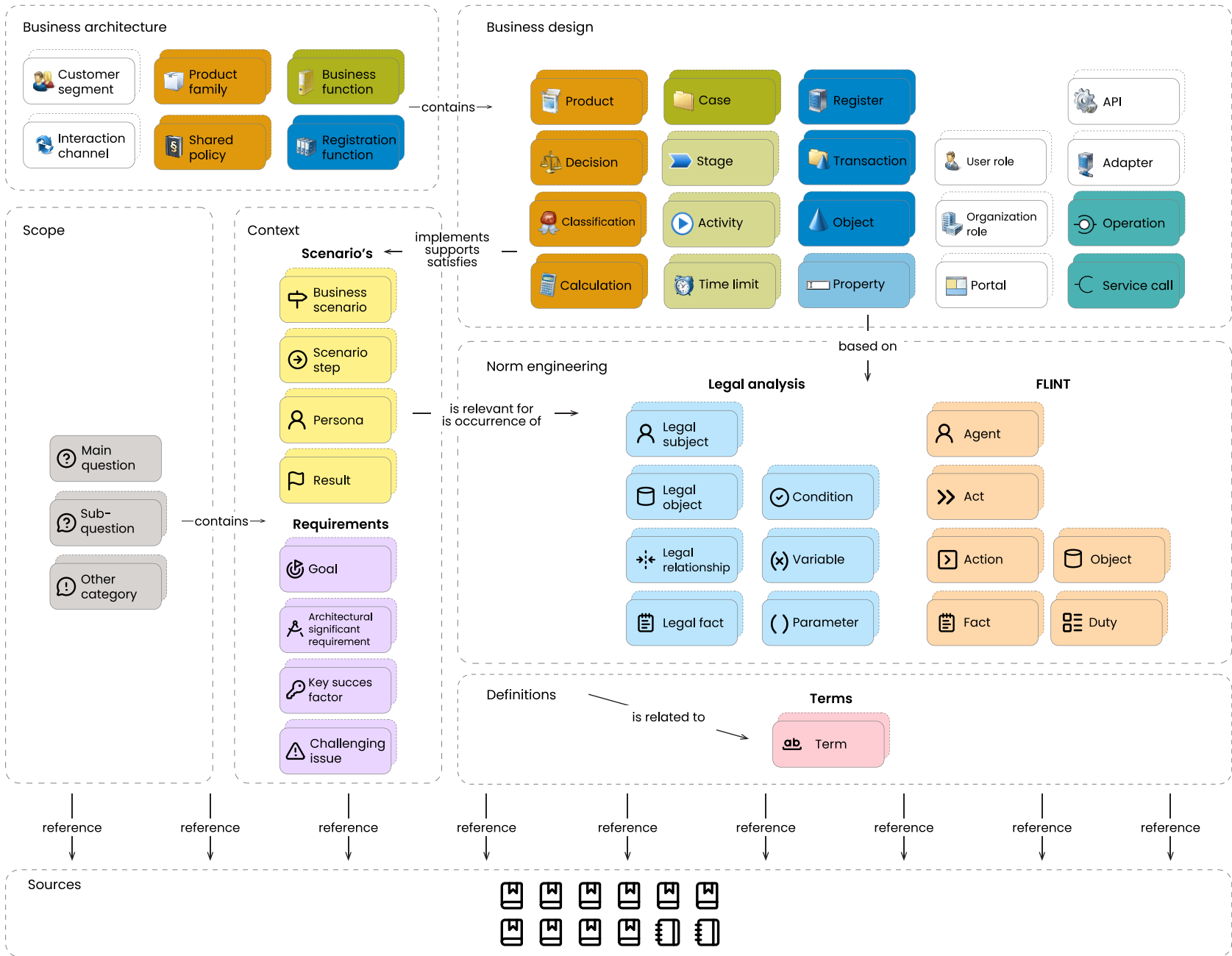
## Engineering

Versioning  
Deployment  
Integration  
Security

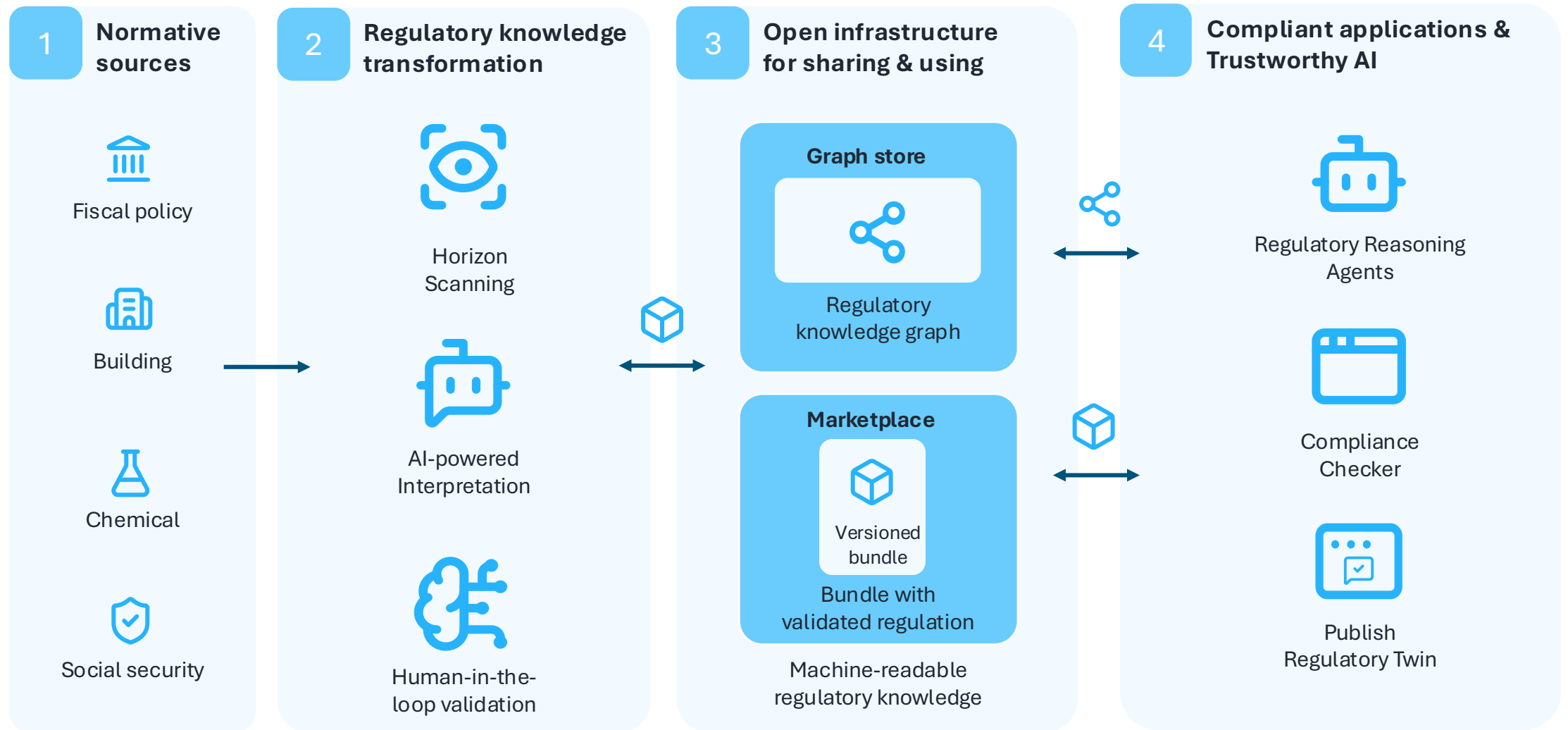
## Capabilities

## Adoption

Training  
AI assistance  
Friendly UI  
Community

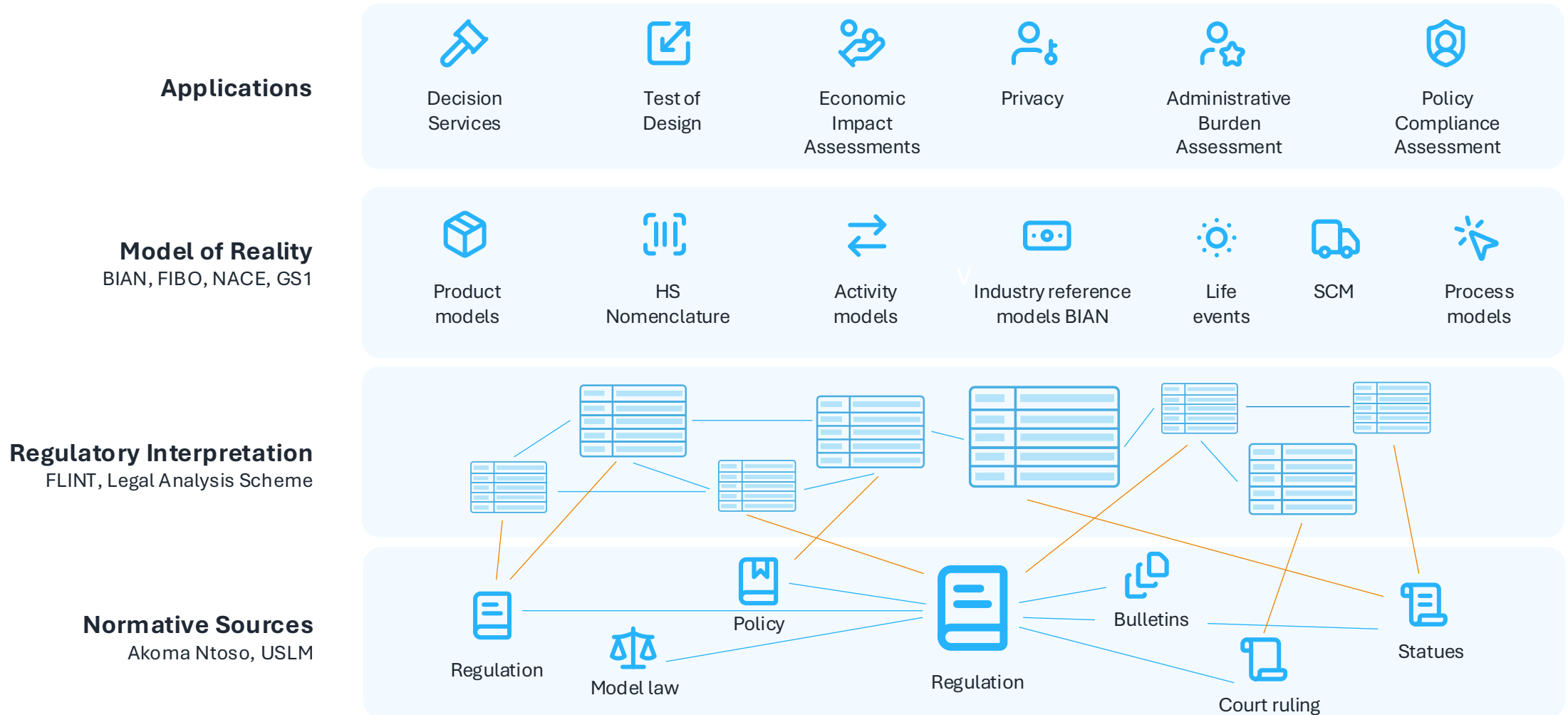


# Working on an Ecosystem for Norm Engineering at Scale



# Use Cases enabled by Norm Engineering at Scale

Digital Regulatory Twins – One managed version of the truth driving value added use case



# Regulatory Digitization and Reengineering

Deloitte | RegExplorer™ Dockets Account Set up Bundle registry Steven Taylor

Dockets Taxmanagement Act 1970.json Modeling

Taxmanagement Act 1970.json FLINT

Project overview Annotate Workbench assistant Modeling Review

Tax management Act 1970 Sources

Finance Act 2016 (serial tax avoidance). ...Schedule 22 to the Finance Act 2016 (asset-based penalty) ...paragraph 1 or 45 of Schedule 16 to the Finance (No. 2) Act 2017 (enablers of defeated tax avoidance etc), orSchedule 18 to the Finance Act 2017.mSchedule 24 to the Finance Act 2021 (penalties for failure to make returns etc),nSchedule 25 to that Act (penalties for deliberately withholding information), orSchedule 26 to that Act (penalties for failure to pay tax).

ukpga\_1970\_9\_section\_104

The provisions of the Taxes Acts shall not, save so far as is otherwise provided, affect any criminal proceedings for any misdemeanour.

ukpga\_1970\_9\_section\_105

Statements made or documents produced by or on behalf of a person shall not be inadmissible in any such proceedings as are mentioned in subsection (2) below by reason only that it has been drawn to his attention—at that where serious tax fraud has been committed the Board may accept a money settlement and that the Board will accept such a settlement, and will not pursue a criminal prosecution, if he makes a full confession of all tax irregularities, or that the extent to which he is helpful and volunteers information is a factor that will be taken into account in determining the amount of any penalty, and that he was or may have been induced thereby to make the statements or produce the documents.2The proceedings mentioned in subsection (1) above are—any criminal proceedings against the person in question for any form of fraudulent conduct in connection with or in relation to tax, and any proceedings against him for the recovery of any tax due from him and any proceedings for a penalty or on appeal against the determination of a penalty.

ukpga\_1970\_9\_section\_106

A person who refuses to allow a deduction of income tax authorised by the Taxes Acts to be made out of any payment shall incur a penalty of £50.2Every agreement for payment of interest, rent or other annual payment in full without allowing any such deduction shall be void.

ukpna 1970 9 section 106A

Act overview Conversation History

>> Accept Settlement and Not Prosecute

Properties Update Delete

Name	Accept Settlement and Not Prosecute
Explanation	The Board accepts a money settlement and does not pursue a criminal prosecution if a person makes a full confession.
State	New
Number of Frame warnings	0
has warnings	No

Validity periods + Add

No validity periods available

Action Update

Accept Settlement

Actor Update

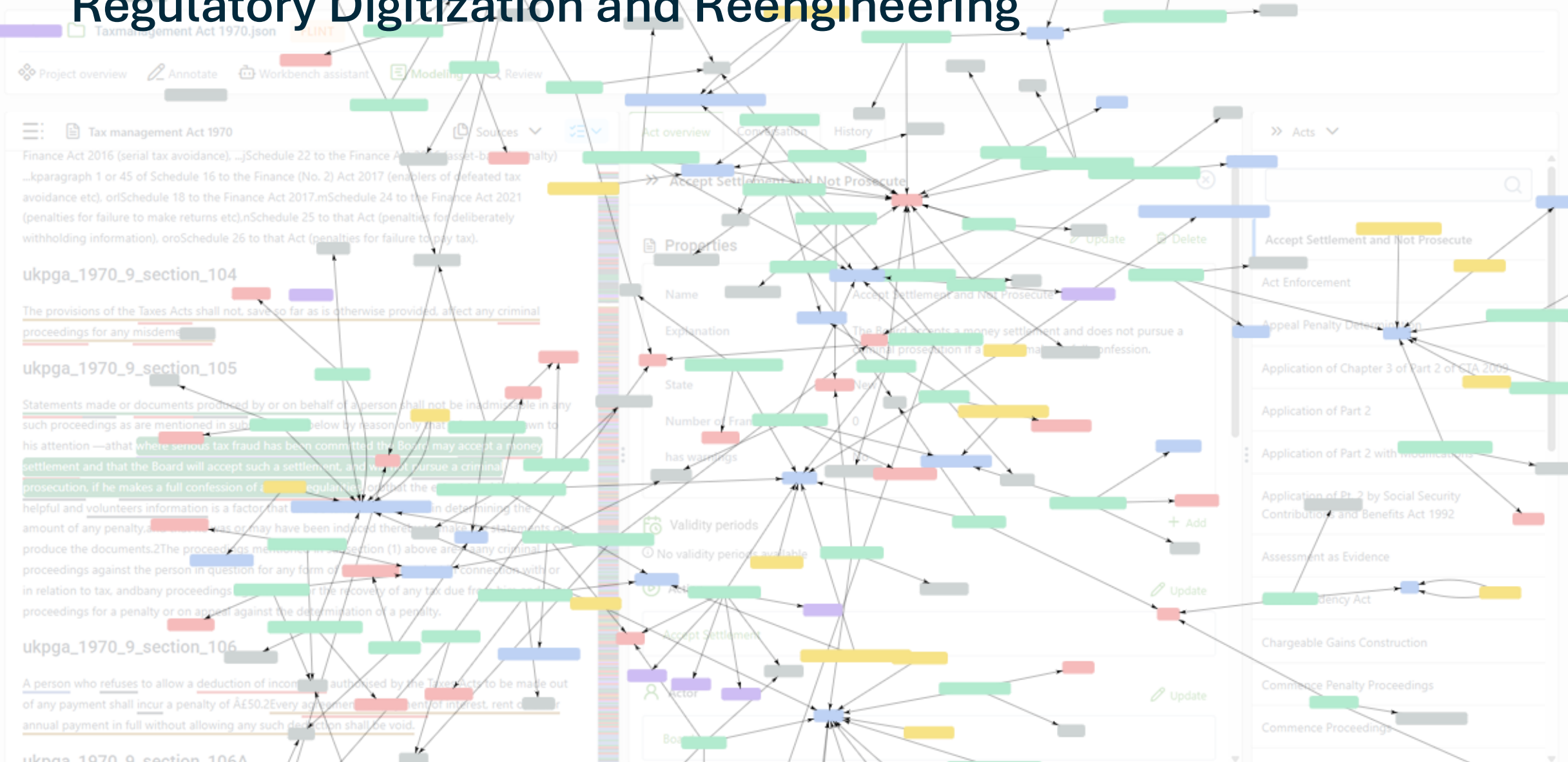
Board

Acts

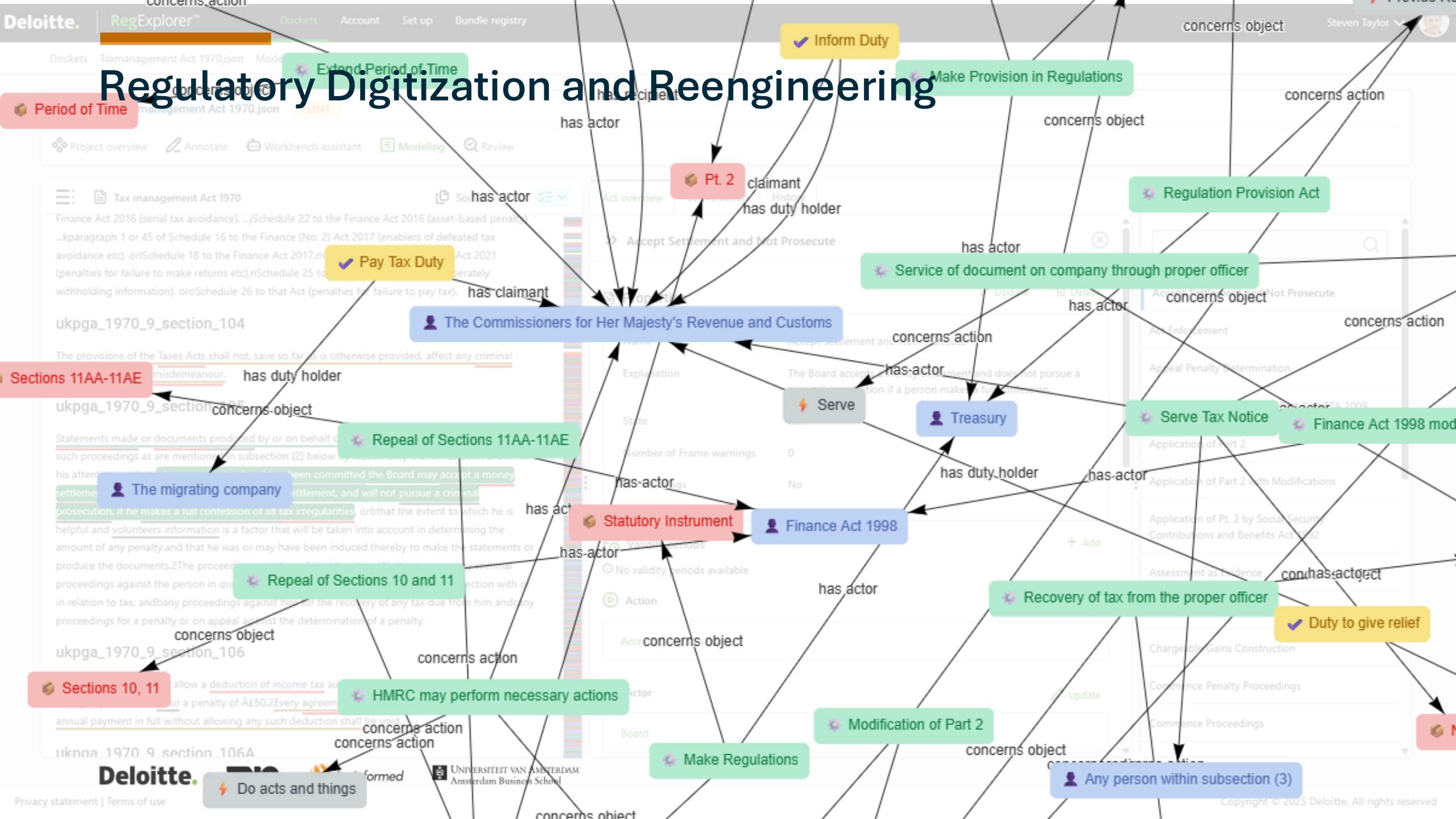
- Accept Settlement and Not Prosecute
- Act Enforcement
- Appeal Penalty Determination
- Application of Chapter 3 of Part 2 of CTA 2009
- Application of Part 2
- Application of Part 2 with Modifications
- Application of Pt. 2 by Social Security Contributions and Benefits Act 1992
- Assessment as Evidence
- Cease Residency Act
- Chargeable Gains Construction
- Commence Penalty Proceedings
- Commence Proceedings

- Regulatory structure & dependencies analysis
- Regulatory consistency & definition analysis
- Administrative burden analysis
- Deregulation & Simplification analysis
- Policy Impact Simulation
- Compliance journey Mapping
- Regulatory Gap & coverage analysis
- “Once only” analysis

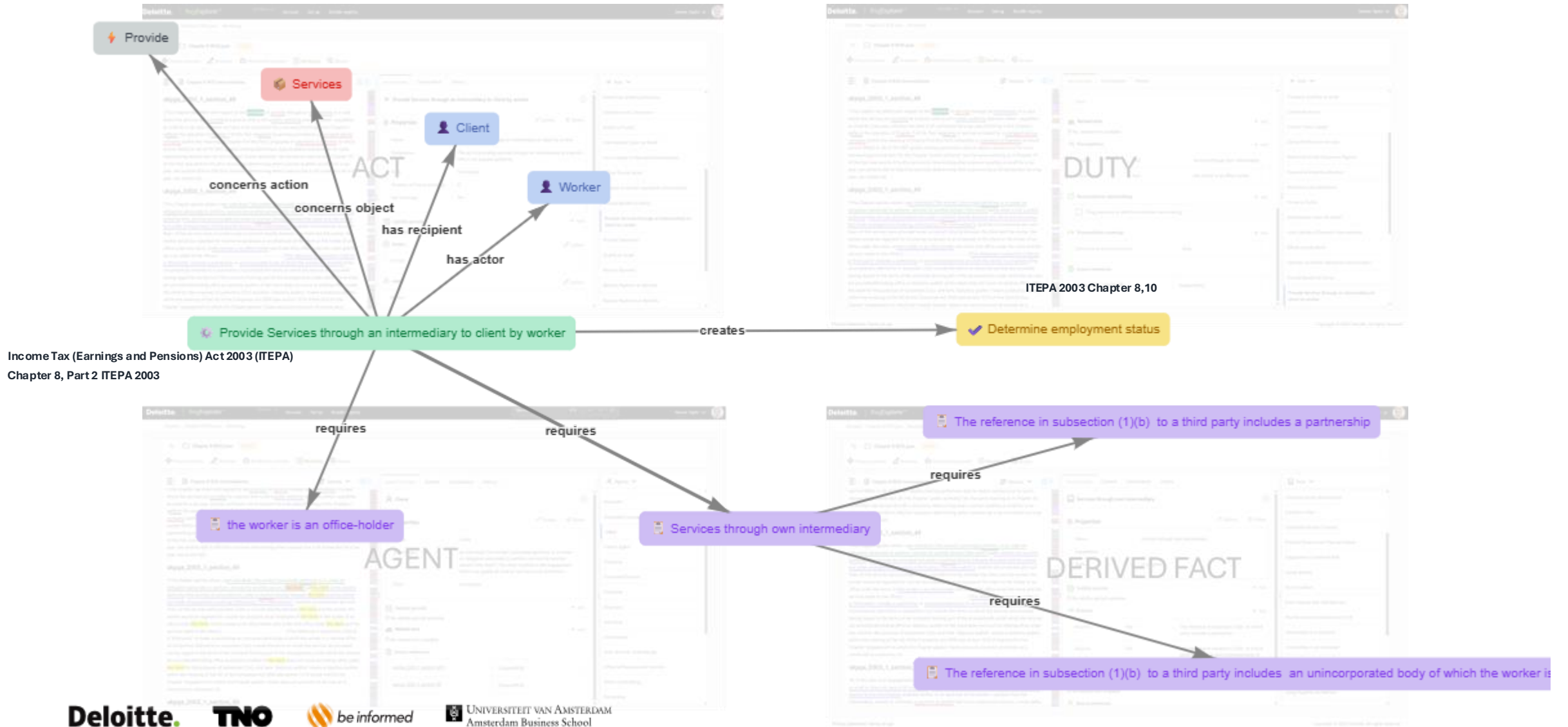
# Regulatory Digitization and Reengineering



# Regulatory Digitization and Reengineering



# Provide Services Through Own Intermediary to Client by Worker



# My FLINT galaxy

Progress indicators for various components:

- FLINT** (frames.flint\_deduplicated\_sequenced.json): 100% complete (green bar)
- Terms & Concepts**: Not uploaded (red bar)
- High Level Requirements**: Not uploaded (red bar)
- Business Scenarios**: Not uploaded (red bar)
- Legal Analysis**: Not uploaded (red bar)
- Scope**: Not uploaded (red bar)

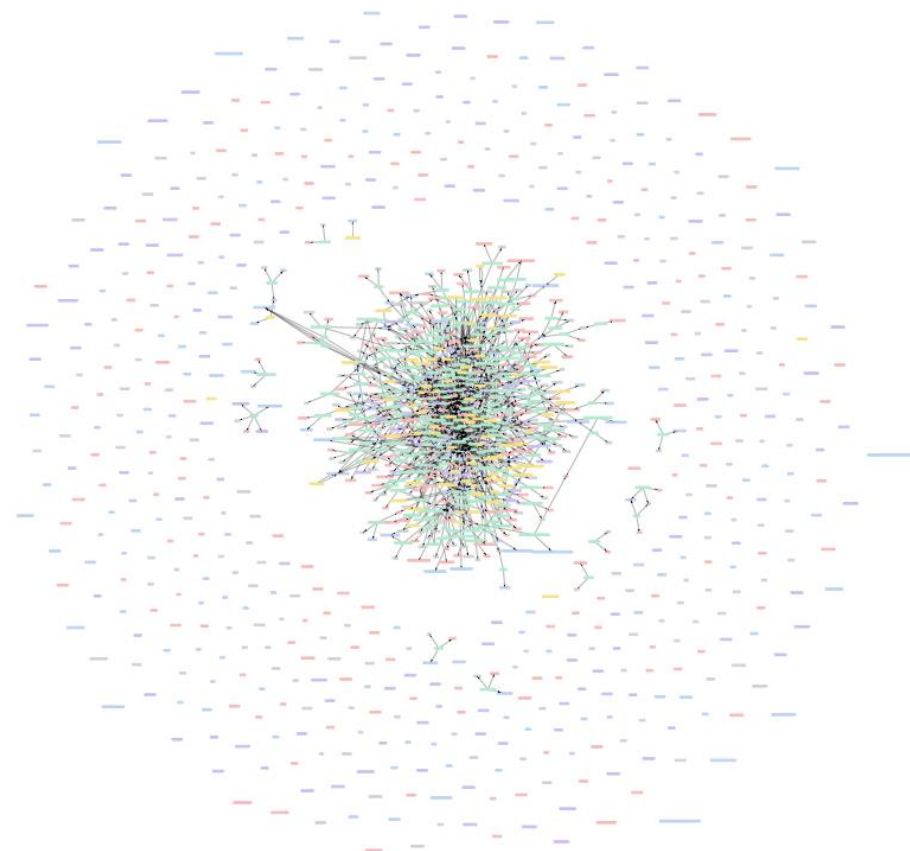
Download current image   Show Full Network   Clear Network

Language: English

### Legend

Flint DSL

- Act (Green square)
- Agent (Blue square)
- Action (Grey square)
- Object (Red square)
- Fact (Purple square)
- Duty (Yellow square)



Navigation icons: up, down, left, right arrows.

Search icon (magnifying glass).

Navigation icons: zoom in (+), zoom out (-), and fit to screen (square with diagonal lines).

# Definitions definitions but definitely definitions

The screenshot shows a web application interface for a legal documentation portal. At the top, there is a navigation bar with tabs for 'Sources', 'Terms', 'Requirements', 'FLINT', 'Legal analysis', 'Scenarios', and 'Scope'. A search bar on the right contains the text 'Search model catalog'. Below the navigation bar, the breadcrumb path is 'Sources | Chapter 8 IR35 Intermediaries' and the date '06-03-2026' is displayed.

The main content area is titled 'Chapter 8 IR35 Intermediaries' and contains a 'Table of contents' on the left with a list of sections from ukpga\_2003\_1\_section\_48 to ukpga\_2003\_1\_section\_61. The main text area shows the content for 'ukpga\_2003\_1\_section\_60H', which discusses the application of the section to an engagement worker and the meaning of 'the client's agent'.

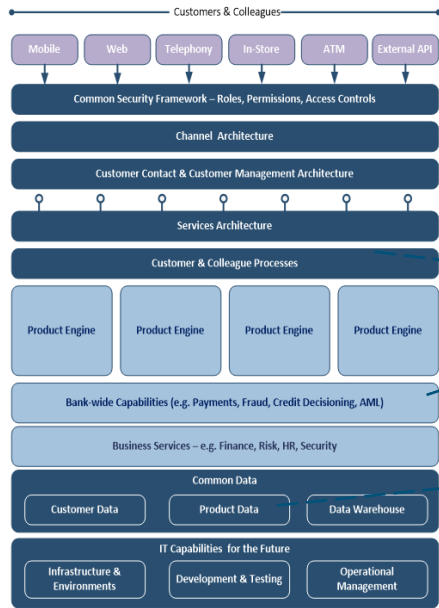
Below the main text, there is a 'Terms' section with a search bar labeled 'Find term'. A list of terms is displayed, including:

- 1992 Act
- Agency rules
- Agency Rules
- Arrangements
- Associate
- Associate
- Associated Company
- Associated Company
- Associated Company
- Body of Persons
- Business
- Business Activity
- Chain Payment
- Chargeable Gain
- Chargeable Period
- Client
- Client
- Client
- Client
- Client
- Client's Agent
- Client's Agent
- Close Company
- Collector
- Company
- Company
- Company
- Earnar
- Earnings
- Earnings Rules
- Electronic Lodgement
- Employed
- Employed Earner
- Employee
- Employer
- Employer's National Insurance Contributions
- Employment
- Employment Business
- Employment Intermediary
- Employment Intermediary
- Employment status determination
- Employment status determination
- Employment Status Determination
- Engagement to which Chapter 8 applies
- Engagement to which Chapter 8 Applies
- Engagement to which this Chapter applies
- Engagement to Which This Chapter Applies
- Engagement to Which This Chapter Applies
- Fee-Payer
- Fee-Payer
- Fee-Payer
- Fraudulent Documentation Condition
- HMRC
- Inspector
- Partnership Return
- Partnership Return
- PAYE
- PAYE Provisions
- Payment or Benefit
- Personal Return
- Potential Deemed Employer
- Primary-Healthcare Provider
- Principal Act
- Public Authority
- Public Authority
- Public Authority
- Public Authority
- Public Sector Client
- Registered Number
- Relevant Avoidance Arrangement
- Relevant Avoidance Arrangement
- Relevant Distribution
- Relevant Engagement
- Relevant Engagements
- Relevant Person
- Relevant Person
- Relevant Person (Section 61U context)
- Relevant Trustees
- Relevant Undertaking
- Relevant Undertaking
- Self-Employed Earner

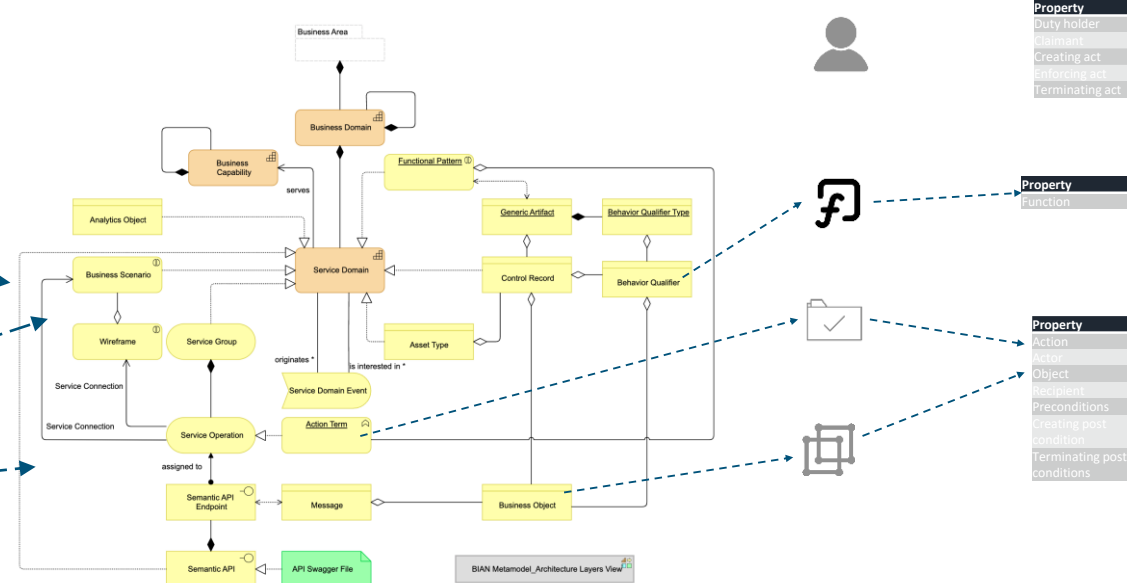


# Managing Regulatory Change

## A digital regulatory twin using BIAN



Your business



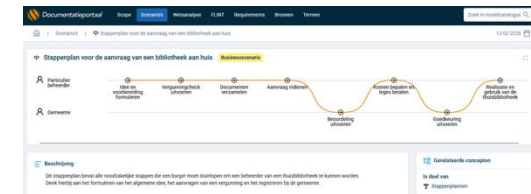
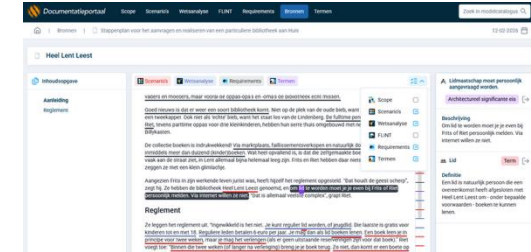
Reference model (BIAN)

Analysis & Interpretation with FLINT

Property
Duty holder
Element
Creating act
Informing act
Terminating act

Property
Function

Property
Action
Actor
Object
Request
Preconditions
Creating post conditions
Terminating post conditions



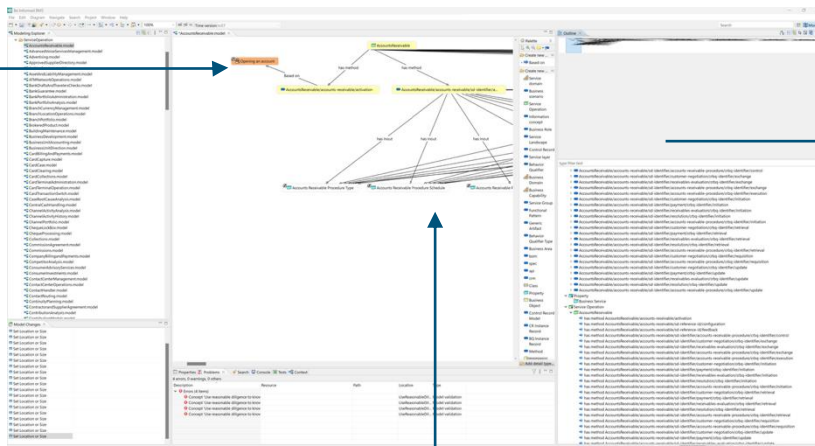
Review & Validate

# A digital regulatory twin

Mapping your business to BIAN

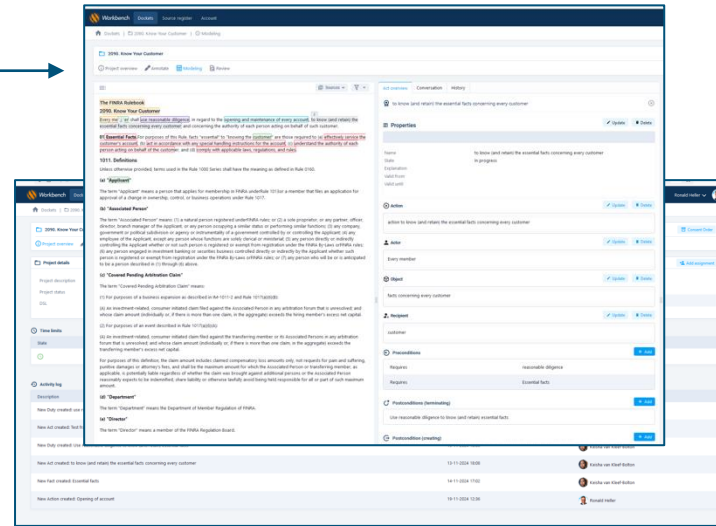
Mapping BIAN to the analysis & interpretations

Feedback loop

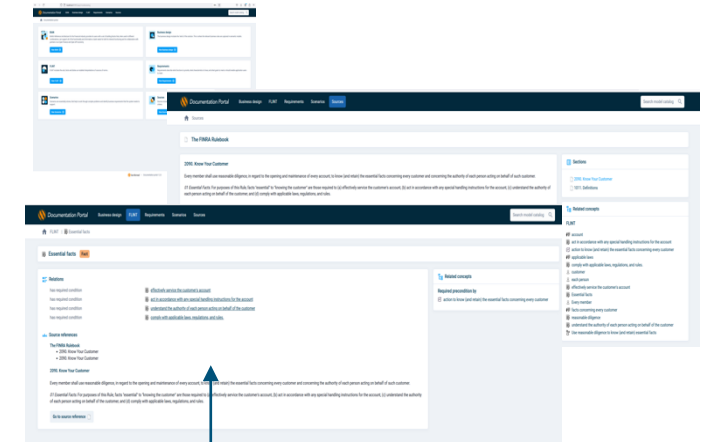


Your business

Reference model (BIAN)



Analysis & Interpretation with FLINT



Review & Validate

# Compliant Applications



## Understanding context

Understand product, materials  
“bag of molecules”, supplements  
appliances, packaging, ..

Understand product classification  
intended use and claims.

Understand the supply chain.

1



## Understanding regulations

Identify relevant jurisdictions and  
regulations for your situation.

Interpret legal obligations across  
domains (health, environment).

Align legal requirements with  
policy and risk appetite.

2



## Check compliance

3



Identify obligations.

Verify & gather additional data.

Reason about transaction context.

Determine controls.

## Product Registration

# Compliant Applications – embedding regulatory reasoning

The screenshot displays the ITTS (International Trade Transaction System) interface. At the top, there's a navigation bar with various compliance check options like 'Cargo transaction compliance check', 'Goods compliance check', etc. Below this, a header section provides key details: Contract of carriage number (ITTS-1-06153222), Compliance request date (06-05-2025 15:32:24), Cargo transaction contract type (Contract of carriage), Request outdated (No), Compliance check status (Compliance assessment completed), Compliance check request owner (Demo Utility), Compliance assessment deadline (08-05-2025 15:32), and a Timeline.

The main content area is divided into several sections:

- Approval overview:** Includes links for Processed request history, Unprocessed request history, Event history, and Related application configurations.
- Compliance summary:** A dashboard showing the status of various screening steps:
 

Party screening	Country screening	Goods screening	Transport vehicle screening	Party assessment	Country assessment	Goods assessment	Transport vehicle assessment	Compliance assessment result	Status text
●	● 2 hits	●	●	●	●	●	●	Cargo transaction is compliant	The transaction has been screened and based upon provided business rules, 2 potential compliance issues have been found. Export restriction check via harmonized system code is not yet supported for Iran (Islamic Republic of)
- Party overview:** A table listing parties involved in the transaction:
 

Name	Role	Hits	Regulatory screening	Internal screening	False positive hits	Assessment	Assessment justification	Assessment description
Behrouz Shahrokh Ghazian	Consignor	0	●	●	0	●		
Abdal-Rahman al-Salbi	Consignee	0	●	●	0	●		
- Country overview:** A table listing countries:
 

Name	Role	Hits	Regulatory screening	Internal screening	False positive hits	Assessment	Assessment justification	Assessment description
Iran (Islamic Republic of) - AWZ ✕	Origin country	2	● 2 hits	N/A	0	●	Policy based assessment	IRAN,IR
Iraq - BGW ✕	Transit country	0	●	N/A	0	●		
Netherlands - SPL ✕	Transit country	0	●	N/A	0	●		
- Goods overview:** A table listing goods:
 

Description	HSC	Hits	Regulatory screening	Internal screening	False positive hits	Assessment	Assessment justification	Assessment description
Medicaments	30069300	0	●	N/A	0	●		

An 'Export to excel' button is visible in the bottom right corner of the Goods overview section.

## Sanctions

- 14 UN sanctions regimes
- 45 countries own sanction regimes
- 70+ countries issuing sanctions lists
- ≈ 14,000 – 21,000 pages (\*)

## Export Control Regulations

- Dual Use / Strategic Goods Regulations
- Military Use
- 80+ countries have export control regs
- ≈ 21,000 – 31,000 pages (\*)

## What about:

- Customs, Tariffs and Taxes
- Trade protection, NTMs, preferential origin
- Import and export licensing
- Product safety and technical measures
- Phyto-sanitarian regulations
- Environmental and Human Safety
- ESG.

(\*) Asked ChatGPT for the number of pages

**Norm Engineering  
at scale holds  
great promises**

**We are getting  
there...**

