



A new Register for SCOTLAND

How do you manage centuries-old land registers and drive innovation? Alastair Reid takes GeoConnexion on a documents-to-data journey north of the border

With one eye on the telly, you thumb through your phone and select the banking app that tells you whether your account is in the red or in the black: TV, the telephone and the bank overdraft all owe their existence to Scottish innovators. Perhaps there is something in our DNA that compels Scots to look at the world and think: 'how can I make that better?' Our desire to challenge the *status quo* has seen us revolutionise science, engineering, economics, the creative arts...you name it. Well, how about the registering of land and property ownership?

I work for Registers of Scotland (RoS), custodians of Scotland's land and property ownership records. That includes the oldest national public land register in the world. The General Register of Sasines began in 1617 when the monarch we call James VI (James I to the English) was on the throne. The sasine register was such an effective medium for logging ownership deeds it still runs to this day.

Slightly less ancient, but similarly cumbersome relics of the past, are the 1990s desktop PCs that remain a cornerstone of our

land registration process. Looks-wise, they've aged about as well as Union Jack mini skirts, but these Britpop-era computers perform simple tasks brilliantly such as producing paper maps. Paper maps bound to the paper land certificates that are still mainstays of the buying and selling of property, but we live in an age when all of us demand more than paper documents at the end of a process. For property conveyancing, it is not enough simply to consider the needs of the house owner or the bank in terms of who might want access to this information. There are so many potential uses for it and we are determined to make that information more accessible to more people.

Key challenges

One of the key challenges we are currently

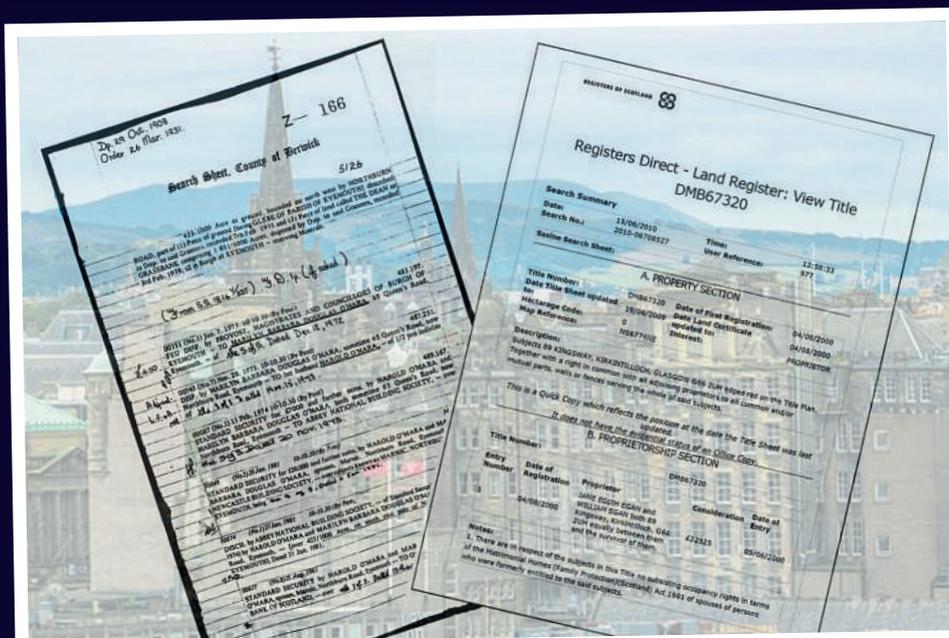


Fig1: Examples pages from The General Register of Sasines (left) and the modern Land Register (right). These are the analogue foundations on which Registers of Scotland is building a digital future

working through is transforming these legacies of system and process to deliver the kind of smart, agile products and services our customers deserve.

Scotland has a very long history of land ownership and public registration. It is all built around what we might consider to be the relatively modern concepts of transparency and openness.

RoS manage and maintain 20 public registers relating to land and property ownership in Scotland. The two big ones are the property registers: the General Register of Sasines and the Land Register (Fig.1). In addition, there are six registers focussed on land and 12 judicial registers, such as the Register of Inhibitions, which notifies the public about individuals who can't competently enter into property transactions, and the wonderfully monikered Register of Hornings. This register's unusual name derives from the old practice of putting a debtor "to the horn". This involved a messenger-at-arms making a public declaration, blowing three blasts of his horn, and denouncing the debtor as an outlaw. The practice died out but the records are very much alive.

The main body of our work is based around sasines and the modern Land Register.

Sasines is primarily concerned with the registration of deeds. They typically include a description in words, which could be something as simple as: 'I own a tract of land which runs along the riverbank from this tree to that wall.' They often give a lovely flavour of how things used to be done, but in modern geospatial terms they don't really cut the mustard. One of the major drawbacks is that sasines contain very few plans or maps. That kind of detail

only started to come through in significant numbers during the mid-Victorian period.

Moving the timeline on, the Land Register of Scotland is based around the registration of title, similar to the principles of the land register of England and Wales. It is a completely spatial register built on Ordnance Survey mapping and is guaranteed by the state. The register was updated in 2012 to bring it more into line with Scottish property law. Only about 36% of the nation's land mass can be seen spatially in the Land Register. That's obviously an issue because most of it is not on a map. It would be correct to assume that there are large parts of rural Scotland still not covered in the Land Register but a high proportion of urban areas are.

Significant, sustained change

If all of this talk of paper maps and plans makes you think of RoS as a public body

rooted in the past then you'd be completely wrong. Innovation is at the heart of what we do and we are going through a period of significant and sustained change.

A few years ago, we launched an in-depth conversation with our customers to better understand how they use registration information; how they interact with the registers and how they perceive us in the conveyancing process. That gave us a whole host of interesting insights. It was also an exercise in getting back to the basics of openness and transparency within registration information in Scotland.

Those insights helped to inform our Corporate Plan. We had already accepted the challenge, set by Scottish Ministers, to complete the Land Register by 2024. Under the Corporate Plan we targeted ourselves to have at least 50% of Scotland's land mass on the register by March 2021. This is a huge challenge and we're engaging stakeholders across the public and private sectors to help make it happen.

We are also committed to delivering major digital improvements for our customers which will enhance access, as well as innovate around land and property data. Underpinning that is an ongoing investment in our staff and physical resources.

Public access

The first step toward greater transparency and openness was around giving public access to the register - and this is the journey we are now on.

ScotLIS, Scotland's Land Information Service, was the first part of that. It gave a public view of the register that hadn't been easily available since its inception. Instead of having to come into a RoS customer service building to access the register you can see it on your laptop or mobile device, but it is only a staging post on the journey (Fig.2).



Fig2: ScotLIS lets users search for property owners and prices, check if a property is on the land register, and buy property documents. The latest version gives members of the public search-by-map functionality. Business users can access aerial maps

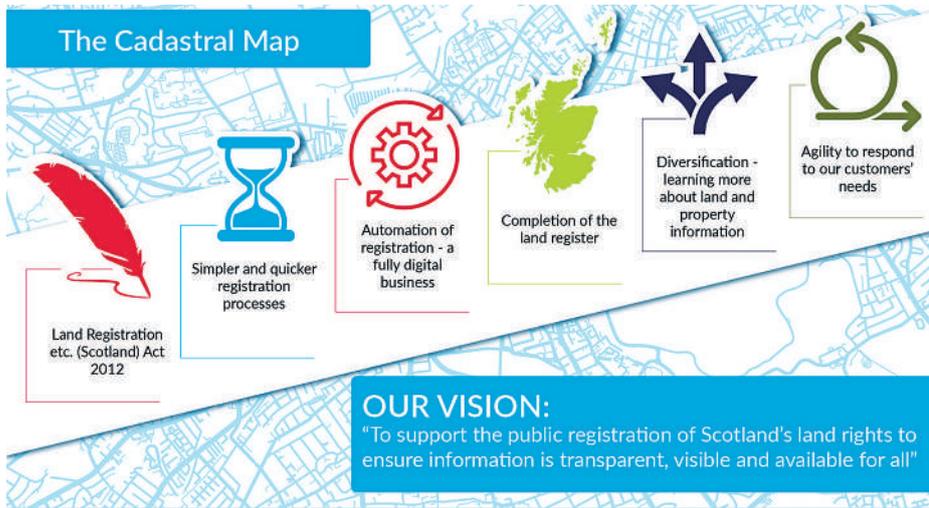


Fig3: Massive strides have already been made in responding to customer needs and expectations

That leads us to the main task in which I am involved, and to the good old 1990s PCs. Part of the next stage is producing what we are calling the Cadastral Map. This is about front-end tooling for our registration process and, at the back end, delivering a new land registration system that supports completion of the Land Register; leads to diversification so we learn more and discover new ways to use land and property information, and responds better to our customers' needs. This has all been achieved using Open Source software such as Postgres/PostGIS, OpenLayers and QGIS.

At a deeper level, this is a documents-to-data journey, where we go from paper plans with shapes on them outlined by a thick red line - which work perfectly well - and start producing something even better: an ownership polygon that

is accessible for purposes other than as a paper plan for land registration.

This is not a straight timeline. We are somewhere in the middle of that journey (Fig.3) but we have made massive strides already.

We quickly recognised societal drivers including poverty eradication, gender equality, housing, agriculture, climate change and good governance, influence land administration design. The opportunities provided by technological development also influence approaches to service and product design.

Standardised data model

The Land Administration Domain Model (LADM ISO19152) helped us align both. The data model (Fig4) provided a standardised vocabulary and, as an international

standard, it stimulated the development of our software applications. The basis of what we're doing is building on a strong model that incorporates open standards and utilises open source software. By adopting a data-first strategy, we have built our new systems built on the foundations of openness and transparency.

The benefits of doing this for RoS and its customers are enormous. From our point of view, it is about ensuring that, as custodians of our data, we are in greater control of our systems; are able to tailor output, reports and metrics to meet our needs; and thus, solve the right problems first. It'll make us far better equipped to cooperate and learn from others.

Importantly, it'll help drive value by making us more cost-effective, freeing us from the lock-in of prohibitive licensing costs that we've suffered from the COTS (Commercial Off-The-Shelf) products model. It's also allowing us to scale our systems without significant monetary impediments.

We're driving change quicker, yet more safely. Making those rapid changes means faster learning and more nimbleness. The people who use our services: from homebuyers and solicitors to researchers and planners, can look forward to an even better, faster and more agile RoS.



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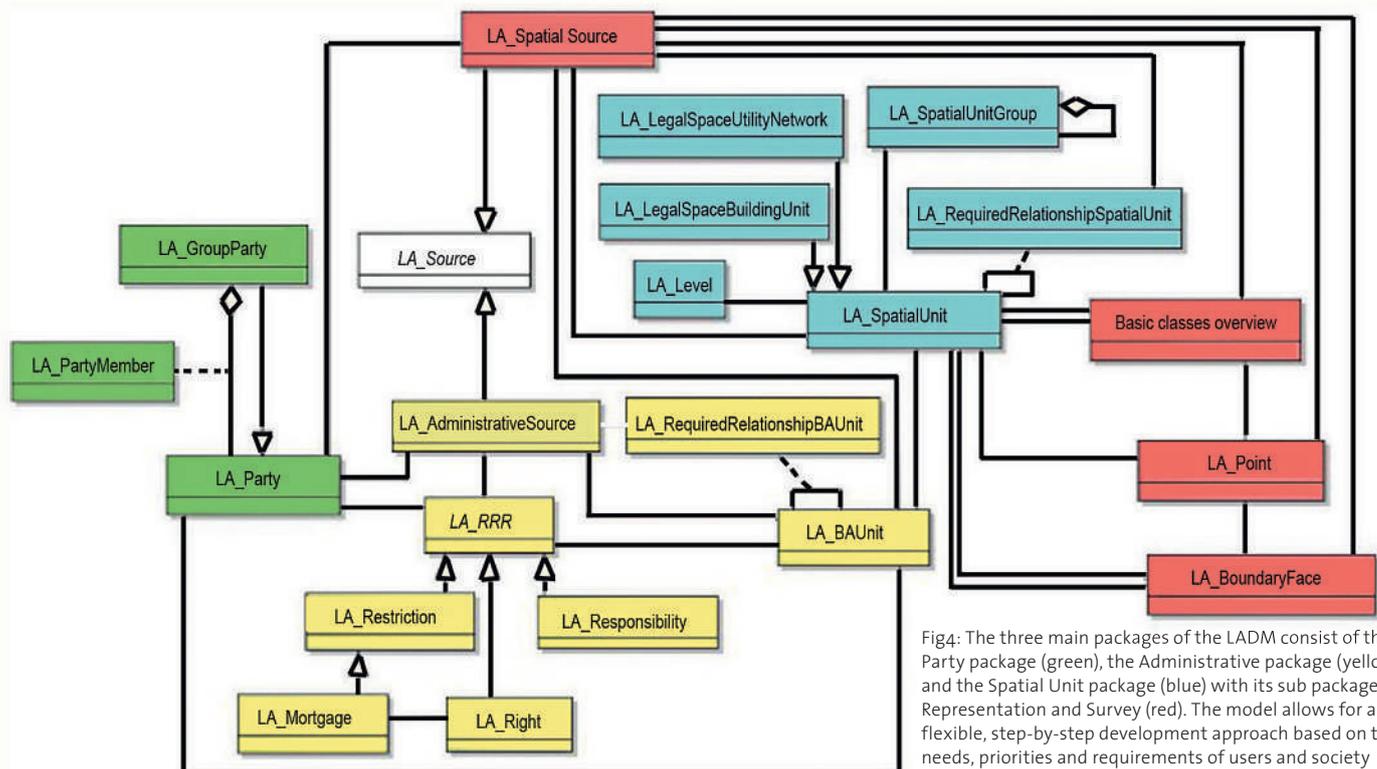


Fig4: The three main packages of the LADM consist of the Party package (green), the Administrative package (yellow) and the Spatial Unit package (blue) with its sub package Representation and Survey (red). The model allows for a flexible, step-by-step development approach based on the needs, priorities and requirements of users and society