The use of LADM primitives and structured indexing to support automated registration using submitted applications

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Registration systems

Land registration systems provide the means for recognizing formalized property rights, and for regulating the character and transfer of these rights.

(, p. 36)

We have described:

- **fundamental primitives** - the nature and representation of parties, rights, and land.
- **outputs** - what products (including search), if any, should be derived from the register.

We shall now discuss:
Digital Registration Systems and instantaneous transaction

This work has a focus on digital approaches.

The application record is the vehicle that conceptually presents a legal instrument (deed etc.) for consideration for registration.

We will use the summary application to both create the deed and render the change.

In an ideal world, all registration applications would be dealt with instantly on receipt.

The Register would immediately be altered in accordance with the application, or, in the case of an invalid application, there would be an instant rejection.

Items would no sooner arrive in the Keeper's in-tray than they would leave again.

(, para 4.32)
A transaction should be logical

A transaction represents a change to a party, right, land relationship.

Theoretically a successful transaction should be both logically valid and logically sound

A logical transaction should be valid

The slots representing the respective party, right and land change should be filled with valid entries.

A valid transaction should be sound

The valid entries should make sense.

For example:

*a granter on the transaction must have the power to authorise the transaction on the register.*
State: a register of parties, rights and land

Each jurisdiction has its own legal framework that defines:

- **fundamental primitives**: the nature and representation of:
  - parties who hold
  - rights which are defined in
  - land
From registered legal facts we can determine legal impact:

- Who owns land
  - What the owner must (not) do on the land
- What benefits the owner has over other land
- What benefits third parties have over the owner's land

These are a reflection of the first-order Hohfeldian rights incidents and rights duality.

However, we have not discussed how we can change these legal facts.
Changes to Party-Right-Land relationships are represented using transactions on the register.

The second-order Hohfeldian rights incidents of immunity and power are used to change rights relationships including:

- **Formalising changes to party/right/land.**
  - A holder of rights-in-land (grantor) legally creates a right in favour of a Grantee.

- **Deed Creation**

  - Deed Id : GUID #1
  - Formalising changes to party/right/land.
  - A holder of rights-in-land (grantor) legally creates a right in favour of a Grantee.

- **Deed Variation**

  - Deed Id : GUID #2
  - Formalising changes to party/right/land.
  - A holder of rights-in-land (grantor) legally varies an existing right.

- **Deed Discharge**

  - Deed Id : GUID #3
  - Formalising changes to party/right/land.
  - A holder of rights-in-land (grantor) legally discharges an existing right.
State change: Transactions on the Land Register

- variation,
  - rights alienation (merge),
  - spatial sub-division (merge), or
  - change details
- transfer, or
- discharge
Conceptual transaction theory

Henssen (, p. 7) describes four general principles that underpin transactions within Land Registers:

- **The booking principle**
  - implies that real rights transaction has no legal effect until the change is registered.

- **The publicity principle**
  - implies that the legal registers are open for public inspection and that published facts
    - can be relied on in good faith and
    - are protected by law.
• The consent principle
  - implies that the registered party holding the real right gives their consent for the transaction.

This is critical.

The party that is registered as holding the real right is generally the only party with powers to change the right.

The right holding party has an immunity against third-parties waiving, annulling, or transferring their registered right.

This is particularly important for owners and supports the nemo dat rule (, p. 884):

You can not sell what you do not own

If land is sold without the consent of the land owner then there has been registration error or fraud.
• The specificity (originally *specialty*) principle
  - implies that the transactional subjects (parties, rights, land) must be unambiguously identified.

The specificity principle

We described a Title as being framed by three key elements:

1. the party (*the who*) that benefits from
2. the ownership right (*the what*) over
3. a plot of land (*the where*).

and then extended by PRL relationships which benefit or encumber that land.

Party verification and designation during registration allows us to uniquely identify *the who*.

The legislative framework allows us to identify *the what*.

What is missing is a mechanism to uniquely identify *the where*. 
The where: a register of (owned or possessed) land

The where is the spatial extent of the owned plot of land.

*Absolute* and *Relative Plots* describe *Plots of Land* which when registered become *Cadastral Units*.

The set of 'Cadastral Units' represents all the 'registered plots of land'.

The spatial representation of the set of 'cadastral units' is the 'cadastral map'.

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**Diagram:**

- **The set of Cadastral Units**
  - Equivalent to the set of 'registered plots of land'
  - Equivalent to the union of registered 'absolute plots' and 'relative plots'

- **The Cadastral Map**
  - The spatial representation of the set of cadastral units
Specificity and indexing

A digital Land Register consists of relationships describing:

- Party,
- Right,
- Land

and then extended by PRL relationships which benefit or encumber that land.

Two principal indexes are required to efficiently structure a modern digital Land Register:

1. Party index - to efficiently identify *pertinential benefits*.
2. Spatial index - to efficiently identify encumbering third party rights.
Describing change

**Transactional instruments** are *jurisdiction dependent* and used to *legally instruct* registrars to make **changes** to the register.

These are normally **legal instruments** (a *Deed* or *Contract*) but can be less formal.
A transactional instrument for a Land Register:

- describes specific rights relationships between:
  - a *granting party* (a right holder - normally the owner) and
  - a *grantee party* (the benefiter) over
  - an *area of land*.

- can represent *multiple rights* granted to *multiple parties* over *multiple areas of land*.
  - as long as the granter has the **power** to make the rights change which is being granted.
What’s in a name?

It does not matter whether a transactional instrument is formal, informal or even a legal instrument.

The key element for this approach is that the transactional instrument is a vehicle for change.

As we will see change drives everything and we will articulate this change in a manner which is:

- Machine readable,
- Human readable, and
- Legally competent evidence

Henceforth, we will use the term deed for transactional instruments.
Transactional Instrument of change as APIs

Accepted Transactional Instruments change a register. They are legal APIs defined for each jurisdiction. Which:

- *define change*
  - creates,
  - varies or
  - discharges
- a thing *(which is of interest to the parties AND is of interest to the registration body)*
  - registerable spatial right
- and is *(legal)* - OPTIONAL by jurisdiction
  - executed (signed by the grantor),
  - witnessed and
  - delivered (to the grantee).
Transactional operations

Transactional Instruments can produce:

- **create operation:**
  - a new party/right/land relationships by *alienating* rights.
  - multiple party/right/land relationships can be generated with a single instrument.

- **variation** of right(s) in an instrument that has already been registered
  - the variation does not need to affect all rights in an instrument.
  - rights can be *discharged* through this process.
  - variation allows nuanced change to an instrument.
    - at implementation one should consider whether
      - the right is physically varied within that instrument (this destroys audit) or
      - the right is discharged in the original instrument and articulated through the new instrument (maintaining audit)

- **discharge** an instrument that has already been registered
  - the instrument is discharged extinguishing all rights.
The life-cycle of a Transactions instrument

A deed does not appear fully formed. It is part of a process:

- Draft (applications) - applications that are yet to be submitted.
- Submitted (applications) - An application is submitted to the registrar for acceptance.
  - Rejected - An application is rejected because it breaches a registration rule.
  - Accepted - An application is accepted because it does NOT breach a registration rule. An accepted application becomes a Transactional Instrument (deed).
- Registered (deed) - An application is accepted by the registrar. Once registered it can be:
  - Varied - PRL relationships are changed by the right holder with powers.
  - Discharged - PRL relationships are extinguished by the right holder with powers.
  - Voided - PRL relationships are voided by the jurisdiction to correct a registration error.
Transactional PRL primitive operations

A right holder can undertake the following *PRL primitive operations* providing they have appropriate *powers*:

- Sale - Transfer of Party
- Rights alienation - Transfer of Right
  - ownership and
  - non-ownership
- Ownership subdivision - Transfer of Land
Transactional PRL primitive operations
Transactional PRL primitive operations

Start State

Principal Land
ID: AABBCC
Ownership

State Change (deed)

Transfer of Party

Part
Whole

Transfer of Right

Part
Whole

Transfer of Land

End State
Bibliography