

# Exploring Options for Standardization of Processes and Transactions in Land Administration

7th Land Administration Domain Workshop

Zagreb, Croatia

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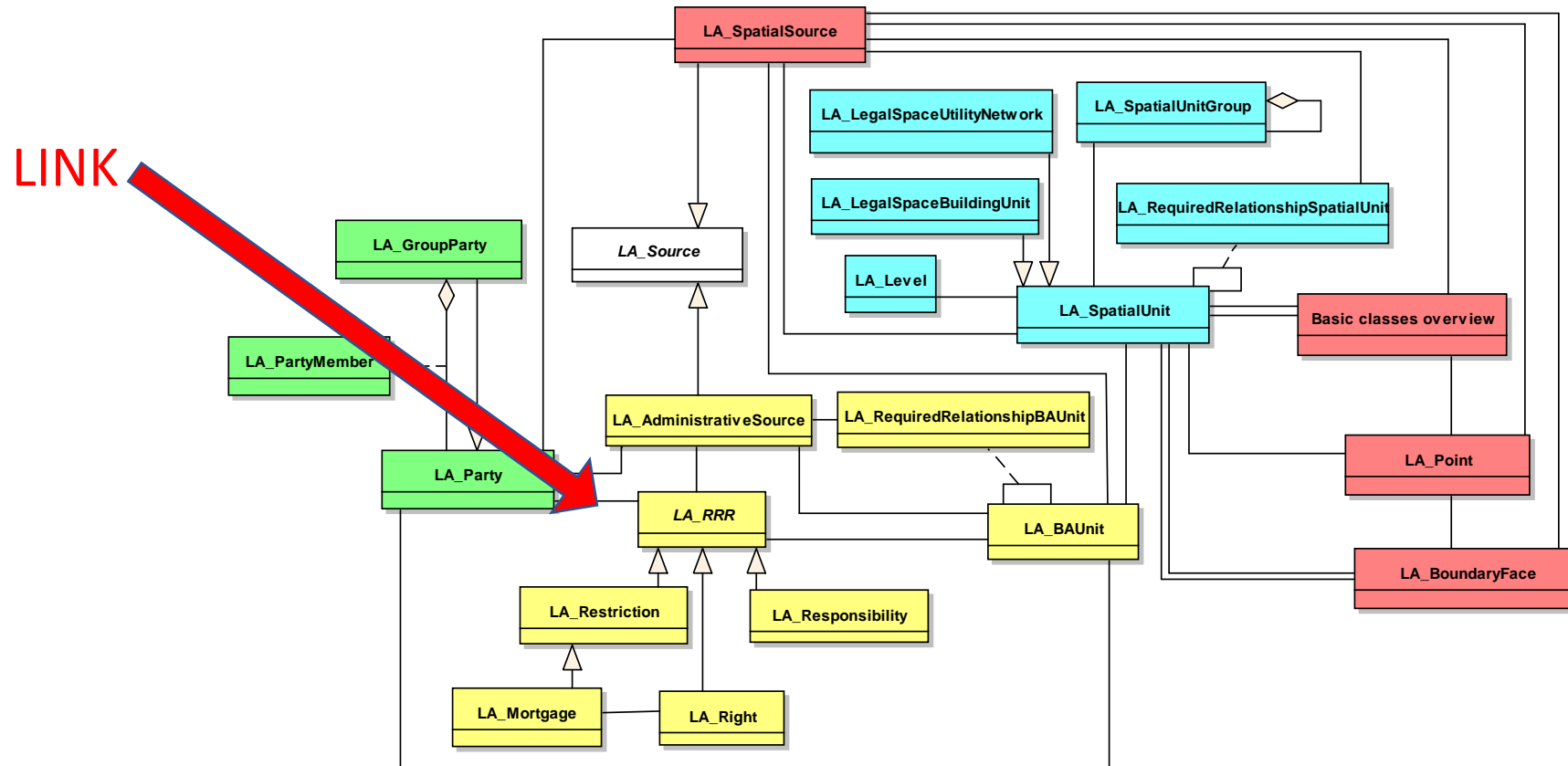
# Exploring Options for Standardization of Processes and Transactions in Land Administration

# Processes

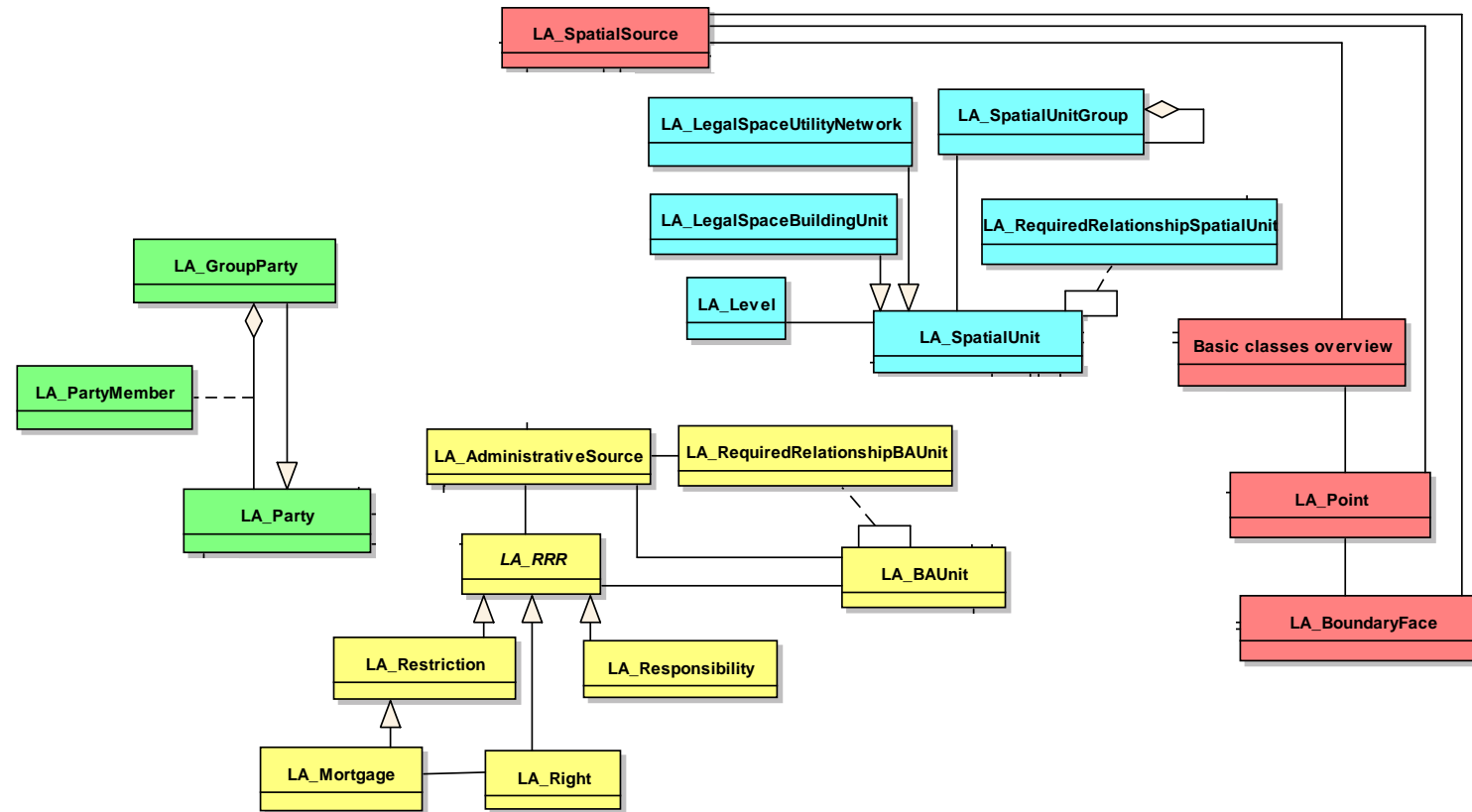
- Transactions
- Blockchain
- Surveying
- Imagery
- 3D and 4D
- Quality
- Conclusions



# Associations between Classes: distributed responsibilities



# Associations between Classes: distributed responsibilities



# Participatory Surveying



# Case 1 - Rwanda



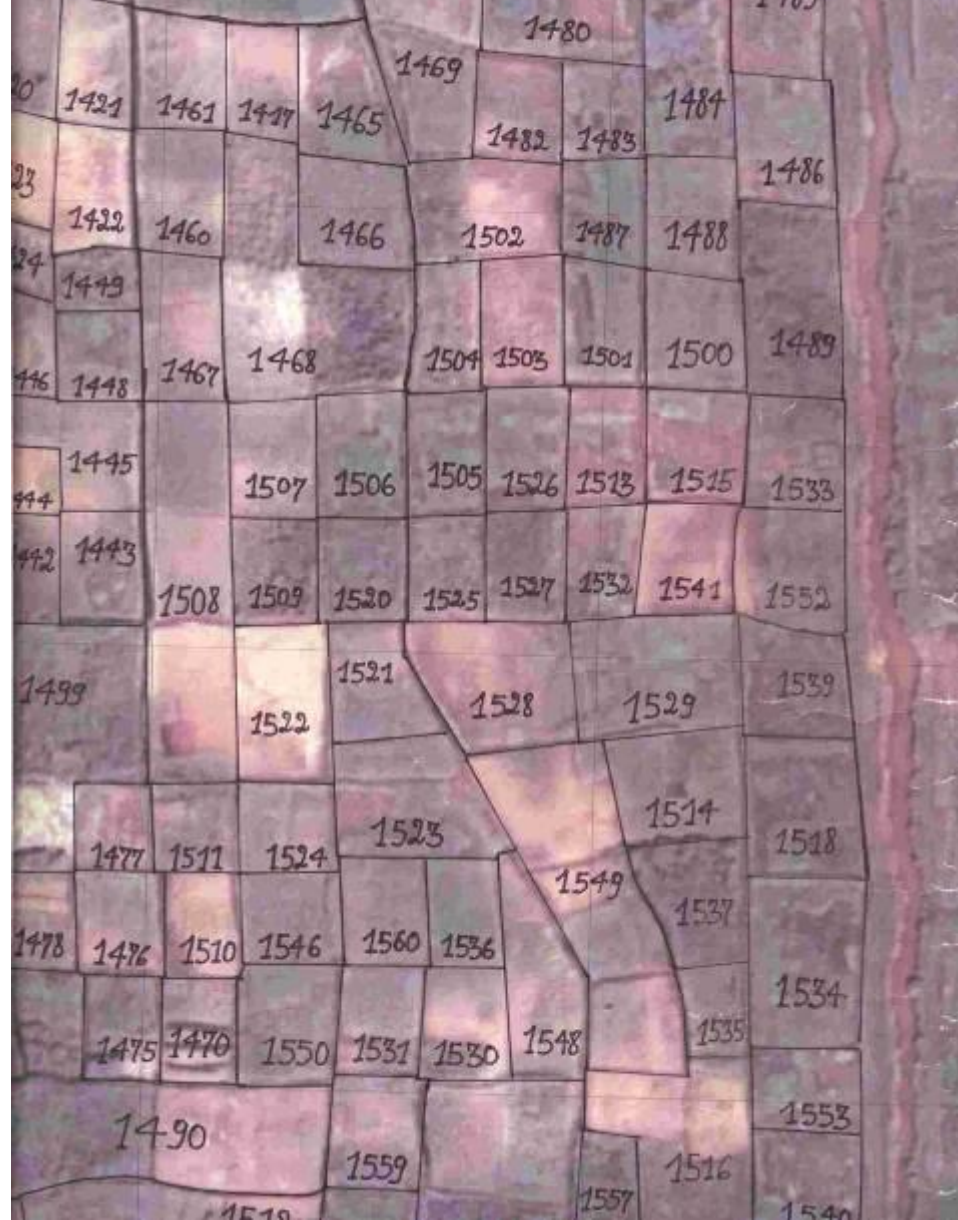


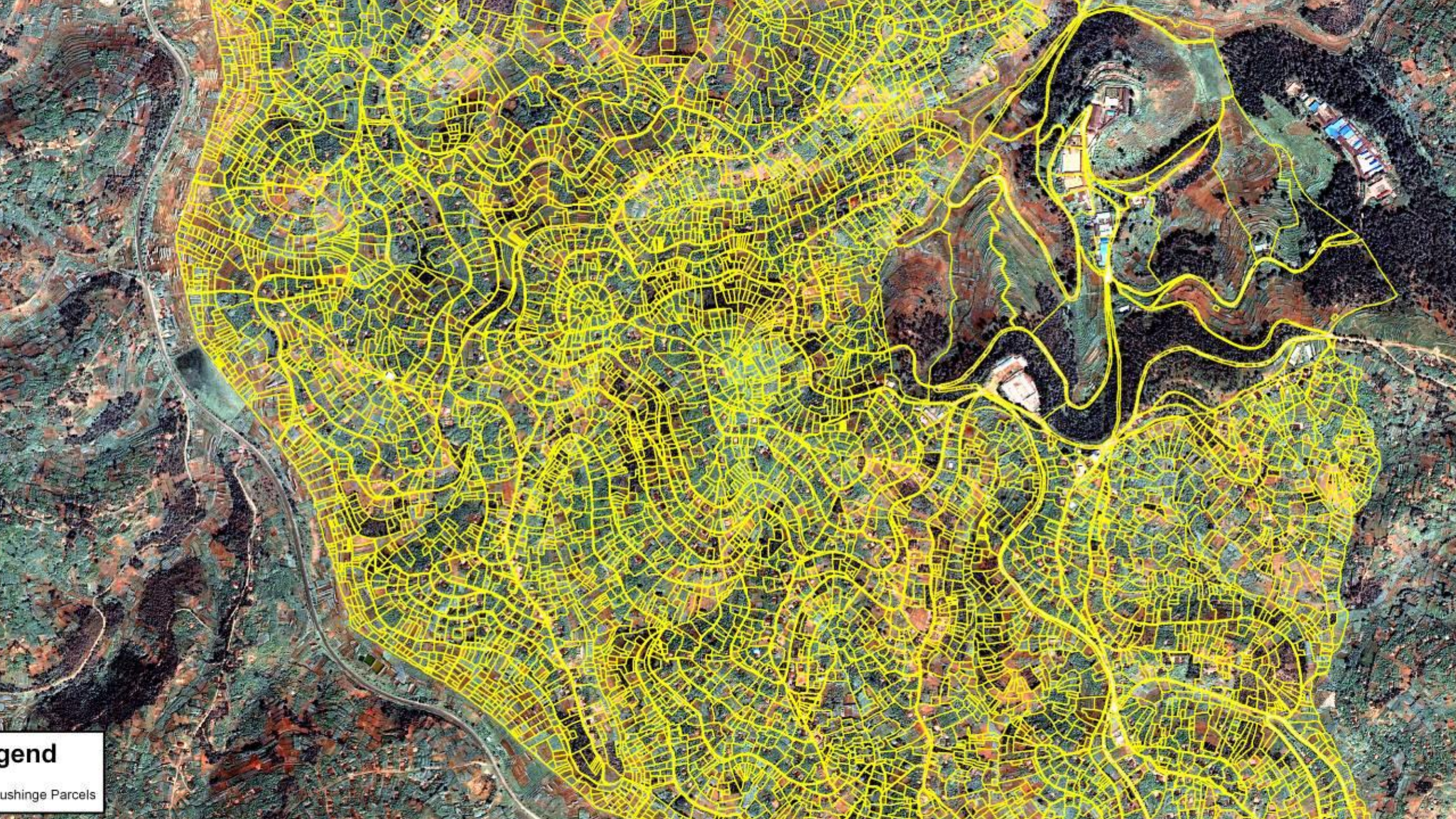










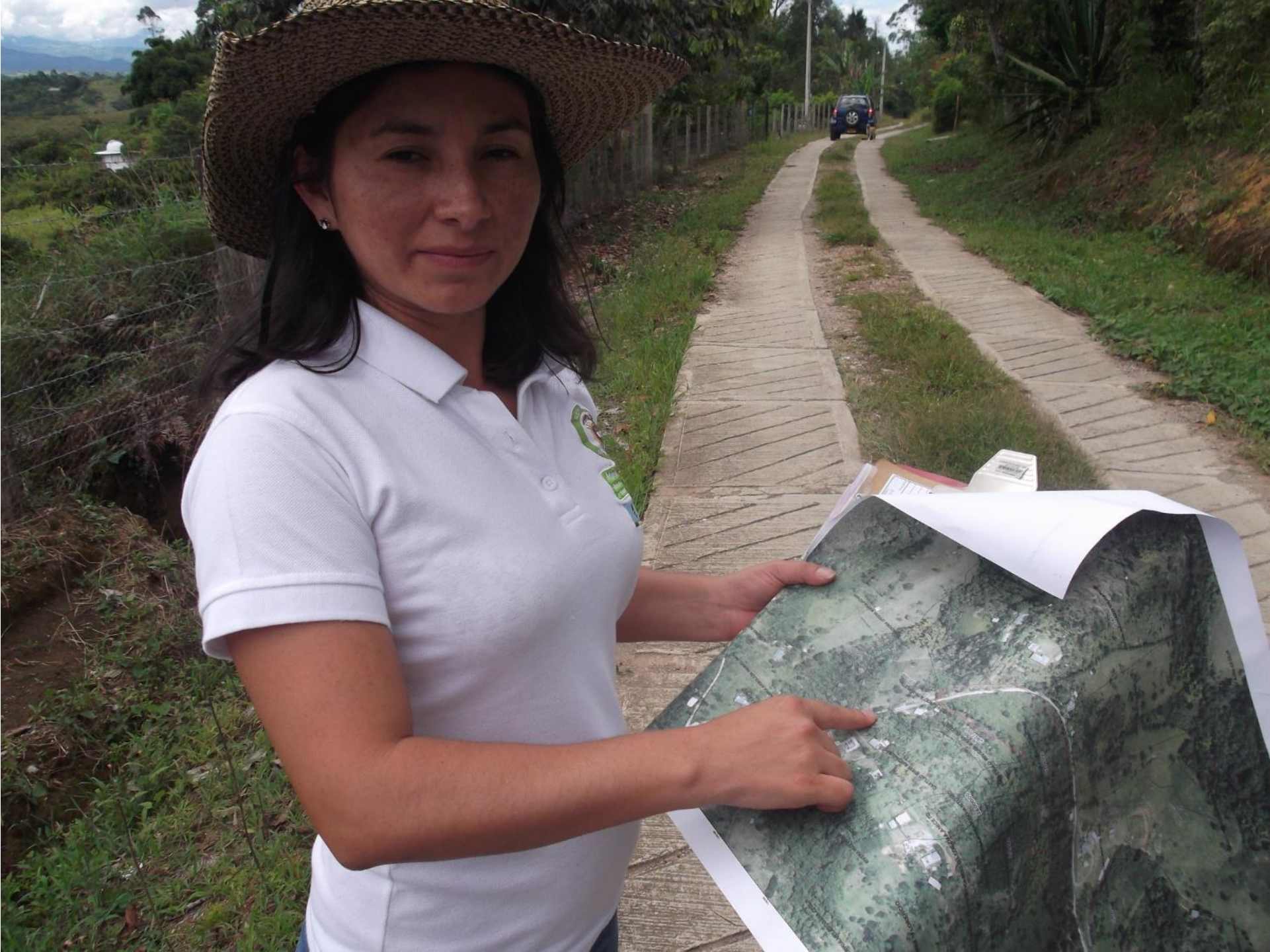


Legend  
Pushing Parcels





# Case 2 - Colombia









0285000

CASTILLO RIV

CAMAYO IDROBO LEONIGILDO

EDEN MARTA MARTHA ELIOM

0285000





0:52

5055  
ANEXO  
RD 003

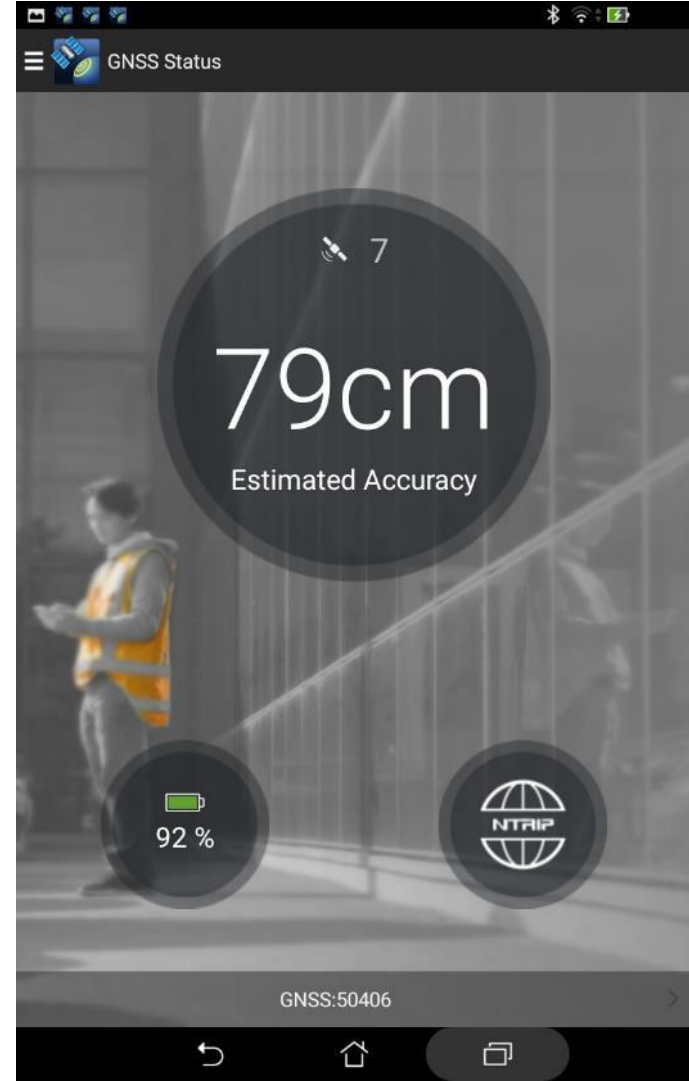
LEDEZMA ASTAIZA MARTHA-EUCIA

NAKVAE

# Case 3 - Colombia









Details

**Party: Jaime Rodrigo Gutierrez Correa**

*Edited by j.moral\_EsriLandInternal an hour ago*

NAME  
**Jaime Rodrigo Gutierrez Correa**

TYPE  
**Natural person**

CREATED\_USER



CREATED\_DATE  
**May 29, 2015**

LAST\_EDITED\_USER

LAST\_EDITED\_DATE  
**June 01, 2015**

PARTY ROLE

- View
- New

Details

**Party: Gilma Velez de Gutierrez**

*Edited by j.moral\_EsriLandInternal 13 minutes ago*

NAME  
**Gilma Velez de Gutierrez**

TYPE  
**Natural person**

CREATED\_USER



CREATED\_DATE  
**May 29, 2015**

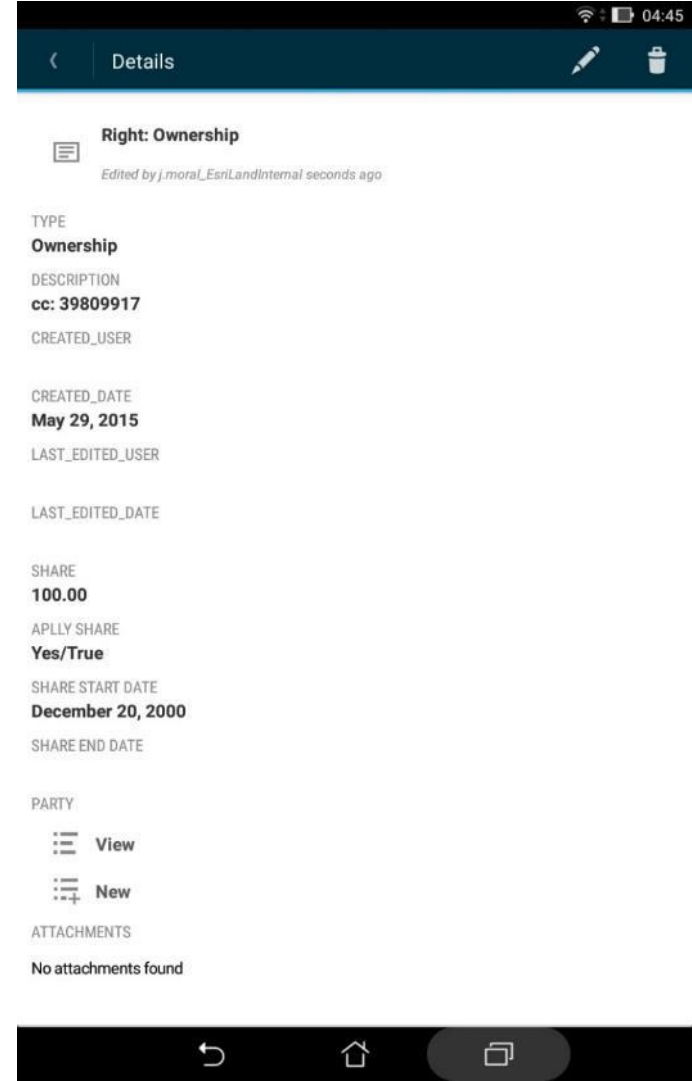
LAST\_EDITED\_USER

LAST\_EDITED\_DATE

PARTY ROLE

- View
- New

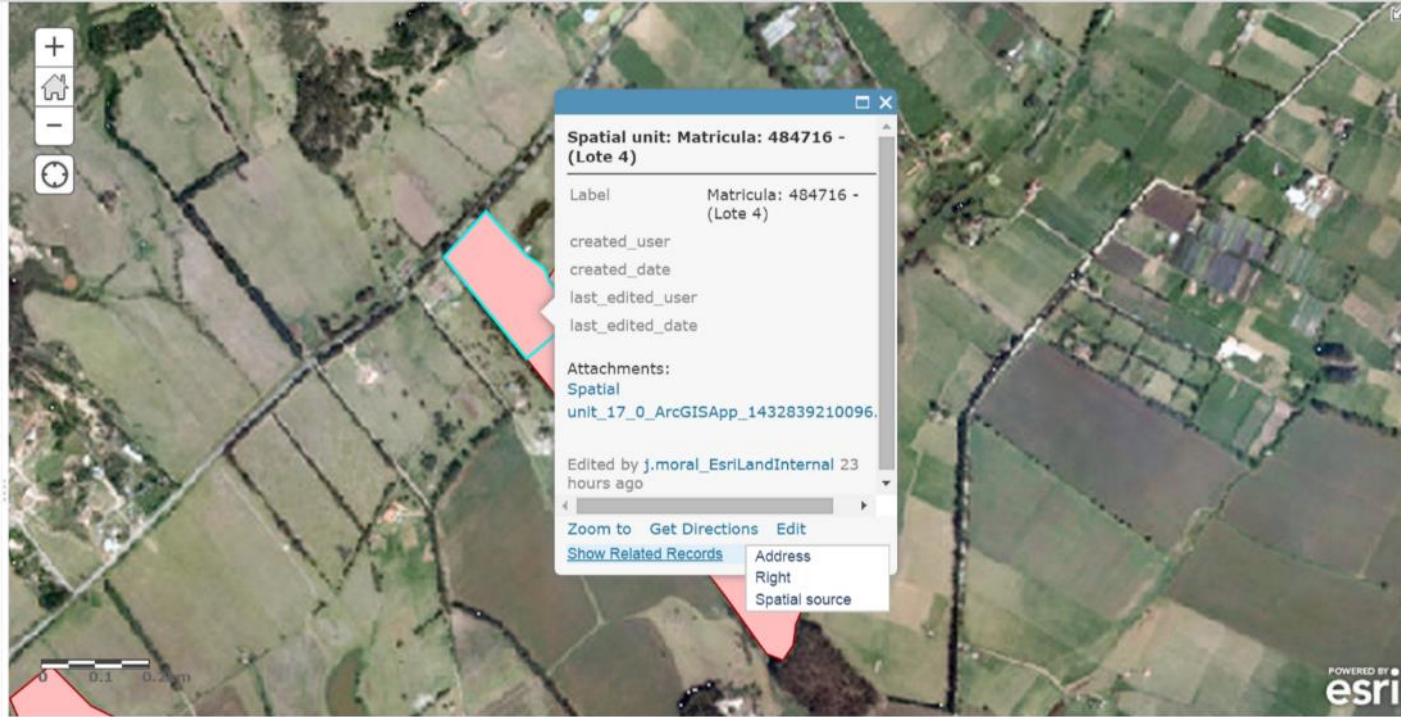


Legend

Spatial unit



Spatial source



Right (2 features)

Table Options ▾

Type	Description	created_user	created_date	last_edited_user	last_edited_date	Share	Apply share	Share start date	Share end date
Ownership	cc: 2929545		May 29, 2015			50.00	Yes/True	December 20, 2000	
Ownership	cc: 24287907		May 29, 2015			50.00	Yes/True	November 20, 2000	

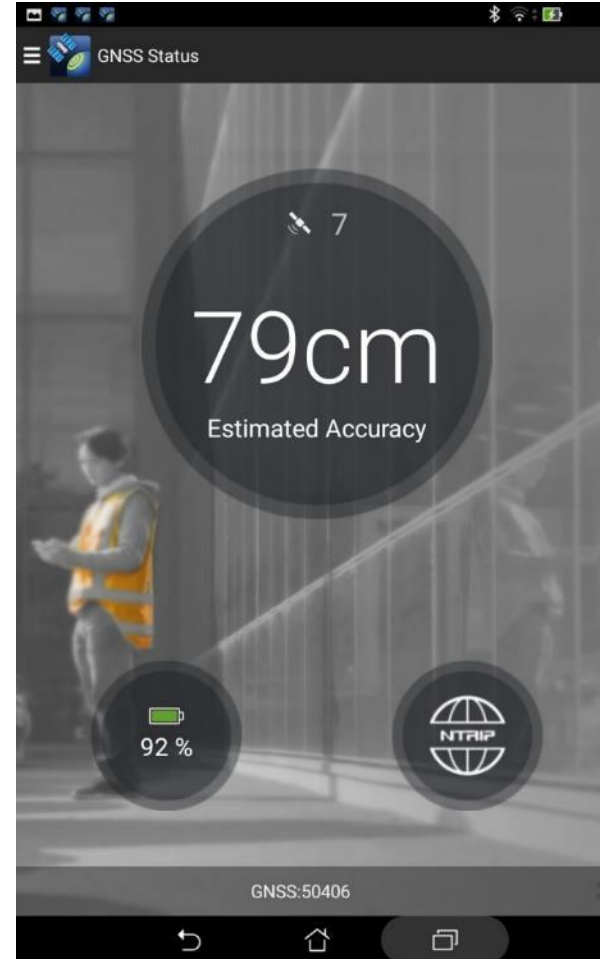
# Concept

- Trimble R1
- Ortho Photos
- App based on Esri Collector for ArcGIS
- Storage in the cloud
- Involvement owners/users



# Accuracy

- Value of the land
- Allowed differences





# Case 4 – Kenya

















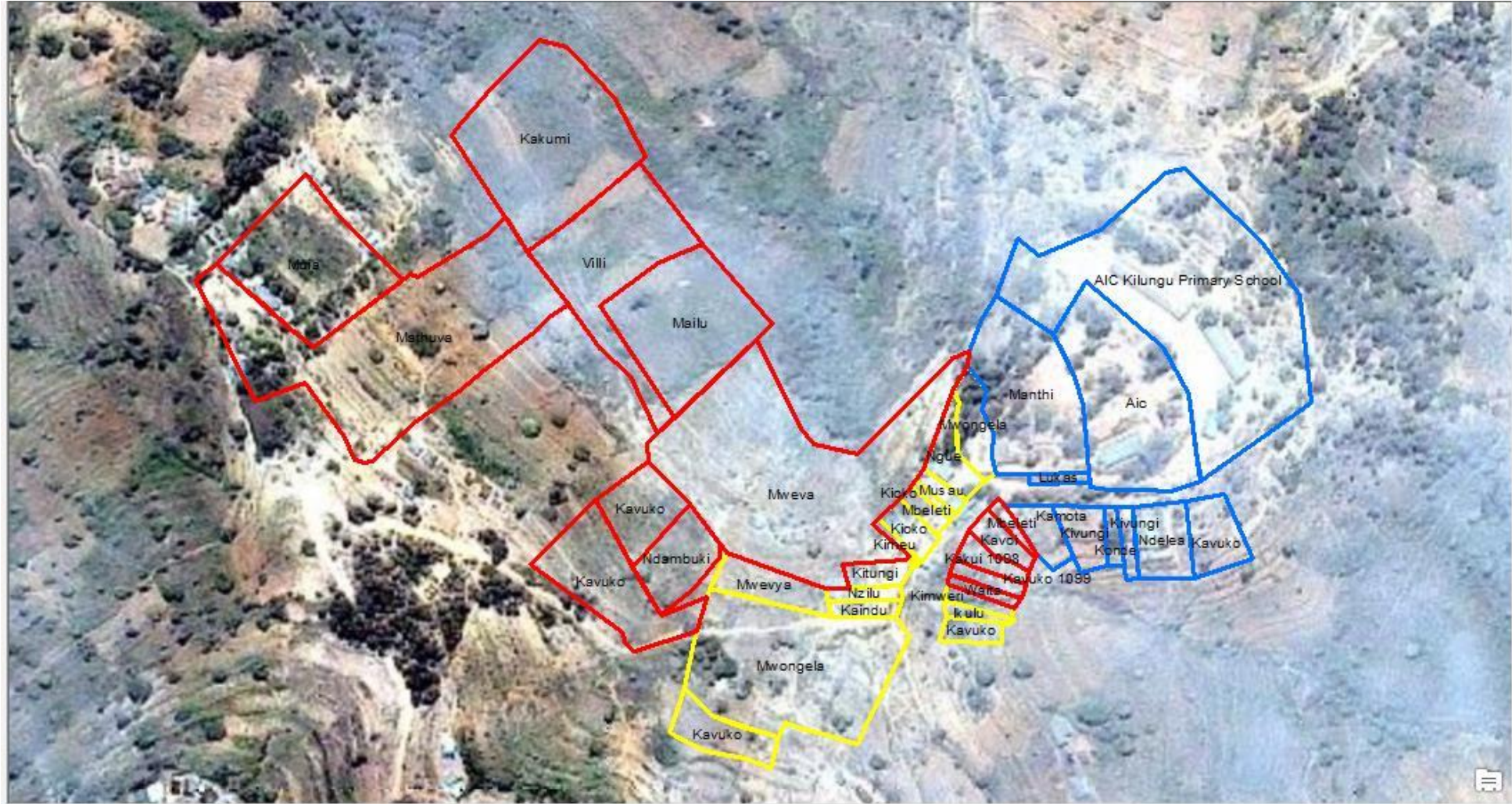














**SPECTRA**  
**PRECISION**

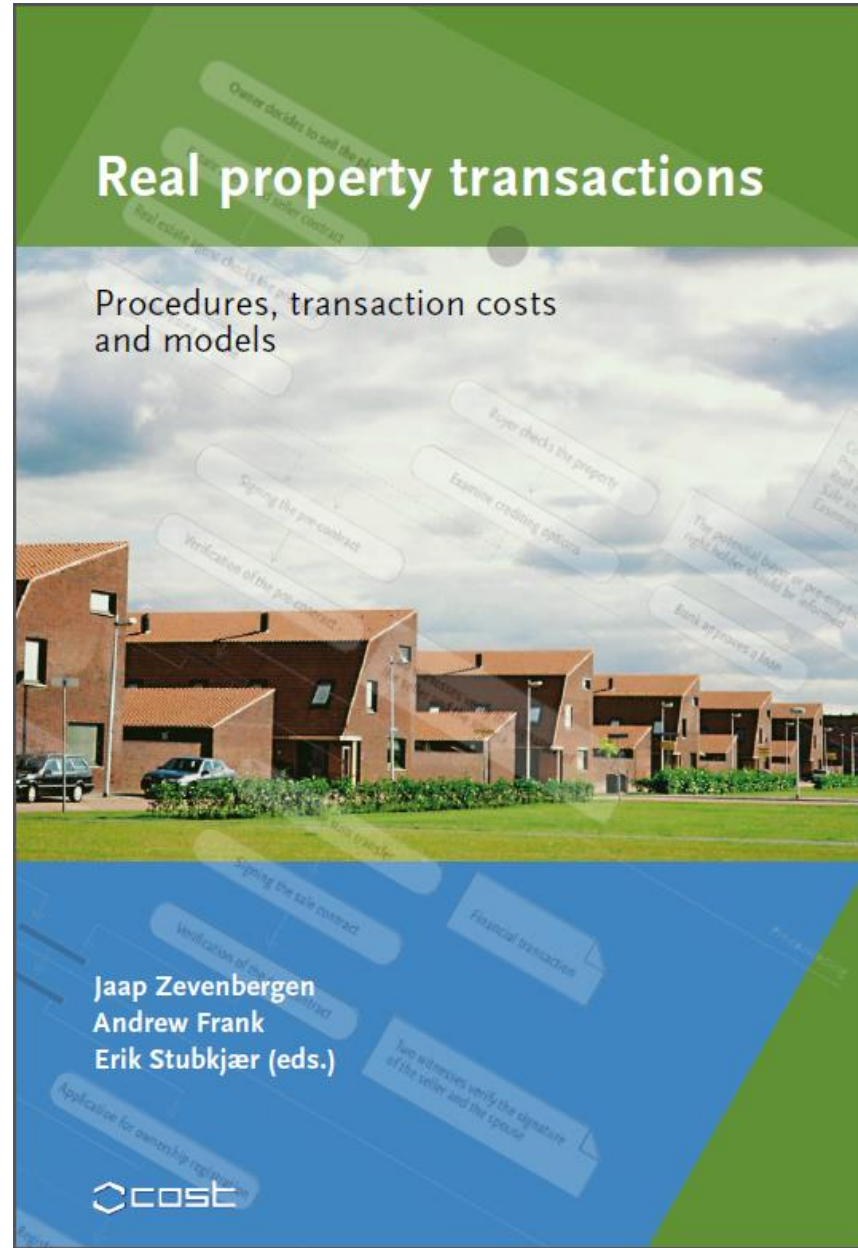
GNSS SURVEYOR  
BANK

14 CE  
TruLife

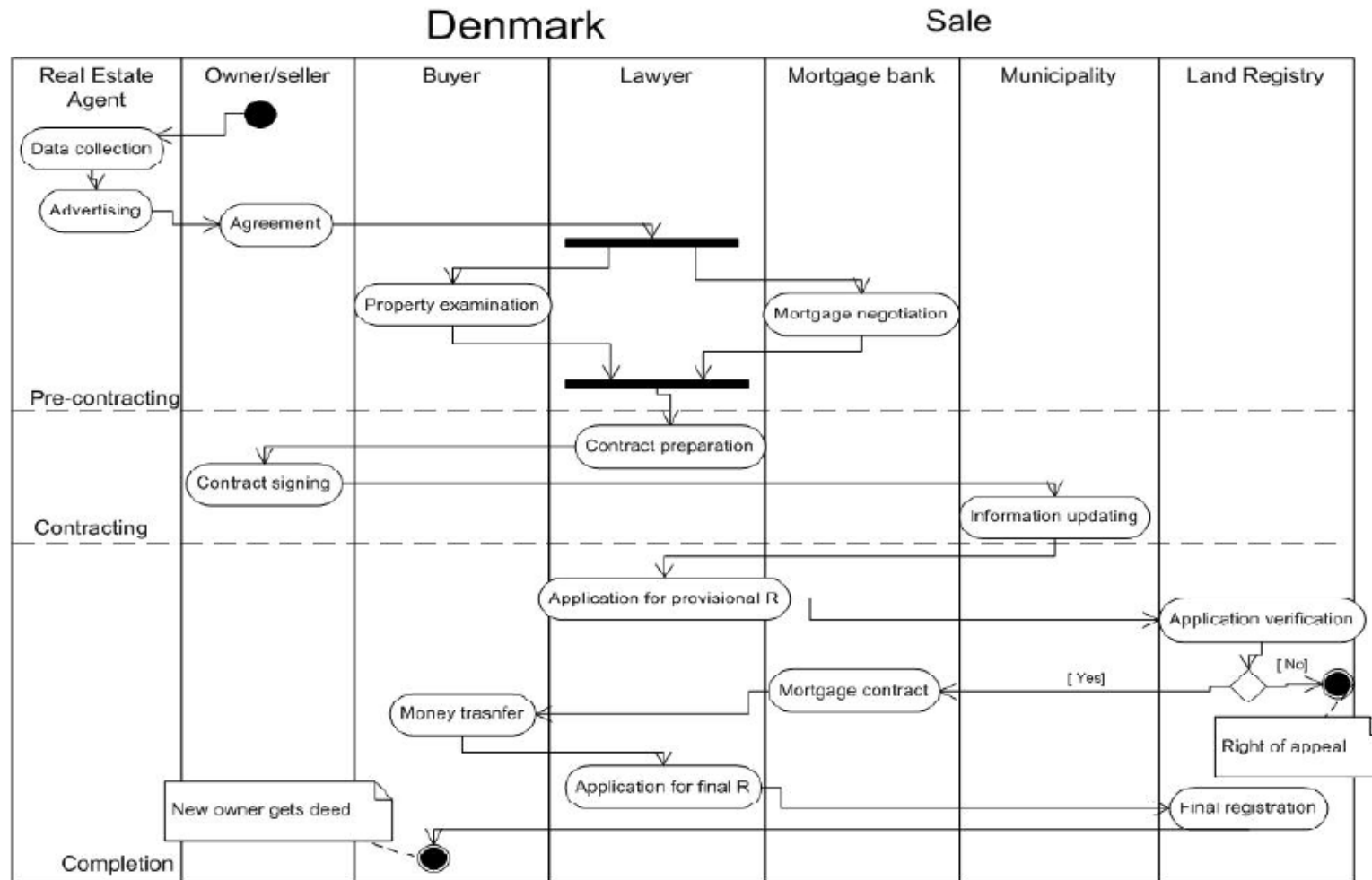




# Transactions



# Activity Diagrams



# Blockchain

Source: Michael Graglia, Christopher Mellon

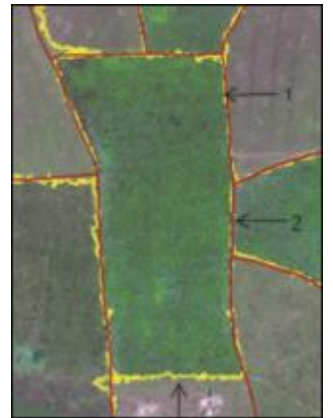
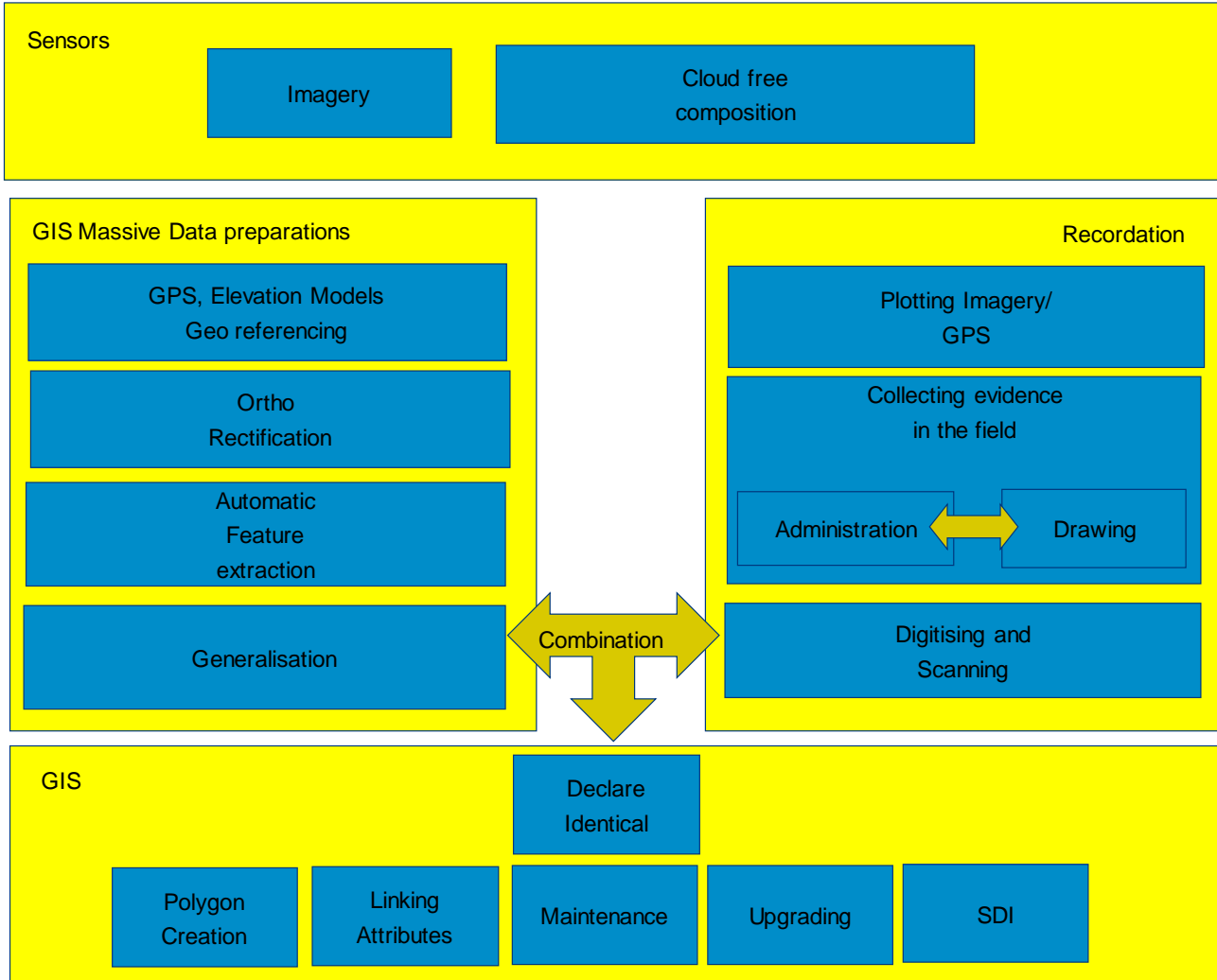
## Blockchain Registry Integration Framework



Level	Name	Description	Example
0	No Integration	No use of blockchain	Most of the world
1	Blockchain Recording	Public blockchain used to record documents related to land transactions	Brazil, Georgia, Dubai
2	Smart Workflow	Blockchain used to record progress of a transaction	Sweden, Dubai Properties (Landstream)
3	Smart Escrow	Smart contracts used for escrowing payment	Propy
4	Blockchain Registry	Central database replaced with a permissioned blockchain	Dubai
5	Disaggregated Rights	Various rights to a single parcel are disaggregated and managed via blockchain	No known example
6	Blockchain Fractional Rights	Rights for a given parcel are fragmented and managed via blockchain	Pangea (potentially)
7	Peer-to-Peer Transactions	Rights are transacted without intermediaries on Level 4 system	No known example
8	Interoperability	Different blockchain registries merge	No known example



# Automated Feature Extraction



# Participatory: paper – digital...





# Quality Principles

Completeness

Logical Consistency

Topological Consistency

Positional Accuracy

Temporal Accuracy

Thematic Accuracy

ISO 19113 Geographic information -- Quality principles  
ISO 19157 Geographic information -- Data quality







Party

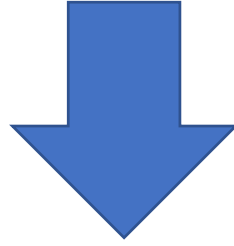
RRR

Spatial  
Unit

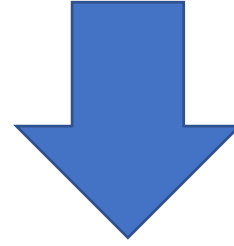




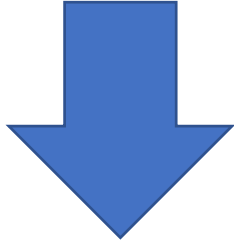
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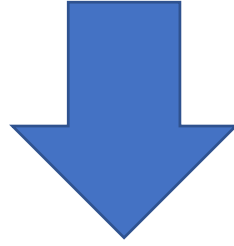
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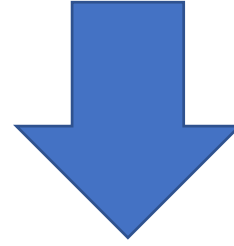
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Unit



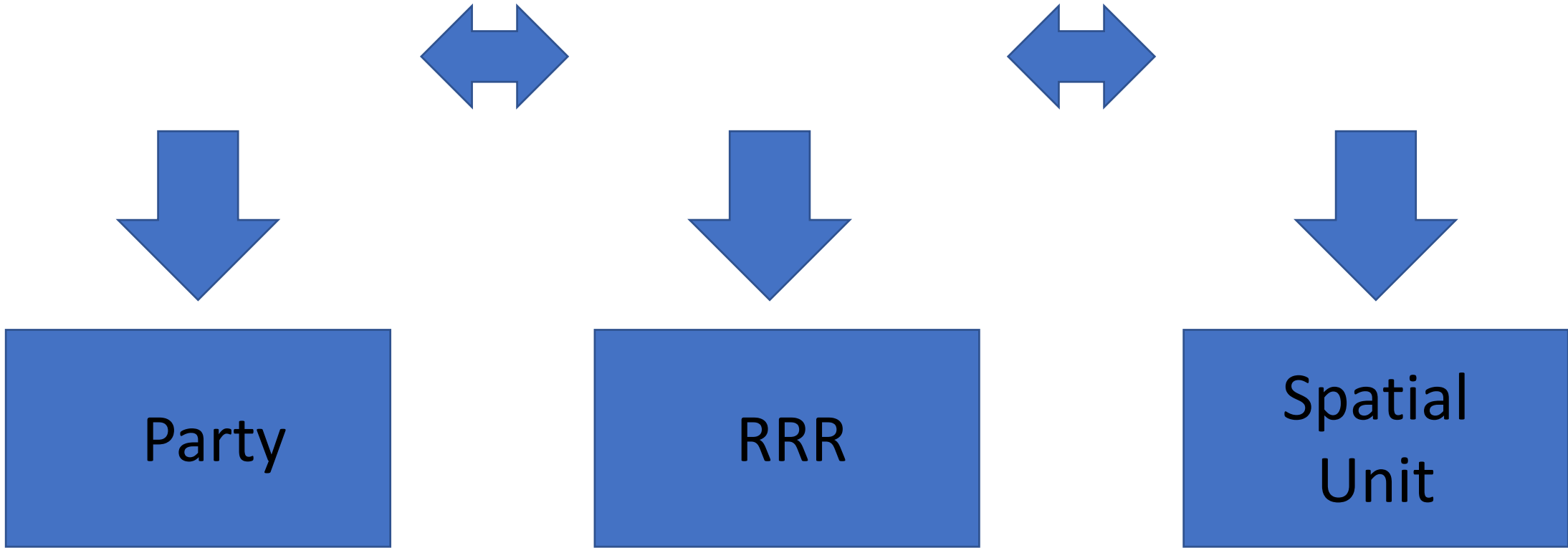
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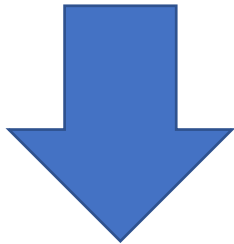
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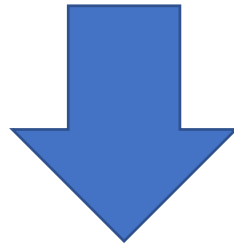
Spatial  
Unit



Party



RRR



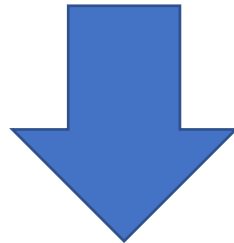
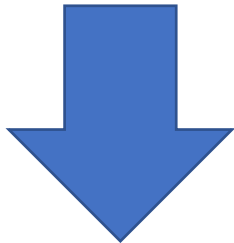
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Unit



Party

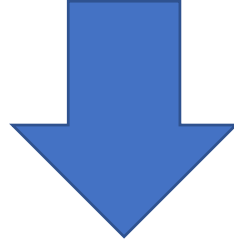
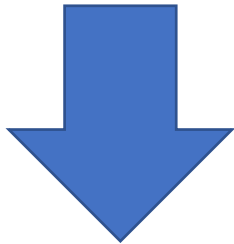
RRR

Spatial  
Unit

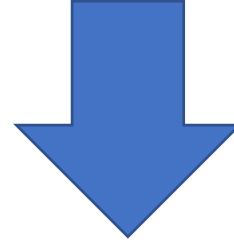
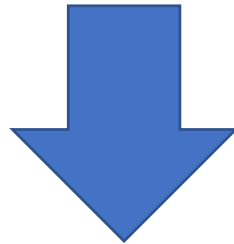




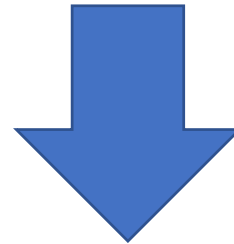
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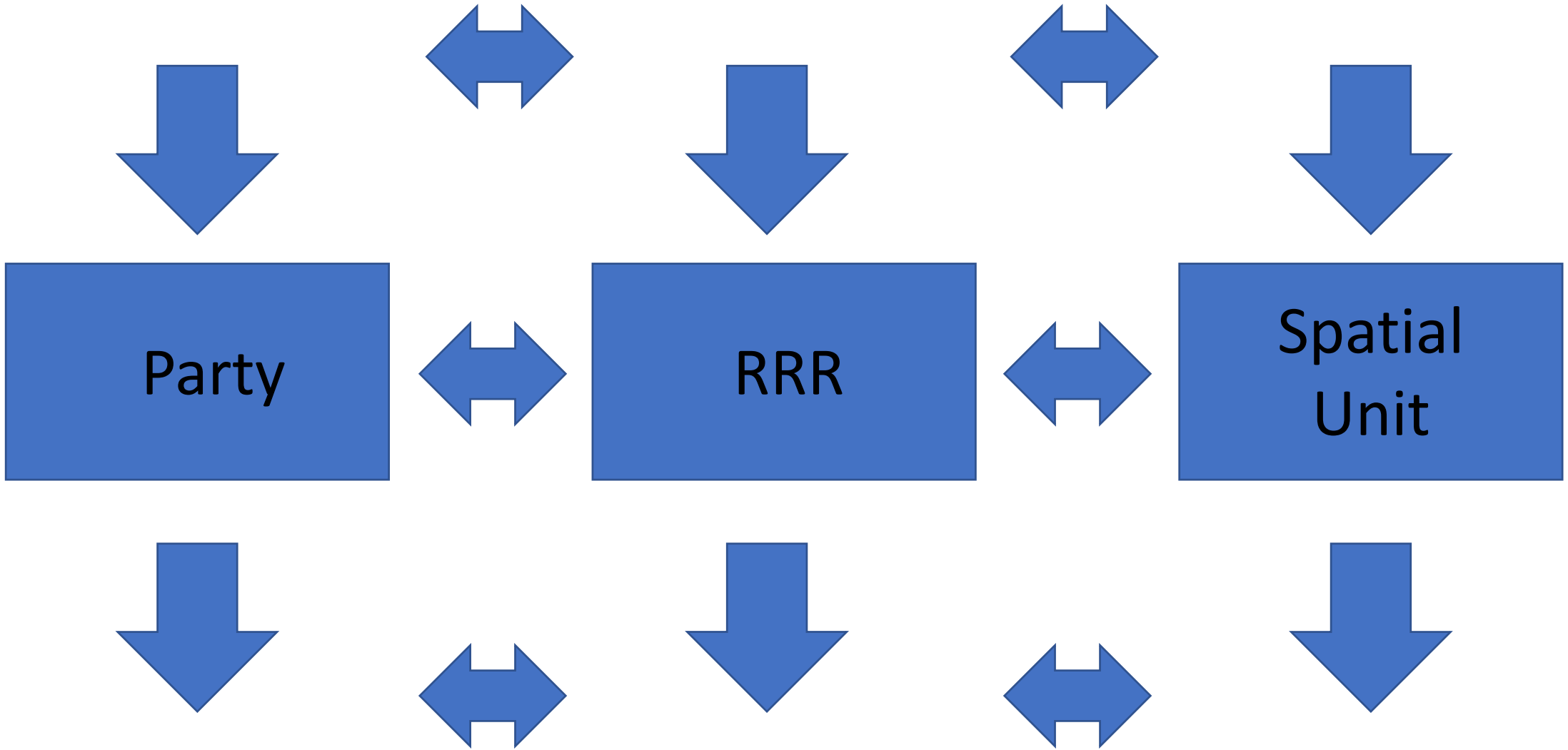
RRR



Spatial  
Unit







# Processes

- Initial data acquisition
- Georeferencing
- Elevation model
- Identification
- Transactions
- Surveying/Mapping/Adjustments
- Subdivision, merge
- Information provision
- A/D Conversion
- Formalisation
- Quality improvement
- Map Renovation
- Public inspection
- Area management
- Land consolidation
- Land readjustment
- Fragmentation index
- Price index
- Cloud-free images
- Informing authorities/citizens
- Crowdsourcing
- Scanning, printing
- Digitizing
- Customers request (application)
- Public inspection
- Sending letters
- Objection, complaint
- Maintenance historical data
- Signature (digital)
- Topology building
- Time registration
- Resource management
- Developing norms
- Workflows
- IT Support – ITIL

# Processes

- Transactions
- Blockchain
- Surveying
- Imagery
- 3D and 4D

## Services

Yes

Yes

Yes

BIM

Thanks