Annotating and Querying Content within Machine-readable Legal Instruments

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Path

- Ask some questions.
- Show our result by way of example.
- Outline why and how we did it by way of example.
- Inquire what you would like to do:
  - What questions would you like to answer with respect to your documents?
  - How would you like others to query your documents?
- Highlight some issues and problems.
Aim and Issues

• Translate legislation from source text to a formal, machine-readable language for rules, LegalRuleML. Query across the whole corpus, link expressions, reprocess text, reasoning.

• Creating a gold standard for onward automated analysis.

• Current limitations:
  • While we can automatically search for strings within a sentence, we can’t search with respect to the semantic class of a sentence.
    • same string-different meanings
    • different strings-same meaning
  • We cannot automatically search for relationships between sentences, e.g. the penalty related to an offence.
  • For a machine, there is no ‘meaning in the text’ per se.
Our Approach

• Start with ‘lightweight’ and ‘high-level’ semantic annotations.
• Goal-oriented to address user questions.
• Interesting point: many (practical and interpretive) issues arise with coarse-grained annotations.
Overview - Pilot project on Scottish Smoking Legislation

• Components
  • corpus
  • queries
  • annotations/model in LegalRuleML

• Visualisation and search

• A ‘middle way’
  • enough LegalRuleML to be useful to the target audience
  • lightweight to facilitate digestion of text
  • added value (marking obligations v. linking to reparations)
  • refine to fuller LegalRuleML

• Discussion
Rationale and Context

• The Scottish Government’s Parliamentary Counsel Office are working to improve internal legislative drafting and information services as well as provide legislative information "as a platform" for a robust ecosystem of legal services.

• Problems:
  • Language and text structure
  • Volume and complexity of corpus
  • Distributed, yet interrelated, information

• A key part is to provide the law in electronically readable form.
  • LegalDocML for document structure.
  • LegalRuleML is tailored to semantic content.
Purposes/Uses

• Explore and understand the law.
• Help drafters and legislators to develop the law.
• Help business, government, and public to access the law.
Part I

Questions and Result
Questions – set-up

2. What would you need/like to do with the materials? Aim.
3. What do you do with the materials to achieve the Aim? Action.
1. Material – small, cohesive corpus
2. Aim – find Scottish Ministers powers, compare clauses across document, check consistency of expression
3. Action – annotate and query content
4. Agents – drafters (how get help to revise, analyse, and relate), the public (what is in the law), businesses (how does the law bear on processes and compliance), other government agencies (how is the law relevant to my department)

On Annotation of the Textual Contents of Scottish Legal Instruments

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Scope so it is manageable and comprehensible, then scale up.

- 2010ActAsAmended.docx - Tobacco and Primary Medical Services (Scotland) Act 2010 asp 3
- asp_20100010_en.docx - Interpretation and Legislative Reform (Scotland) Act 2010
- asp_20160003_en.docx - Smoking Prohibition (Children in Motor Vehicles) (Scotland) Act 2016
- asp_20160014_en.docx - Health (Tobacco, Nicotine etc. and Care) (Scotland) Act 2016
- ssi_20100406_en.docx - The Sale of Tobacco (Prescribed Document) Regulations 2010
- ssi_201000407_en.docx - The Sale of Tobacco (Register of Tobacco Retailers) Regulations 2010
- ssi_20110023_en.docx - The Sale of Tobacco (Registration of Moveable Structures and Fixed Penalty Notices) (Scotland) Regulations 2011
- ssi_20110132_en.docx - The Sale of Tobacco (Display of Warning Statements) (Scotland) Regulations 2011
- ssi_20130085_en.docx - The Sale of Tobacco (Display of Tobacco Products and Prices etc.) (Scotland) Regulations 2013
- ssi_20170050_en.docx - The Sale of Tobacco and Nicotine Vapour Products by Persons Under 18 (Scotland) Regulations 2017
Smoking Prohibition (Children in Motor Vehicles) (Scotland) Act 2016
2016 asp 3

The Bill for this Act of the Scottish Parliament was passed by the Parliament on 17th December 2015 and received Royal Assent on 21st January 2016

An Act of the Scottish Parliament to prohibit smoking in private motor vehicles in the presence of children, subject to limited exceptions; and for connected purposes.

1

(1) It is an offence for an adult to smoke in a private motor vehicle when—
   (a) there is a child in the vehicle, and
   (b) the vehicle is in a public place.

(2) Subsection (1) does not apply to a private motor vehicle that is designed or adapted for use as living accommodation and which, at the time the smoking occurs, is parked and is being used as living accommodation.

(3) A person who commits an offence under subsection (1) is liable on summary conviction to a fine not exceeding level 3 on the standard scale.

2

Fixed penalties

The schedule provides for fixed penalties for offences under section 1.

3

Powers to enter and require information

(1) An authorised officer of a local authority may enter and search a private motor vehicle which is parked within the area of the local authority in order to ascertain whether an offence under section 1 has been or is being committed there.

(2) A person who—
   (a) an authorised officer of a local authority reasonably believes—
      (i) is committing or has committed an offence under section 1, or
      (ii) has information relating to such an offence, and
   (b) fails without reasonable excuse to supply the officer with the person’s name and address on being so required by the officer,
Sample Queries

Generally:
• What questions would you like to answer with respect to your documents?
• How would you like others to query your documents?

Specifically:
• What are the offences and associated penalties or defences?
• What prohibitions apply to tobacco products?
• What obligations have been placed on what entities, e.g. shop owners?
• What permissions are given to Scottish Ministers?
• Given a provision, what are related overriding or reparation provisions?

Scope so it is manageable and comprehensible, then scale up.
To answer the questions:

How do we classify portions of the text?

How can we search for strings within textual portions?

How do we relate portions of the text one to the other?
Annotiations

• Clauses and relations in the smoking corpus has been annotated with:
  • Permission (prescriptive norm)
  • Obligation (prescriptive norm)
  • Prohibition (prescriptive norm)
  • Constitutive (definition)
  • Penalty (having violated a norm, what must be ‘paid’?)
  • Override (expresses ‘exception’)
  • Reparation (a relation between a prescription and a penalty; penalty is triggered when the prescription is violated)
  • Number as index (optional)
• Definitions from the *LegalRuleML Core Specification* document.

Scope so it is manageable and comprehensible, then scale up.
Model

The set of annotations (classifications of text and relations between classified text) constitute a

\[ \textit{model of the text} \]

which represents an understanding of the meaning, relevance, and use of text.

Annotating the text with respect to a model creates an instantiation of the model.

You can choose or create another model for other meanings, relevance, and uses.
Visualisation and Search

• Searching for provisions in terms of semantic class and terminology.
• Finding connected provisions (or connected parts of a provision).
• Gathering information that is distributed across the corpus, which might otherwise be hard to find or understand.
LegalRuleML Search tool

This is a simple web application which allows us to browse and search through corpus of Legal documents which are annotated with LegalRuleML.
The documents list page. Download or click to see visualisation.
1 Prohibition of tobacco displays etc.

(1) A person who in the course of business displays or causes to be displayed tobacco products or smoking related products in a place where tobacco products are offered for sale commits an offence.

Overridden by [fpa2] [fpa2]
Has reparation: [fpa3]

[fpa2]

(a) A person does not commit an offence under subsection (1) if the display - (a) is in a specialist tobacconist, (b) does not include cigarettes or hand-rolling tobacco, – and (c) Complies with any prescribed requirements.

Overriden: [fpa1]

[fpa3]

(b) A person does not commit an offence under subsection (1) if (a) the tobacco products or smoking related products are displayed in the course of a business involving the sale of tobacco products only to persons who carry on a tobacco business (or their employees), – and (b) the display complies with any prescribed requirements.
Followed a link to a reparation.

There are links between statements and penalties and parts of a reparation.

‘but’ and the language of exceptions
The Search page. Results for search on obligations.

- ssi_20130085_en_LS_ED_AW_AA.xml:
  
  (2) A display of prices must— (a) comply with the general requirements in regulation 13; (b) comply with the requirements in regulation 14(1)(a) and (b)(1) to (vi); and (c) be limited to one for each premises or tobacco area.

- ssi_20130085_en_LS_ED_AW_AA.xml:
  
  11. The requirement is that a display of prices must not be visible from outside the premises of the trade tobacconist.

- ssi_20130085_en_LS_ED_AW_AA.xml:
  
  12. The requirement is that a display of prices must comply with— (a) the general requirements specified in regulation 13; and (b) the requirements specified in— (i) regulation 14 (in relation to price lists); (ii) regulation 15 (in relation to price lists available only on request); (iii) regulation 16 (in relation to price labels).

- ssi_20130085_en_LS_ED_AW_AA.xml:
  
  13. The requirements are that a display of prices— (a) must only contain the following information in relation to the tobacco products or smoking related products— (i) the brand name of the product; (ii) where pre-packed, the number of units in the package or, where sold by weight, the net weight of the product; (iii) in relation only to
Searched for the string “Scottish Ministers” in passages with the permission annotation.
Answers: “What permissions are given to Scottish Ministers?”
Advanced search examples

- Find tokens which are not part of a longer token sequence:
  "tobacco" not in "tobacco product"

- All words in the string need to be found:
  "Scottish Ministers make the following Regulations" all words

- Any word contained in the string need to be found:
  "Scottish Ministers make the following Regulations" any word

- All strings need to be found:
  {"Scottish Ministers", "make", "Regulations"} all

- Words are found in the specified order and results are returned if there are at most eight words between tobacco and regulations.
  'tobacco regulations' all words ordered distance at most 8 words

- The \texttt{occurs} keyword comes into play when more than one occurrence of a token is to be found. Various range modifiers are available: \texttt{exactly, at least, at most, and from ... to ...}.
  "act" occurs at least 4 times

- The keywords \texttt{ftand}, \texttt{ftor} and \texttt{ftnot} can also be used to combine multiple query terms.
  { Medical, 'regulations' } all ordered distance at most 3 words

- The \texttt{window} keyword accepts those texts in which all keyword occur within the specified number of tokens.
  { 'tobacco', 'regulations' } all window 7 words

- Sometimes it is interesting to only select texts in which all searched terms occur in the same sentence or paragraph.
  { 'sale of tobacco', 'regulations' } all words same sentence

- If case is insensitive, no distinction is made between characters in upper and lower case. By default, the option is \texttt{insensitive}; it can also be set to \texttt{sensitive}.
  { 'sale of tobacco', 'regulations' } all words using case sensitive same sentence

Advanced Search shows a range of ways that strings can be searched.
LRML Search
This is a simple web application for browsing and searching a corpus of legal documents which are annotated with LegalRuleML.
Differences in Applicability of Laws in England and Wales

Though there is a single legal jurisdiction in England and Wales, some laws are only applicable within Wales (not within England) and over which Wales (but not England) has competence.

- The text in connection to jurisdictions is complex and dense.
- There are threads of dependencies, which may not always have an explicit reference.
- Applicability sometimes needs to be inferred.
- There are ‘legal dead ends’.

Want to be able to ‘test out’ the impact of changing laws and where they are applicable. How can we make annotations to do this?

Thanks Terry Kowal, Welsh Govt.
Part I Summary

• Introduced some questions and how they can be addressed.
• Showed the corpus and text.
• Sampled the annotations.
• Illustrated some queries.
Part II

How we did it
What is LegalRuleML?

• A proposed OASIS open access/open-source standard XML markup language.
• Used to markup/annotate up a range of contentful information specific about rules in the legal domain.
• A bit of detail to come, but there is much more....
RuleML and LegalRuleML Elements

- Atom, if, then, Rule, Rel(ation), Ind(ividual), Formula, Var, slot, Time, Data, And, Or, Negation

- Agent, Authority, AuxiliaryParty, Bearer, ConstitutiveStatement, Context, DefeasibleStrength, FactualStatement, Jurisdiction, LegalSource, Obligation, Override, PenaltyStatement, Permission, Prohibition, Reparation, Right, Role, StrictStrength, TemporalCharacteristics, Violation
A person can engage in a credit activity if the person holds a licence.

Task: translate natural language text into the formal ML.
Problem is translation and TMI!!
Our Approach

• Start with ‘lightweight’ and ‘high-level’ semantic annotations.
• Fine-grained v coarse-grained. We go with coarse-grained.
• Goal-oriented to address user questions.
• *Interesting point: still many (practical and interpretive) issues arise with coarse-grained annotations.*
What We Did

• Manually annotate a corpus of Scottish legislation and regulation in a subpart of LegalRuleML.
• Transform to technical LegalRuleML.
• Once formally annotated, analysts can use a computer to query, link, reprocess, and transmit information.
• Facilitates analysis across the corpus.

• A small team of students, cooperation with legal drafters, Trello, Google Docs, annotation manual, limited annotations, development cycle, gold standard corpus....
Manual - Initial Annotation

We annotated it as:

[prohibition 1 A person who in the course of business displays or causes to be displayed tobacco products or smoking related products in a place where tobacco products are offered for sale commits an offence. prohibition]

This is pretty close to what people do anyways in analysing text.
Smoking Prohibition (Children in Motor Vehicles) (Scotland) Act 2016

2016 asp 3

The Bill for this Act of the Scottish Parliament was passed by the Parliament on 17th December 2015 and received Royal Assent on 21st January 2016

An Act of the Scottish Parliament to prohibit smoking in private motor vehicles in the presence of children, subject to limited exceptions; and for connected purposes.

(1) [prohibition 1 It is an offence for an adult to smoke in a private motor vehicle when—
(a) there is a child in the vehicle, and
(b) the vehicle is in a public place. prohibition]

(2) [exception 2 Subsection (1) does not apply to a private motor vehicle that is designed or adapted for use as living accommodation and which, at the time the smoking occurs, is parked and is being used as living accommodation. exception]

[override over 2 under 1]

(3) [reparation 3 A person who commits an offence under subsection (1) is liable on summary conviction to a fine not exceeding level 3 on the standard scale. reparation]
To LegalRuleML – Why?

• Transform the Word document with annotations into LegalRuleML.
• On the way to search and extraction using computers.
Tobacco and Primary Medical Services (Scotland) Act 2010 asp 3 (Scotland) TOBACCO AND NICOTINE VAPOUR PRODUCTS ETC. Chapter 1 DISPLAY, SALE AND PURCHASE Display products etc. 

<!-- Legal Source -->

<lrml:LegalSources>
  <lrml:LegalSource key="src1" sameAs="/Corpus/2010ActAsAmended_E0_OT.docx"/>
</lrml:LegalSources>

<lrml:Statements key="stmts1">
  <lrml:Comment> 1 Prohibition of tobacco displays etc. </lrml:Comment>
</lrml:Statements>
<!-- Prescriptive Statement: 1 -->
<lml:PrescriptiveStatement key="ps1"
</lml:PrescriptiveStatement>

<!-- Prescriptive Statement: 2 -->
<lml:PrescriptiveStatement key="ps2"
</lml:PrescriptiveStatement>

<lml:Override over="#ps2" under="#ps1"/>

Various issues: only the prescription mentioned, not the related penalty.
LegalRuleML Virtues

• Extensible (add more parts of an analysis)
• Revisable (can change XML)
• Refinable (take a rough draft and refine it)
• Maintainable (a text file)
• Transmittable (available on the web)
• Linkable (connect one XML file to another anywhere on the web)
Part II Summary

• Indicated the rationale and aim.
• Pointed out some aspects of LegalRuleML and the complexity problem.
• Sketched our approach and annotation.
• Filled in a bit further the LegalRuleML representation of our text.
• Highlighted some advantages of the approach.
Part IV

Examples for Discussion
Annotation - must

• On granting an application under section 11(3) the Scottish Ministers must issue to the applicant a certificate of registration in respect of each premises stated in the application.

• The list must be made available free of charge at all reasonable times.

• A person who carries on a tobacco business must display a notice in accordance with subsection (2) in any premises where that business is carried on.
Annotation - must

• In statements with ‘must’, when do we have an obligation and when a constitutive (definition) statement.
• Does every obligation statement have a correlated penalty for violation:
• If deontic concepts are used to guide behaviour, what is the difference between a penalty for violating an obligation and a judicial review?
• Epistemic v root interpretation of the modal.
• When is the language of ‘must’ used v language of ‘commits an offence’?
(4) If it appears to the Secretary of State that there has been a change in the value of money since the relevant date, he may by order substitute for the sum or sums for the time being specified in the provisions mentioned in subsection (5) below such other sum or sums as appear to him justified by the change.

(3) The Scottish Ministers may by regulations alter any of the following definitions in subsection (1)— “car”, “private motor vehicle”, “public transportation vehicle”.
Annotation - may

• In statements with ‘may’, when do we have a permission and when a ‘possibility’? A permission is something that one can do without interference.
• Epistemic v root interpretation of the modal.
• Normatively, ‘may’ always means permission. Can we demonstrate this?
It is the duty of a council to enforce within its area the provisions of Chapters 1 and 2 and regulations made under them.

Why ‘duty’ and not ‘obligation/must’ or ‘commits an offence’?

What is the linguistic difference between:

• commission of an offence for failing to comply with a duty, e.g. for an individual or company
• judicial review of public bodies when something may be wrong

How is this represented in LegalRuleML?
Annotation – linguistic variants

• *For the purpose of carrying out a council's functions under this Part, a council officer is entitled to*— *(a) enter any premises (other than premises used only as a private dwelling house)*...

Why *entitled to* and not *may*?

Observation: the search tool could be helpful in drawing all similar terminological patterns together for comparison.
Annotation – prohibitions

• A right to enter any premises conferred by section 28 may be exercised only at a reasonable time.

Is this a
  • restricted right, which becomes a prohibition outside the scope of the right
  • a qualification of the power

How is this represented in LegalRuleML?
6. The amount prescribed for the purposes of paragraph 4(1)(a) and (b) of schedule 1 to the Act for offences under sections 5 and 7 of the Act are respectively— (a) £50 (fixed penalty); and (b) £30 (discounted amount).

The treatment of reparations. These are relations between a prescriptive statement and a penalty, usually by references. References are addressed in LegalDocML. We have a partial representation.
(2) [Constitutive 10 For the purposes of subsection (1), a website is not a place constitutive] [permission 11 but the regulations may otherwise provide for the meaning of “place” in that subsection. Permission]

Have tried only to annotate sentences. But there are instances where portions of sentences need to be annotated separately and in order to set interpretive scope.
Search

1. All offences by searching for the word “offence”.
2. Defences are obtained by searching for “defence” or “offence”.
3. Prohibitions which apply to tobacco products.
4. Obligations placed on shop owners.
5. Powers given to “Scottish Ministers”. When using the language of ‘may’, how do we differentiate between powers and permissions such that they can be automatically recognised?
1. Linking referential expressions.
   • “A person who fails to comply with a requirement made under subsection (1) or (2) commits an offence”.

2. Annotation of whole sentences v parts (offence):
   • (1) A person who in the course of business displays or causes to be displayed tobacco products or smoking related products in a place where tobacco products are offered for sale commits an offence.
Part IV
Legal Drafters' Point of View
A prism through which to look at drafting choices
"The expression of every law essentially consists of,
-1st, the description of the legal subject;  [Bearer]
-2ndly, the enunciation of the legal action;  [Deontic specification: obligation, permission, prohibition, etc.]

To these, when the law is not of universal application, are to be added,

Modifiers of the principal predicate  [Overriding statement (jurisdiction, temporal characteristics)]

~ George Coode, On Legislative Expression (1848)
17 Tobacco retailing banning orders etc.: appeals

(1) A person against whom a tobacco [and nicotine vapour product] banning order or an ancillary order under section 16 is made may appeal to the sheriff principal, whose decision is final.

(2) An appeal under this section must be made within 21 days of the order being made.

(3) Where the appeal is against a tobacco and nicotine vapour product banning order, the sheriff principal may determine the appeal by— (a) quashing the order (and any ancillary order under section 16 relating to the order), (b) substituting for the period specified in the order under section 15(5) such other period of effect (ending no later than 24 months after the day the order was granted) as the sheriff principal considers appropriate, or (c) refusing the appeal.
11 Application for registration and addition of premises etc.

link to #ps70 which is the counterpart obligation of this right

(1) A person may apply to the Scottish Ministers— (a) to be registered, or (b) to add further premises to the person's entry in the Register.

(2) The application must— (a) state the name and address of the applicant, (b) where it is an application under subsection (1)(a), state the addresses of all premises at which the applicant proposes to carry on a tobacco or nicotine vapour product business, (c) where it is an application under subsection (1)(b), state the address of the further premises at which the applicant proposes to carry on a tobacco or nicotine vapour product business, (d) contain such other information as is prescribed, and (e) be made in such form and manner as is determined by the Scottish Ministers.

(2A) an application under subsection (1) must state, in relation to each of the premises included in it, whether the applicant proposes to carry on— (a) a tobacco business at the premises, (b) a nicotine vapour product business at the premises, or (c) both a tobacco business and a nicotine vapour product business at the premises.

(3) The Scottish Ministers must grant the application unless— (a) it does not comply with the requirements in subsection (2), or (b) at the time the application is made, the applicant is banned...
11 Application for registration and addition of premises etc.

(1) A person may apply to the Scottish Ministers— (a) to be registered, or (b) to add further premises to the person’s entry in the Register.

( ) The Scottish Ministers must grant an application if it is valid.

( ) An application is valid if it— (a) states the name and address of the applicant ... &c.
1 Prohibition of tobacco displays etc.

(1) A person who in the course of business displays or causes to be displayed tobacco products or smoking related products in a place where tobacco products are offered for sale commits an offence.

Override by: [#ps2], [#ps3]
Has reparation: [#rs5]

(2) A person does not commit an offence under subsection (1) if the display - (a) is in a specialist tobacconist, (b) does not include cigarettes or hand-rolling tobacco, – and (c) Complies with any prescribed requirements.

Overrides: [#ps1]

(3) A person does not commit an offence under subsection (1) if (a) the tobacco products or smoking related products are displayed in the course of a business involving the sale of tobacco products only to persons who carry on a tobacco business (or their employees), – and (b) the display complies with any prescribed requirements.

Overrides: [#ps1]
4 Sale of tobacco products to persons under 18

(1) A person who sells a tobacco product or cigarette papers to a person under the age of 18 commits an offence.

Overridden by: [#ps16], [#cs39]
Has reparation: [#rs19]

(2) It is a defence to a charge in proceedings against a person (“the accused”) under subsection (1) that – (a) the accused believed the person under the age of 18 (“the customer”) to be aged 18 or over, and (b) the accused had taken reasonable steps to establish the customer's age.

Overrides: [#ps15]
A way to make connections across the statute book
(1) A person who sells a tobacco product or cigarette papers to a person under the age of 18 commits an offence.

Section 51A, Criminal Procedure (Scotland) Act 1995

(2) It is a defence to a charge in proceedings against a person (“the accused”) under subsection (1) that – (a) the accused believed the person under the age of 18 (“the customer”) to be aged 18 or over, and (b) the accused had taken reasonable steps to establish the customer’s age.

(1) A person is not criminally responsible for conduct constituting an offence, and is to be acquitted of the offence, if the person was at the time of the conduct unable by reason of mental disorder to appreciate the nature or wrongfulness of the conduct.
Defences based on Article 31(1) of the Refugee Convention.

(1) It is a defence for a refugee charged with an offence to which this section applies to show that, having come to the United Kingdom directly from a country where his life or freedom was threatened (within the meaning of the Refugee Convention), he—

(a) presented himself to the authorities in the United Kingdom without delay;
(b) showed good cause for his illegal entry or presence; and
(c) made a claim for asylum as soon as was reasonably practicable after his arrival in the United Kingdom.

(2) If, in coming from the country where his life or freedom was threatened, the refugee stopped in another country outside the United Kingdom, subsection (1) applies only if he shows that he could not reasonably have expected to be given protection under the Refugee Convention in that other country.

(3) In England and Wales and Northern Ireland the offences to which this section applies are any offence, and any attempt to commit an offence, under—

(a) Part I of the Forgery and Counterfeiting Act 1981 (forgery and connected offences);
(b) section 4 or 6 of the Identity Documents Act 2010;
(c) section 24A of the 1971 Act (deception); or
(d) section 26(1)(d) of the 1971 Act (falsification of documents).
26 Programmes of enforcement

(1) A council must, at least once in every period of 12 months, carry out a programme of enforcement action in its area.

- Local authority
- Planning authority
- Social work authority
- appropriate authority
Ministers of the Crown.

So far as may be necessary for the purpose or in consequence of the exercise of a function by a member of the [Scottish Government] within devolved competence, any pre-commencement enactment or prerogative instrument, and any other instrument or document, shall be read as if references to a Minister of the Crown (however described) were or included references to the Scottish Ministers.
Next Steps

• Larger corpus or other corpora
• Adjudication of issues – quality control
• Additional annotations:
  • Penalties
  • Conditional rule structures
  • Reparations
  • Agents
  • Additional LegalRuleML components
• Additional queries
Next Steps

• Expand network of collaborations and linking across jurisdictions.
• Other models of the text.
• More corpora and jurisdictions raises importance of common understandings and implementations.
  • Workshop on Legislation and Regulations on the Semantic Web 2019
  • https://sites.google.com/view/legregsw2019/home
• Project proposal.
Thanks for your attention!

• Contact:

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• Comments, questions, suggestions....