

Integrating geospatial and statistical standards using Fintech

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ABSTRACT

Keywords: Real estate development, property taxes, valuation, sustainability, financial inclusion, economic development, blockchain, property markets, cryptocurrency, sustainable development goals, real estate management, Distributed ledger technology, Fintech.

New technologies have reduced the time taken to make maps from years to hours, and new forms of satellite data are enabling the capture and generation of information in days as opposed to years.

Geospatial data sources, methods, and standards can be integrated into the production of official statistics, and to identify a plan for future collaboration to support integration and interoperability of statistical and geospatial standards. In the United Nations, among member states, and across trans-national organizations there is a growing embrace of combining statistical and geospatial data. In 2013, following 4 years of work, the United Nations Statistical Commission pushed for developing a statistical spatial framework in national statistical systems (UNSC, 2013).

Recently the United Nations Economic Commission for Europe called for an in –depth review of developing geospatial information services based on official statistics, as presented in 2016 at the meeting of the Bureau of the Conference of European Statisticians (UNECE-CES, 2016). It discussed new frameworks that allow geospatial information to be integrated with statistical information, stressing the pressing need to link information to its geolocation. It also emphasized that as part of their modernization efforts, National Statistical Offices ought to consider geospatial information, techniques and technologies.

This article emphasises the use of expertise in Earth observatory and satellite imagery for better valuation and Real estate management. the emergence of the fields related to big data and the Internet of Things quickly created linkages and opportunities for geospatial information and technologies, as was discussed at the United Nations Statistical Commission (UNSC, 2014)

1. INTRODUCTION

During the seventh session of UN Economic and Social Council, Dave Lovell, chair of the UNGGIM- geo spatial societies made the following statement -

“GGIM Geospatial Societies thanks the standards community for their vitally important work in developing standards and fully supports the use of existing international standards applicable to the creation, management and use of geospatial information, infrastructures and delivery arrangements. GGIM Geospatial Societies would like to highlight the importance of accelerating the process of developing new international standards given the rapid development of new technologies applicable to the achievement of the Sustainable development goals (SDGs).

In this regard we wish to draw attention to the importance of the work of ISO/TC 307 dealing with Blockchain and Electronic Distributed Ledger Technologies. A technology which has been hailed by custodians as being the future of the real estate management industry with potential to streamline processes such as land and property registration, valuation of property and many more digital actions.”

“The relevance of financial technology in filling the credit gaps for a sustainable financing in real estate projects by augmenting the traditional financing modes for real estate. The key dynamics within cryptocurrency and technology that may be of interest to sustainable financing in real estate is still prone towards the elitist, tech-centric outlook of disruptive technology start-up culture. It is reckoned that one blockchain does not fit all” (Velpuri et al 2016)

2. SDG PLATFORM BY 2020

As part of the strategic framework, the following proposal for an SDG platform by 2020 has been presented. The Global SDG database has been built upon the national development indicators and after validation of data produced by the international organisations. Global SDG database will be the source for country SDG implementation and later SDG platform by 2020

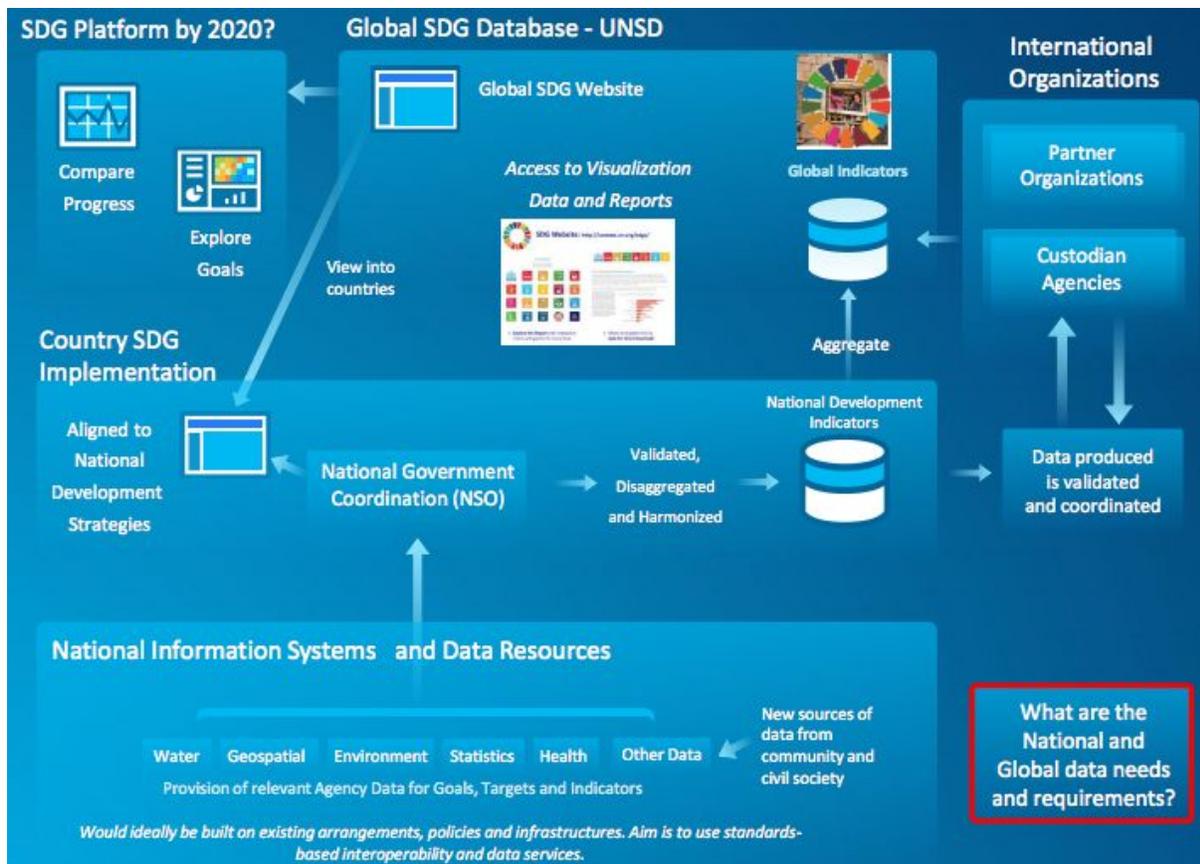


Figure 1 : SDG platform by 2020 (Source : Greg Scott, UNGGIM, Kunming forum 2017)

2. GEO AND SDG

National information systems includes

- Earth observations and monitoring
- National spatial data infrastructure
- National statistics, Accounts, Administrative registers, Demographics
- Other sources of Data, incl BigData

GEO is the group on earth observations. Satellite data is crucial for defining the SDG indicator framework. It is possible through collaborations with Earth observation communities like the Group on Earth observations and Committee on Earth observation satellites. Establishing partnership with non-space communities are relevant to pull the data from different sources to form that platform of GI data. The non-space communities could be JICA, JST, WB, ADB, UNSC, WGGI, NSO.

The Features of the data that could fit to quantify SDG's must be characterised by -

- Scale and continuity
- Long time serie with Consistency

- Comparability and complementarity with traditional statistics.
- Free and open data with diversity of measurements

SDGs provide guidance for planning and monitoring city development. Space-based Earth observation has great potentials to contribute to implementation of various SDG Indicators for cities and solving its issues.

2. GEOspatial DATA AND REFERENCE ARCHITECTURE FOR DLT TO IMPLEMENT SDG AGENDA

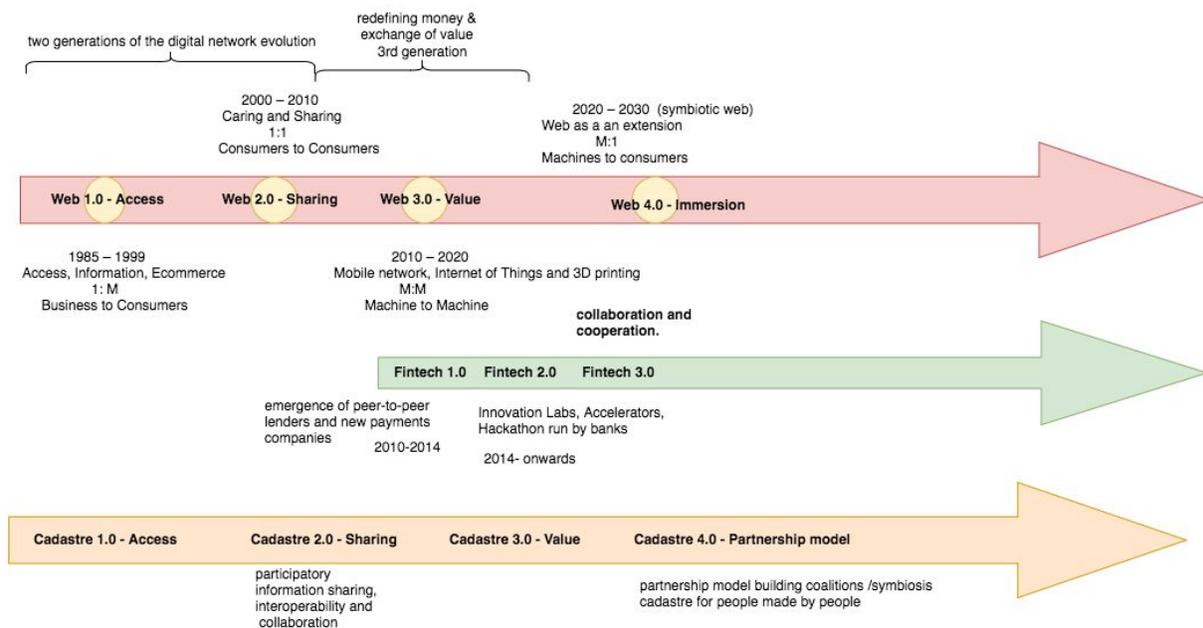
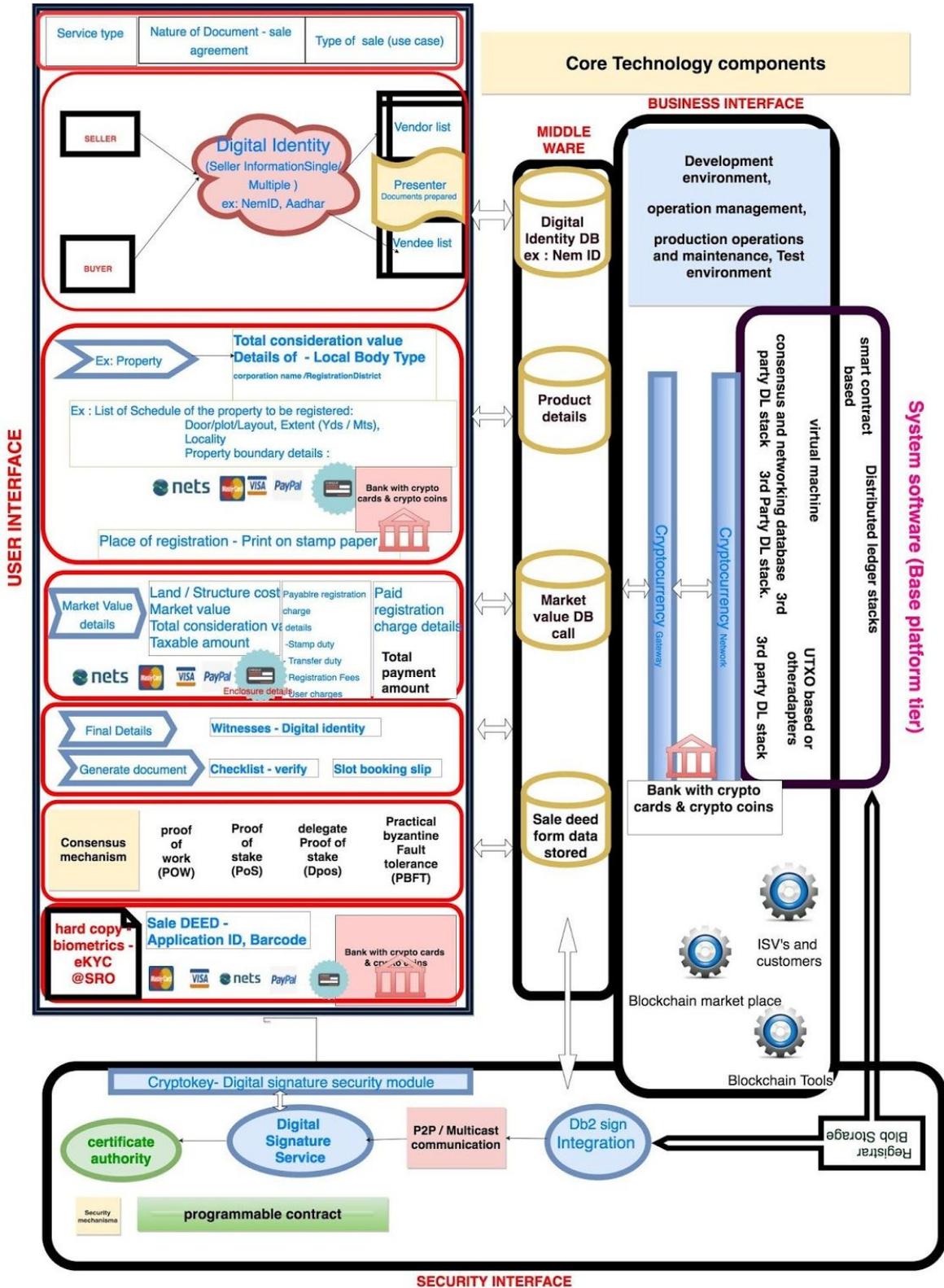


Figure 2 : Overlap of the Web version with Cadastre and Fintech development

Geospatial data is core to the 2030 Sustainable Development Agenda. It is in this context Surveyors could contribute to creating that link of accessibility through digital Identity linked to Geographical information. One of the key definition approaches is presented by EU Developing a global, people-based definition of cities and settlements. The European Union together with the OECD and the World Bank launched this commitment to develop a global people based definition of cities and settlements during Habitat III in Quito in 2016. This commitment was also joined by FAO. There is the continuing need to advocate policies that promote - i) affordable access to the basic geospatial data set, ii) avoid duplication particularly in mapping iii) quality, iv) timeliness, v) data sharing and vi) interoperability and standards. so a population focused GI data could be possible through VGI thinking. Complex and high-resolution geometries could be grid aligned and can represent any piece of land. It allows creating for more than a passive registry of entries or transaction.



LOGICAL VIEW - REFERENCE ARCHITECTURE

ACKNOWLEDGEMENTS

APPENDIX A.

A.1. Table : GEO and EO for agenda 2030 - direct and indirect indicators for measurement of SDG (source: Chu Ishida, 2017)

Sustainable Development Goals																
GEO & Earth Observations in Service to Agenda 2030																
Target										Goal	Indicator					
<i>Contribute to progress on the Target yet not the Indicator per se</i>											<i>Direct measure or indirect support</i>					
DRAFT										1.5	1.4.2					
										2.c	2.4.1					
										3.d	3.9.1					
										5.a	5.9.1	5.a.1				
6.1	6.3	6.4	6.5	6.6	6.a	6.b				6.3.2	6.4.2	6.5.1	6.6.1			
										7.b	7.1.1					
										8.4						
										9.a	9.1.1	9.4.1				
										10.a						
11.1	11.3	11.4	11.5	11.6	11.7	11.b	11.c				11.1.1	11.2.1	11.3.1	11.5.2	11.6.2	11.7.1
										12.b	12.a.1					
										13.b	13.1.1					
										14.a	14.3.1	14.4.1			14.5.1	
15.1	15.2	15.3	15.4	15.5	15.7	15.8	15.9				15.1.1	15.1.2	15.2.1	15.3.1	15.4.1	15.4.2
										16.8						
17.2	17.3	17.6	17.7	17.8	17.9	17.16	17.17	17.18				17.6.1	17.18.1			

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BIOGRAPHICAL NOTES

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OTHER EXAMPLES - TABLES, EQUATIONS, FIGURES AND FOOTNOTES

1. TABLES

Table 2 : Goals and Indicators - custodian agencies (source: Chu Ishida, 2017)

Goals	Indicators	Tier	Custodian agency	Domestic Ministry
Goal 3. Health	3.9.1 Mortality rate attributed to household and ambient air pollution	I	WHO	MHLW
Goal 6. Water	6.4.2 Level of water stress 6.5.1 Degree of integrated water resource management implementation	II I	FAO FAO	MLIT MLIT
Goal 7. Energy	7.1.1 Population with access to electricity	I	WB	METI
Goal 9. Infrastructure, Industry	9.4.1 CO2 emission per unit of value	I	UNIDO, IEA	MOE, CAO, METI, MLT

	added			
Goal 11. Cities	11.1.1 Urban population living in slums, informal settlements or inadequate housing	III	UN-Habitat	MHLW
	11.2.1 Population that has convenient access to public transport	II	UN-Habitat	MIC MLIT
	11.3.1 Ratio of land consumption rate to population growth rate	II	UN-Habitat	MLIT MAFF
	11.5.2 Direct disaster economic loss in relation to global GDP	II	UNISDR	CAO, FDMA, MLIT
	11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities	I	WHO	MOE
	11.7.1 Average share of the built-up area of cities that is open space for public use	III	UN-Habitat	MLIT
Goal 13 Climate change	13.1.1 Number of countries	II	UNISDR	CAO

	with national and local disaster risk reduction strategies			
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2. ILLUSTRATIONS

A well functioning cadastre is essential to make the legal access to land a right of the poor. A cadastre should enable securing rights in land and property, asset creation, and contribute to better real estate management. The Cadastral Template was established under UN mandate by Resolution 4 of the 16th UNRCC-AP in Okinawa, Japan in July 2003.

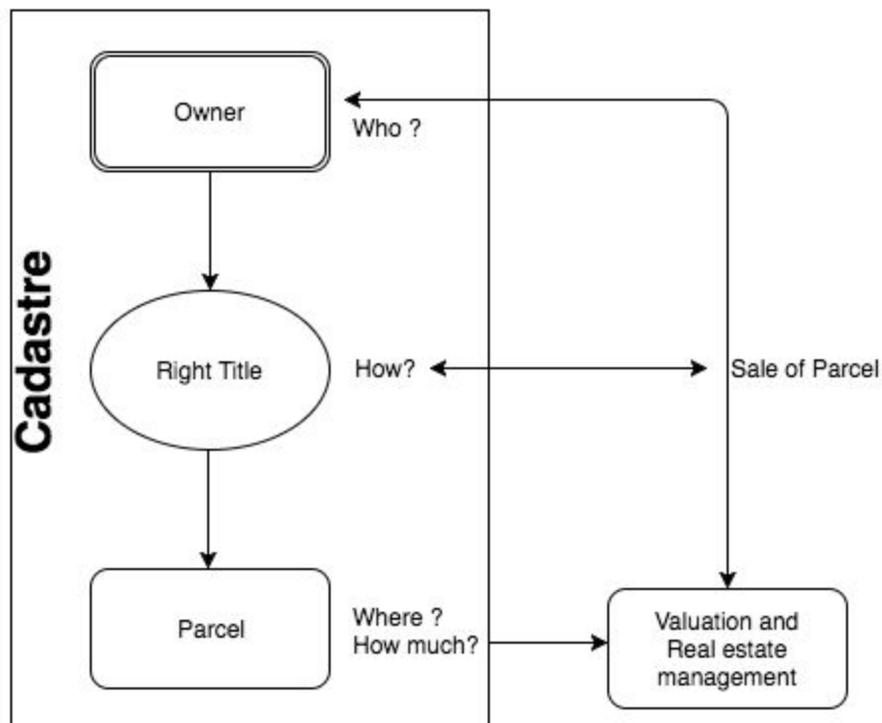


Figure 1 : Cadastre and Real estate management - core entities connected.

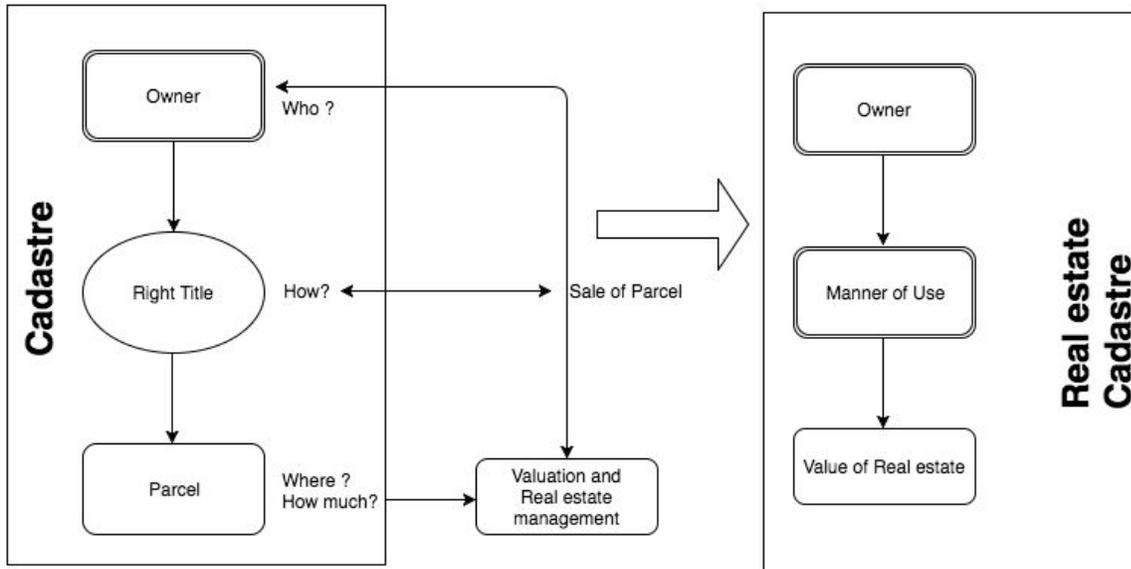


Figure 2 : Cadastre encompasses the data for Real estate cadastre