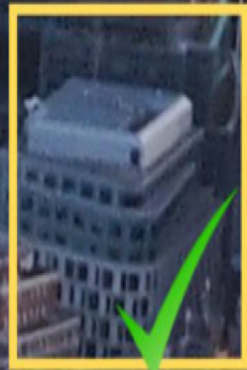


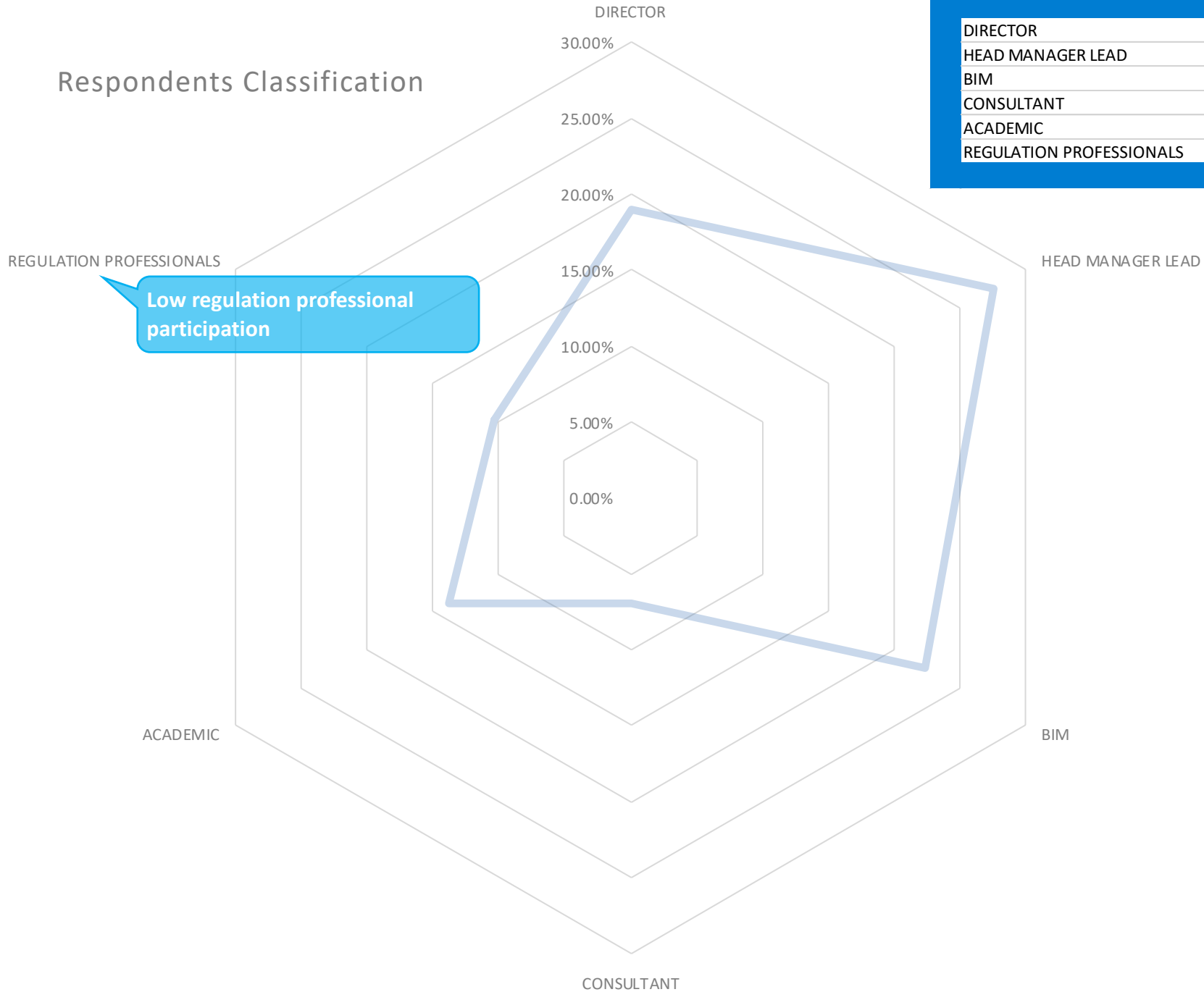
Digital Compliance DCOM Network

Survey analyses 3.0



# Respondents Classification

Classification	Count	Percentage
DIRECTOR	11	18.97%
HEAD MANAGER LEAD	16	27.59%
BIM	13	22.41%
CONSULTANT	4	6.90%
ACADEMIC	8	13.79%
REGULATION PROFESSIONALS	6	10.34%
<b>Total</b>	<b>58</b>	



# 58 respondents declared their roles and responsibilities



Sample Size

60

# Which Target is possible by 2025?

0 - No Automation: The current document and drawing based procedures are adequate

- 1 From a technology perspective, which target is possible by 2025?
- 3 From a commercial perspective, how far is this process viable by 2025?
- 5 From a political perspective, what is level of appetite required that will allow policy makers to affect

5 - Full Automation: Fully automated compliance checking.

1 - Automated Information Exchange: Automating submission of project information for regulatory compliance



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appetite for automation

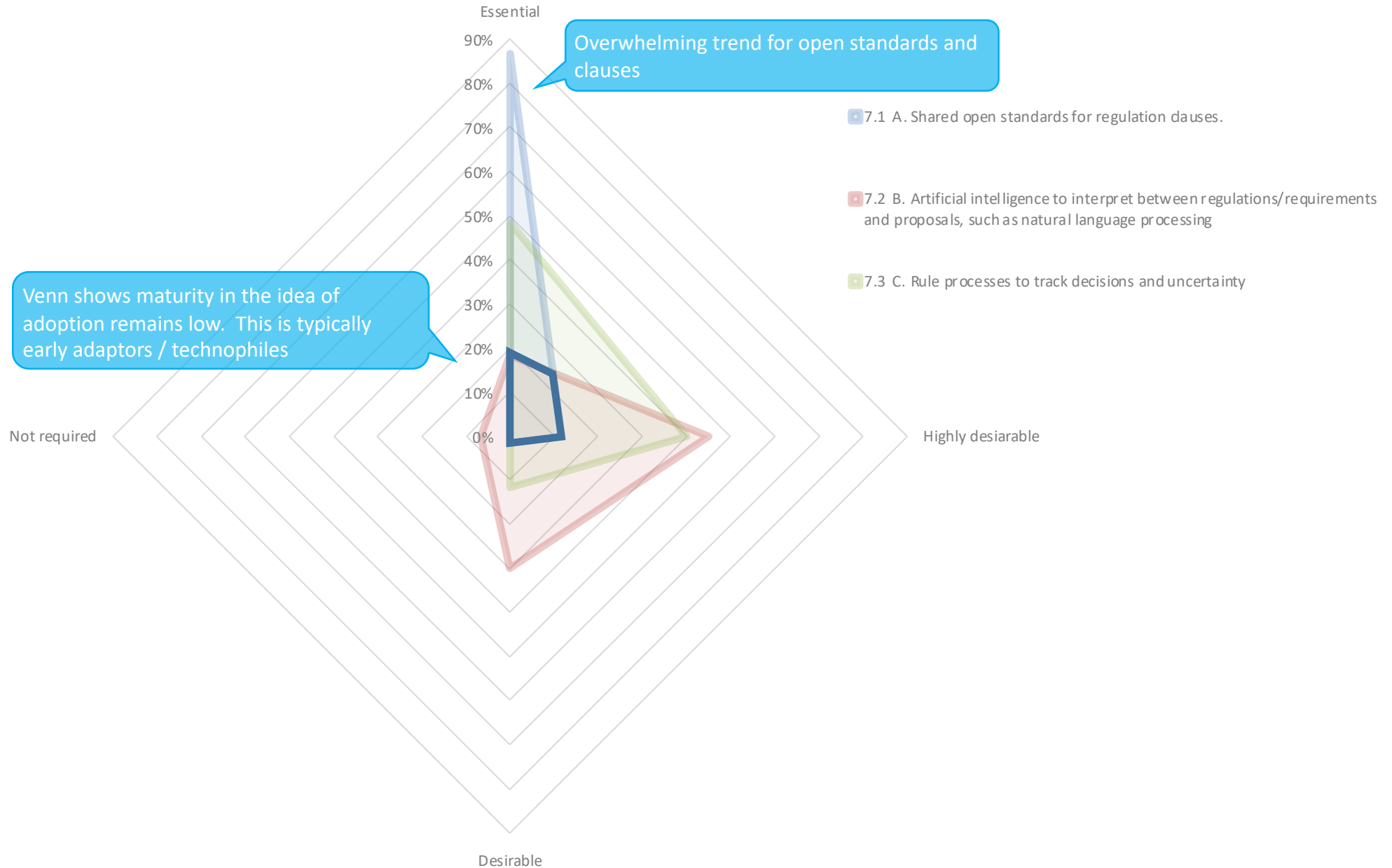
Venn represents automation but with human intervention

4 - Automated Assessment: Fully Automated assessment, but requiring final human approval.

2 - Automated Validation: Automating the checking of information for completeness prior to compliance checking.

3 - Partial Automated Assessment: Automatic assessment of some key regulations.

# Adoption of automated compliance checking with reference to technologies



# Adoption of automated compliance checking with reference to the following commercial arrangement

- 9.1 A. Brief and regulatory requirements to be contractually enforceable
- 9.2 B. Reduced costs for assessment
- 9.3 C. Faster turnaround for assessment
- 9.4 D. Ability to pre-check for compliance prior to formal submission.
- 9.5 E. As proposed/ designed and as built structured asset information (i.e. BIM) to be required for non-domestic projects
- 9.6 F. As proposed/ designed and as built structured asset information (i.e. BIM) to be required for all projects



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Questions refer to reducing burden on humans

Not required

Essential

90.00%  
80.00%  
70.00%  
60.00%  
50.00%  
40.00%  
30.00%  
20.00%  
10.00%  
0.00%

demand for enforceable regulatory requirements & ability to check for pre-compliance

Highly desirable

Venn – still the urge to have human intervention

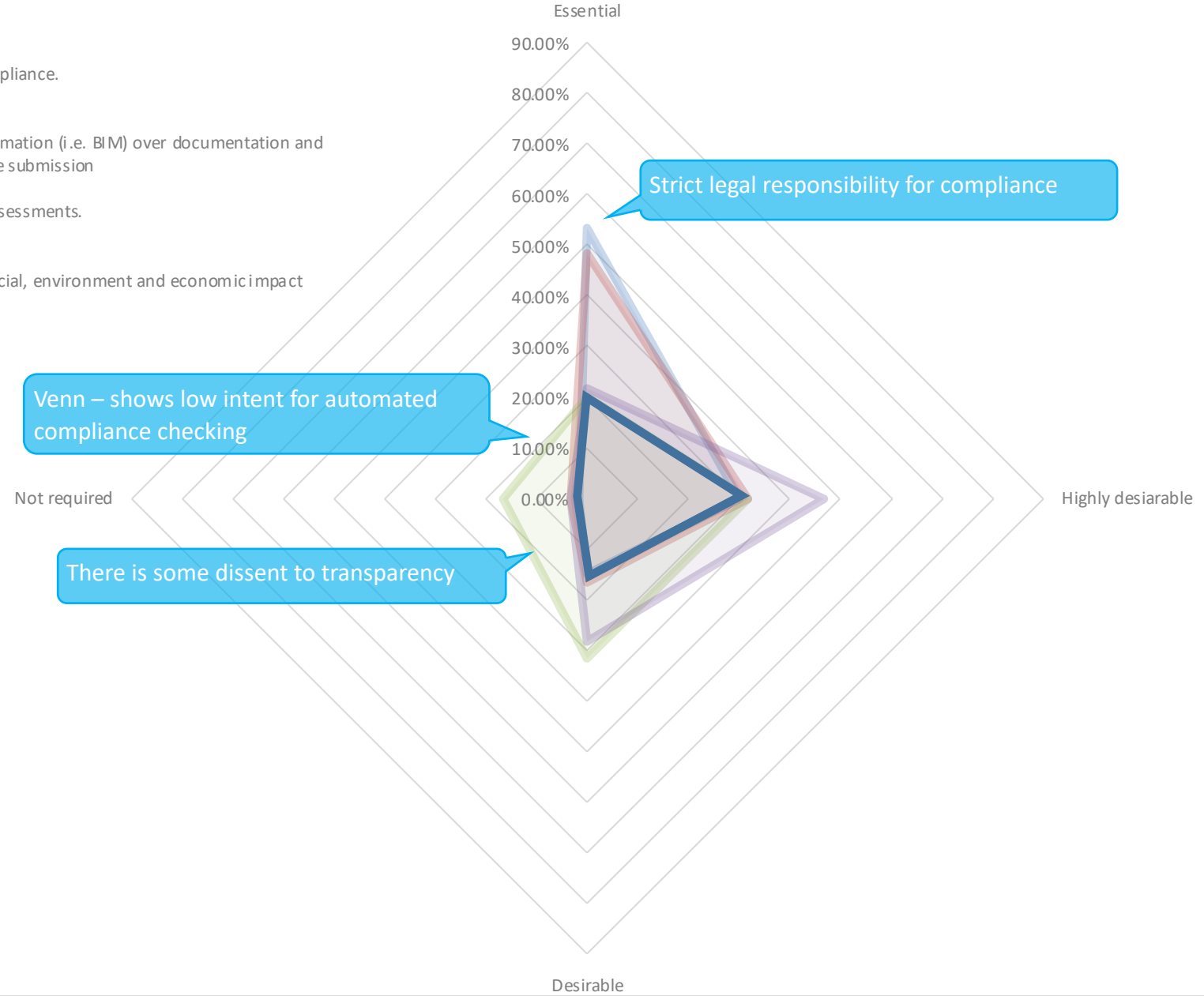
Desirable

# Adoption of automated compliance checking with reference to the following positions

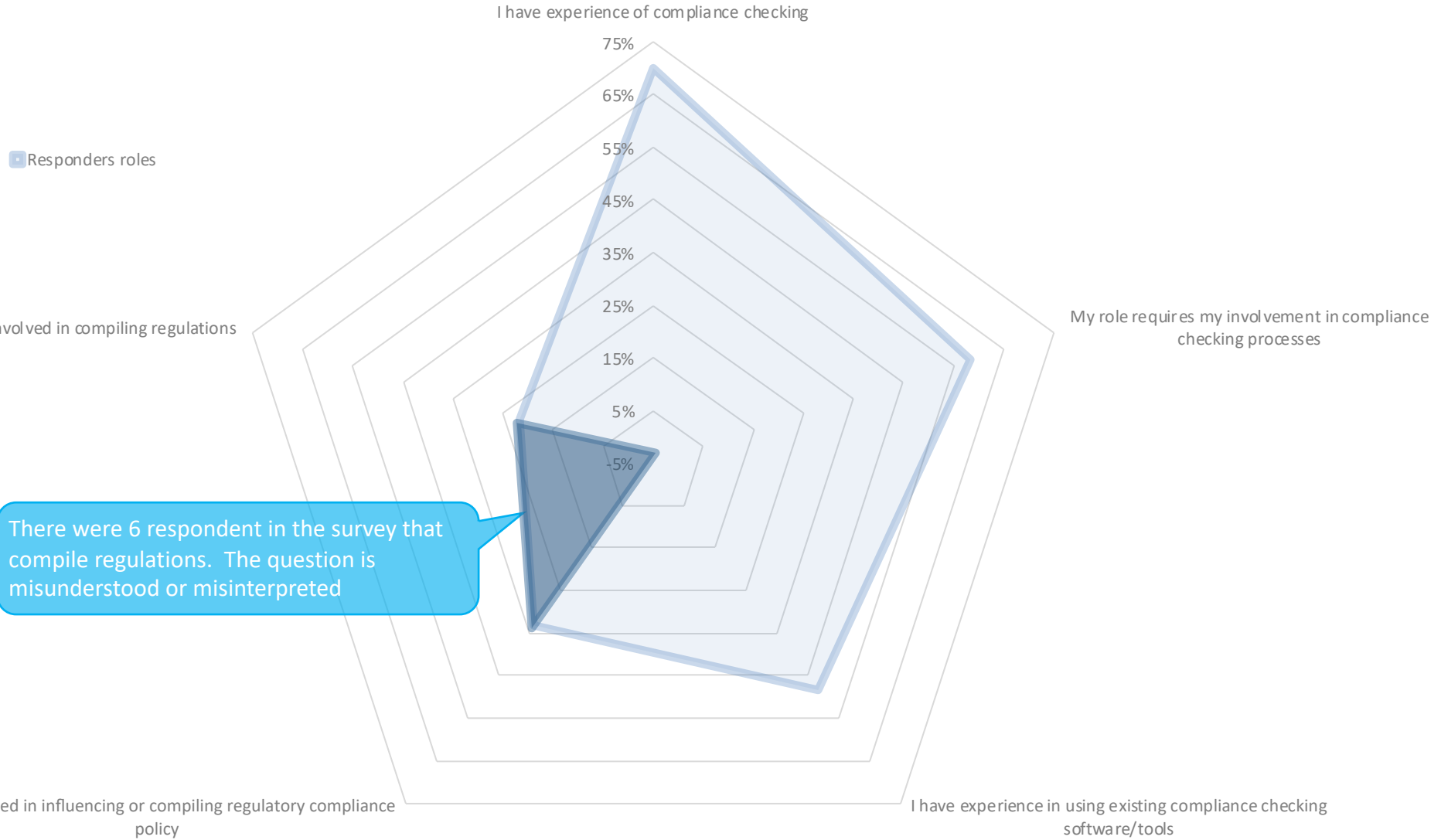
- 11.1 A. Strict legal responsibility for compliance.
- 11.2 B. Primacy of structured asset information (i.e. BIM) over documentation and drawings for the purposes of compliance submission
- 11.3 C. Public right to see compliance assessments.
- 11.4 D. Standard data and criteria for social, environment and economic impact assessments



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# Respondents and their experience in compliance roles



## Methodologies (1) – Simplified

There are three approaches;

1. the referential approach, which formulates the essence of meaning as the interdependence between words and things or concepts they denote
2. the functional approach, which studies the functions of a word in speech. This approach is based on the analysis of various contexts
3. syntactic marker approach, which uses the noun, from the levels of phrases, clauses, sentences and paragraphs to the level of the writing as a whole, to the languages-independent meanings

**M1-2** are generally used for semantics used with the speech modal and where large data can be analysed to confirm the context and meaning.

**M3** is used in smaller data set and forms the basis of the methodology used in this analyses

Grammar is inextricably linked with the language semantics, which is the semantic dictionary that describes more than one hundred thousand lexical units (words and phrases), and each word is described as a semantic formula consisting of basic functions

syntax is the set of rules, principles, and processes that govern the structure of sentences in a given language, usually including word order

syntactic of or according to syntax

lexical relating to the words or vocabulary of a language



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## Extraction method using Method 3

### Function

Cause (x,y)

Location (x,y)

### Description

x is the reason y

x is in y

The method uses extracting structured physical knowledge in the form of physical effects.

Physical effects are entities that avoid ambiguity. The physical effects can also be classified in an ontology to determine the emotional context in a phrase, such as demand, respect, platitudes, threat, rigor etc.

(1) Sukhorolska S.M. , Fedorenko O.I. Methods of Linguistic Analysis 2016; Tuzov V A 1998 Computer Linguistics. St. Petersburg, St. Petersburg State University. Fomenkova, Korobkin, Fomenkov, Volgograd State Technical University, Volgograd, Russia 2017



# Semantic analyses

## Definitions

**semantic analysis** is the process of relating syntactic structures, from the levels of phrases, clauses, sentences and paragraphs to the level of the writing as a whole, to their language-independent meanings

**Claim** : refers to the narrative produced by the respondents. This claim is then analysed from the survey narrative using a semantics engine

- *Claim : state or assert that something is the case, typically without providing evidence or proof*

**Limitations** : is a direct reference to the survey questions

- *Limitation : a limiting rule or circumstance; a restriction*

**Primary** : shows the top layer of impression of the limitations that are voiced in the claims

**Secondary** : shows the lower layer of impression that are voiced in the claims

**Attributes** : are characteristic inherent or part of the primary and secondary layers

Note : Typographical errors in the statements are not corrected and have been interpreted to mean the same as the word implies



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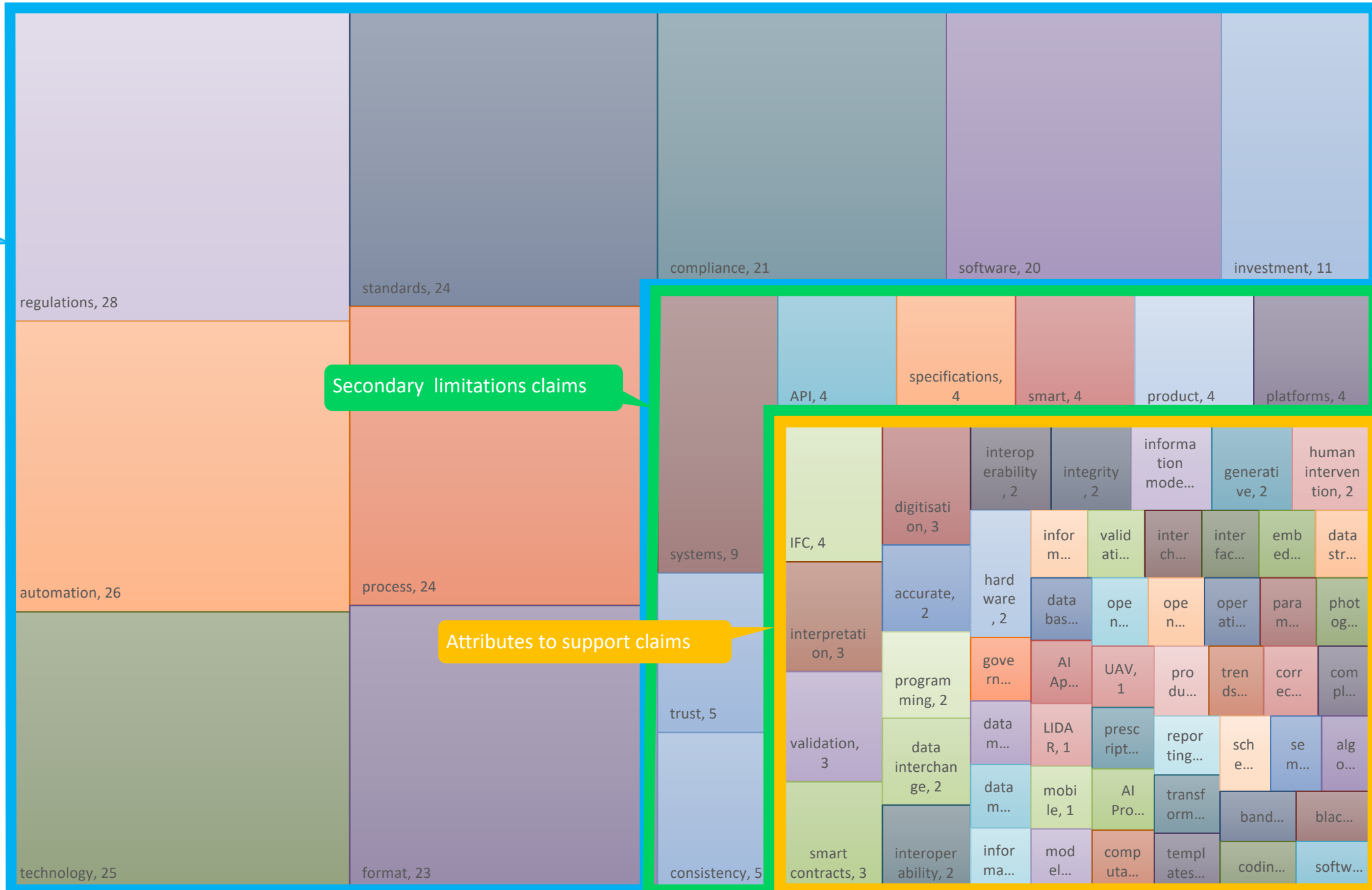
# In your opinion, what are the technological limitations today? If there are limitations, what work is required to overcome these?

Semantic analyses

Prime limitations claims



DCOM



Secondary limitations claims

Attributes to support claims

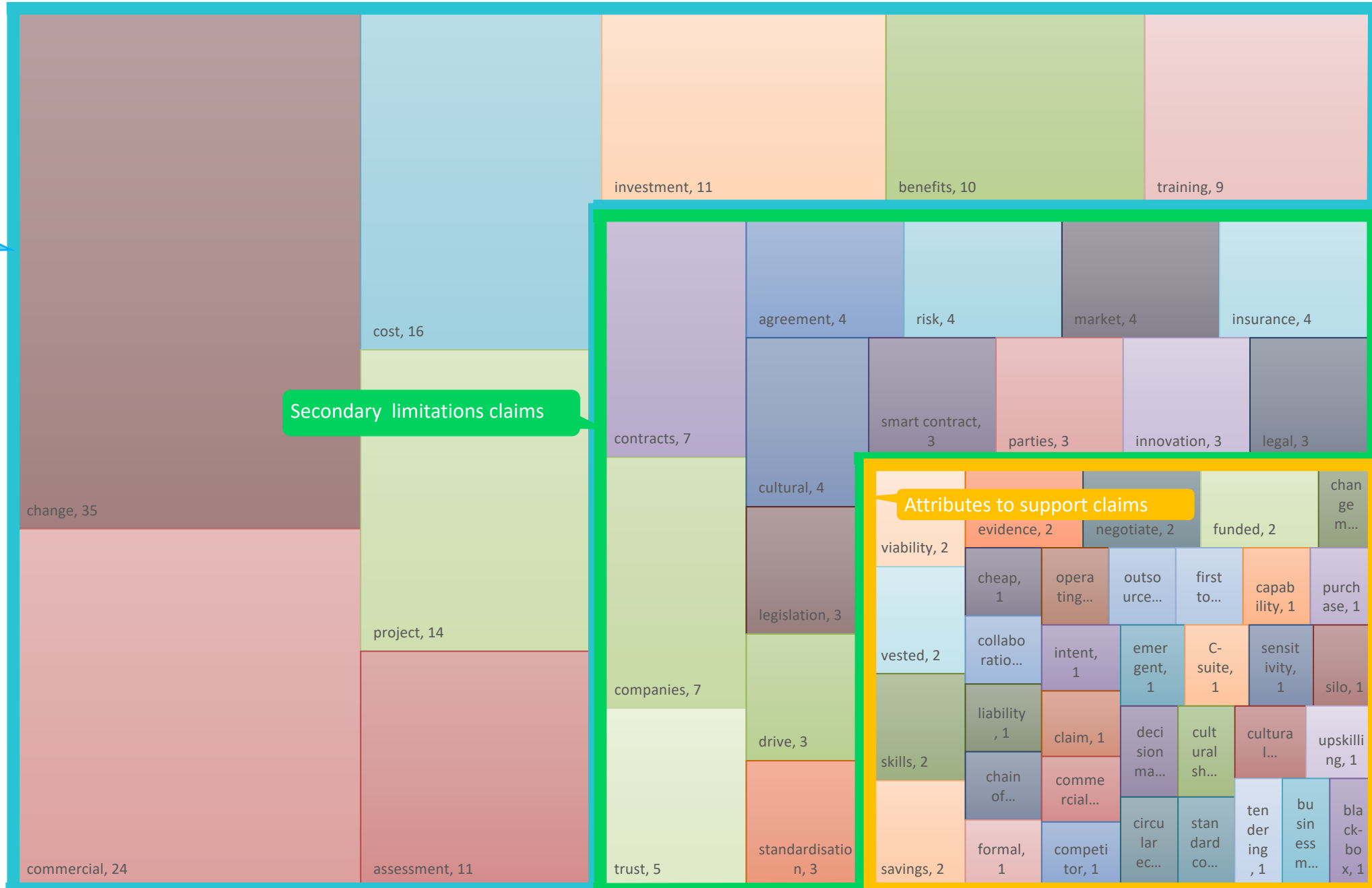
In your opinion, what are the commercial limitations today? If there are limitations, what work is required to overcome these?

Semantic analyses

Prime limitations claims



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Secondary limitations claims

Attributes to support claims

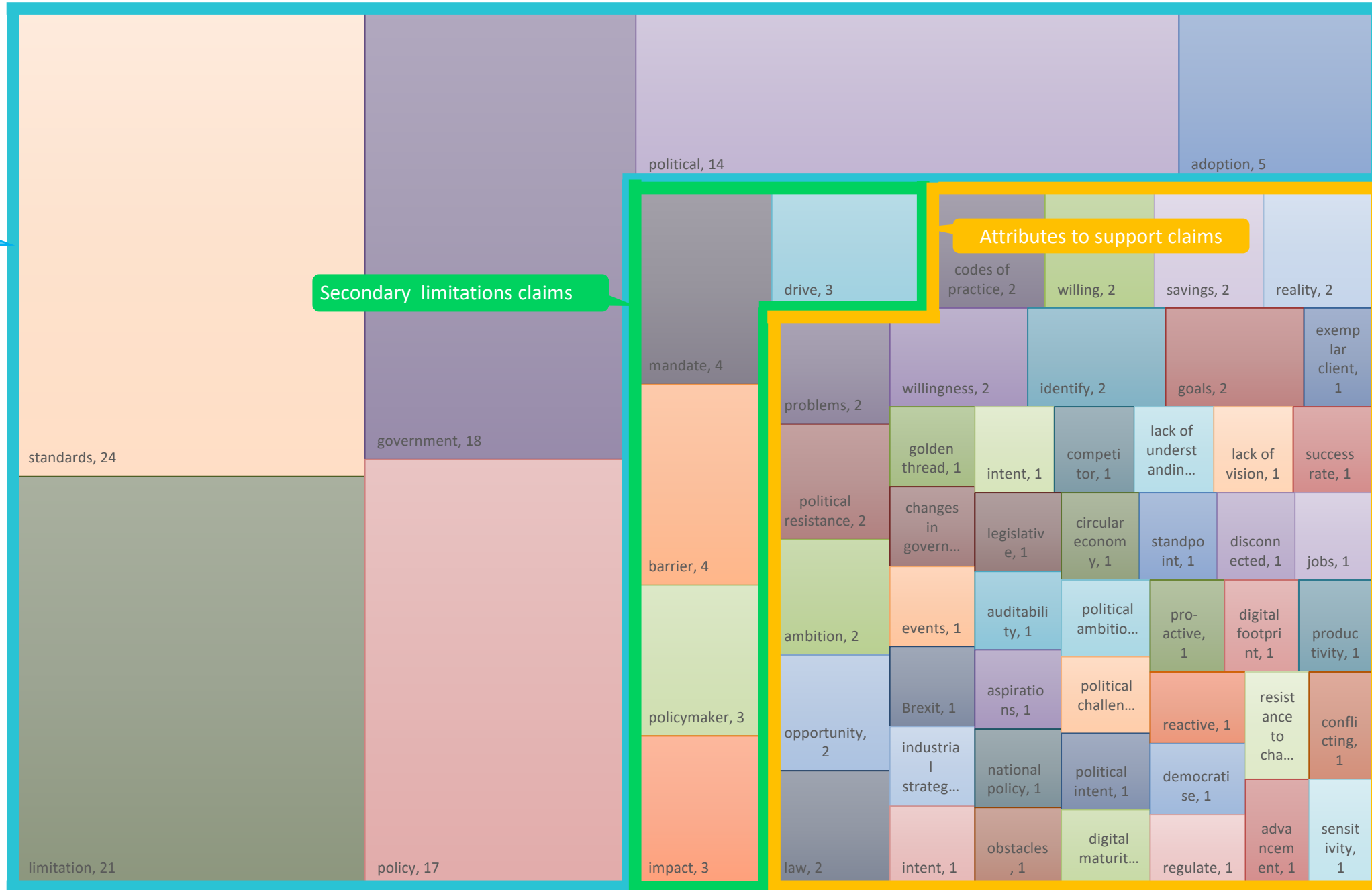
6. In your opinion, what are the political and policy making limitations today? If there are limitations, what change is required to overcome these?

Semantic analyses

Prime limitations claims



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Secondary limitations claims

Attributes to support claims

# Semantic analyses

## Definitions

**Influencing factor** : refers to the percentage of respondents who referenced the factor in their statements and claims. The statement and claim is then analysed using and IFTTT conditions and the semantic engine for various combinations of the statement and claims

- *Factor : a circumstance, fact, or influence that contributes to a result*

**Automation** : is a direct reference to the survey questions

- *: the ability to orchestrate and integrate tools, people and processes through workflow*

1<sup>st</sup> order factors : shows the high order factors that would influence automation

2<sup>nd</sup> order factors : shows the secondary factors that would influence the 1<sup>st</sup> order factors

3<sup>rd</sup> order factors : show the tertiary factors that would influence the 2<sup>nd</sup> order factors



D C O M

# If the client brief was automate, what are the key influencing factors to automate this?

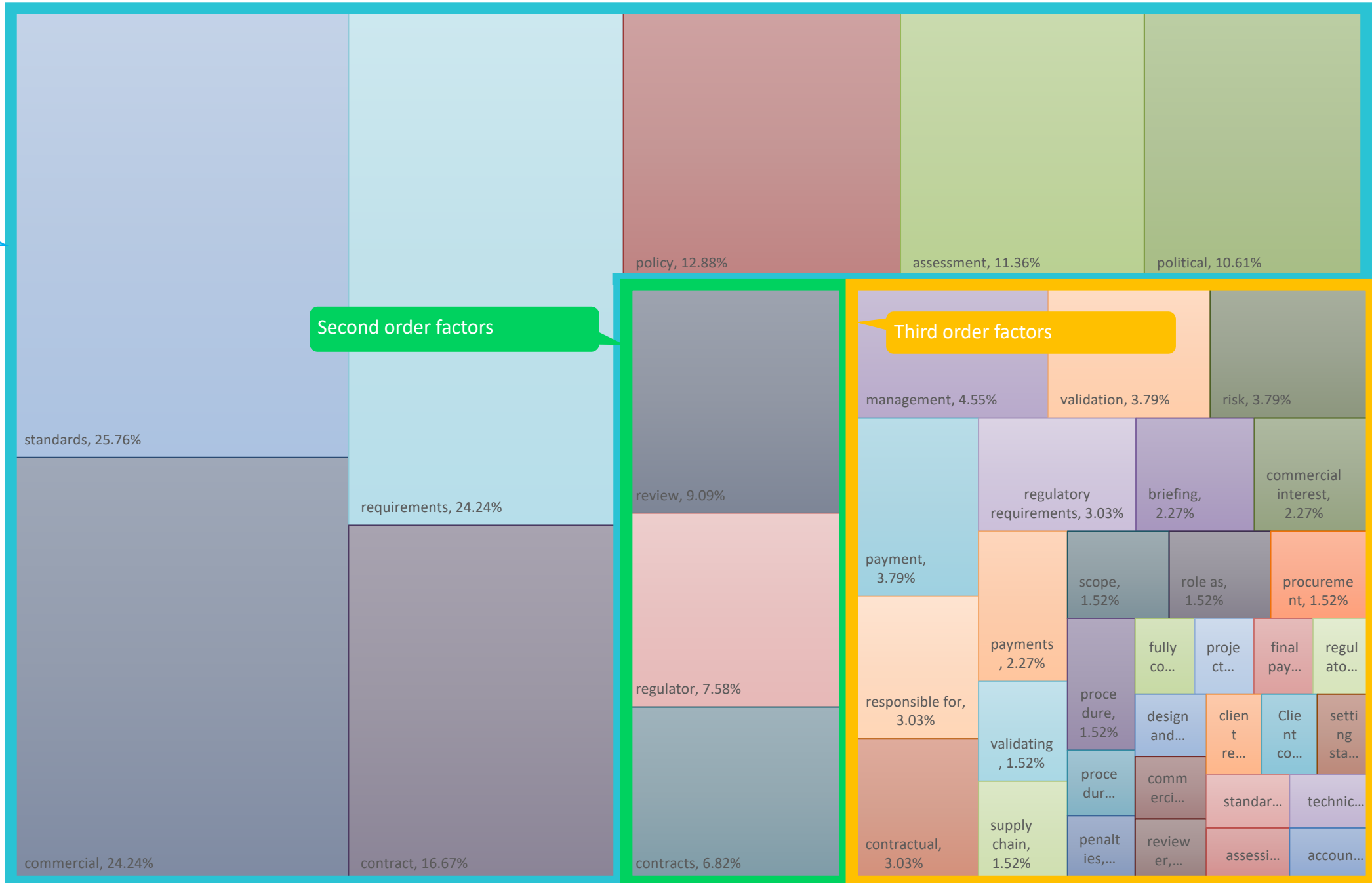


Semantic analyses

1st order factors



D C O M

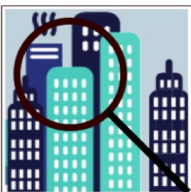


If the regulations were automated, what are the key influencing factors to automate this?

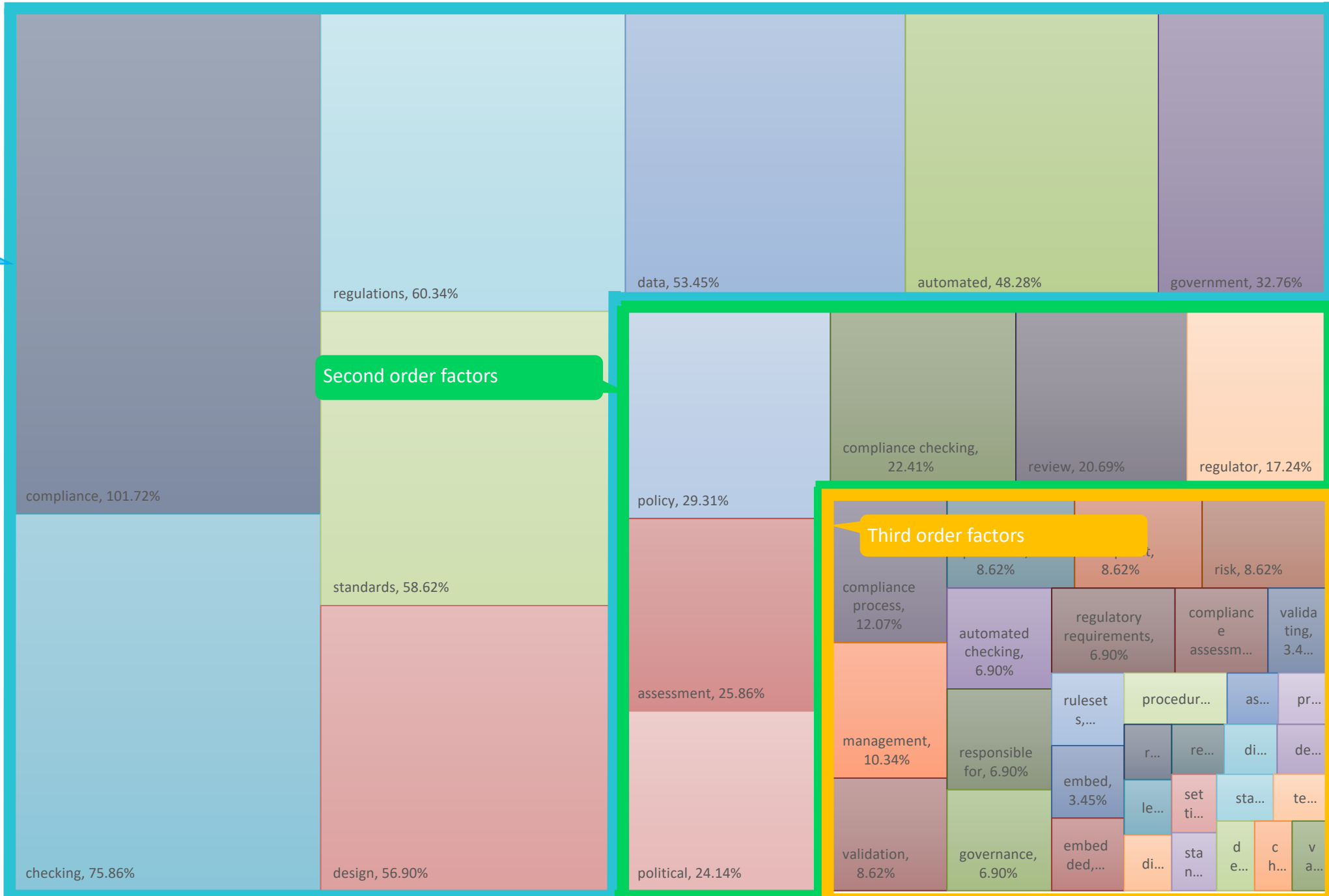


Semantic analyses

1st order factors



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Second order factors

Third order factors

If the requirements were automated, what are the key influencing factors to automate this?

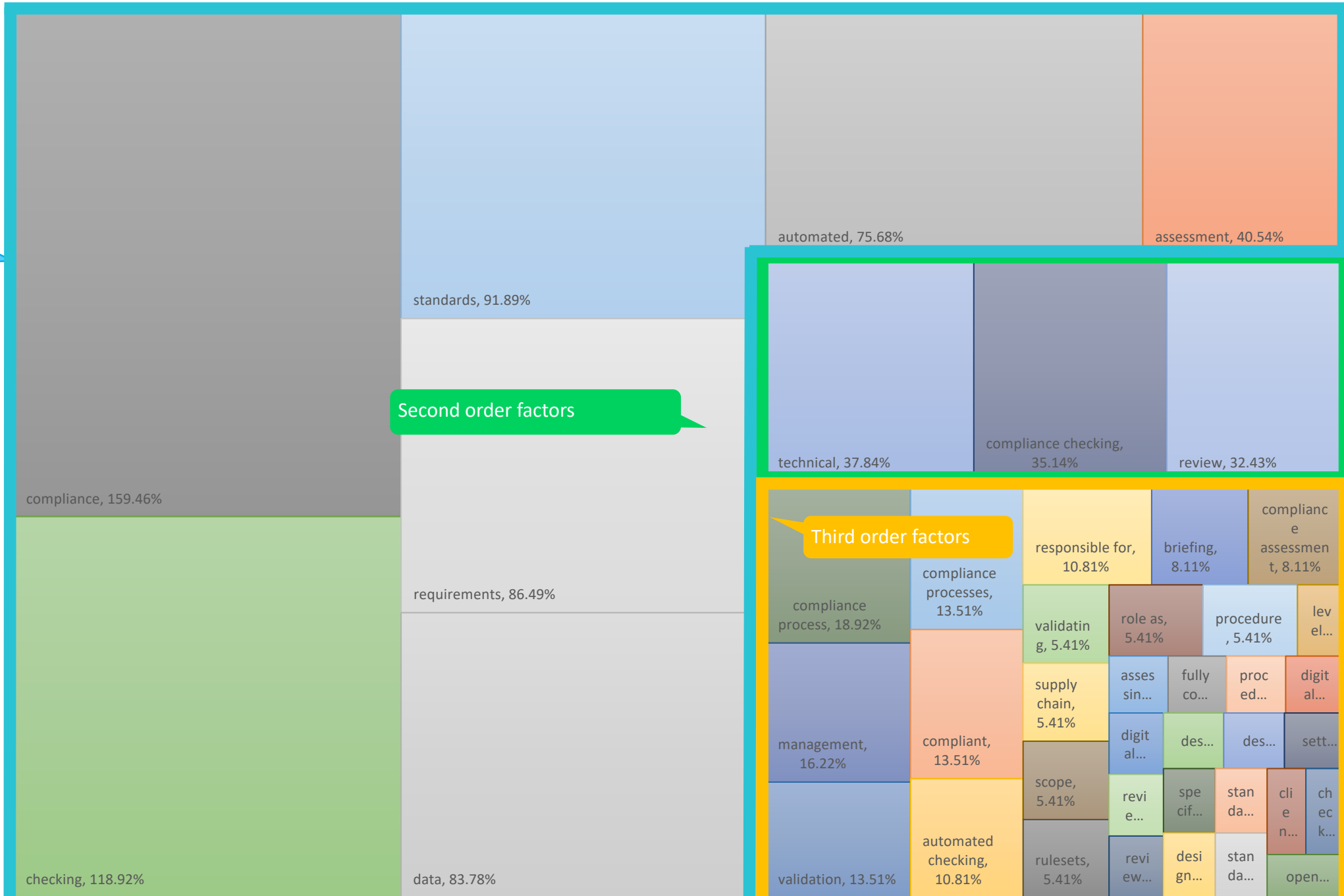


Semantic analyses

1st order factors



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Second order factors

Third order factors

compliance, 159.46%

standards, 91.89%

automated, 75.68%

assessment, 40.54%

requirements, 86.49%

technical, 37.84%

compliance checking, 35.14%

review, 32.43%

checking, 118.92%

data, 83.78%

compliance process, 18.92%

compliance processes, 13.51%

responsible for, 10.81%

briefing, 8.11%

compliance assessment, 8.11%

management, 16.22%

compliant, 13.51%

validating, 5.41%

role as, 5.41%

procedure, 5.41%

level, 5.41%

validation, 13.51%

automated checking, 10.81%

supply chain, 5.41%

assessment, 5.41%

fully co..., 5.41%

procedure, 5.41%

digital, 5.41%

scope, 5.41%

digital, 5.41%

des..., 5.41%

des..., 5.41%

sett..., 5.41%

rulesets, 5.41%

review, 5.41%

design, 5.41%

standa..., 5.41%

open..., 5.41%



If the standards were automated, what are the key influencing factors to automate this?

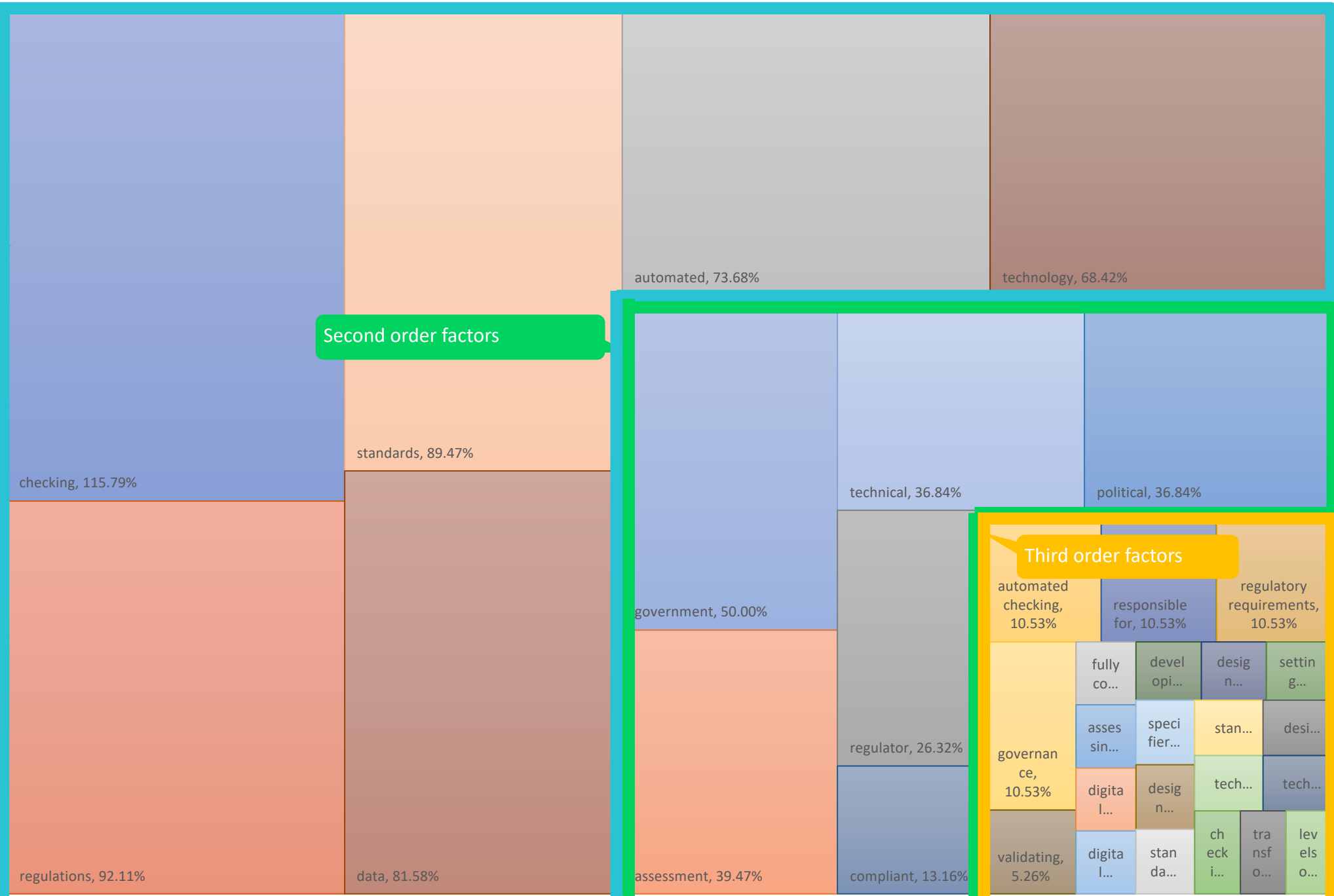


Semantic analyses

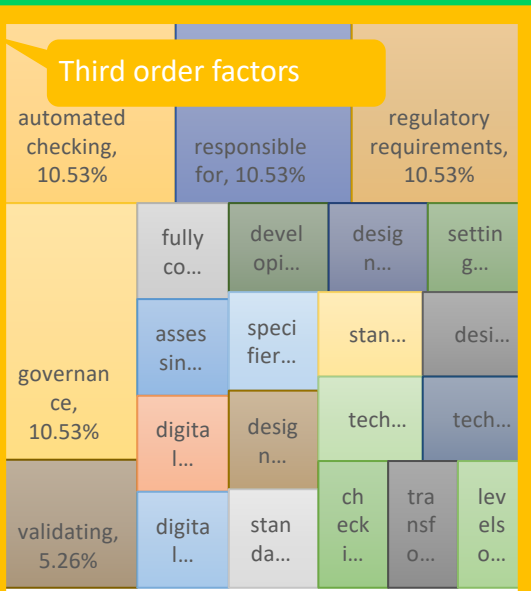
1st order factors



D C O M



Second order factors



Third order factors

# If compliance checking was automated, what are the influencing factors to automate this?

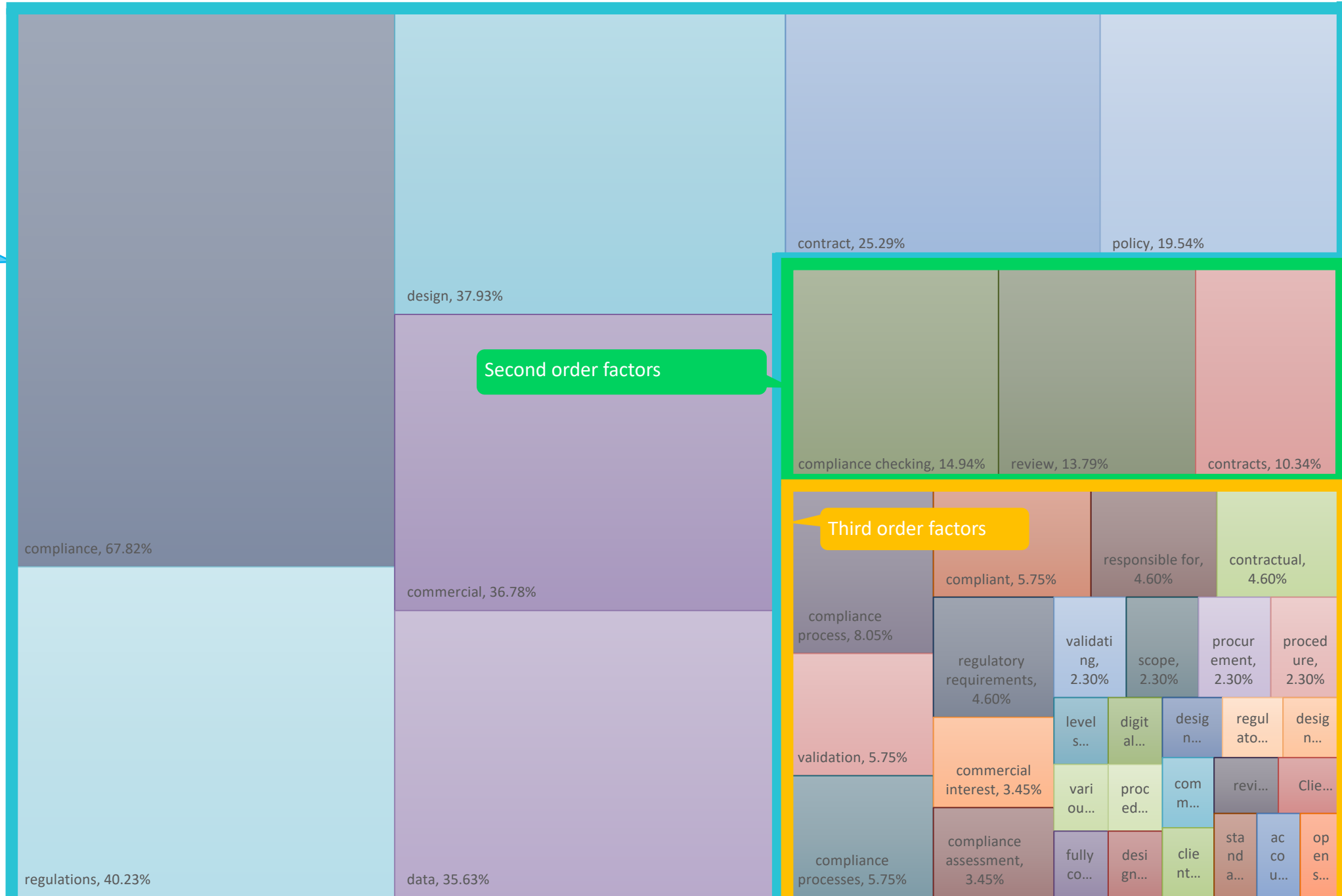


Semantic analyses

1st order factors



D C O M



Second order factors

Third order factors