



LADM based models for sustainable development

LA-DRM for disaster prone areas and communities
(an example for SDG 1 and SDG 13)

Eva-Maria Unger, Rohan Bennett, Christiaan Lemmen, Jaap Zevenbergen, Paula Dijkstra and Kees de Zeeuw



Global Change Forces related to LA and DRM



Increasing occurrence and scale of natural disasters increases the no. of susceptible people, areas and people to land relationships affected



Land is limited: 29.2% of the earth surface is land - less is actually able to be inhabited - no. of informal settlements, land grabs and disputes increases.

Animated Gifs source: <https://www.worldbank.org/en/news/feature/2019/03/21/green-and-gray>



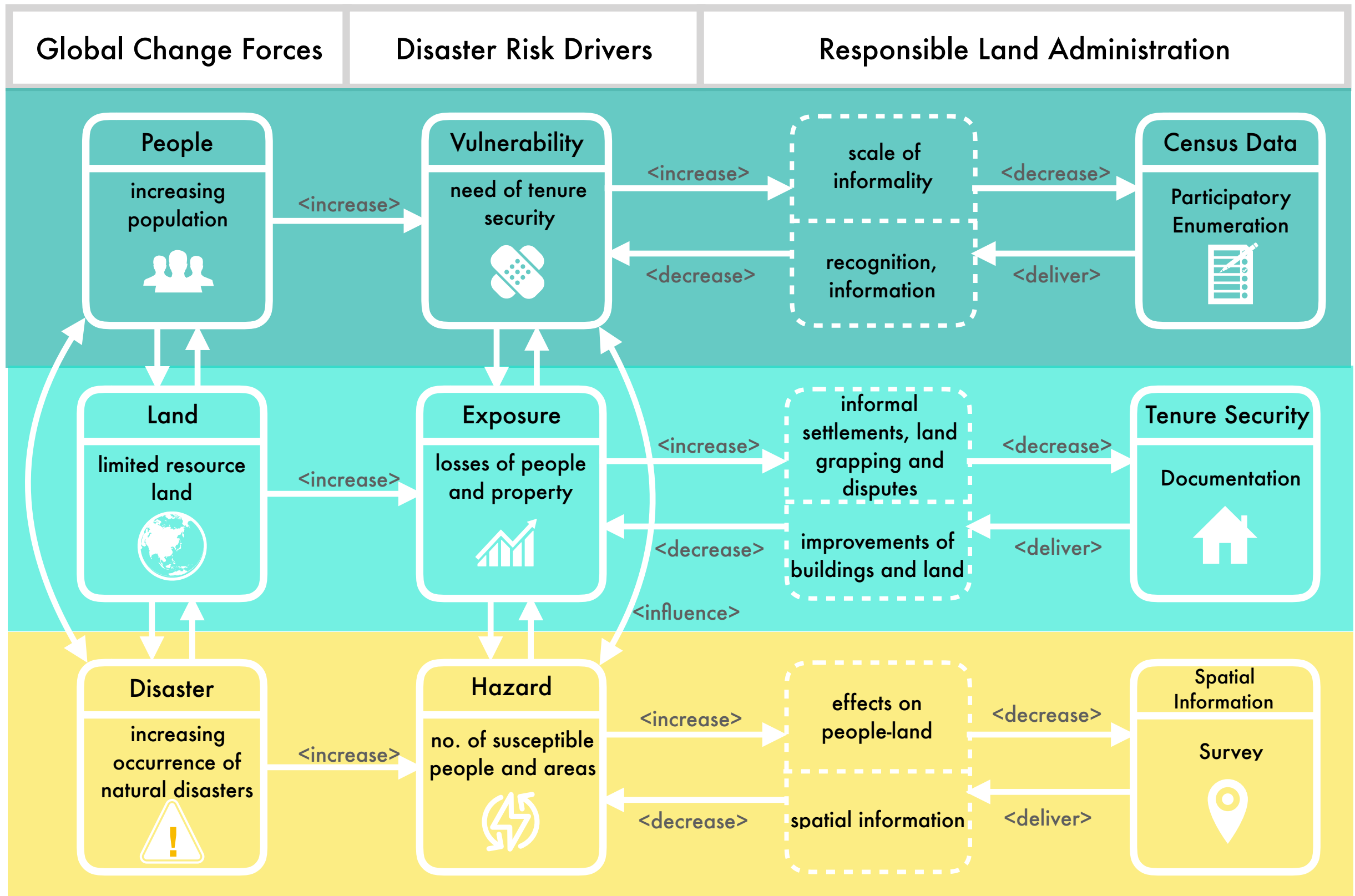
Global Change Forces related to LA and DRM

Population growth causes more people to be affected by insecurity of land tenure and natural disasters. It further increases the scale of informality of people and property in the affected areas.

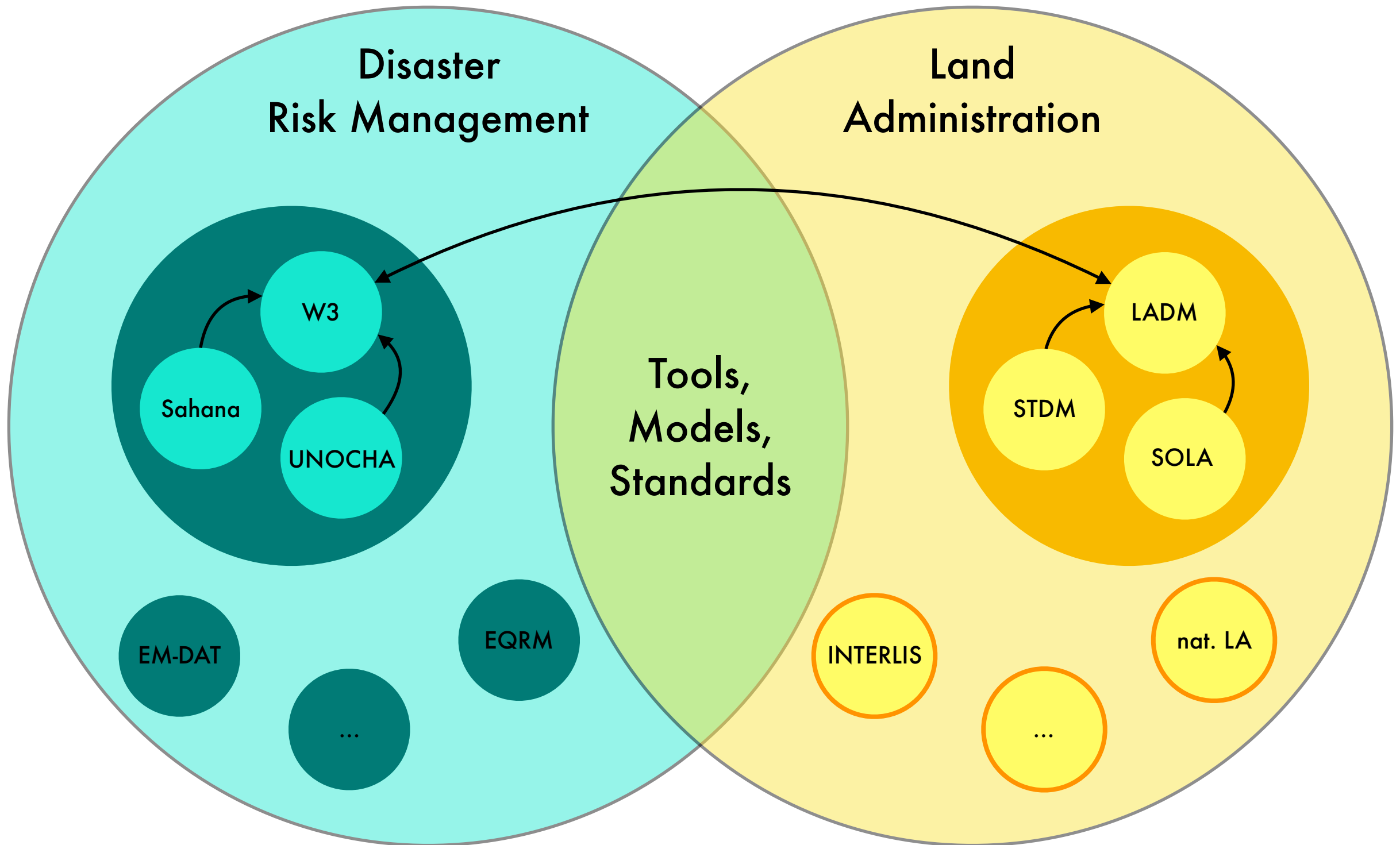
Since 2000
approximately
200 million
people were affected by
natural hazards
(UNISDR)

Animated Gifs source: <https://www.worldbank.org/en/news/feature/2019/03/21/green-and-gray>

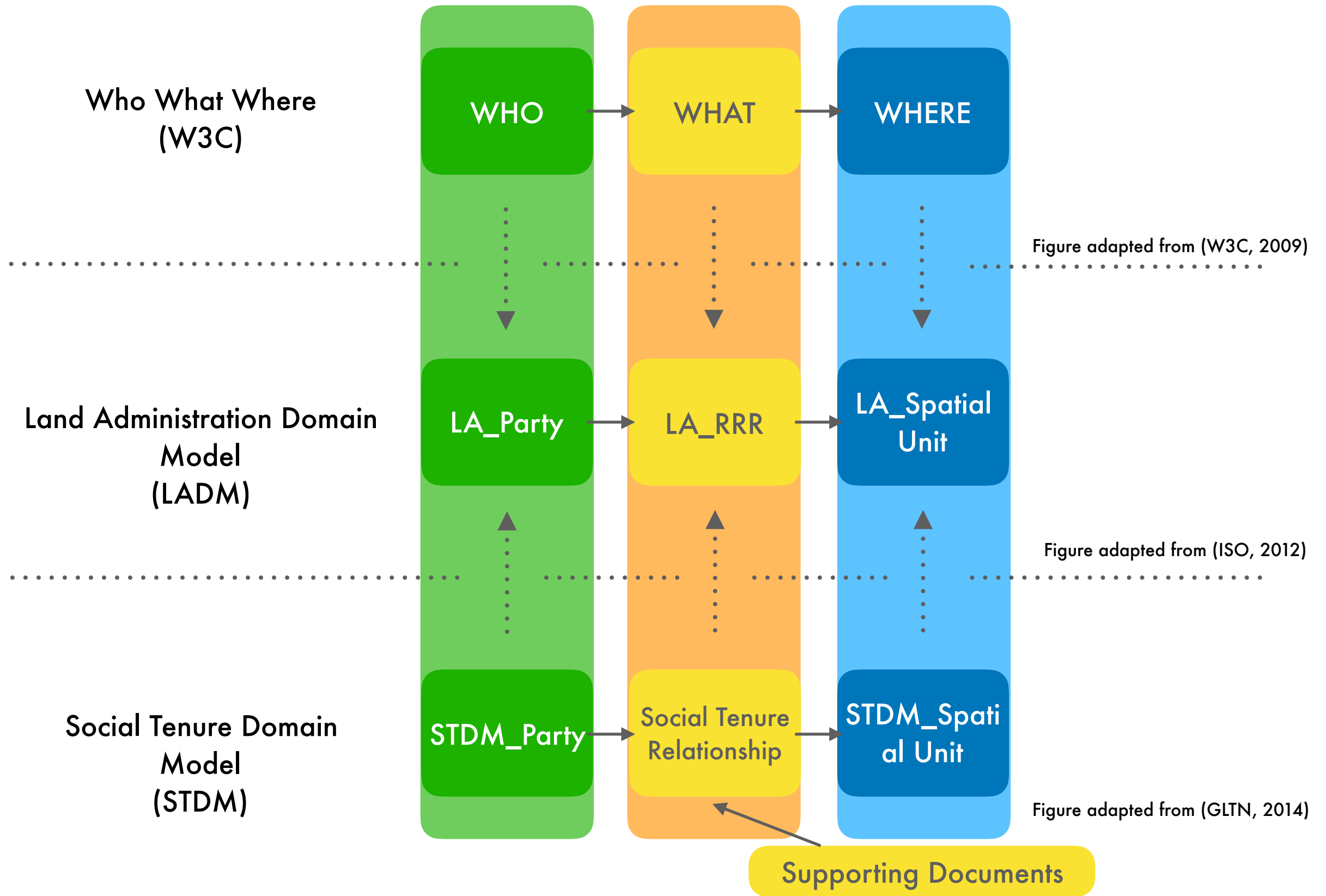
1 Conceptual Framework



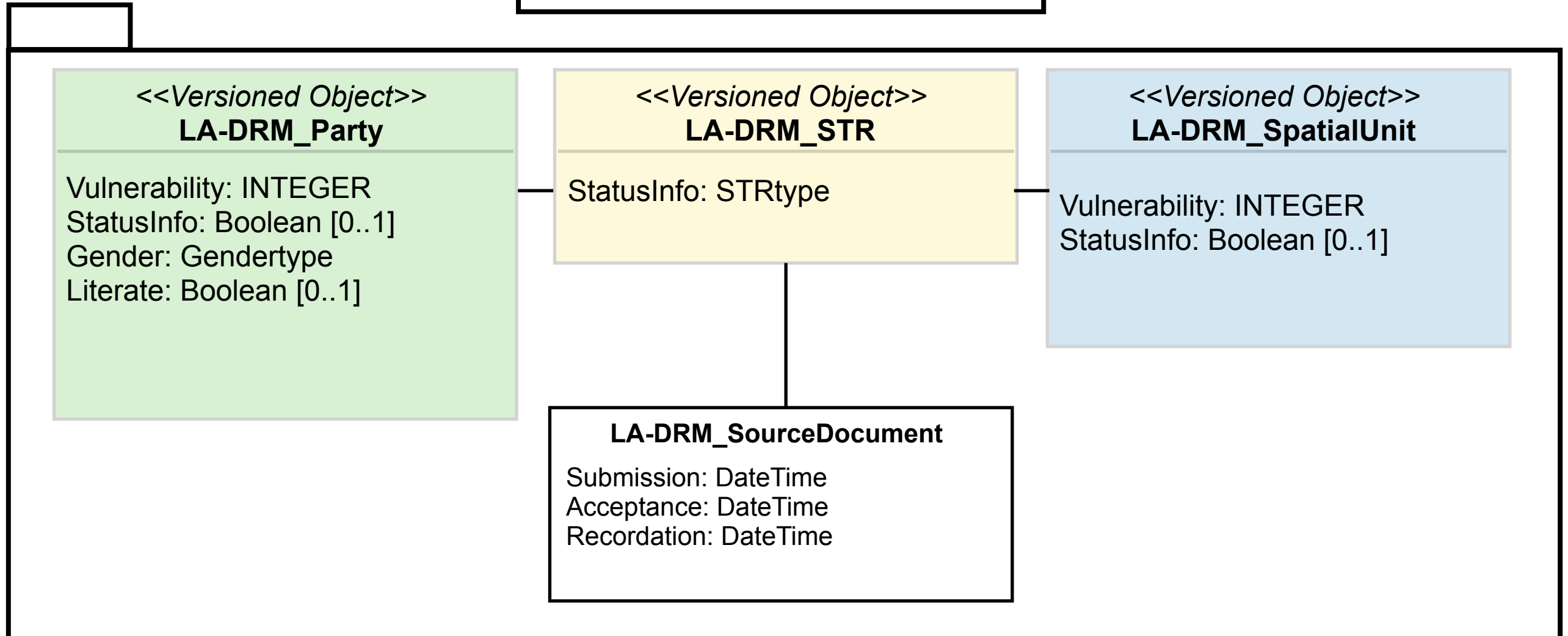
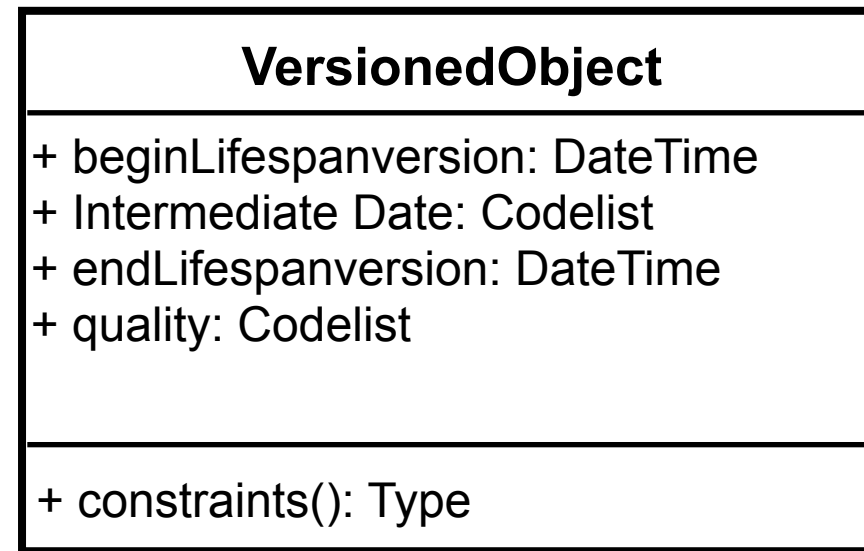
② LA-DRM Model



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Requirements based on (Lemmen, et al., 2015)

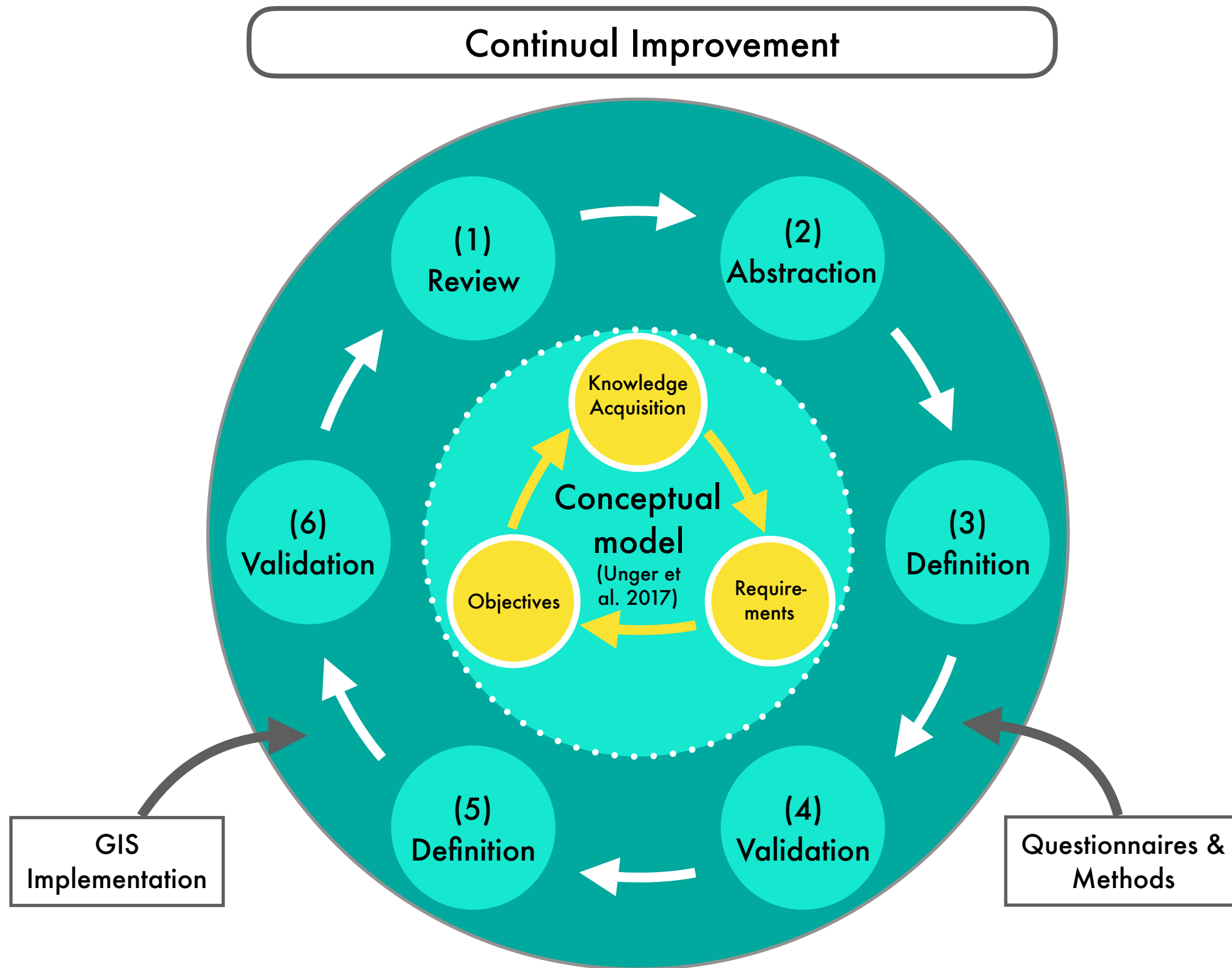
No.	Requirement	Impact
2	A continuum of land use right claimants (subjects or parties)	is extended with: the LA-DRM model enables a 'party' to be, for example, a household, family, or group of families (e.g. 4 families live in 1 building) with each person to be recorded. Especially in regards to DRM, the inclusion of children in any system is essential.
3	A continuum of spatial units	is extended: DRM requires the building or any construction to be recorded and changed / updated over time.
5	A range of data acquisition methods	is extended with: data acquisition methods especially in regards to DRM should support and include community acquired data. Further collaboration and data sharing with different domains should be facilitated and encouraged e.g. weather radar stations, ministries etc.
6	A range of authentic source documents	is extended with: in case of a natural disaster all kind of documents can be destroyed and may not be able to be retrieved from any system. Further witnessing through neighbours may not be applicable in case they are deceased; therefore any kind of source document at different stages should be supported.
8	History	Is extended with: DRM is describing an agile and fast environment whereas LA is defined through long-term processes and defined rules and regulations with fewer changes over time. Influencing the life cycle of the core classes immediately. Normally change in either 'party', 'social tenure relationship' or 'spatial unit' are long on- going processes but in case of a natural disaster, this life cycle can be seriously disrupted, or ad hoc.

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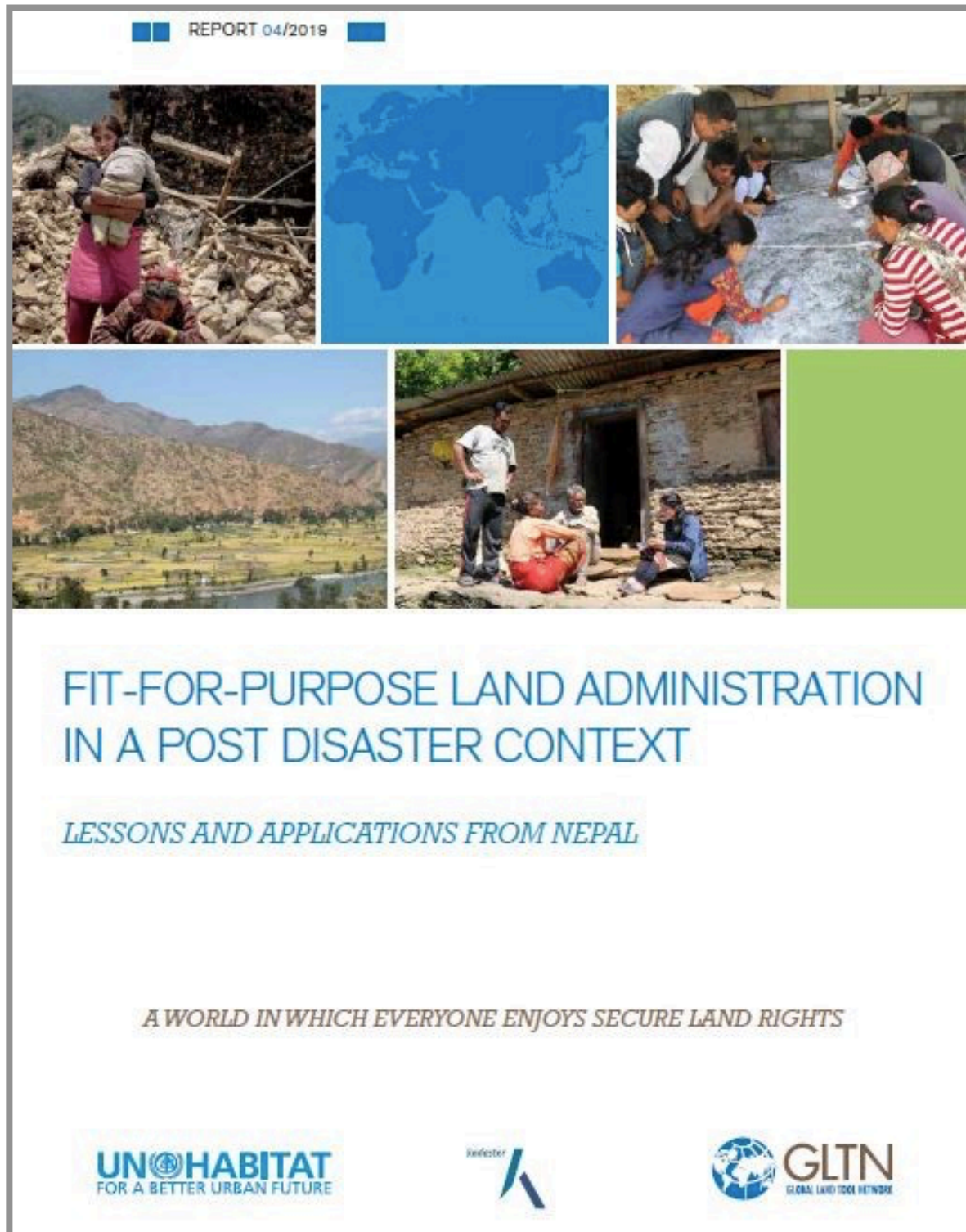
Additional Requirements

No.	Requirement	Impact
16	Vulnerabilities	Vulnerabilities at individual, household, family, organisation or business level shall be described. Those vulnerabilities should also deliver information such as the level of literacy, education or poverty.
17	Status Info	Each core class should be supported by a 'Status Info' attribute, as for example each party/individual can have a different status as e.g. a party can be deceased, can be handicapped etc., which all influence the social tenure relationship. Also, the spatial unit itself can have different statuses in the phases of a natural disaster. Therefore, interoperability and data exchange with other domains will be supportive in data maintenance and complete coverage based on the principle "collect once and use multiple times".
18	Source Document	Based on the extended requirement No. 4 this requirement now describes that various timestamps for the source documents are needed and should be supported by the system. Those dates could be, for example, the date of acceptance, or recordation, or reconstruction. This is especially relevant when the issuance of land documents should be enabled in the aftermath of the disaster.
19	Model Boundaries	LADM is organised into several packages, which already cover the needed packages for the LA-DRM. Nevertheless, this requirement shall describe and emphasise the importance of linking such a model to other registers such as the population register, taxation, addresses, land use and land cover and valuation systems.

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Publication is online available at:

<https://gltn.net/2019/08/13/fit-for-purpose-land-administration-in-a-post-disaster-context-lessons-and-applications-from-nepal/>

