

# LADM: A blueprint for enterprise level land administration systems<sup>1</sup>

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**Key words:** enterprise level, land administration, Oracle, 1Spatial Management Suite

## SUMMARY

The development of the LADM and its ratification in 2012 as a descriptive standard is a major milestone in the evolution of efficient and effective land administration systems and in the formulation of a truly universal framework for sharing related information.

This presentation initially looks at particular existing land administration environments familiar to the author to see how these map to the LADM solution. It will then focus on the challenges and practicalities of delivering the necessary enterprise platform required to effectively support a core national land administration solution. Finally it will reference specific 1Spatial experiences over recent years in the UK and Ireland and identify how well the LADM approach addresses the evolving business needs.

1Spatial is an Oracle Gold Partner and shares with Oracle a vision of delivering innovative spatial solutions built on an enterprise architecture. Both organisation have a long tradition of engaging with and supporting standardisation initiatives in the spatial information sphere. In particular:

- 1Spatial is a Technical Member of OGC and has been involved as:
  - Contributor to original WMS and WFS specifications the associated test beds.
  - Dr Paul Watson (1Spatial CTO): Contributor to the GML specifications (topology in GML 3.0 and WG for GML 3.2.1).
  - Founder Chaired or Co-Chaired of the OGC Data Quality Working Group
- Oracle has extensive involvement in both OGC and ISO and supports these standards in many products reflecting the importance of standards compliance to the company.
  - OGC Founding Members and active on Board of Directors
  - WG Chair (Simple Features SWG, GeoSPARQL SWG, Geometry DWG, ...)
  - John Herring is involved in OGC and is chair of ISO TC211 IMWG helping ensure that industry and de jure standards are in line.

In 2005 1Spatial tendered successfully for the provision of a national digital mapping solution to support the maintenance of a cadastral index and for the integration of this with an existing title management solution for Property Registration Authority of Ireland (PRAI). The project led to the multi-award winning ITRIS DMapS solution which today provides comprehensive title and cadastral map management with full online public access to all published data. The data model development for ITRIS DMapS took place long before LADM was published but still can be seen to conform to the core concepts presented in this standard:

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<sup>1</sup> Abstract of presentation in Industry Session

- All registerable interests are consistent with LADM Basic Administrative Units (BAU).
- All parties to a registration, people/groups/organisations, are associated with a BAU through structured and non-structured Rights, Responsibilities and Restrictions.
- The BAU is composed of spatial units with appropriate level based types and constraints.

The fact that a best practice solution developed prior to the publication of the standard can be shown to map to that standard is a measure of the fitness-for-purpose of that standard and the universality of its application.

The implementation of a well-founded core conceptual data model is critical to the success of a land administration solution but the encapsulation of the required data management functionality in a scalable information system is equally critical if the solution is to be successfully deployed at a national level. 1Spatial has extensive experience in the implementation of highly scalable spatially enabled enterprise solutions utilising its advanced object technology underpinned by Oracle databases and middleware. The 1Spatial Management Suite (1SMS) is a workflow based enterprise solution utilising best of breed core technology from Oracle that supports very large national spatial datasets in rich data models requiring extensive topological and rules based validation. It is highly configurable and scalable to serve business processes of whatever complexity and transaction throughput is required.

The Government of Ireland recently decided to merge the separate functions of Ordnance Survey Ireland (OSi) as national mapping and cartographic agency with those of PRAI as the cadastral mapping and title registration authority and those of the Valuation Office as property valuation and official boundaries authority into a single new property agency. The recent implementation of 1SMS as the enterprise data management environment for the OSi real world feature database will support the integration of the PRAI ITRIS DMapS solution into an LADM compliant enterprise solution that will serve as a scalable national framework for many years to come.

Her Majesty's Land Registry (HMLR) in the UK has recently started a process of engagement with key technology suppliers to identify the options available to support two key business drivers that it has identified as strategically important. These drivers would be well served by the LADM concepts which should be considered in the context of the overall approach to implementation of a next generation solution. The key drivers and the LADM advantages are:

- Digital by default.  
Encourage a move away from a paper based legal and registration process. Provision of a solution that is compliant with international standards and best practice will make it easier for a traditionally conservative legal profession to adopt new practices which will enhance services and reduce costs.
- Make data freely available and useable.  
The decision on whether to charge for data or not is outside the scope of the LADM but it is clear that the accessibility and usability of data is dramatically enhanced when it is managed in conformance with a universally adopted conceptual data model. Consumers of the data will have confidence in it and in their understanding of the data and what it means.

This presentation will conclude with an overview of the PRAI ITRIS DMapS solution and the 1SMS based OSi Geospatial Management System with particular reference to how the 1SMS technology framework might support a merged business process that includes both LADM compliant land administration and national mapping functions.

## **BIOGRAPHICAL NOTES**

**Seamus Gilroy Biog** is a Chartered Engineer with a background in computational mechanics who worked in civil and mechanical engineering in Ireland and Australia before setting up a business focused on spatial information management in Ireland in the mid 1990's. This business was acquired by 1Spatial in 2007 and since then Seamus has had a significant involvement in both the Property Registration Authority ITRIS DMapS and Ordnance Survey Ireland PRIME2 projects. Séamus Gilroy is Country Manager of 1Spatial Ireland.

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