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Unmasking the Regulatory Burden for individual Australian Residents

Full research paper

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Abstract

The legislation defines the roles that individuals play, but it causes confusion when a role has different definitions in the same jurisdiction. In Australia, the welfare, taxation and immigration legislation each provide a different definition of an Australian resident. This paper applies the GovUI-Onto, a new method developed to conceptualise and model the implementation of legislation using government user interfaces, to compare the regulatory burden for individual Australian residents in different settings. Not surprisingly, the research indicates that there may be a higher regulatory burden for individuals seeking benefits and services from the government, than those who will be required to pay money to the government. The paper also demonstrates how a whole-of-government view of a role, such as an Australian resident, can be developed and be used to harmonise and simplify the legislation for all.

Keywords GovUI-Onto method, regulatory burden, definitions, welfare, taxation, immigration, legislation, whole-of-government, Australian resident, government information systems, content analysis, definitions, roles, individuals.

1 Introduction

Australian legislation provides at least three different definitions for the concept of an individual Australian Resident. Different definitions impose additional burdens for government departments that administer the legislation, and complexity for individuals straddling the welfare, taxation, and immigration settings in this single jurisdiction. For departments, different implementations in government information systems (GovIS) need to be maintained. A GovIS is the information technology (IT), processes, and people used to solve government problems. For an individual being assessed as an Australian resident, the different definitions may impose an inconsistent regulatory burden, notwithstanding that the determination is occurring in the same jurisdiction. When different definitions reside across legislation, the burden for individuals may not be evident because the legislation is complex, and because requirements imposed on an individual in a legislative role may be scattered throughout the legislation.

This paper applies the GovUI-Onto method introduced by Romano, 2021 to detect and model the regulatory requirements imposed on individuals in what is seemingly, the same role, but in different legislation. The GovUI-Onto method is a new method developed to conceptualise and model the implementation of legislation using government user interfaces. Content analysis is used to detect the definition of an individual Australian resident in the legislation and the implementation of the definition in a government user interface (GovUI) such as a government claim form. This paper demonstrates an application of the GovUI-Onto method to provide a way to compare the regulatory burden of individual Australian residents in three different settings.

1.1 Implementing legislation in government information systems

Government legislation defines an individual Australian Resident across multiple Acts. This legislation is then operationalised by GovIS that store information and are used to make decisions about eligibility for benefits and liability for payments. The GovIS use the information provided by prospective service consumers using GovUIs such as claim forms to determine their eligibility for government benefits and services. Complex GovIS collect, store, and process the data that are used by government departments to determine whether an individual meets the legislative rules to determine if they are an individual Australian resident.

This research investigates whether the inconsistent implementation of the legislation within the GovIS of different departments could be causing an inconsistent burden for individuals. Outputs of the research include models representing the Role class, Australian resident in both the legislation and the GovUI for the three settings, and a merged view to demonstrate how a Whole of Government (WhoG) view could be developed. Because the model already has been tested across three such disparate settings, it is strongly likely to be scalable across further settings such as health and aged care, housing, child support and voting rights. By modelling other legislation, and more GovUI, a comprehensive view of an individual Australian resident can be developed.

A comprehensive representation can provide government with information to simplify and harmonize the legislation. While the Australian government has announced the review of the Legislative Framework for Corporations and Financial Services Regulation including the consistent use of terminology to reflect the same or similar concepts simplifying Australia's corporations and financial services legislation (ALRC, 2020), there is no similar call to simplify it for people in individual roles such as Australian residents, parents, aged care, or welfare recipients. This paper demonstrates a method to develop WhoG models of a Class role that incorporates both the legislation and GovUI, and the attributes of an individual in a Class role. This paper develops a representation of the Class role, individual Australian resident. By comparing the number of Role class attributes is shown to provide insights about the regulatory burden for an individual in different settings.

The GovUI-Onto method is used to present the Role classes and the attributes of the Role classes of different definitions of an individual Australian Resident in the welfare, taxation, and immigration settings. The first view presents the Role classes related to of an individual Australian resident for example, a Visa Holder, an Employee, or a Citizen, etc. Role classes also capture the relation between roles. The second view presents the attributes of the Role classes of an individual. For example, is an individual is an Australian citizen? Yes or, No? Or another example, is an individual is a permanent Visa Holder? Yes or, No? While an individual may be a citizen, the information system needs to capture the attribute, i.e., whether they are an Australian citizen from a GovUI, such as a claim form. The answer to the question needs to be detected, stored, retrieved, and read by various processes used in the GovIS.

The Role classes and the Attributes of the Role classes are captured from the legislation and the GovUI in the welfare, tax and immigration settings are then they are compiled to demonstrate how a WhoG view can be developed to inform a process of harmonization and to remove the inconsistencies that make regulation difficult for individuals to comprehend. A major justification for pursuing legal harmonization within Australia is the difficulty or uncertainty for individuals arising from regulatory inconsistencies among jurisdictions and unacceptable differences in impacts for individuals due to inconsistent treatment of the same action across jurisdictions (House of Representatives Standing Committee on Legal and Constitutions, 2006).

1.2 The GovUI-Onto method

The research being reported uses GovUIs as a substitute to the complex GovIS that would otherwise be required to investigate this type of misalignment. While auditors have access to complex GovIS to investigate both alignment and misalignment to the legislation, this required access precludes the review by others. The research being reported uses the GovUI as a substitute for the GovIS and applies an ontological approach to determine the burden on an individual Australian resident.

An ontology is an “explicit specification of a conceptualization” (Gruber, 1993). The specification provides a description of concepts and relations that exist for an individual or a community of individuals as a conceptual model of a specific domain (Mommers, 2010). A conceptual model is an abstract and simplified description of the reality that is being represented (Mylopoulos, 1992). Conceptual modelling is the activity of formally describing some aspects of the physical and social world around us for the purposes of understanding and communication (Li & Dai, 2011, p. 87). By specifying a domain as a model, it is possible to understand, (Uschold & Gruninger, 1996) or analyse a domain (Noy & McGuinness, 2001).

A full ontology would require a description of all concepts in the legislation. While substantial amounts of statutory law are definitional in nature (Sergot et al. 1986), not everything that exists in legislation is defined (Bench-Capon & Visser, 1997). For this research, an ontology is not required as there is only one concept, individual Australian resident, being considered, and each setting provides its legal definition. Another reason that a full ontology is not required is because only some relations are required to make the comparison in different settings. These relations are Classes, Role class, Class attributes, and Is_a relations.

A class is a set of entities (Noy & Musen, 2003, p. 985). The three ontological relationships being detected from the text used to determine whether an individual is an Australian resident, are Role classes, Is_a Classes, and Role class attributes. These are described as follow:

- A Role class is a subset of a Class and could be any role that the legislation describes held by an individual when determining if an individual is an Australian resident. For example, an individual could hold a Role class as an Employee, or a Visa Holder.
- An Is_a relationship is an inheritance association, and for the purposes of the research being reported, describes a parent and child association between the class Individual and any of the Role classes. For example, the legislation may refer to an individual who is a Visa holder. Given that not all individuals are citizens, representing the parent and child relationships in a tree diagram helps to visualize the relationship. In this example, ‘Individual’ is the parent, and ‘Visa holder’ is the child.
- A Role class attribute is a requirement derived from the text found in either the legislation or the GovUI about an Individual used to determine if they are an Australian resident. For example, the legislation may require an Individual to be an Australian citizen. Therefore, a Class attribute of ‘Individual’ would be ‘is an Australian citizen’.

The following excerpt from the legislation is used to provide examples of the ontological relationships. An Australian resident Class is a person who: resides in Australia and is an Australian citizen s7(2)(a)(i) Social Security Act, 1991. This excerpt provides three relations: the first is that an Australian resident Is_a person (i.e., an individual, and not a company, incorporated in Australia); the second, is that the person has a Role class of Resident; and the third, is that the person has a role of Australian citizen. The excerpt also provides three Role class attributes, requirements that are framed as Boolean Yes/No? Firstly, is the applicant an individual? Secondly, does the applicant reside in Australia? Thirdly, is the applicant an Australian citizen? This example describes how the relations between Role classes, and other Role class attributes detected from the text provide can be used to specify a conceptualization of the individual Australian resident definition, without the requirement for a full ontology.

The method undertakes a non-semantic investigation, i.e., it does not define the concepts related to an individual Australian resident, but rather, it represents the sub-set of the relations with the definition

that exist in the legislation and its implementation in selected GovUI. The GovUI-Onto method is an ontological approach derived from the process of building a full ontology, to focus on a single legislative definition.

The outcome of the research being reported is a series of models that depict firstly, the Role classes related to an individual Australian resident. Secondly, the models depict the attributes necessary to be deemed an individual Australian resident in the welfare, taxation, and immigration settings. A setting-view of an individual Australian Resident is constructed by modelling the ontological components found in the legislation, then, modelling those found in the GovUI, and merging them. The merged view represents the burden on an individual in that setting.

2 Developing a Whole-of-Government View of an individual Australian resident

There are three different ways to use concepts in a domain to build ontologies that organize hierarchies of classes and properties, bottom-up, top-down, and combination approach (Uschold & Gruninger, 1996). The bottom-up approach starts with the most specific concepts in a domain of application while a top-down approach starts with high-level concepts that are assumed to be common to many application areas (Mommers, 2010). A combination approach combines the top-down and bottom-up approaches. The research used a bottom-up approach to develop a WhoG view of the roles and the attributes of an individual Australian resident. In modern society, for many roles there are many requirements the government therefore has views about the roles and attributes of individuals. In this paper we are observing the Role classes and the Role class attributes of an individual Australian resident. Figure 1 depicts how Role classes, and the Role class attributes are used to determine the regulatory burden for individual Australian residents.

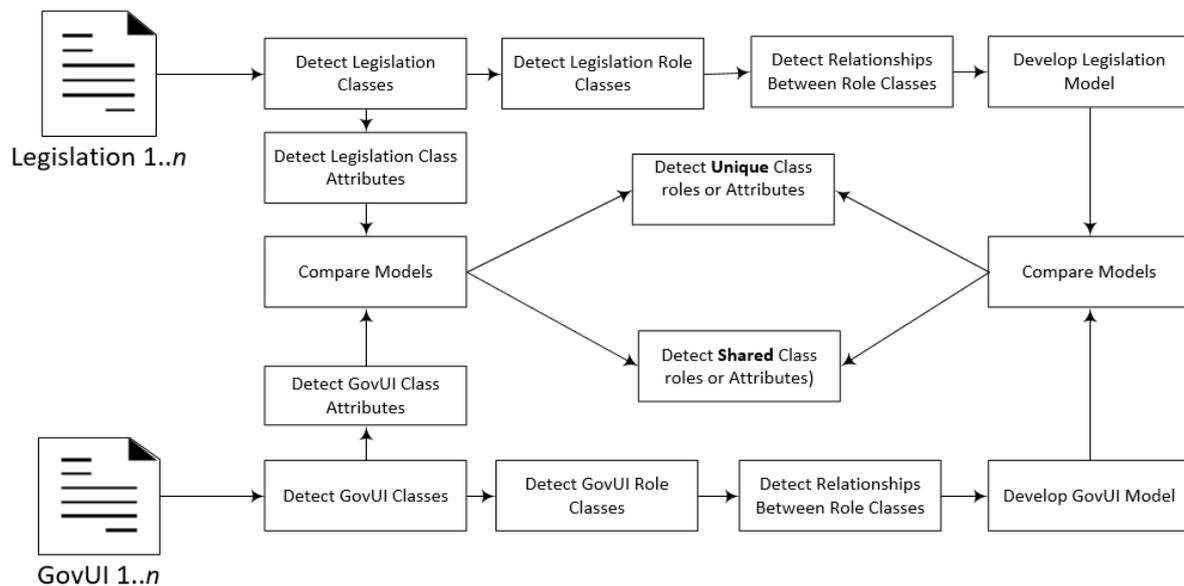


Figure 1 Role classes and Role class attributes to determine regulatory burden for individual Australian residents

In Figure 2, the bottom-up approach is used to detect the Classes, then the Role Classes from the legislation and GovUI in each setting. A merged view of the legislation and GovUI, or WhoG view is developed, and then these are merged to create a WhoG view. By using this approach, it is possible to capture the attributes of an individual Australian resident found in the legislation, for comparison to those found in the GovUI.

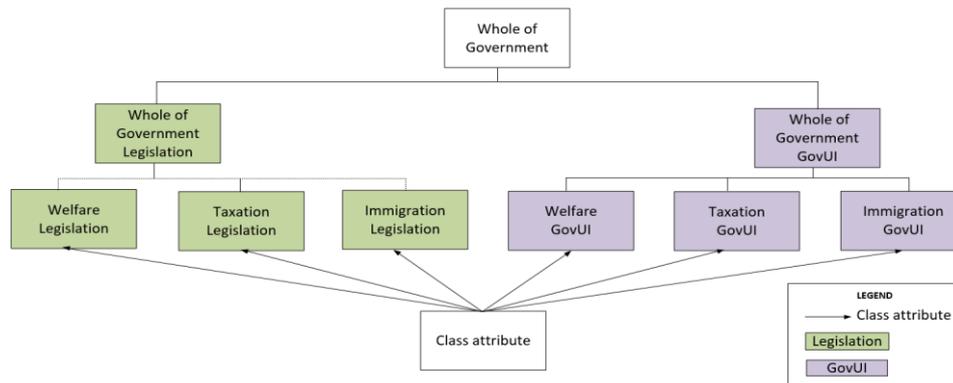


Figure 2 Individual Australian resident Whole of Government Class attributes Model

The following sections provide the attributes required of an individual Australian Resident in legislation and a GovUI the three different settings. The legislation definition of an individual Australian Resident in each setting, and a GovUI that implements the definition are used. While there are many different GovUI, only a single GovUI in each setting is used.

2.1 Attributes of an individual Australian Resident in the Welfare setting

An individual who is an Australian resident in the welfare setting can apply for Australian welfare benefits. The research being reported detected the attributes of an Individual using the *A New Tax System (Family Assistance) Act, 1999* and 'Claim for an annual lump sum payment of Family Tax Benefit'. The welfare setting has 22 requirements for an individual Australian Resident as listed in Figure

- AccommodationNatureSuggestsResidingInAustralia
- AssetsNatureAndExtentSuggestsResidingInAustralia
- AustralianCitizen
- AustralianCitizenBornInAustralia
- CountryOfBirthAustralia
- CountryOfCitizenshipAustralia
- EmploymentBusinessFinancialSuggestsResidingInAustralia
- EverLivedInAustralia
- EverTravelledOutsideAustralia
- FamilyRelationshipsNatureAndExtentSuggestResidingInAus
- LivedOutsideAustralia3YearsUpTo30June2017
- NeverTravelledToAustralia
- OtherMatterSuggestIntentionToRemainPermanentlyInAus
- PermanentVisaHolder
- ResidesInAus
- SpecialCategoryVisaHolderWholsProtectedSCVHolder
- TravelOutsideAustraliaFrequencyAndDurationSuggestsResidingInAustralia
- VisaOnArrivalNewZealandPassprotSpecialCategoryVisa
- VisaOnArrivalPermanentVisa
- VisaOnArrivalTemporaryVisa
- VisaOnArrivalUnknownVisa
- VisaSubClassChangedSinceArrival

Figure 3 Welfare Class attributes

2.2 Attributes of an individual Australian Resident in the Taxation setting

An individual who is an Australian Resident in the taxation setting is required to pay income tax in Australia. The attributes of an Individual were detected from the Tax Administration Act, 1953, and the income Taxation ruling (TR) residency status of individuals entering Australia (TR 98/17). The taxation setting has 15 requirements for an individual Australian Resident as listed in Figure 4.

BeenInAustralia>1/2YearOfIncome
BehaviourInAusSuggestsResidingInAus
CommSatAbodeOutsideAus&NotIntentAusResidence
CommSatPermPlaceAbodeOutsideAustralia
DomicileInAustralia
EligibleEmployeeSuperannuationAct1976
FamilyAndBusinessEmploymentTiesSuggestsResidingInAus
IntentionOrPurposeOfPresenceSuggestsResidingInAus
MaintenanceAndLocationOfAssetsSuggestsResidingInAus
MemberSchemeSuperannuationAct1990
NonAcompany
PeriodOfPhysicalPresenceInAusSuggestResidingInAus
ResidesInAus
SocialAndLivingArrangementSuggestsResidingInAus
SpouseOrChildUnder16OfPersonAorB

Figure 4 Taxation Class attributes

2.3 Attributes of an individual Australian Resident in the Immigration setting

An individual who is an Australian resident in the immigration setting may be eligible for Australian citizenship, and all the benefits that this entails. The research being reported detected the attributes of an Individual using the Citizenship Act, 2007 and the application for Australian citizenship – general eligibility claim Form 1300t. The immigration setting has 18 requirements for an individual Australian Resident as listed in Figure .

AbsentFromAusPartPeriodNot>12MonthsInThe4YearsBeforeApplicationDay
AnAusCitizenAnytimeBeforeApplicationDay
AustralianCitizen
bornInAustralia
ConfinedInPrison4YearPeriod
ConfinedInPsychiatricInstitution4YearPeriod
MinDiscPresentInAusButAdminErrorNotPermanentResidentDuringPeriod
MinDiscPresentInAusButAdminErrorUnlawfulNonCitizenDuringPeriod
MinDiscSpouseDeFactoSurvivingSpouseOrSurvivingDeFactoOfAustralianCitizenWithContinuingAssociations
MinDiscUnreasonableBecauseOfConfinement
MinDiscWouldSufferSignificantHardshipOrDisadvantage
NotPresentInAusAsAnUnlawfulNonCitizenAnyTime4YearsBeforeApplicationDay
PresentInAus4YrsBeforeApplicationDay
PresentInAusAsPermRes12MonthsApplicationDay
PrisonConfinement4YearsImmediatelyBeforeApplicationQuashed
PsychiatricInstitutionConfinement4YearsImmediatelyBeforeApplicationQuashed
SatisfiesGeneralResidenceRequiriements
TotalPeriodOfAbsenceNot>90Days

Figure 5 Immigration Class attributes

2.4 The Whole-of-Government Shared and Unique Class attributes

By capturing the set of Class attributes of an individual Australian resident found across both the legislation and the GovUI, it is possible to develop a model of different requirements for those being assessed as individual Australian residents. Figure 6 is a list of the requirements in the welfare, taxation, and immigration settings. It provides an example of how a whole of government view may be developed.

By capturing the Class attributes of an individual Australian resident found in both the legislation and the GovUI, it is possible to understand the requirements imposed on an individual in different settings. The Class attributes are representative of the set of rules, or requirements, that should be represented in government information systems. For example, a Class attribute ‘hasSpouse’ would be a Boolean data item that could be accessed to understand whether an individual has reported that they have a spouse. In a WhoG view of an individual, ‘hasSpouse’ may have relevance for many different applications. If a Class attribute is used by more than one application then, it could be important to recognize this for impact assessments where for example, a legislative change is made to the definition of a spouse. In this case, understanding which government departments are impacted, or even, which area of a government department is impacted ensures that all impacted stakeholders are engaged.

AbsentFromAusPartPeriodNot>12MonthsInThe4YearsBeforeApplicationDay
AccommodationNatureSuggestsResidingInAustralia
AssetsNatureAndExtentSuggestsResidingInAustralia
AustralianCitizen
AustralianCitizenAnyTimeBeforeApplicationDay
AustralianCitizenBornInAustralia
BehaviourInAusSuggestsResidingInAus
BeenInAustralia>1/2YearOfIncome
BornInAustralia
CommSatAbodeOutsideAus&NotIntentAusResidence
CommSatPermPlaceAbodeOutsideAustralia
ConfinedInPrison4YearPeriodBeforeApplicationDay
ConfinedInPsychiatricInstitution4YearPeriodBeforeApplicationDay
CountryOfBirthAustralia
CountryOfCitizenshipAustralia
DomicileInAustralia
EligibleEmployeeSuperannuationAct1976
EmploymentBusinessFinancialSuggestsResidingInAustralia
EverLivedInAustralia
EverTravelledOutsideAustralia
FamilyAndBusinessEmploymentTiesSuggestsResidingInAus
IntentionOrPurposeOfPresenceSuggestResidingInAus
LivedOutsideAustralia3YearsUpTo30June2017
MaintenanceAndLocationOfAssetsSuggestsResidingInAus
MemberSchemeSuperannuationAct1990
MinDiscPresentInAusButAdminErrorNotPermanentResidentDuringPeriod
MinDiscPresentInAusButAdminErrorUnlawfulNonCitizenDuringPeriod
MinDiscSpouseDeFactoSurvivingSpouseOrSurvivingDeFactoOfAustralianCitizenWithContinuingAssociations
MinDiscUnreasonableBecauseOfConfinement
MinDiscWouldSufferSignificantHardshipOrDisadvantage
NeverTravelledToAustralia
NonAccompany
NotPresentInAusAsAnUnlawfulNonCitizenAnyTime4YearsBeforeApplicationDay
PeriodOfPhysicalPresenceInAusSuggestResidingInAus
PermanentVisaHolder
PresentInAus4YrsBeforeApplicationDay
PresentInAusAsPermRes12MonthsApplicationDay
PrisonConfinement4YearsImmediatelyBeforeApplicationQuashed
PsychiatricInstitutionConfinement4YearsImmediatelyBeforeApplicationQuashed
ResidesInAus
SatisfiesGeneralResidenceRequiriements
SocialAndLivingArrangementSuggestsResidingInAus
SpecialCategoryVisaHolderWholsProtectedSCVHolder
SpouseOrChildUnder16OfPersonAorB
TotalPeriodOfAbsenceNot>90Days
TravelOutsideAustraliaFrequencyAndDurationSuggestsResidingInAustralia
VisaOnArrivalNewZealandPassprotSpecialCategoryVisa
VisaOnArrivalPermanentVisa
VisaOnArrivalTemporaryVisa
VisaOnArrivalUnknownVisa
VisaSubClassChangedSinceArrival

Figure 6 Whole of Government Class attributes

The legislation does not apply a standard when describing the attributes of roles held by an individual being assessed as an Australian resident. While there may be many variations two of these relate to the semantics used in attributes that can be resolved using a Boolean (Yes or No) where the legislation could easily be standardized to remove inconsistencies. The first example is where the legislation requires a decision-maker to determine if an individual has ever been something, or done something, etc. But, in other legislation, the decision-maker must determine if an individual has never been something, or never done something, etc. Another example of this is where the legislation requires a decision-maker to determine if a person has been Present [in Australia], while in other legislation, requires them to be 'In [Australia]', and yet in another legislation, the requirement is that the individual is 'Absent [from Australia]'. The second example is the use of the word 'not' in an attribute. For example, the legislation may require a decision-maker to determine if an individual is 'Present' [in Australia], but in other legislation, the decision-maker must determine if an individual is not present in Australia. If a standard approach to describe the attributes was adopted, this could reduce some inconsistencies for individual Australian residents. These are two examples where harmonisation can identify opportunities to simplify the legislation.

A Role class attribute analysis is presented as a WhoG view identifying Role class attributes that are shared by, and those that are unique to, different administering departments. Knowing the shared and unique attributes across the WhoG can inform other harmonisation activities. In the research being reported, the WhoG view is limited to three settings however the method is extensible, and more settings could be included. Figure 6 provides a summary of the categorisation of 51 Class attributes found across welfare, taxation, and immigration settings, as either shared or unique. The green circles represent the three settings, and the number in these circles provides a count of the unique Class attributes that are

only found in that setting. The blue circles capture those Class attributes that are shared. If a Class attribute is shared by all three settings, then it would be included in the number in the centre blue circle. Notably, there are no Class attributes that are used in all three settings and only four attributes that are shared by welfare and taxation, and one attribute shared by welfare and immigration.

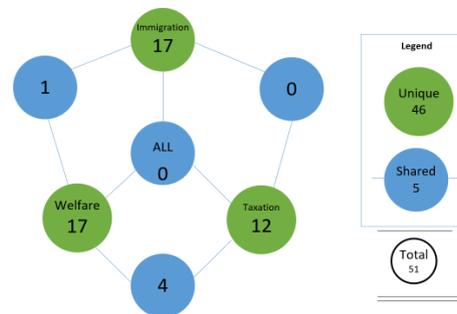


Figure 7 Shared and Unique Whole of Government individual Australian Resident Class attributes

2.5 The Whole-of-Government Role classes

There are potential benefits that emerge from developing a WhoG view of Role classes. For the government, harmonization opportunities may emerge for interoperability of the data, and the rules being applied using these data. The harmonization could be as simple as reusing labels in GovUI for similar data items to make it clearer for users. This would also help manage WhoG change processes. For individuals in legislative roles, a view of Role classes may provide a view to understanding their responsibilities under different legislation.

The legislation applies labels to the roles held by an individual being assessed as an Australian resident. Ensuring that the roles are labelled consistently in different settings is a form of harmonization that could be used to simplify the legislation for individuals. The Role classes in the welfare setting have been detected from the *A New Tax System (Family Assistance) Act, 1999*. The Role classes in the taxation setting have been detected from the *Tax Administration Act, 1953*. The Role classes in the immigration setting have been detected from the *Citizenship Act, 2007*. 8 represents the roles found in the welfare, taxation, and immigration settings. Figure 8 is representative of how a WhoG view could be visualised, albeit that only three settings have so far been included. The roles are presented in an Is_a structure. The roles are also color-coded, with the associated settings captured in each cell. A blue cell represents a Role class that is found in all settings, of which there is only one. A red cell represents the Role classes that are found in both the welfare and immigration settings, of which there are four. A black cell represents unique Role classes, the bulk of the cells are in this category.

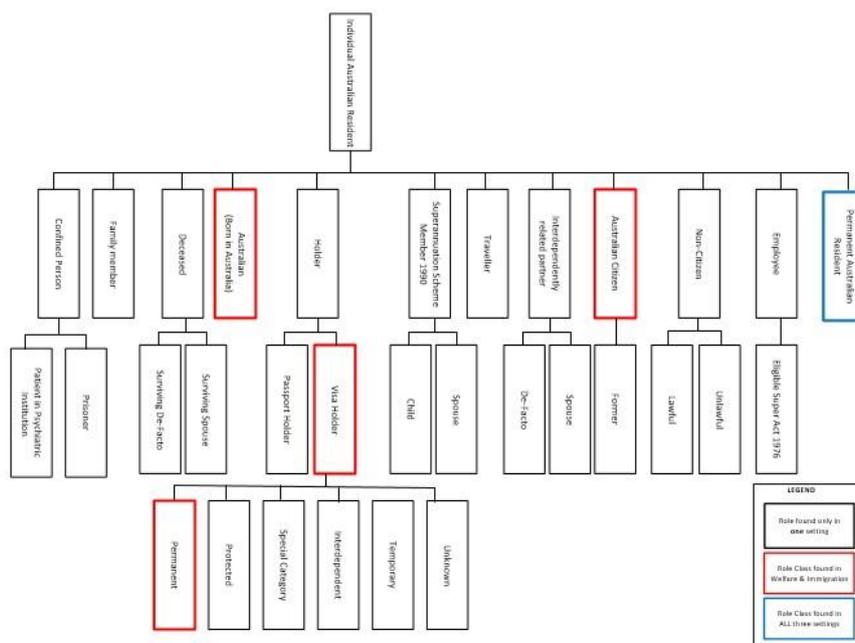


Figure 8 Class Roles of an individual Australian Resident

3 The regulatory burden on an individual Australian resident

For the research, a Role class is a subset of the class Individual. Two examples of a Role class are Employee and Visa Holder. Understanding the number and types of different legislative roles an individual may hold could be useful for the government when considering cohorts of citizen interactions in a citizen-centric approach to service delivery. The research being reported demonstrates an approach using the attributes of the Role classes can be helpful to understand the number of legislative rules that must be satisfied to meet the requirements of an individual Australian Resident. The number of rules applying to an individual being assessed is described in this research as the burden on an individual and these numbers are captured in Table 1.

Setting	Individual Australian Resident Class attributes
Welfare	20
Immigration	18
Taxation	15

Table 1. Regulatory burden in different settings

Publicly available documents, i.e., the legislation and GovUI have been used to understand the burden for an individual using the legislation and the GovUI that are publicly available documents. This research demonstrates a method that uses the legislation and GovUI to understand the regulatory burden on an individual Australian resident in the welfare, taxation, and immigration settings. A WhoG view has been discussed and the benefits of its development to identify harmonization opportunities to simplify the legislation for individual Australian residents has been described.

This information systems (IS) research uses manual content analysis to detect three ontological components in the legislation and GovUI such as a government application form. Future research will investigate the use of Natural Language Processing (NLP) to automate the detection of Roles and Attributes of roles from legislation and GovUI.

This paper demonstrates that by using the GovUI-Onto method to model the Role class attributes of an individual Australian resident in the legislation, it is possible to compare the regulatory burden for an individual in the different settings. This paper has presented the Role class attributes as the set of rules that an individual must meet to be deemed an Australian Resident in different settings. The paper has

also presented a WhoG Role class model of an individual Australian resident comprised of three settings, that can be extended by other researchers in the future.

4 Contributions and Implications

The research reported in this paper applies GovUI-Onto, a new method developed to conceptualise and model the implementation of legislation using government user interfaces to model and compare the regulatory burden being imposed on individuals being assessed as Australian residents in the welfare, taxation, and immigration settings. While only one definition is investigated, its application in three settings suggests that the method is extendable. In future research, NLP will be used to remove the manual detection of the ontological relations used in the content analyses.

This research contributes to IS knowledge by providing a method that can be used by auditors and others, as the research data is publicly available. This removes the requirement to access complex GovIS behind secure firewalls.

5 Conclusion

The research indicates that there may be a higher regulatory burden for individuals who will gain a benefit or service from the government, than for those who will be required to pay the government. The research also demonstrates how a WhoG view of the legislative requirements for an individual Australian resident can be developed. A WhoG view can be used to identify harmonisation opportunities to reduce the regulatory burden for individual Australian residents, and to simplify the legislation for all.

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