Digital Legislation
Technology to re-imagine the legal and regulatory landscape

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www.data61.csiro.au
Outline

- Motivation and Vision
- Data61’s Digital Legislation
- Computational Law
- Applications we built on Digital Legislation
Develop and deliver technologies that identify and reduce regulatory burden and friction for government, businesses and individuals
Vision Statements

1. Enable regulators to move their rulebook from analogue to digital (machine consumable)
2. Enable government agencies to identify red tape, understand the impact of changes, provide the public with better service delivery and achieve policy agility
3. Provide 3rd parties and the regtech/lawtech industry with data and technology components so they can:
   ▶ enable businesses and individuals to know with certainty their compliance requirements, to meet them and stay in business
   ▶ enable public trust in businesses and trust between businesses (ethical-by-design, privacy-by-design... )
Compliance is difficult

Tangled legislation at the federal, state & local levels
The cost of compliance

- The cost of compliance on businesses (2016):
  - $1.88 trillion USD per annum (Source: IRS)
  - $249 (190 in 2015) billion AUD per annum
  - cost of compliance $\sim$15–20% GDP

- 1 million people employed in the compliance area in Australia (9% of workforce), growing fast.

- In the 2013/14 financial year, the Australian Government awarded more than 66,000 contracts with an overall value of almost $49 billion AUD.

- Compliance amounts to 4% of ICT spending.
Legislation as Code

“The Holy Grail is when we start to actually write regulation and legislation in code. Imagine the productivity gains and compliance savings of instantaneous certified compliance” Treasurer Morrison (4 November 2016)
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“When it is written in code then that makes for its very rapid implementation and application to the various practices it is seeking to regulate (…) to help get better decisions.” PM Morrison (20 August 2019)
Imagine...
Imagine...

Based on our experiment, Digital legislation can save up to 30% of compliance cost (≈ 5% GDP).
Legislation as Code

<table>
<thead>
<tr>
<th>Human Understandable</th>
<th>Machine Understandable</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Goal</td>
<td>• Eligibility</td>
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<tr>
<td>• Intent</td>
<td>• Mandates</td>
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<td></td>
<td>• Calculations</td>
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Data61 Regulation as a Platform

Applications
Using the open-source logic and provided tools, anyone can build their own application, from government agencies, industry innovators and citizens.

- Websites
- Mobile apps
- Business softwares

Legislation, policies, contracts, etc.

Parser

Logic Database

If
And
Then

Enable

Regulators & Policy Owners

Write

Endorse
Benefits of Digital Legislation

Overall cost to the industry could be reduced as who, what and how policy affects can be clearly understood.

Untangle the sources with clear & common baseline of machine understandable rules.

Increased speed from policy to compliance.

3rd parties and consumers of leg can still add value on top of the core rules, but faster and with broader applicability.
What is Computational Law

Formal (logical) model to

- determine what normative positions are in force
- determine what norms have been violated or complied with

by the encoding in a machine processable format normative systems
Key components of Normative Systems

A normative system is a set of clauses (norms).
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\[ A_1, \ldots, A_n \Rightarrow C \]

- Definitional clauses (constitutive rules: defining terms used in a legal context)
- Prescriptive clauses (norms defining “normative effects”)
  - obligations
  - permissions
  - prohibitions
  - violations
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Norms are defeasible (handling exceptions)
Normative Effects

Obligation A situation, an act, or a course of action to which a bearer is legally bound, and if it is not achieved or performed results in a violation.

Prohibition A situation, an act, or a course of action which a bearer should avoid, and if it is achieved results in a violation.

Permission Something is permitted if the obligation to the contrary of or its prohibition does not hold.

Obligations and prohibitions can be violated and violations can be compensated.
NATIONAL CONSUMER CREDIT PROTECTION ACT 2009 (Act No. 134 of 2009)
Section 29

(1) A person must not engage in a credit activity if the person does not hold a licence authorising the person to engage in the credit activity.

(3) For the purposes of subsections (1) and (2), it is a defence if:
(a) the person engages in the credit activity on behalf of another person (the principal); and
(b) the person is:
   (i) an employee or director of the principal or of a related body corporate of the principal; or
   (ii) a credit representative of the principal; and . . .
Digital Legislation

\[ r_1: \text{If person Then creditActivity is FORBIDDEN} \]
\[ r_2: \text{If ownCreditLicense Then creditActivity is PERMITTED} \]
\[ r_3: \text{If person And onBehalfOfPrincipal And employeeOfPrincipal Then creditActivity is PERMITTED} \]

\( r_2 \) overrides \( r_1 \),

\( r_3 \) overrides \( r_1 \)
Obligations, Violations and Sanctions

- Norms (obligations and prohibitions in force) can be violated
- Some violation can be compensated (by some sanction)
- Compensatory norms vs Contrary-to-duty
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If condition Then something is FORBIDDEN
If something Then something else is OBLIGED

vs

If condition Then something is FORBIDDEN compensated something else is OBLIGED
A Case Study in Digital Legislation and Computational Law
Spent Conviction

A “spent conviction” is a conviction that becomes hidden from public view after a set period of time but, depending on certain factors, still remains accessible for specific (public) purposes by specific interested parties.
Spent Conviction in Australia

- Commonwealth level: Part VIIIC, Crimes Act 1914.
- States and Territories have legislations/schemes (not all states)
- ACIC runs National Police Checking Service
  - 5.29 million checks processed in 2017–2018 (increase of 11%)
  - 1.49 million checks referred to police agencies in States/Territories
Encoding of Part VIIC – Pardons, quashed convictions and spent convictions

Encoded

- (part of) Division 1 (interpretations...)
- Division 2
- Division 3
- Division 4
- Division 6 (exclusions)
The language selected for the encoding was Defeasible Deontic Logic (DDL) developed by CSIRO’s Data61. The language provides for environment (Turnip, by CSIRO’s Data61) in which to “execute” the encoding to simulate cases.

The language proved suitable to encode Part VIIC, wrt to the “operational” provisions for spent conviction.

The language is able to model constitutive rules (definitional norms), prescriptive rules (prescriptive norms, including concepts like Obligation, Prohibition, Permission, Exemption,...) and it offers a natural way to model exceptions (exclusions).
(1) For the purposes of this Part, a person shall be taken to have been convicted of an offence if:

(a) the person has been convicted, whether summarily or on indictment, of the offence;
(b) the person has been charged with, and found guilty of, the offence but discharged without conviction; or
(c) the person has not been found guilty of the offence, but a court has taken it into account in passing sentence on the person for another offence.
Section 85ZS

(1) Subject to Division 6, but despite any other Commonwealth law or any State law or Territory law, where, under section 85ZR, a person is, in particular circumstances or for a particular purpose, to be taken never to have been convicted of an offence:

(a) the person is not required, in those circumstances or for that purpose, to disclose the fact that the person was charged with, or convicted of, the offence;

(b) it is lawful for the person to claim, in those circumstances, or for that purpose, on oath or otherwise, that he or she was not charged with, or convicted of, the offence;

s85ZS_1a: Person & PardonOrWronglyConvicted
s85ZS_1b: Person & PardonOrWronglyConvicted
Section 85ZZH Exclusions

(a) a law enforcement agency, for the purpose of making decisions in relation to prosecution or sentencing or of assessing:

(i) prospective employees or prospective members of the agency; or
(ii) persons proposed to be engaged as consultants to, or to perform services for, the agency or a member of the agency;

...

(g) Commonwealth authority, for the purpose of assessing appointees or prospective appointees to a designated position;

s85ZZHa_2: LawEnforcementAgency & PurposeOfEngagementWithAgency =>
[P] OtherDisclose.conviction & [P] OtherDisclose.charged

s85ZZHh: CommonwealthAuthority & PurposeOfEngagementWithAgency =>
[P] OtherDisclose.conviction & [P] OtherDisclose.charged

s85ZZHa_2 >> s85ZS_1a
s85ZZHh >> s85ZS_1a
Person A had two prior convictions for insider trading in 1998 and had been released on entering into a good behaviour bond for two years. Person A applies for an appointment as a management consultant to the Australian Federal Police.
Person A had two prior convictions for insider trading in 1998 and had been released on entering into a good behaviour bond for two years. Person A applies for an appointment as a management consultant to the Australian Federal Police.

Is A exempt from disclosing the charge?
The Case Outcome

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**Rules**

1. The person is convicted of s8525.id
2. s8525.1d_consent >> s8525.b
3. // Division 4
4. // Division 6 exclusions
5. // s8525a just gives the aim of the section
6. Atom OtherEntityCollectInfoPersonSeekingWorkWithChildren "a person or body permitte
7. Atom DisclosurePersonSeekingWorkingWithChildren "the disclosure information is about
8. s8525b: Person & [P] OtherEntityCollectInfoPersonSeekingWorkWithChildren &
9. DisclosurePersonSeekingWorkingWithChildren ->
   [0] Disclose.charged & [0] Disclose.conviction
10.Atom LawfulTakingIntoAccountConvictionInfo "The taking into account of the conviction
11. s8525c: Person & [P] OtherEntityCollectInfoPersonSeekingWorkWithChildren &
12. LawfulTakingIntoAccountConvictionInfo ->
   [0] Disclose.charged & [0] Disclose.conviction
13. Atom PurposeForDealingWithInfo "the taking into account of the info is required by a law
14. s8525c: Person & [P] OtherEntityCollectInfoPersonSeekingWorkWithChildren &
15. PurposeForDealingWithInfo & InfoRequiredByLaw >> LawfulTakingIntoAccount
16. Atom OtherLawDisclosure.convictionInfo "the disclosure of conviction information is re
17. s8525d: Person & [P] OtherEntityCollectInfoPersonSeekingWorkWithChildren &
18. OtherLawDisclosure.convictionInfo ->
   [0] Disclose.charged & [0] Disclose.conviction
19. Atom PurposeOfEngagementWithAgency "a person seeks employment or to work as a contr

**Facts**

1. case.date := 2019-09-22 // when the case was examined
2. Person // Person A
3. Conviction // there was a conviction for insider trading
4. conviction.date := 1998-08-10 // when A was convicted for insider trading
5. CommonwealthTerritoryOffence // insider trading is forbidden underw
6. Division 10 // Division 10.01 DIVISION 10 Corporations Act 2001
7. Discharged // A was discharged with 5y good conduct bond
8. - Imprisonment
9. proposedConsultant // A seeks to work as proposed consultant for
10. AustralianFederalPolice // the Australian Federal Police
11. 

**Result**

1. (Imprisonment)
2. [0] Disclose.charged
3. [0] Disclose.conviction
4. [P] OtherDisclosure.charged
5. [P] OtherDisclosure.conviction
6. AustralianFederalPolice
7. CommonwealthAuthority
8. CommonwealthTerritoryOffence
9. ConvictionVICT
10. Discharged
11. LawEnforcementAgency
12. Person
13. PurposeOfEngagementWithAgency
14. SpentConviction
15. WaitingPeriodEnded
16. proposedConsultant
17. case.date := 2019-09-22
18. conviction.date := 1998-08-10

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Business Process Compliance
Business Process Compliance
Thanks

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Questions?

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