

## 1.3 Data Model and LADM Compliance

The data models of the SOLA applications have been assessed in the context of the Land Administration Domain Model (LADM, ISO 19152:2012). The SOLA data models are all at least **Level 1 Compliant with LADM**. Some of the packages are **Level 2 or Level 3 compliant** (see Figure 14 below). The details of this assessment are provided in Appendix E.

Figure 14: SOLA applications' compliance with LADM packages

	Compliance 'Registry'	Compliance 'Systematic Registration'	Compliance 'State Land'	Compliance 'Open Tenure'
Party Package	Level 1	Level 1	Level 1	Level 1
Administrative Package	<b>Level 3</b>	<b>Level 3</b>	<b>Level 3</b>	Level 1
Spatial Unit Package	<b>Level 2</b>	<b>Level 2</b>	<b>Level 2</b>	Level 1
Surveying and Representation Sub package	Level 1	Level 1	Level 1	Level 1

Consider increasing LADM  
compliance for Party  
Package

Merge and improve data  
models (and improve  
documentation) to support  
merging of SOLA  
applications

- > SOLA is Level 1 Compliant with LADM.
- > The SOLA implementation of the LADM has added and **extended the LADM** significantly.
- > Data models for the different SOLA applications seem to have inherited, elements of other SOLA applications, in other words there is large overlap in different data specifications (see Appendix F). For example, the data model for SOLA registry contains sections (schemas) for administrative, application, cadastre, document, party, transaction, but also for *open tenure*. The data model for Community Server (Open Tenure) contains fields that are intended for systematic registrations. This may be related to manner in which SchemaSpy<sup>28</sup> software was used to document the database. Scrutinizing the data model in the context of the individual SOLA apps is not straightforward with the provided data models. The documentation on data could be improved with additional information on how the data is maintained and used by which SOLA applications.

### 1.3.1 SOLA Registry

- > It should be noted that SOLA has added and extended the LADM significantly, especially in the area of workflow, applications, transactions and services, (digital) documents, system & bulk operations. SOLA has defined (alternative) data model implementations in the SOLA database; for example the implementation of party (right holders) members and groups of parties involved in rights.

<sup>28</sup> <http://schemaspy.org/>

- > Modelling processes and transactions was considered outside the scope of the LADM Edition I (2012), because they were considered to be country specific, and generic processes were expected to be too difficult to model. It should be noted that the authors of LADM are now reconsidering this view given developments as Fit-For-Purpose land administration, mobile device apps and block chain<sup>29</sup>. Standardised administrative and technical update processes, are envisioned to be addressed **LADM Edition II**.
- > Some of the entities, are labelled to indicate an implementation of/link with a certain LADM class, and at the same time indicate that this SOLA entity is **"Not used by SOLA"** (for example group\_party, party\_member, building\_unit\_type, legal\_space\_utility\_network, spatial\_source\_type). Those classes/tables and their relationships were generally created and left initially unpopulated and without associated software in case, in future customisations they would be required. In modelling SOLA, the most generic form of implementation has been used (level 1). *In assessing LADM compliance these tables were not assessed as Conformant.*

### 1.3.2 SOLA Systematic Registration

- > SOLA Systematic Registration is reported to work on exactly the same data model as SOLA Registry.

### 1.3.3 SOLA State Land

- > The data model for SOLA State Land resembles the SOLA Registry datamodel, but has considerable additions in the application area (related to public display, notifications, and disputes). Unlike registry data model, there is no schema for open tenure.

### 1.3.4 SOLA Open Tenure / Community Server

- > For SOLA Open Tenure / Community Server, a separate, different structure has been setup for open tenure (schema open tenure) where elements of SOLA registry could have been used (re-using data, functionality, and business rules), avoiding the need of data migration, for example from Open Tenure to SOLA Registry (see section 1.1 on architecture on the same).
- > While at application level a distinction is made between Open Tenure Mobile App and Community Server, this distinction at data model level is not clear.
- > The data model Community Server contains the schema "opentenance" but also the schemas known from SOLA Registry and Systematic Registration (administrative, application, cadastre, document, etc.).

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<sup>29</sup> Lemmen CHJ, Unger EM, van Oosterom PJM, Kalantari M. Exploring Options for Standardisation of Processes and Transactions in Land Administration. 2018. Paper presented at 19th Annual World Bank Conference on Land and Poverty 2018, Washington, United States.