



Digital Legislation

Technology to re-imagine the legal and regulatory landscape

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ALMA-AI, 16 September 2020

www.data61.csiro.au



Outline



- Motivation and Vision
- Data61's Digital Legislation
- Computational Law
- Applications we built on Digital Legislation

Mission



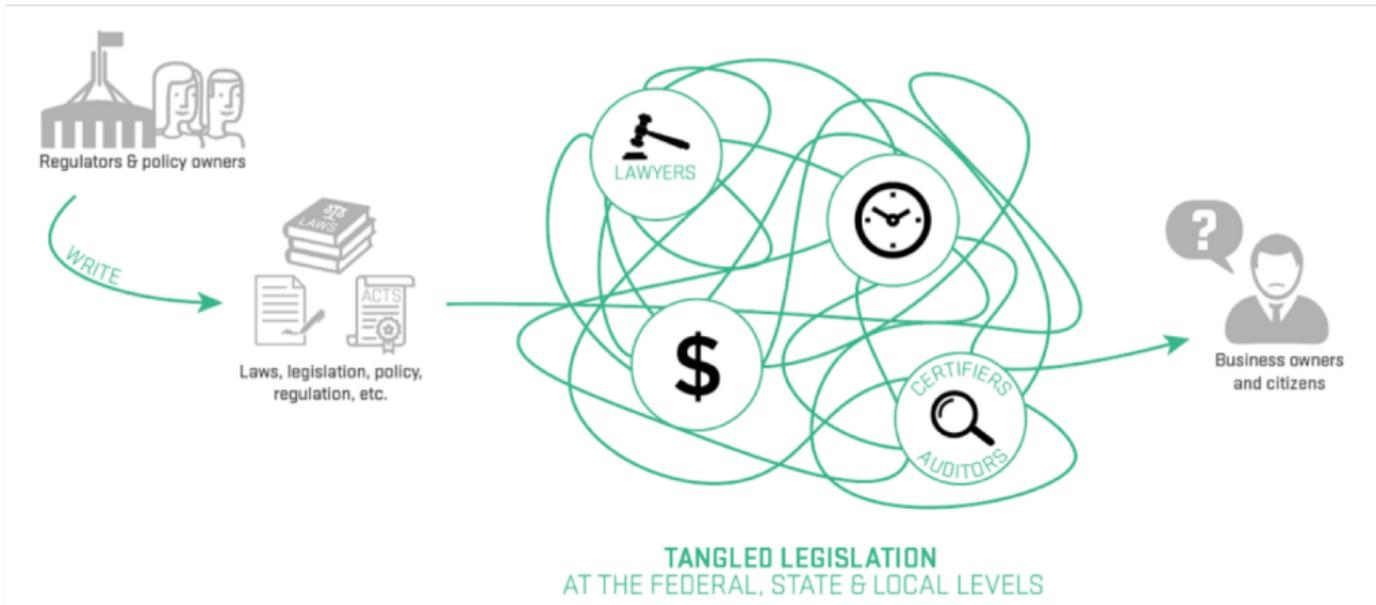
Develop and deliver technologies that identify and reduce regulatory burden and friction for government, businesses and individuals

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



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

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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)

AFR Tuesday 20 August 2019
www.afr.com | The Australian Financial Review

News 3

Canberra, we have a problem, says PM

Phillip Coorey
Political editor

The miraculous rescue of the three stranded Apollo 13 astronauts in 1970 should be the benchmark for problem-solving within the Australian Public Service, Prime Minister Scott Morrison said.

Mr Morrison said problem-solving was the key skill the public service needed to develop, following a speech in which he demanded public servants

Key points

Scott Morrison says problem-solving is the key public service skill.

Bureaucrats must be mindful their minister is taking the political risk.

Tom Hanks, and he detailed how



someone else's degree, there were just people who were trying to save the lives of three people in an escape pod.”

Mr Morrison said much of the work the public sector did helped to save lives, whether it was implementing food recovery programs in north Queensland, overseeing policies that create opportunities for young Indigenous people or helping rural folk struggling with drought.

Mr Morrison also expanded on his call for the public sector to embrace

bound up in these massive thick volumes.

“Digital technologies have the abilities to demystify all that.”

Mr Morrison said the technology could apply especially to state government legislation and regulations.

“There's no reason why development and building codes and planning codes cannot be written in code and you simply submit a CAD design aiming to provide for real-time improvements.

Imagine...

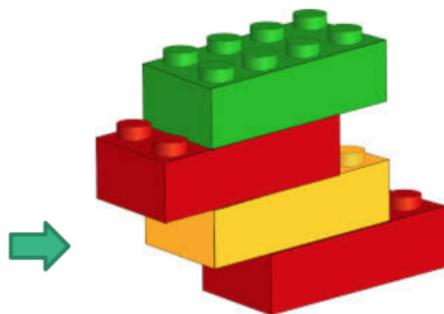
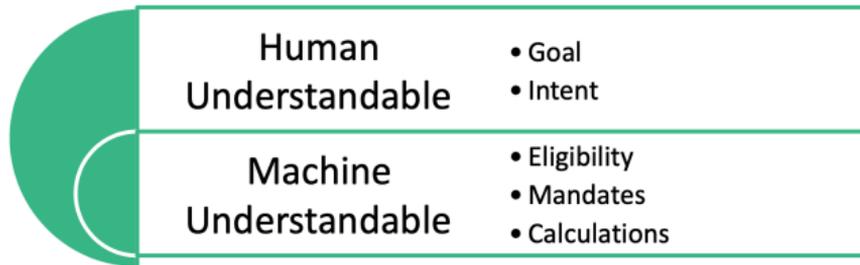


Imagine. . .

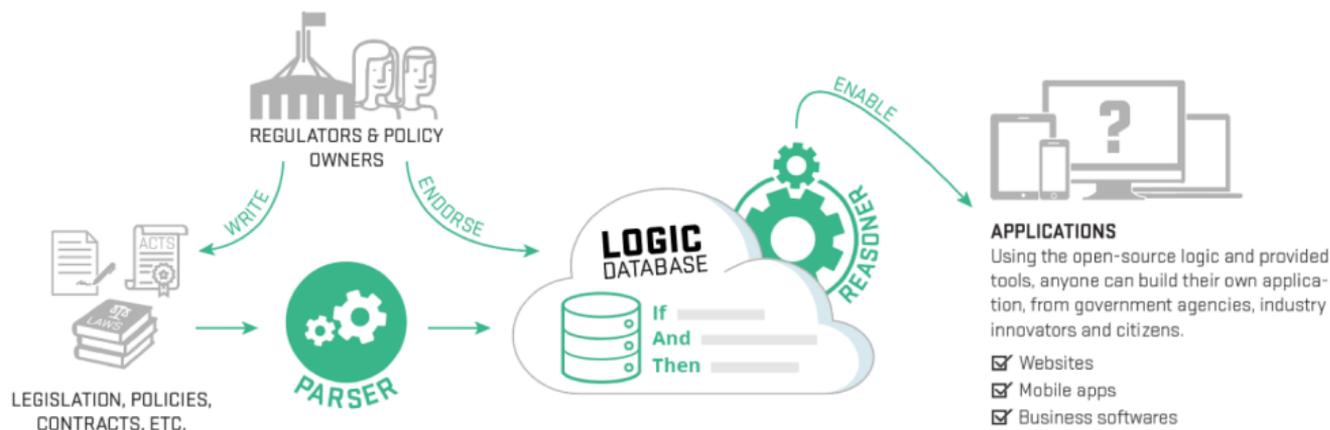


Based on our experiment, Digital legislation can save up to 30% of compliance cost (~5% GDP).

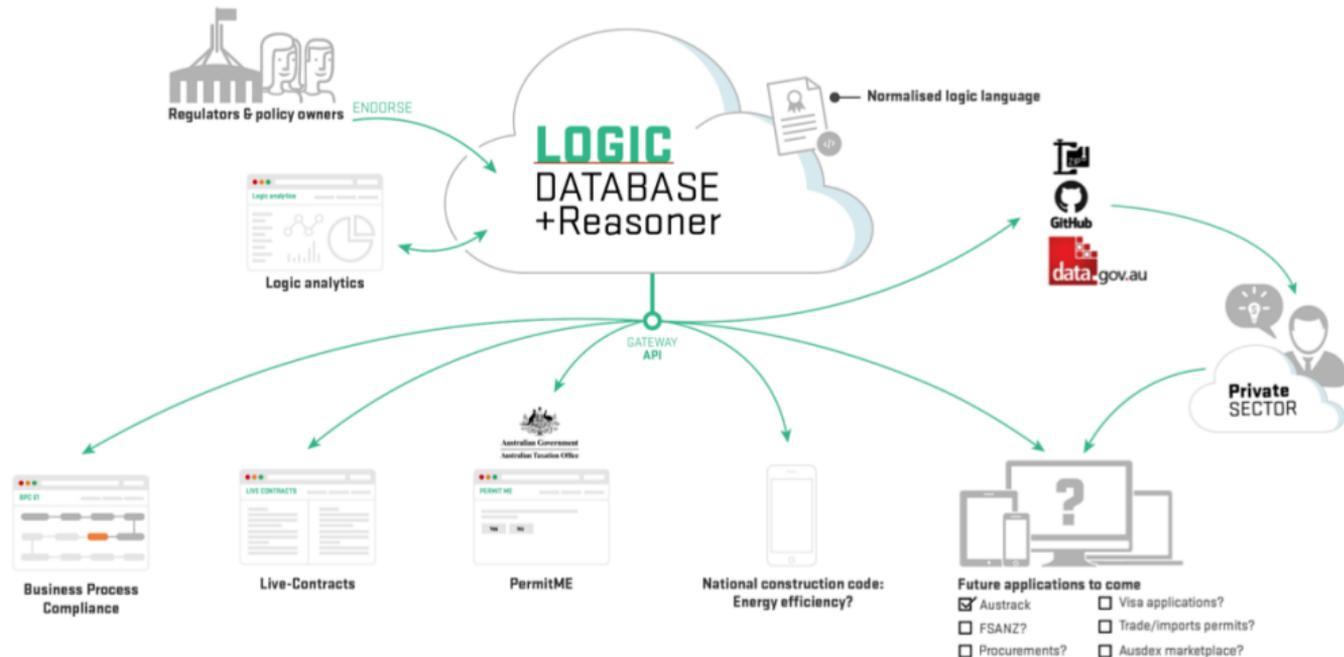
Legislation as Code



Data61 Regulation as a Platform



Digital Legislation Platform



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

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Computational Law

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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Norms are modelled as **if ... then** rules

$$A_1, \dots, A_n \Rightarrow C$$

- 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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 - ▶ permissions
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 - ▶ violations

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 ...

*r₁: If person **Then** creditActivity is FORBIDDEN*

*r₂: If ownCreditLicense **Then** creditActivity is PERMITTED*

*r₃: If person **And** onBehalfOfPrincipal **And** employeeOfPrincipal
Then creditActivity is PERMITTED*

r₂ overrides r₁,

r₃ overrides r₁

Obligations, Violations and Sanctions



- Norms (obligations and prohibitions in force) can be violated
- Some violation can be compensated (by some sanction)
- Compensatory norms vs Contrain-to-duty

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- Compensatory norms vs Contrain-to-duty

*If condition **Then** something is FORBIDDEN*
*If something **Then** somethingelse is OBLIGED*

VS

*If condition **Then** something is FORBIDDEN **compesated** somethingelse is OBLIGED*

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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 VIIC, 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).

Section 85ZM



- (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.

Atom Person "an individual not a body corporate" // see Section 85ZP(2)

Atom ConvictionVII "a conviction according to Part VII"

Atom Conviction "a person has been convicted for an offence"

Atom Guilty "a person has been charged with an offence and found guilty"

Atom Discharged "a person has been discharged without a conviction"

Atom OtherOffence "a person has not been found guilty, but the court has taken it into account (for the conviction) for another offence"

s85ZM_1a: Person & Conviction => ConvictionVII

s85ZM_1b: Person & Guilty & Discharged => ConvictionVII

s85ZM_1c: Person & OtherOffence => ConvictionVII

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

=> [E] Disclose.charged & [E] Disclose.conviction

s85ZS_1b: Person & PardonOrWronglyConvicted

=> [E] Oath.not_charged & [E] Oath.not_conviction

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

```
s85ZZHa_2 >> s85ZS_1a  
s85ZZHh >> s85ZS_1a
```

A Case



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.

A Case



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

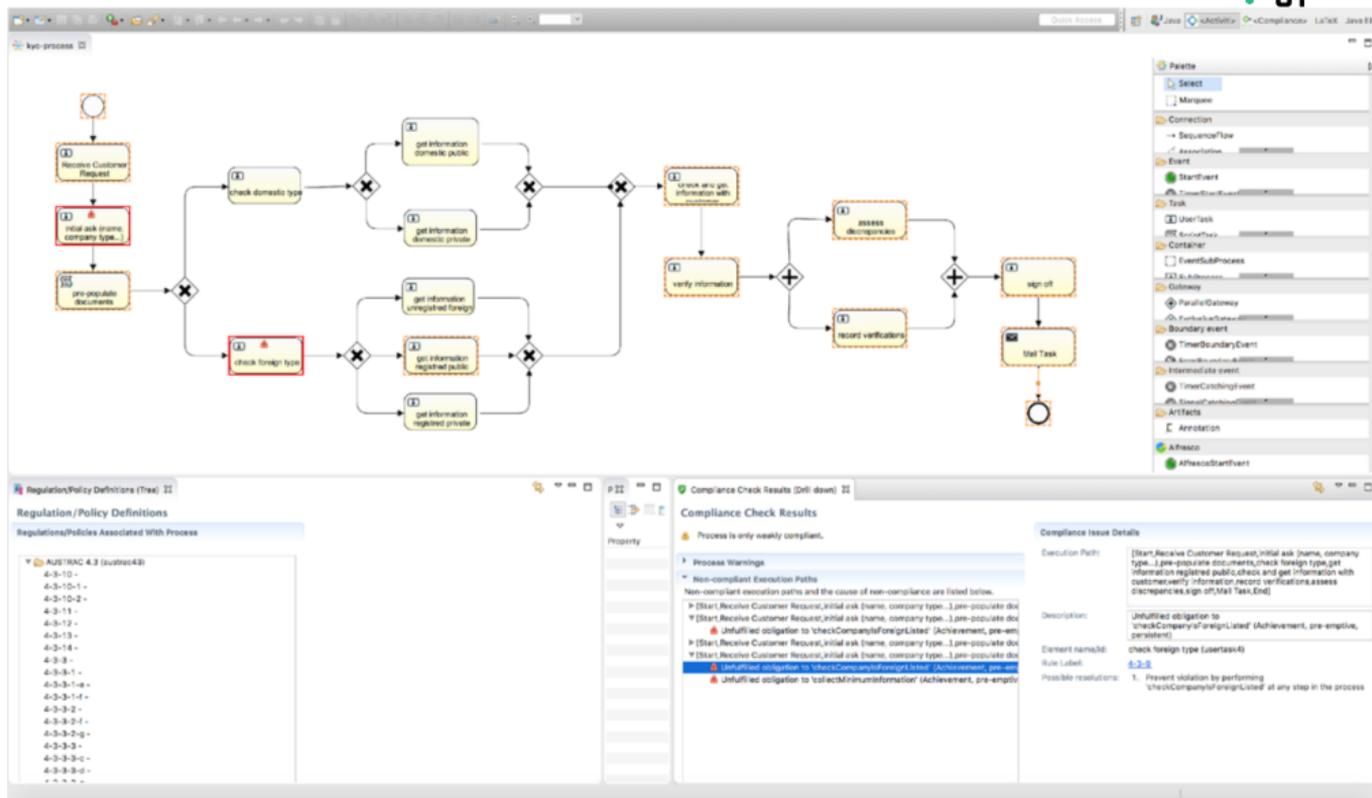


TurnipBox Run Save Reset GgbWQoHC2kxIFDcw3LEU loaded

Rules	Facts
192 // the consent is covered by s85ZG... 193 s85ZS_id_consent => s85ZS_b 194 195 // Division 4 196 197 // 85 ZX 198 199 Atom otherOffence.inWaitingPeriod "the person was convicted of another offence during 200 201 s85ZX_1: Person & Conviction & WaitingPeriodEnded & otherOffence.inWaitingPeriod => 202 203 // Division 6 exclusions 204 205 // 85ZGGA just gives the aim of the section 206 207 Atom OtherEntityCollectInfoPersonSeekingWorkWithChildren "a person or body permitted 208 Atom DisclosurePersonSeekingWorkingWithChildren "the disclosure information is about 209 210 s85ZGGB: Person & [P] OtherEntityCollectInfoPersonSeekingWorkWithChildren & 211 DisclosurePersonSeekingWorkingWithChildren => 212 [0] Disclose.charged & [0] Disclose.conviction 213 214 Atom LawfulTakingIntoAccountConvictionInfo "The taking into account of the conviction 215 216 s85ZGCG: Person & [P] OtherEntityCollectInfoPersonSeekingWorkWithChildren & 217 LawfulTakingIntoAccountConvictionInfo => 218 [0] Disclose.charged & [0] Disclose.conviction 219 220 Atom PurposeForDealingWithInfo "the taking into account is for the purpose of dealing 221 Atom InfoRequiredByALaw "the taking into account of the info is required by a law" 222 223 s85ZGCAux: PurposeForDealingWithInfo & InfoRequiredByALaw => LawfulTakingIntoAccount 224 225 Atom OtherLawDisclose.convictionInfo "the disclosure of conviction information is required 226 227 s85ZGDD: Person & [P] OtherEntityCollectInfoPersonSeekingWorkWithChildren & 228 [0] OtherLawDisclose.convictionInfo => 229 [0] Disclose.charged & [0] Disclose.conviction 230 231 Atom PurposeOfEngagementWithAgency "a person seeks employment or to work as a contractor	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 under 6 // section 1043, Part 7.10 Division 10 Corporations act 2001 7 Discharged // A was discharged with 2y 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]OtherDisclose.charged 5 [P]OtherDisclose.conviction 6 AustralianFederalPolice 7 CommonwealthAuthority 8 CommonwealthTerritoryOffence 9 Conviction 10 ConvictionVII 11 Discharged 12 LawEnforcementAgency 13 Person 14 PurposeOfEngagementWithAgency 15 SpentConviction 16 WaitingPeriodEnded 17 proposedConsultant 18 case.date := 2019-09-22 19 conviction.date := 1998-08-10	

Business Process Compliance

Business Process Compliance



The screenshot displays a business process compliance tool interface. The main area shows a BPMN diagram of a process starting with 'Receive Customer Request', followed by 'initial ask (name, company type...)' and 'pre-populate documents'. The process then branches into two paths: 'check domestic type' and 'check foreign type'. Each path involves multiple 'get information' tasks (public, private, foreign, registered) leading to a 'verify information' task, which then leads to 'assess discrepancies', 'record verifications', and finally 'sign off' and 'Mail Task'.

Below the diagram, there are three panels:

- Regulation/Policy Definitions:** Shows a list of regulations/policies associated with the process, including 'AUS/IRAC 4.3 (subsect4.3)' and various sub-sections (4-3-10-1 to 4-3-3-4).
- Compliance Check Results:** Displays a warning: 'Process is only nearly compliant.' It lists non-compliant execution paths and identifies specific 'Unfulfilled obligation' instances, such as 'Unfulfilled obligation to 'checkCompanyForeignListed' (Achievement, pre-emp)'. A highlighted entry shows 'Unfulfilled obligation to 'selectMinimumInformation' (Achievement, pre-emp)'.
- Compliance Issue Details:** Provides details for a specific issue, including the 'Execution Path' (from 'Start.Receive Customer Request' to 'Mail Task.End'), a 'Description' of the unfulfilled obligation, the 'Element name/id' ('check foreign type (userTask4)'), and 'Possible resolutions' (e.g., 'Prevent violation by performing 'checkCompanyForeignListed' at any step in the process').



Thanks

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Questions?

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