

Annotating and Querying Content within Machine-readable Legal Instruments

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Part I

What we did and Result

Aim

- Translate legislation from source text to a formal, machine-readable language for rules, *LegalRuleML*.
- Contributes to automated translation by creating a gold standard.
- Presented this work to Legal Counsel offices in:
 - Scottish Government
 - Welsh Government
 - UK Government

Our Approach

- Start with 'lightweight' and 'high-level' semantic annotations.
- Goal-oriented to address user questions.
- *Interesting point: still 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

Pilot Project Scottish Smoking Legislation

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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<http://ebooks.iospress.nl/publication/48050>

Smoking Corpus

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
- criminalprocedure_1995_46_section_225.docx - Criminal Procedure (Scotland) Act 1995
- ssi_20100406_en.docx - The Sale of Tobacco (Prescribed Document) Regulations 2010ssi_20100407_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) 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

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

- 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?

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2016 asp 3

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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.

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?

- (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.
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 - (b) fails without reasonable excuse to supply the officer with the person's name and address on being so required by the officer,

Annotations

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

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

Model

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

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.

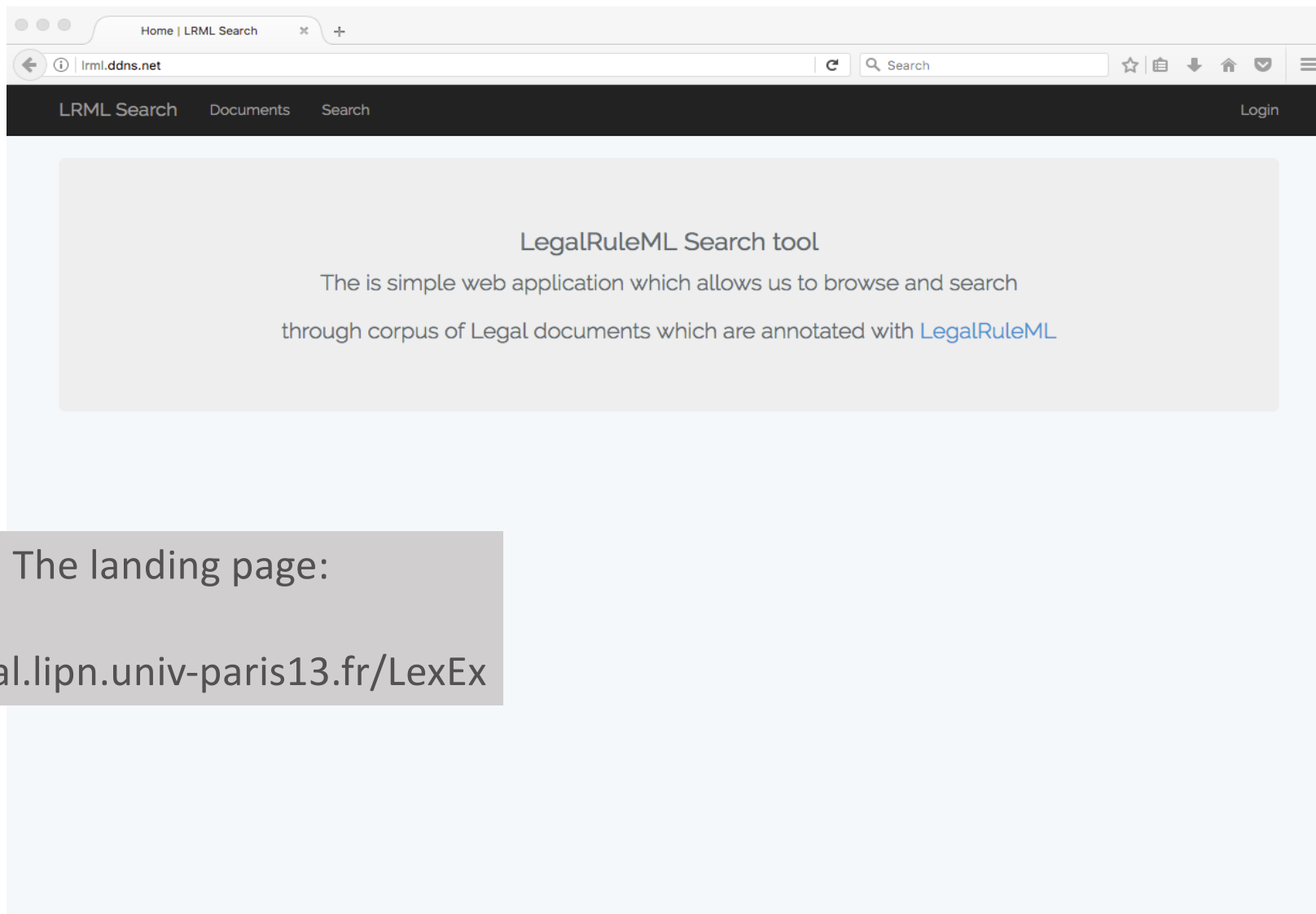
You can choose or create another model for other meanings, relevance, and uses.

Annotated text to LegalRuleML

- Documents in the corpus were manually annotated with respect to the model.
- The annotated documents were imported into LegalRuleML.
- The LegalRuleML documents can be visualised and queried on the web.
- Sample LegalRuleML later if there is time.

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.



The landing page:

<http://tal.lipn.univ-paris13.fr/LexEx>

Index | LRML Search

lrml.ddns.net/doc

Search

LRML Search Documents Search Login

Uploaded documents: 10 (7 shown)

- [2010ActAsAmended_EO_AF_AW_RS1.xml](#)
- [criminalprocedure_1995_46_section_225_LS_EO_AW_AA.xml](#)
- [ssi_20130085_en_LS_EO_AW_AA.xml](#)
- [asp_20160003_en_EO_AF_AW_AA.xml](#)
- [ssi_20170050_en_LS_EO_AW_AA.xml](#)
- [ssi_20100407_en_EO_AF_AW_AA.xml](#)
- [ssi_20100406_en_LS_EO_AW_AA.xml](#)

<< 1 2 >>

The documents list page. Download or click to see visualisation.

2010ActAsAmended_EO_AF_AW_

lrml.ddns.net/doc/show/2010ActAsAmended_EO_AF_AW_RS1.xml

Search

Login

LRML Search
Documents
Search

2010ActAsAmended_EO_AF_AW_RS1.xml

Go Back
Download
Delete

Tobacco and Primary Medical Services (Scotland) Act 2010 asp 3 (Scottish Act) Part 1 TOBACCO AND NICOTINE VAPOUR PRODUCTS ETC. Chapter 1 DISPLAY, SALE AND PURCHASE Display of tobacco products etc.

1 Prohibition of tobacco displays etc.

[#ps1]

(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: **[#ps2]**, **[#ps3]**

Has reparation: **[#rs5]**

[#ps2]

(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]**

[#ps3]

(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.

Constitutive
Factual
Penalty
Prescriptive
Reparation

Obligation
Permission
Prohibition

Document with coded highlights. Links to related passages, e.g. overridden-by and has-reparation

Hovering over passage shows the annotation

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

[#rs5] (5) A person guilty of an offence under subsection (1) is liable on summary conviction to a fine not exceeding level 4 on the standard scale.

Applies to: **[#ps1]**

[#cs6] (6) For the purposes of subsection (1), a website is not a place.

[#cs7] (7) In subsection (2), "specialist tobacconist" has the meaning given by section 6(2) of the Tobacco Advertising and Promotion Act 2002 (c.36).

2 Displays which are also advertisements

[#ps8]

The Scottish Ministers may by regulations provide that a display of tobacco products or smoking related products which also amounts to an advertisement is to be treated for the purposes of offences under this Act and the Tobacco Advertising and Promotion Act 20022002—. (a) as an advertisement and not as a display. , or (b) as a display and not as an advertisement.

3 Regulation of display of prices

[#ps9]

(1) The Scottish Ministers may by regulations impose requirements in relation to the display in the course of business of prices of tobacco products or smoking related products in a place where tobacco products are offered for sale.

Has reparation: [#rs13]

[#cs10] (2) For the purposes of subsection (1), a website is not a place.

Overriden by: [#ps11]

[#ps11]

but the regulations may otherwise provide for the meaning of “place” in that subsection.

Overrides: [#cs10]

- | |
|--|
| Constitutive |
| Factual |
| Penalty |
| Prescriptive <ul style="list-style-type: none"> Obligation Permission Prohibition |
| Reparation |

PrescriptiveStatements containin: ✕ +

lrml.ddns.net/search?search=&statement=PrescriptiveStatement&deontic_operator=Obligation

LRML Search Documents Search Login

Search

Statements containing terms (leave blank to find all):

Search for ...

☐ Enable Advanced Search ⓘ

Statement Type: prescriptive obligation **Search**

- ssi_20130085_en_LS_EO_AW_AA.xml:

[#ps15]

(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)(i) to (vi); and (c) be limited to one for each premises or tobacco area.
- ssi_20130085_en_LS_EO_AW_AA.xml:

[#ps16]

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

Overridden by: **[#ps18]**
- ssi_20130085_en_LS_EO_AW_AA.xml:

[#ps17]

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_EO_AW_AA.xml:

[#ps18]

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

The Search page. Results for search on obligations.

PrescriptiveStatements containin: ✕

lrml.ddns.net/search?search=Scottish+Ministers&statement=PrescriptiveStatement&deontic_operator=Permission

LRML Search Documents Search Login

Search

Statements containing terms (leave blank for all terms)

Scottish Ministers

☐ Enable Advanced Search

Statement Type: prescriptive permission Search

- asp_20160003_en_EO_AF_AW_AA.xml:
[#ps10]
(3) The Scottish Ministers may by regulations alter any of the following definitions in subsection (1)— “car”, “private motor vehicle”, “public transportation vehicle”.
- asp_20160003_en_EO_AF_AW_AA.xml:
[#ps11]
(1) Any power of the Scottish Ministers to make regulations under this Act includes power to make incidental, supplementary, consequential, transitional, transitory or saving provision.
- asp_20160003_en_EO_AF_AW_AA.xml:
[#ps40]
11 The Scottish Ministers may make regulations about— (a) the application by local authorities of fixed penalties paid under this schedule, (b) the keeping of accounts, and the preparation and publication of statements of account, relating to fixed penalties under this schedule.
- asp_20160003_en_EO_AF_AW_AA.xml:
[#ps42]
as may be prescribed by regulations made by the Scottish Ministers.
- asp_20160003_en_EO_AF_AW_AA.xml:

Searched for the string “Scottish Ministers” in passages with the permission annotation.
Answers: “What permissions are given to Scottish Ministers?”

PrescriptiveStatements containin: ✕

lrm1.ddns.net/search?search=Scottish+Ministers&statement=PrescriptiveStatement&deontic_operator=Permission# Search

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 **occurs** keyword comes into play when more than one occurrence of a token is to be found. Various range modifiers are available: **exactly**, **at least**, **at most**, and **from ... to**
`"act" occurs at least 4 times`
- The keywords **ftand**, **ftor** and **ftnot** can also be used to combine multiple query terms.
`{ 'Medical', 'regulations' } all ordered distance at most 3 words`
- The **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 **insensitive**; it can also be set to **sensitive**.
`{ 'sale of tobacco', 'regulations' } all words using case sensitive same sentence`

Advanced Search shows a range of ways that strings can be searched.

Uses of Results

- Check alternative linguistic forms:
 - must, may, duty, required
- Identify if there are missing LegalRuleML relations, e.g. conditions distributed across text.
- Analyse subportions of text.
- Provides a 'first draft' for further LegalRuleML analysis.

Plus Point – Jurisdictional Distinctions between England and Wales

Issues about what laws are applicable within Wales and over which Wales 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.
- Jurisdictional applicability sometimes needs to be inferred.
- There are ‘legal dead ends’.
- Want to be able to ‘test out’

Can make a series of questions, annotations, and links to work with this.
Encode drafters knowledge for drafters uses.

Thanks Terry Kowal, Welsh Govt. (errors or misrepresentations are mine)

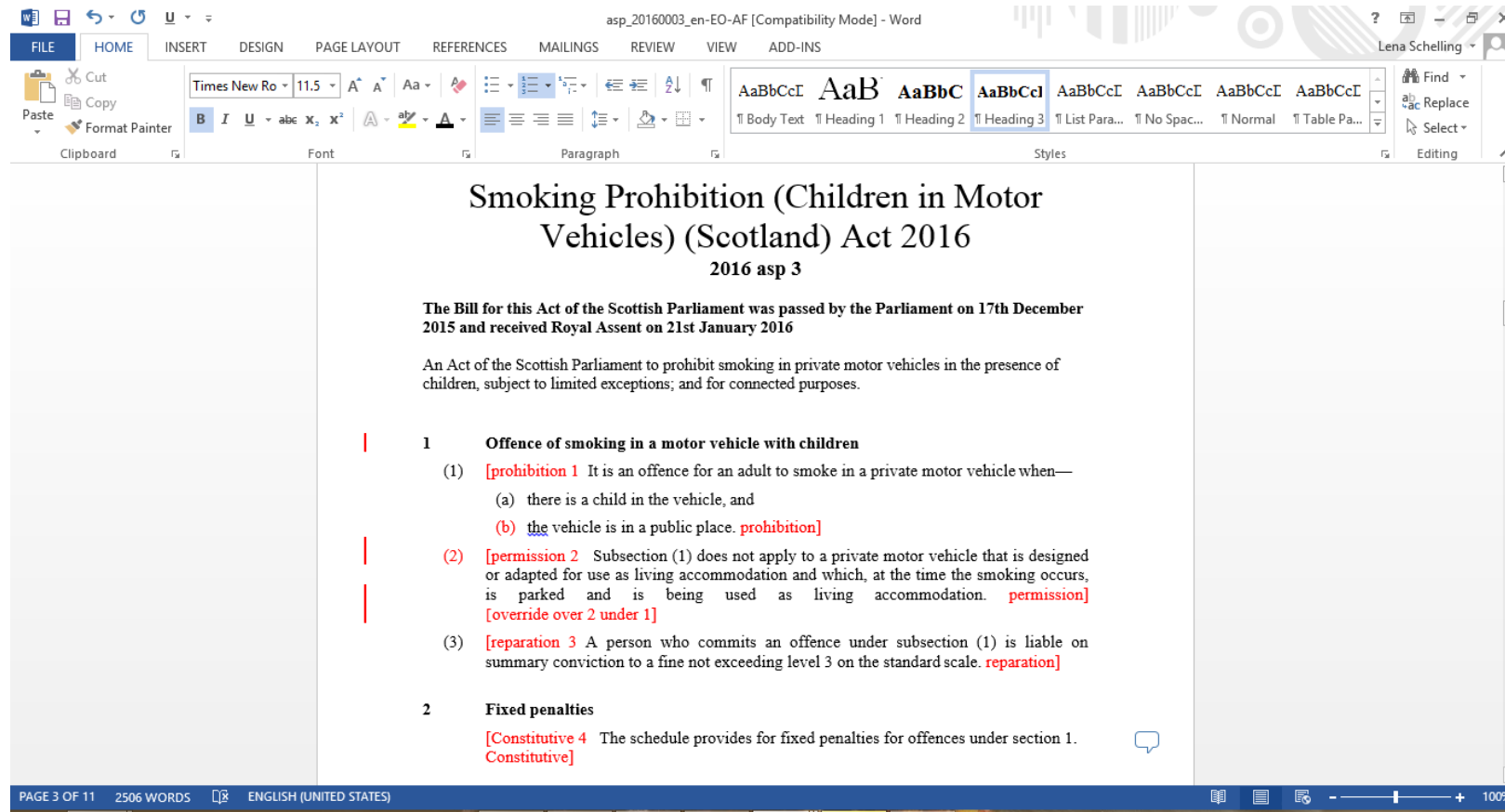
Part II

How we did it

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 – Example



LegalRuleML - Heading

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <?xml-stylesheet type="text/css" href="stylesheet/css/style.css"?>
3 <lrml:LegalRuleML xmlns:lrml="http://docs.oasis-open.org/legalruleml/ns/v1.0/"
4   xmlns:ruleml="http://ruleml.org/spec" xmlns:xm="http://www.w3.org/2001/XMLSchema-dat
5   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
6   xsi:schemaLocation="http://docs.oasis-open.org/legalruleml/ns/v1.0/ file:/home/rst/P
7
8
9 <lrml:Comment> Tobacco and Primary Medical Services (Scotland) Act 2010 asp 3 (Scott
10 TOBACCO AND NICOTINE VAPOUR PRODUCTS ETC. Chapter 1 DISPLAY, SALE AND PURCHASE Disp
11 products etc. </lrml:Comment>
12
13 <!-- Legal Source -->
14 <lrml:LegalSources>
15   <lrml:LegalSource key="src1" sameAs=" ../Corpus/2010ActAsAmended_EO_OT.docx'"/>
16 </lrml:LegalSources>
17
18 <lrml:Statements key="stmts1">
19   <lrml:Comment> 1 Prohibition of tobacco displays etc. </lrml:Comment>
20
```

LegalRuleML – Prohibition, Permission, and Override

```
21 <!-- Prescriptive Statement: 1 -->
22 <lrml:PrescriptiveStatement key="ps1">
23   <ruleml:Rule>
24     <ruleml:then>
25       <lrml:Prohibition>
26         <lrml:Paraphrase> A person who in the course of business displays or causes to be
27           tobacco products or smoking related products in a place where tobacco products
28           for sale commits an offence. </lrml:Paraphrase>
29       </lrml:Prohibition>
30     </ruleml:then>
31   </ruleml:Rule>
32 </lrml:PrescriptiveStatement>
33
34 <!-- Prescriptive Statement: 2 -->
35 <lrml:PrescriptiveStatement key="ps2">
36   <ruleml:Rule>
37     <ruleml:then>
38       <lrml:Permission>
39         <lrml:Paraphrase> A person does not commit an offence under subsection (1) if the
40           (a) is in a specialist tobacconist, (b) does not include cigarettes or hand-rolled
41           – and (c) Complies with any prescribed requirements. </lrml:Paraphrase>
42       </lrml:Permission>
43     </ruleml:then>
44   </ruleml:Rule>
45 </lrml:PrescriptiveStatement>
46
47 <lrml:OverrideStatement>
48   <lrml:Override over="#ps2" under="#ps1"> </lrml:Override>
49 </lrml:OverrideStatement>
```

LegalRuleML

```
192 <!-- Reparation Statement: 20 -->
193 <lrml:ReparationStatement key="rs20">
194   <lrml:Reparation>
195     <lrml:Paraphrase> A person guilty of an offence under subsection (3) is liable on
196       conviction to a fine not exceeding level 4 on the standard scale. </lrml:Paraphrase>
197     <lrml:toPrescriptiveStatement keyref="#ps19"/>
198   </lrml:Reparation>
199 </lrml:ReparationStatement>
```

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)

Thanks for your attention!

- Contact:
Adam Wyner, a.z.wyner@swansea.ac.uk
- Comments, questions, suggestions....