Land Registration and the Trusted Intermediary: considerations on the practicality of moving to self-service transactions

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Key words: Cadastre, Digital cadastre, e-Governance, Land management, Trust, Digital transactions, Conveyancing

SUMMARY

In many jurisdictions the conveyancing process is supported by highly trained and regulated legal professionals (lawyers, notaries, conveyancers etc.). They provide services to support party verification, transfers, sub-divisions, rights management and secured lending. Essentially these accredited and licensed legal professionals provide a trust-based interface between the Registrar, citizens (granters and grantees) and lenders involved in a transaction on the register.

Torrens 'Title by Registration' and the Digitalisation of Land Registers both aim to simplify registration practice. Torrens (1859, p. 43) imagined a registration process so simple that *'men of ordinary education may transact their own business'*. From a digital perspective, the long-term goal is to produce an automated registration system which allows any party to submit digital applications. These are referred to as *smart contracts* and remove the need for a trusted legal intermediary. Clearly, the removal of a trusted intermediary means that their role must be facilitated by the platform and the supporting digital ecosystem. This paper describes conceptual approaches within what UN-GGIM[1] refer to as *an 'ecosystem' of 'interconnected land administration domains'*.

This paper will consider the trust implications of the following issues:

- Party validation requiring:
  - Party verification: confirming the identity of a party.
  - Power authorisation: confirming that a party is legally authorised to act e.g. a bona fide seller
- Transactional sequences with power dependencies: a sequence of transactions where, at submission, a granters power to grant a transaction is dependent upon the successful registration of an earlier transaction.

Parties are crucial to the functioning of the Land Administration ecosystem. Different parties play different roles within the ecosystem. These different roles require actors with appropriate powers. Without a trusted intermediary the platform and ecosystem must verify individual parties and ensure they have the appropriate authorisation to undertake their assigned role in a transaction.

[1] https://ggim.un.org/meetings/GGIM-committee/12th-Session/documents/E-C.20_2022_13_Add_1_Land_Administration_and_Management.pdf

Some transactional events require that multiple atomic transactions travel together with different granters. An example is where an existing mortgage blocks a subsequent sale transaction. The problem is that the current owner can only generate the funds to discharge the mortgage through the property sale. In such a scenario there must be a necessary level of confidence among the mortgage holder, seller and buyer in that all appropriate funds will be available, and all the pending dependent transactions will be duly registered.
We will describe several different scenarios without a trusted intermediary including simple transactions, power of attorney and dependent transactional sequences.

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1. Introduction

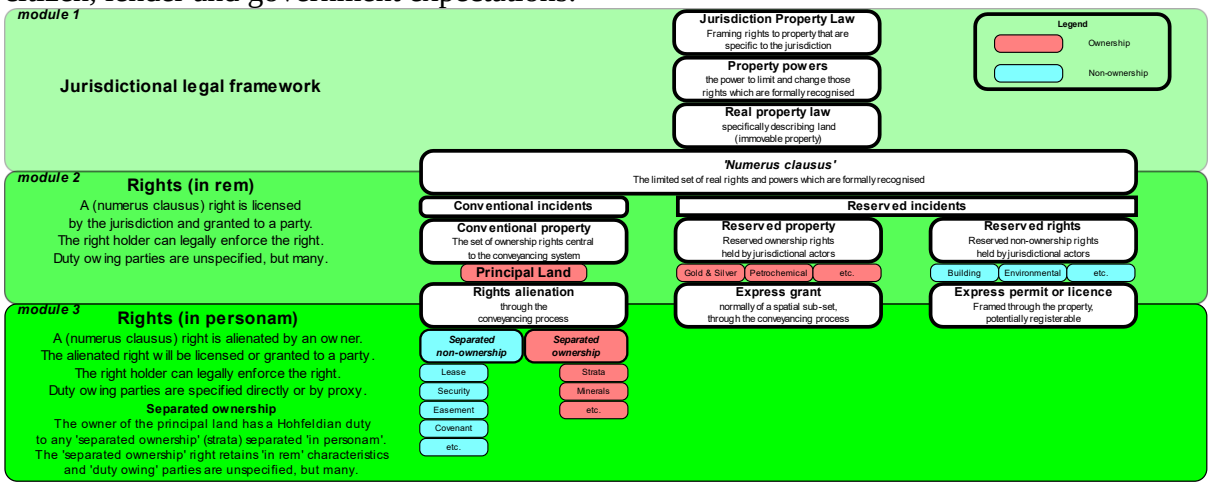
The agencies legally mandated to manage real rights represent core stakeholders in the Land Administration domain. Land and property is characterised by the interplay of complex real right relationships formalised through these different land administration stakeholders (as summarised in **Error! Reference source not found.**). The responsibility for managing core **Land Administration Data** is normally distributed between different government agencies each with a specific legal mandate to administrate land rights and functions. These tend to include:

- ***Land Registry*** – managing the conveyancing process (the transfer and granting of rights in land from one party to another), and maintenance of the cadastral map and land register (in some jurisdictions the cadastral and land registration functions are carried out by different agencies).
- ***Planning Department*** - regulating land and property development.
- ***Departments of Heritage, Conservation, Environment, and Agriculture*** – regulating the use and conservation of land.
- ***Department of Finance*** - gathering revenue from land and property through sales, leasing, and taxation.
- ***Ministry of Justice*** - resolving conflicts concerning the ownership and use of land.

Key is the Land Register which describes real property and associated real rights which are created, modified or extinguished as part of the conveyancing process. Parties can 'own' real property which, when spatially described, is known as a cadastral unit. Ownership can be segmented into different legal estates. Each different legal estate is a facetted possessory right interest, or tenure (e.g. fee simple, allodial, leasehold, etc.). The Land Register describes these owned estate interests using Party-Right-Land relationships. The owner of an estate tends to have associated conveyancing powers which allow them to grant a legally limited set of estate and non-estate rights (such as leases, easements and securities) to third parties. The Land Register also describes these interests using Party-Right-Land relationships. The Registrar can derive different products from these right relationships. The most important derivative is the Title certificate which describes the owner's entitlement to an estate and any real rights held on the Land Register that: (1) benefit the estate (and therefore the owner) and, (2) encumber the estate (real rights held by third parties that impose a duty (responsibility or restriction) on the owner).

Other formal agencies are empowered through public law to manage real rights outside the conveyancing process. These agency interests can be described using Party-Right-Land relationships. An owner of an encumbered legal estate as described in the Land Registry is restricted by these interests. As such, Kitsakis *et al.* (2022) refer to rights managed by other agencies as Public Law Restrictions. The managing agencies can grant permits to estate

owners, or their agents, that allow them to undertake what would otherwise be restricted activities (normally for a time limited period). These permits can be described using Party-Right-Land relationships. As the rights are not registered on the Land Register, the Land Register is legally 'blind' to their existence, and they do not appear on any Title certificate. However, as the rights have legal effect, they "override" what is stated on the Land Register. This ecosystem is further supported by other stakeholders who offer, for example, legal, payment, and personal identification services. These services are increasingly digital in nature. Emerging standards drives conceptual consolidation of services across the ecosystem while technological innovation results in the evolution of new service offerings. This wider ecosystem of interconnected services has the potential to be transformative and will drive citizen, lender and government expectations.



Figur 1 The modular arrangement of rights relationships (Beck, 2021). Module 1: the Jurisdiction defines the legal system and the set of registerable real property rights ('numerus clausus'). Module2: Formal agencies are empowered to manage specific groups of 'real rights'. Module 3: The conveyancing process supporting 'in personam' transactions.

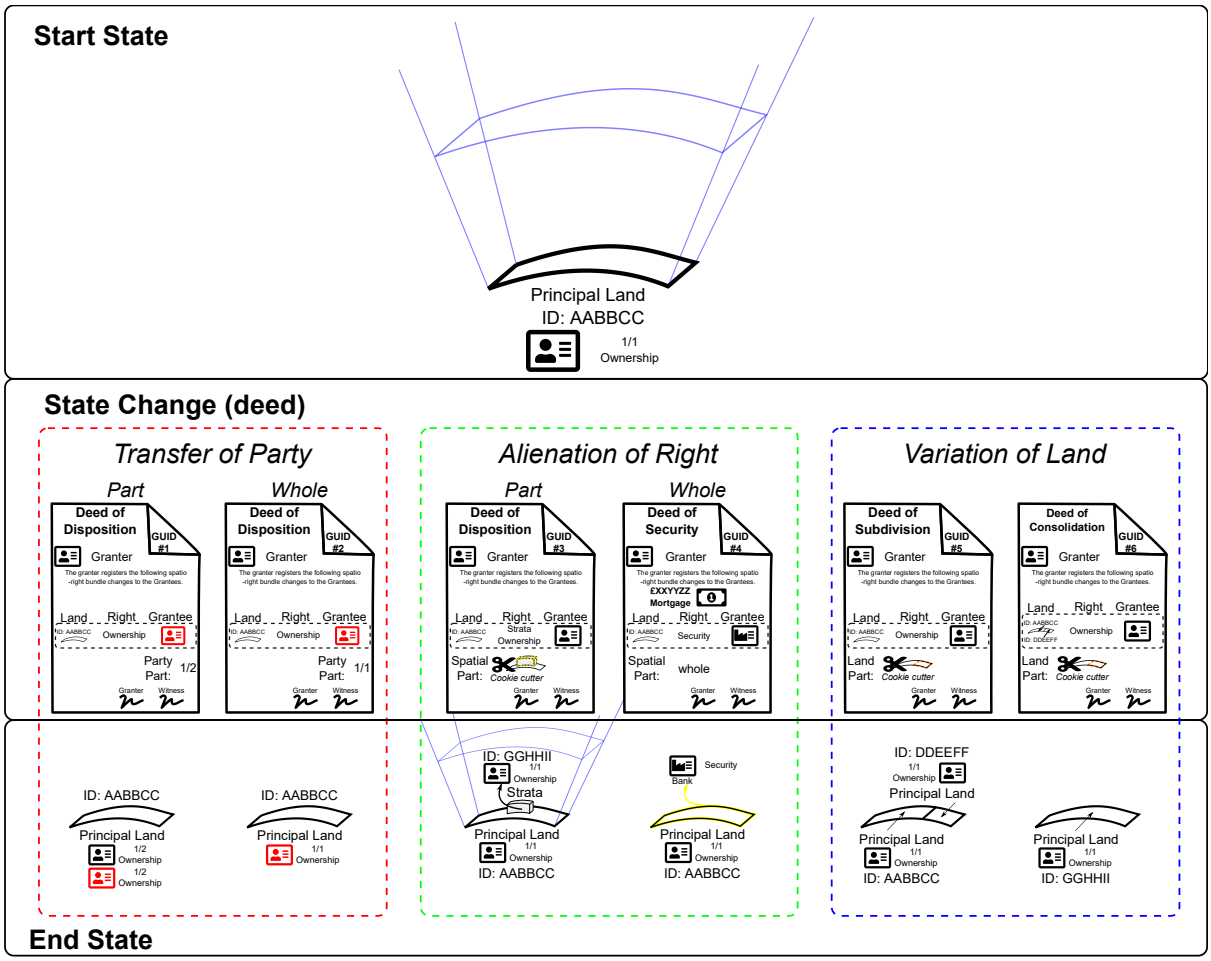
Land Registers evolve to adapt to the changing social and legal needs over time and will need to respond to these expectations. UN-GGIM Agenda item #11[2] Expert Group sees the necessity to "*address land administration within an 'ecosystem' or 'interconnected domains' to be effective*". This will have a fundamental impact on Land Registers as a key node in the ecosystem (as described above). An obvious corollary of such a change would be the ability for the Land Registry to dynamically access information on, what would legally be, off register rights and restrictions. We will consider the implications of such an ecosystem on the development of trust between stakeholders and the evolution of transactional services through the prism of 'self service' transactions.

2. Party-Right-Land relationships and LADM

The Land Administration Domain Model (LADM (ISO TC/211, 2012)) is a conceptual model which supports the modelling of social relations with land articulated through *rights*. There are three principal concepts within LADM: the party (*the who*) that has a rights relationship (*the what*) with a plot of land (*the where*). As a standard, LADM dominates the domain and

[2] https://ggim.un.org/meetings/GGIM-committee/12th-Session/documents/E-C.20_2022_13_Add_1_Land_Administration_and_Management.pdf

supports nuanced representations of Party-Right-Land relationships. While an LADM Party-Right-Land triple can be used to describe the ***state*** of a party's rights relationship with land, we will use the LADM party, right and land concepts to describe how a Party-Right-Land relationship should be ***changed***. Beck (2022a) describes these transactions in detail. Key elements are summarised here.



Figur 2 Transactions associated with a legal estate based on LADM concepts (Beck (2022)): (1) A Transfer of Party (ToP), (2) An Alienation of Right (AoR), and (3) Variation of Land (VoL).

3. Conveyancing Transactions

Conveyancing transactions are events which change a Land Register. A request is submitted to change the register, if that request is valid and cannot be rejected then that request is registerable and becomes a transaction. Most requests reflect a contract between the owner and other, named, third-parties. However, other right holders can undertake transactions on the register. A right holder's ability to undertake transactions is framed around the transactional powers vested through the right itself. For example, the holder of a right of access has limited powers to transact, whereas the holder of a leasehold or security right has a range of powers. In addition to the right holder the jurisdiction will reserve a range of powers which they can use to control the register.

As described in **Error! Reference source not found.** an owner of an estate can vary their ownership in terms of a party, right or land transaction:

- A *Transfer of Party* (ToP) transaction is where an owning party (granter) transfers all, or a proportion, of their ownership to a third party (grantee). Fractional ownership can also be consolidated in this process.
- An *Alienation of Right* (AoR) transaction is where an owner (granter) can separate rights from the body of an owned estate. This essentially creates a right which introduces a duty (responsibility or restriction) on the owner of the estate. Once alienated these rights have their own lifecycle and, subject to the powers of the right holder, can be transferred, varied or discharged.
- A *Variation of Land* (VoL) transaction is where an owner (granter) subdivides a cadastral unit to create multiple cadastral units (of the same estate type). Multiple cadastral units (of the same estate type) held by the same owner (granter) can also be consolidated to create a single cadastral unit.

Conveyancing transactions are simply the Party-Right-Land change requests which are submitted to the Registrar to give effect to contracts, deeds and other acts and instruments that right holders are party to. The majority of conveyancing transactions represent the intended effect of contracts between a granting party (normally the right holder) and a grantee (benefitting) party. A number of criteria should be satisfied before any proposed transaction can be accepted. This includes:

1. The Party-Right-Land triple (or appropriately indexed object, such as a deed) which is to be changed must be unambiguously referenced. Henssen (1995, p. 7) refers to this as the *specificity principle*.
2. The right holder should provide their consent for the transaction. Henssen (1995, p. 7) refers to this as the *consent principle*.
3. The granting party should have the *power* to grant the transaction. Henssen (1995) does not describe this characteristic. However, it is part of a Hohfeldian approach to rights management (see Beck (2022b) and Hjelmblom et al. (2019, pp. 37-38)). We shall refer to this as the *power principle*.
4. The grantee party should have the *legal capacity* to receive the right. Henssen (1995) does not describe this characteristic. We shall refer to this as the *capacity principle*.

There are also scenarios where multiple transactions with different granters have co-registration dependencies. For example, in the scenario of a "*sale of a property with an outstanding mortgage to a buyer who requires a mortgage"*, there is a transactional chain with linked dependencies:

- The buyer's lender will not provide funds to the seller until they have been granted a security over the property.
- The buyer does not have the power to grant a security to their lender until they become the owner (i.e. when the seller grants the transfer of the property to the buyer and it is registered).
- The seller can not grant a transfer of property until their mortgage is discharged.
- The seller's lender will not grant a discharge of the security until the outstanding mortgage has been repaid.

Each party must believe that each dependent party will submit their transaction and uphold their contract. Clearly the ordering of transactions and trust in dependent transaction submission is critical for registration in this scenario. In practice the trusted intermediaries, acting for the seller and the buyer, ensure that all necessary transactional contracts are in place and that all parties can fulfil the terms of those contracts.

The suite of transactions changes a party's power relationship with the property. For example, the buyer has no powers over the property until the 'transfer of party' transaction has been successfully registered: at which point the buyer becomes the *owner* and can legally *grant* the security right to their lender. In addition, there is an overarching assumption that all dependent transactions are registerable. Therefore, clauses should be included that ensure that if one transaction in the dependent sequence fails to be registered then all transactions in the sequence should be voided.

4. The impact of removing trusted intermediaries on transactions

In many jurisdictions the conveyancing process is supported by highly trained and regulated legal professionals (lawyers, notaries, conveyancing solicitors etc.). They provide services to support party verification, transfers, sub-divisions, rights management, secured lending and financial transfers. Essentially these accredited and licensed legal professionals provide a trust-based interface between the Registrar, citizens (granters and grantees) and lenders involved in a transaction on the register. The majority of transactions use these trusted legal intermediaries.

Torrens 'Title by Registration' and the Digitalisation of Land Registers both aim to simplify registration practice. Torrens (1859, p. 43) imagined a registration process so simple that *'men of ordinary education may transact their own business'*. From a digital perspective, the long-term goal is to produce an automated registration system which allows any party to submit digital applications. Such digital applications we refer to as *digital contracts.* Digital contracts are similar to *smart contracts* but do not have to be coupled to blockchain or other distributed ledger technology. Wikipedia defines a *smart contract* as[3]:

> *"a computer program or a transaction protocol that is intended to automatically execute, control or document events and actions according to the terms of a contract or an agreement.* ***The objectives of smart contracts are the reduction of need for trusted intermediators****, arbitration costs, and fraud losses, as well as the reduction of malicious and accidental exceptions."*

Clearly, the removal of a trusted intermediary means that trust relationships need to be re-established between the transactional actors and the Registrar. The Registration platform will need to develop stakeholder trust within the digital ecosystem of *'interconnected land administration domains'* enhanced by other digital services that support legal, payment, and personal identification services.

The implication is that the digital ecosystem will expose services that can support or replace the role of the trusted legal intermediary. This paper will focus on a small subset of specific services offered by the trusted intermediary. These specifically cover party verification, agent

[3] https://en.wikipedia.org/wiki/Smart_contract

authorisation, power validation and the submission of multiple transactions which have inherent granter dependencies. This paper shall not cover other critical due diligence services, such as searching, offered by legal intermediaries.

As we have described above different agencies in the ecosystem are mandated to hold canonical (up-to-date, credible, accurate, assured, and authentic) data on different resources. These represent 'core references'. These 'core references' are indexes which can be exposed and shared within a linked data ecosystem. In reference to the geographical domain Barr and Roper[4] describe core reference data characteristics, as follows:

- They are definitive (i.e. there are no substitutes).
- They are natural monopolies (i.e. they are naturally curated by a single organisation).
- They have value in different applications (i.e. they have ubiquitous application).
- They have highly elastic demand (i.e. demand is very sensitive to changes in price).

We believe these characteristics are generic for canonical data and are not limited to spatial data. There is a need to provide links between these different agencies so that trusted actors within the ecosystem can confidently use this canonical data within their business process. There are clearly a range of cyber-security and other risks inherent in such an approach, which will not be discussed in this paper. Although it is noted that inclusion of a cell-phone number has the benefit of enabling direct communication and dynamic authentication. There are broadly two approaches to this problem: a 'linked data' approach and a 'trust framework' approach.

4.1 A loosely coupled 'linked data' approach

The 'linked data' approach is where identifiers for core resource references, which are managed and maintained by a canonical agency, are re-used by third-party agencies. Central to the 'linked data' approach is thinking behind the Semantic Web[5], Resource Description Framework (RDF) and persistent Uniform Resource Identifier (URI). Berners-Lee *et al.* (2005) define a URI as: "*a compact sequence of characters that identifies an abstract or physical resource*". Persistence means that the URI is permanently assigned to a particular resource, is stable and does not change over time. Such loosely coupled linking of resources can be achieved using traditional data structures via a service based architecture exposing APIs. Wikipedia defines a *server based web API* as[6]:

> *"A server-side web API is a programmatic interface consisting of one or more publicly exposed endpoints to a defined request–response message system, typically expressed in JSON or XML, which is exposed via the web—most commonly by means of an HTTP-based web server."*

In essence the canonical agency exposes a service endpoint that delivers a response to a specific request in a structured manner. This service can have different verification and trust wrappers depending upon the sensitivity of the underlying information. This process will determine if the requestor is authorised to get a response. It is likely that such response will be based upon pre-established trust frameworks between different agencies which are supported

[4] https://www.slideshare.net/geocommunitylive/bob-barr-what-are-core-reference-geographies
[5] https://www.w3.org/TR/cooluris/
[6] https://en.wikipedia.org/wiki/Microservices

by user agreements in their terms-of-service. An authorised stakeholder sends a request to this service endpoint based upon a *common identifier* (which in this case is a party identifier). The service returns a response to each request. Such an approach is well suited to jurisdictions with well-established digital National Identity, e-governance, and e-business systems where party identifiers are trusted and embedded across the social fabric.

4.2 A brokered 'trust framework' approach

A 'trust framework' approach essentially acts as a broker and can be used to store attributes about a digital identity. The UK Department for Digital, Culture, Media and Sport (DCMS) produced a policy paper that described a 'trust framework' (DCMS (2023)). Core to the DCMS 'trust framework' is a digital identity which:

> *"... is a digital representation of a **person acting as an individual** or as a **representative of an organisation**. It enables them to **prove who they are during interactions and transactions**. They can use it online or in person. Services and organisations that let users use secure digital identities can better trust that those users are who they say they are."*

A user can add attributes to their digital identity to generate something equivalent to a personal data store or digital wallet. The attributes themselves can be created, collected and checked by an attribute service provider. An attribute service provider could be an organisation or a piece of software. These attributes can be used as demonstrable proof that a user is eligible or entitled to do something. The framework is essentially a managed broker service that collates user attributes and evidence and mediates with third-parties on behalf of a user.

The identifier for the *digital identity*, while unique, is arbitrary and could be based upon any unique system that has currency (username, phone number, email address, passport number etc). In essence the broker exposes a service endpoint that delivers a response to a specific request in a structured manner. This service can have different verification and trust wrappers depending upon the sensitivity of the underlying information. This process will determine if the requestor is authorised to get a response. It is likely that the user may need to authorise each request individually or confirm an agreement for each requesting stakeholder for on-going access. A stakeholder sends a request to this service endpoint based upon a user's *digital identity* identifier. The service returns a response to each request. This brokered solution is attractive to jurisdictions, like the UK, which do not have specific National Identity systems[7].

5. Trust implication for transactions

This paper will consider the trust implications of the following issues:

- Party validation requiring:
  - Party verification: the process of unambiguously confirming the identity of a party.
    - Agent authorisation: the process of confirming that a party is legally authorised to act either on their own behalf or on behalf of a third-party.

[7] The UK 2006 Identity Cards Act (TSO, 2006) was repealed in 2010.

    - Transaction empowerment and legal capacity: the process of confirming that the granter has the power to undertake the transaction and the grantee has the legal capacity to receive the right.
- Transactional sequences with power dependencies: a sequence of transactions where, at submission, a granters power to grant a transaction is dependent upon the successful registration of an earlier transaction.

While what we present is broadly generic, we will use policy frameworks and documents from the United Kingdom to support discussion. We are not presenting or advocating any specific solution. Rather, we are proposing a conceptual framework within which legal and operational requirements can be identified and the logical implication of these requirements can be considered.

6. Party validation within the conveyancing process

Parties are crucial to the functioning of the Land Administration ecosystem. Different parties play different roles within the ecosystem. These different roles require actors vested with appropriate legal powers. Without a trusted intermediary the platform and ecosystem must verify individual parties and ensure they have the appropriate authorisation (i.e. powers) to undertake their assigned role in a transaction.

As described above most conveyancing transactions reflect a contract between the right holder and other, named, third-parties. There are two key roles in the transaction: *granter* and *grantee*. A *granter* is the party who has power to transact. In the majority of transactions granters are the 'owner' of an estate right or the holder of a security (lien or mortgage) right. A *grantee* is the party who will benefit from the transaction. The *grantee* must have the *legal capacity*[8] to receive the right. A conveyancing contract requires, at minimum, a granter and grantee.

There are broadly two types of transactional granter/grantee party: 1) natural – a person, and 2) non-natural - a corporate body (legal person). Any party must be legally capable of holding rights in real property which generally means that they are juridically recognised (e.g. a person, company, charity or trust) and competent (e.g. of age, with capacity etc.).

6.1 Party verification

In many jurisdictions party verification is an activity undertaken by a supporting legal agent. For example, in England and Wales the HM Land Registry (HMLR) Practice guide 67: evidence of identity states (HMLR, 2023a):

> *"To reduce the risk of registration fraud, HM Land Registry relies on the steps that conveyancers take, where appropriate, to verify the identity of their clients."*

The guidance goes on to outline the steps that the conveyancer, the supporting legal agent, should use to verify the identity of natural and non-natural parties. HMLR asks the conveyancer to fill in form ID1 for natural parties (HMLR, 2023b) and form ID2 for non-natural parties (HMLR, 2023c). Form ID1 requires a natural party to show the verifier credible evidence of proof of identity in the form of passport, driving licence and other

[8] Registers of Scotland have an excellent webpage on Legal Capacity: https://rosdev.atlassian.net/wiki/spaces/2ARM/pages/210239821/Legal+Capacity

jurisdictional documents. Both the 'linked data' and 'trust framework' approach described above can be used to verify the identity of a natural party in a credible manner. However, things become more complicated where a third-party transactional agent uses attorney or guardianship powers on behalf of the right-holder. We shall discuss this in the agent authorisation section below.

Form ID2 requires that the natural party who is acting as the agent for the non-natural party to show the verifier proof of their identify (e.g. passport, driving licence and other jurisdictional documents), credible evidence that the agent is authorised to act for the non-natural party, and credible evidence of proof of the company (company name and formal registration details). In most jurisdictions non-natural parties must be registered with an appropriate organisation. In the UK this includes Companies House, the Charity Commission (for England and Wales) and the Scottish Charity Regulator. These agencies provide a unique reference for the non-natural party and provide details of the natural parties who can act as transactional agents. We shall discuss this in the agent authorisation section below.

Where the transactional party is a *granter* (either as a right holder or by proxy, through an agent) the verification process can also satisfy the *consent* requirement for the transaction. Cell-phone authentication can provide dynamic evidence of consent if this is required.

6.2 Agent authorisation

A transactional agent is a natural party that is authorised to act on behalf of a third-party Granter or Grantee in a contract. Examples of transactional agents include:

- A power of attorney (OPGa, 2023): a natural party legally authorised to act on behalf of a third-party (in a full or limited capacity) – this includes Guardianship.
- A company agent: a natural party (director or other authorised party) legally authorised to operate on behalf of a non-natural party.

Each of these agents are empowered to act on behalf of a third-party by a legally authorised agency. In order for a transaction to be registerable the power of a transactional agent to act on behalf of the third-party must be confirmed with the authorising agency.

Increasingly, these authorising agencies provide digital verification services. For example, in 2020 the Office of the Public Guardian (OPG) in England and Wales released a new service to support the digital verification of powers of attorney (OPG, 2020). The service (OPG, 2023b) "*maintains existing checks, including to confirm whether someone has the legal right to act as an attorney and the powers they may be entitled to – protecting the vulnerable and elderly from abuse of a Lasting Power of Attorney (LPA).*" Similar services exist for Companies House, the Charity Commission (for England and Wales) and the Scottish Charity Regulator.

In order to determine if an agent is authorised to act for a third-party the service needs to expose the following details:

- Agent party details (enough to unambiguously confirm the agent party - ideally a commonly used identifier).
- The details of the natural or non-natural party for whom the agent is authorised to act (enough to unambiguously confirm the party - ideally a commonly used identifier).
- The nature of the powers granted to the agent.
- The date on which the powers were granted and, if applicable, when they may be rescinded.

Both the 'linked data' and 'trust framework' approach described above can be used to determine whether an agent can act on behalf of a third party and if so, in what capacity. However, complexities are emerging. While the proposed digital identity in the DCMS 'trust framework' can determine if a party is a *representative of an organisation* (and one assumes an agent of any other third-party), it does beg questions concerning data *currency* and *lag*. It is possible that powers granted to an agent could be revoked by the authorising agency. The lag period between an update to the canonical data being reflected in the data held within the brokered 'trust framework' is critical During this lag the data in the 'trust framework' is stale and does not reflect the current legal state. If the 'trust framework' was used for authentication during this lag period then a false result would be returned – which in turn would lead to a voidable transaction. Clearly access to canonical data is preferred. However, where this is not possible the lag associated with a brokering system is a key consideration.

6.3 Transaction empowerment and legal capacity

Once the transacting party (or their agent) has verified that ***they are who they claim to be***, they then need to demonstrate that the proposed transaction is registerable. This means the Registrar will need to determine that the granter has the *legal power* and *legal capacity* to transact and the grantee the *legal capacity* to benefit from the transaction.

In most cases determining whether the *granter* has the *legal power* to transact should be a simple matter of confirming that the *granter* **is** the current right holder in the land register and that the transaction is permissible for the right which is held. This is a simple query against the Land Register itself. If they are not the right holder then the granter does not have the power to transact and the Registrar should reject the application. If they are the right holder but the transaction is not permissible for the right which is held the transaction is invalid and the Registrar should reject the application. This process confirms that the *granter* (either as a right holder or by proxy, through an agent) is empowered and can satisfy the *power* requirement for the transaction. However, the right may be held by multiple parties. Dependent upon the nature of the transaction *consent* may be required from these other parties. Party and/or agent verification techniques (described above) can be used to verify consent. Cell-phone authentication can provide dynamic evidence of consent if this is required.

Ensuring the *grantee* has the *legal capacity* to benefit from the transaction is less simple. Confirming legal capacity requires a number of party-based checks on the grantee. This is likely to include:

- Age of party (natural party)
    - in most jurisdictions minors do not have the legal capacity to enter in to a transaction without the support of an agent (Guardian). There could be further restrictions on receiving rights, too. In England and Wales, for example, legal title to land cannot be held by anyone under the age of 18.
- Impaired or limited legal capacity (natural party)
    - a party may have no (or impaired) legal capacity by reason of disease, injury or birth defect. The issue arises most commonly in respect of neuro-degenerative conditions such as dementia or brain injuries. An agent can be appointed either by a court or by power of attorney to manage the affairs of an incapable adult.
- Frozen capacity (any party)

- a party's ability to be involved in a conveyancing transaction can be frozen for a variety of reasons. At present the Office of Financial Sanctions Implementation (OFSI) in the UK maintains the authoritative information on sanctioned parties with financial and investment restrictions. We have seen these powers exercised recently in relation to property owned in the UK by sanctioned individuals related to Russia. Registers of Scotland maintains the Register of Inhibitions (RoS, 2023) which "*notifies the public about individuals who can't competently enter into property transactions*".

It should be noted that the Registrar should also confirm that the granter's capacity to transact is not frozen. Different agencies will be authorised to hold the information described above. In order to determine if a party has the capacity to undertake the transaction then the agency needs to expose a service that describes the details in a structured manner. Both the 'linked data' and 'trust framework' approach described above can be used to determine whether a party satisfies the capacity principle. Once again data currency is important and the implications of any lag associated with a brokering system is a key consideration.

7. Transactional sequences with power dependencies

Some transactional scenarios require that multiple atomic transactions travel together with different granters. An example is where an existing mortgage blocks a subsequent sale transaction. The problem is that the current owner can only generate the funds to discharge the mortgage through the property sale. There are a number of dependencies in the sequence as summarised below:

1. the *seller's lender* needs the *seller to demonstrate* that they have the **funds to repay the loan:**
    a. once demonstrated the *lender*, as holder of the security right, will be the *granter* for a *discharge of security* transaction.
2. the *seller* needs the *buyer to demonstrate* that they have the **funds to buy the property** (which in turn will be used to repay the loan):
    a. once demonstrated the *seller*, as owner of the property, will be the *granter* for a *transfer of ownership* (party) transaction in favour of the *buyer* (grantee)
3. the *buyer's lender* needs the *buyer to demonstrate* that the *buyer*, as **future owner of the property**, will be the granter for a *create security* transaction in favour of the *buyer's lender*:
    a. once demonstrated the *buyers lender* will release funds that allows *the seller to demonstrate* to the *seller's lender* that the ***seller* has the funds to repay their loan**.

In such a scenario trust needs to be established between the seller, buyer and their respective lenders. Each must demonstrate that all appropriate funds will be available and believe that all necessary transactions will be submitted and registered. Key, in terms of this paper, is that these transactions are treated as an ordered sequence as there is a power dependency requirement in order to guarantee successful registration. For example, the buyer can not arbitrarily grant a security to their lender over a property they do not own. Only when they become the owner do they have the legal power to grant the security. This does not stop the contract being drawn up and used to demonstrate intent so that mutual trust concerning the veracity of the transactional sequence can be established between all the stakeholders. Once

all parties are happy with the transactional sequence the funds can be released and the transactions registered. The registration must build the supporting platform in a manner which allows all the parties to develop this trust in the transactional sequence.

8. Conclusion

This paper describes how a digital Land Administration ecosystem can support self-service transactions and potentially, remove some of the services provided by a legal intermediary. We have identified a number of principles which support a transaction without a legal intermediary:

1. The *specificity principle*: unambiguous referencing of a Party-Right-Land triple (or appropriately indexed object, such as a deed).
2. The *consent principle:* demonstrating that a right holder (or their attorney) provides their consent for the transaction.
3. The *power principle*: demonstrating that the granting party has the legal *power* to grant the transaction.
4. The *capacity principle*: demonstrating that the granting party has the legal *capacity* to transact (i.e. they are not inhibited from transacting) and the grantee party has the legal *capacity* to receive the right.

The *power* and *capacity* principles extend the four principles originally proposed by Henssen (1995, p. 7; namely: booking, consent, publicity, and specificity).

We have described how different agencies in the Land Administration ecosystem hold canonical (up-to-date, credible, accurate, assured, and authentic) 'core reference' data that support 'self service' transactions. 'Self service' means allowing parties to use these digital services to confirm that parties "are who they say they are" and that the same parties have the power and capacity to complete any proposed transaction.

There is recognition that canonical data will need to be consistently exposed, securely accessed and codified. Any codification must reflect the mandated requirements of the host but should also support the operational requirements of the consuming stakeholder. Establishing a multitude of symbiotic relationships between data host and data consuming stakeholders is how an effective Land Administration ecosystem can be built. However, it must be stated that we do not underestimate the complexity of this task which may require social, legal and digital transformation within and between stakeholders.

There is clearly a need to provide enabling infrastructure so that trusted actors within the ecosystem can confidently use this canonical data. This will in part address the interconnected ecosystem issues raised by UN-GGIM Agenda item #11 with the aim of building highly effective and efficient service infrastructure. We have described both a 'linked-data' and brokered 'trust framework' approach. The choice between such systems is, in part, dependent on whether the jurisdiction has a functioning National Identity framework in place. We also identified potential issues with a brokered 'trust framework': 'lag', which is inherent in the approach, may mean that the system reported state does not match the legal state resulting in a voidable transaction. While the 'linked-data' approach does not have problems of lag and currency it does imply the use of common National Identifiers which may require extensive legal reform.

We further described how complex transactional sequences with deferred power dependencies can be framed without a legal intermediary. In such a scenario trust needs to be established

between the seller, buyer and their respective lenders. Each must demonstrate that all appropriate funds will be available and believe that all necessary transactions will be submitted and registered. We described how a supporting platform must allow the transacting parties to develop trust in the transactional sequence without the need of a legal intermediary. This paper has described ways to remove some elements of the role of a trusted legal intermediary. Does this mean we can now remove legal agents from the conveyancing process? Legal agents perform many due diligence activities as part of their service. This includes searches across the Land Administration ecosystem that identify off-register interests. Such searches can expose important issues which might have an impact on the buyer, seller or some third-party right holder. Even when off-register interests are transparently available across the conveyancing ecosystem the role of the legal agent is still likely to be required. The interplay of real rights associated with Land and Property is complex. Legal agents provide reassurance and certainty when undertaking what could be a complicated legal transaction. For many people real property is their largest single capital investment. It is prudent to be cautious: just because you can doesn't mean you should.

REFERENCES

Beck, A., 2022a. The use of LADM primitives and structured indexing to support automated registration using submitted applications. In 10th International FIG Workshop on the Land Administration Domain Workshop, 22. Dubrovnik, Croatia, 2022. https://doi.org/10.4233/uuid:cdb21f36-8ddb-43d1-abde-c50c756a8876.

Beck, A., 2022b. Developing a Hohfeldian theory of Real Rights to support LADM modelling. In 10th International FIG Workshop on the Land Administration Domain Workshop, 19. Dubrovnik, Croatia, 2022. https://doi.org/10.4233/uuid:c0497413-5a0e-4f94-85d7-c3bc79a60d67.

Berners-Lee, T., Fielding, R. and Masinter, L., 2005. Uniform resource identifier (URI): Generic syntax (No. rfc3986).

DCMS, 2023. *UK digital identity and attributes trust framework beta version (0.3)*. URL https://www.gov.uk/government/publications/uk-digital-identity-and-attributes-trust-framework-beta-version/uk-digital-identity-and-attributes-trust-framework-beta-version (accessed 2.20.23).

Henssen, J. L. G., 1995. Basic principles of the main cadastral systems in the world. *Proceedings of the One Day Seminar in Delft on May 16, 1995*, 5–12. https://www.fig.net/organisation/comm/7/Library/reports/events/Delft_seminar_95/paper2.html

Hjelmblom, M., Paasch, J. M., Paulsson, J., Edlund, M., & Bökman, F., 2019. Towards automation of the Swedish property formation process: A structural and logical analysis of property subdivision. *Nordic Journal of Surveying and Real Estate Research*, *14*(1), 29–63. https://doi.org/10.30672/njsr.78170

HMLR, 2023a. Practice guide 67: evidence of identity. GOV.UK. URL https://www.gov.uk/government/publications/evidence-of-identity-conveyancers/practice-guide-67-evidence-of-identity-conveyancers (accessed 2.20.23).

HMLR, 2023b. ID1 Certificate of identity for a private individual. GOV.UK. URL https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1118522/ID1__2022-11-21_.pdf (accessed 2.20.23).
HMLR, 2023c. ID2 Certificate of identity for a body corporate. GOV.UK. URL https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1118522/ID1__2022-11-21_.pdf (accessed 2.20.23).
Kalogianni, E., Kara, A., Beck, A., Paasch, J.M., Zevenbergen, J., Dimopoulou, E., Kitsakis, D., van Oosterom, P. and Lemmen, C., 2022. Refining legal Land Administration-related aspects in LADM. In 10th International FIG Workshop on the Land Administration Domain Workshop. Dubrovnik, Croatia, 2022. https://doi.org/10.4233/uuid:1dcccbbd-bcc3-42df-9a55-b29817b0665e.
Kitsakis, D., Kalogianni, E. and Dimopoulou, E., 2022. Public Law Restrictions in the Context of 3D Land Administration—Review on Legal and Technical Approaches. *Land, 11*(1), p.88.
OPG, 2020. New online service to improve Lasting Power of Attorney. GOV.UK. URL https://www.gov.uk/government/news/new-online-service-to-improve-lasting-power-of-attorney (accessed 2.20.23).
OPG, 2023. Make, register or end a lasting power of attorney. GOV.UK. URL https://www.gov.uk/power-of-attorney (accessed 2.20.23).
OPG, 2023b. View a lasting power of attorney. GOV.UK. URL https://www.gov.uk/view-lasting-power-of-attorney (accessed 2.20.23).
Penner, J. E., 2000. *The Idea of Property in Law*. Oxford University Press. https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780198299264.001.0001/acprof-9780198299264
RoS, 2023. Register of Inhibitions. Registers of Scotland. URL https://www.ros.gov.uk/our-registers/register-of-inhibitions (accessed 2.20.23).
Torrens, R., 1859. *The South Australian System of Conveyancing by Registration of Title: With Instructions for the Guidance of Parties Dealing, Illustrated by Copies of the Books and Forms in Use in the Land Titles Office. To which is Added the South Australian Real Property Act as Amended in the Sessions of 1858, with a Copious Index by Henry Gawler. Adelaide, Printed at the Register and Observer Printing Offices, 1859* (No. 33). Public Library of South Australia.
TSO, 2006. *Identity Cards Act 2006 (repealed)*. Statute Law Database.

BIOGRAPHICAL NOTES

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Anthony is a geospatial and analytics professional with a strong mix of technical, commercial, academic and policy skills. One of Anthony's key skills is demonstrating the link between concepts, data, policy and practice. He was the integration lead for the multi-award winning utility data integration project (VISTA) which was the foundation behind the UK National Underground Asset Register.

Anthony is fluent with ISO19152 (Land Administration Domain Model (LADM)) and is contributing to the ISO19152 version 2 revision. He is interested in approaches that improve registration automation and first-order logic modelling of the registration domain.

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