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

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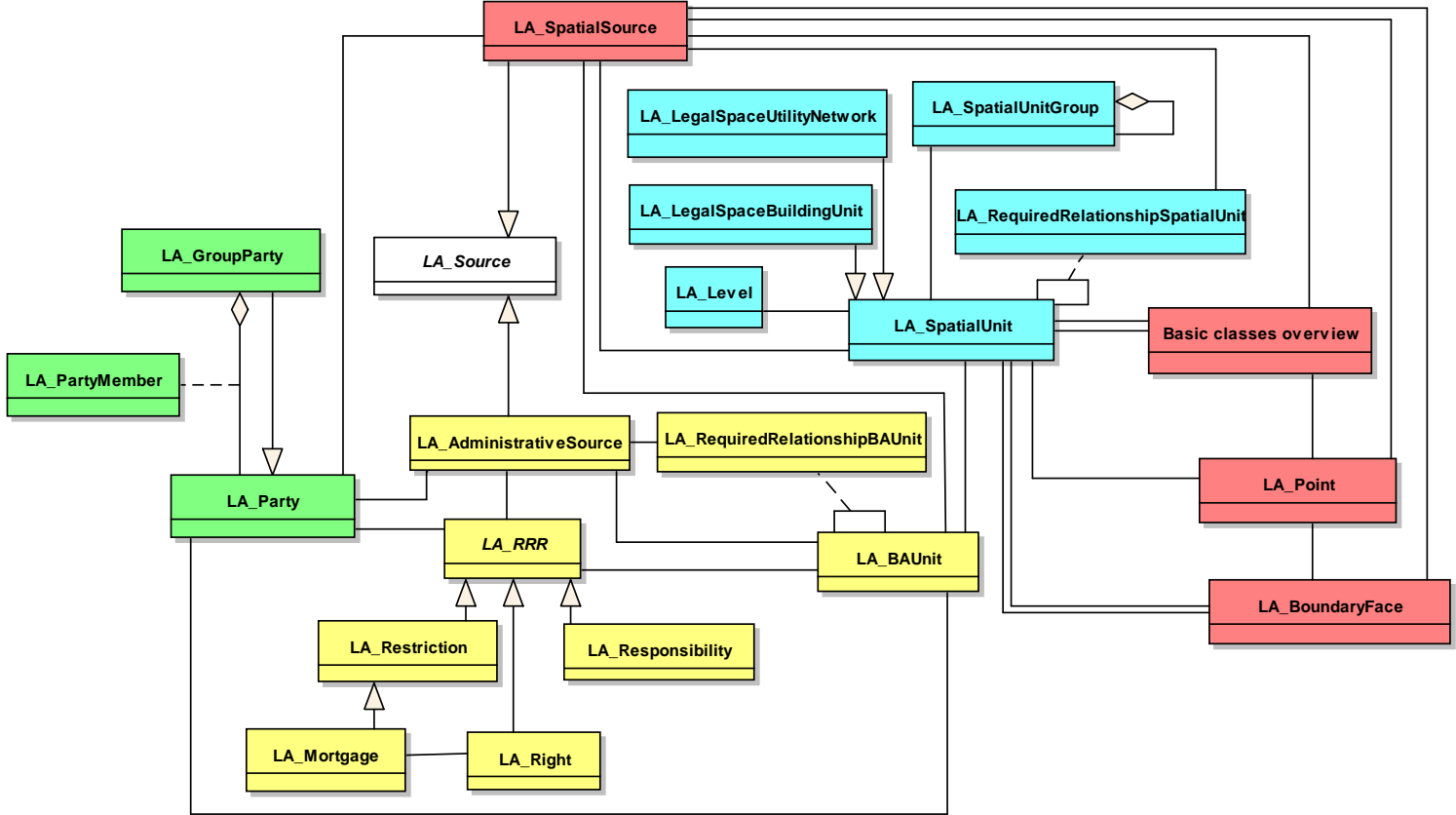
Christiaan LEMMEN, Peter van OOSTEROM, Eva-Maria UNGER, Kees de ZEEUW, the Netherlands and Mohsen KALANTARI, Australia

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

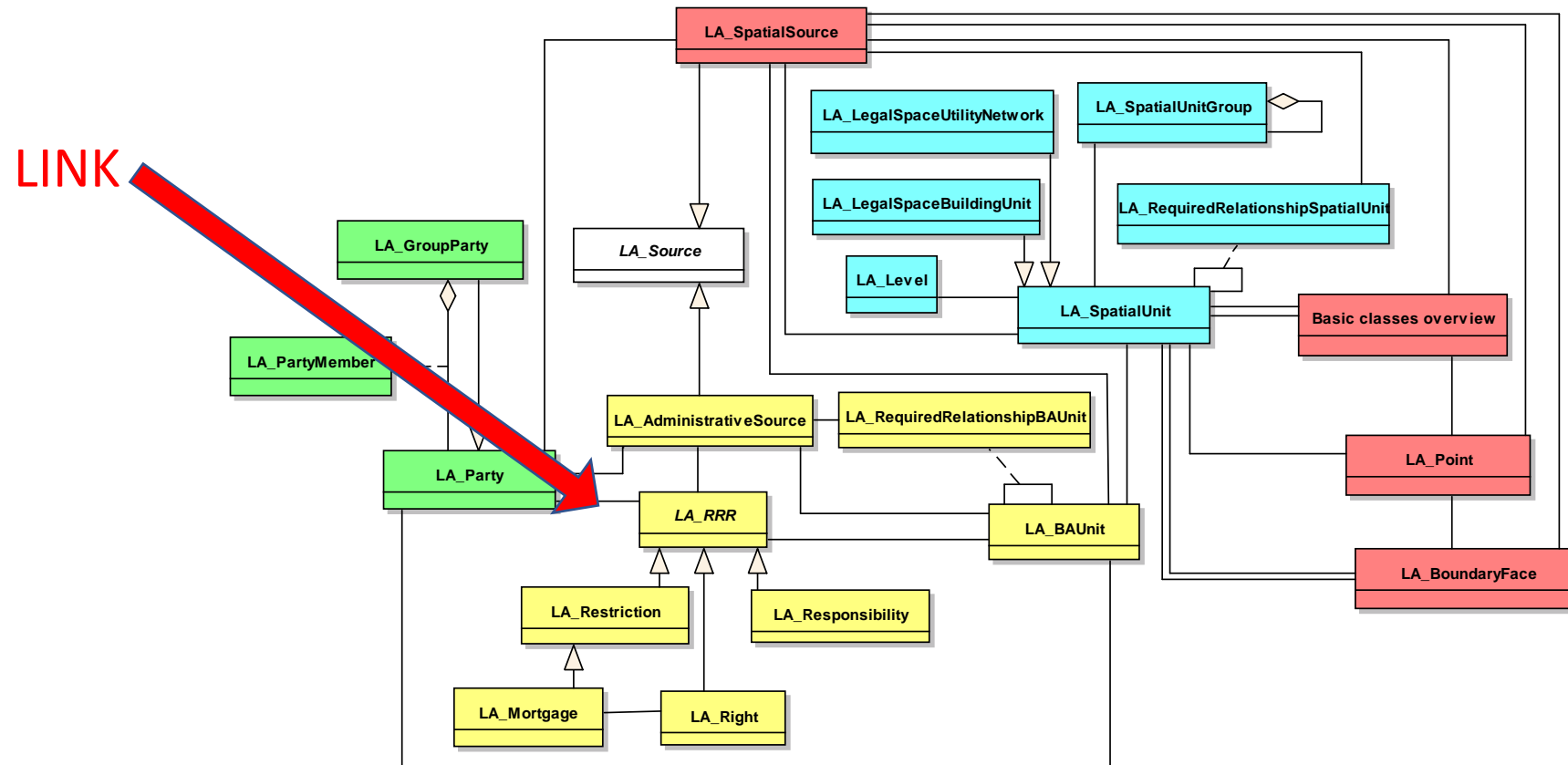
# Processes

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

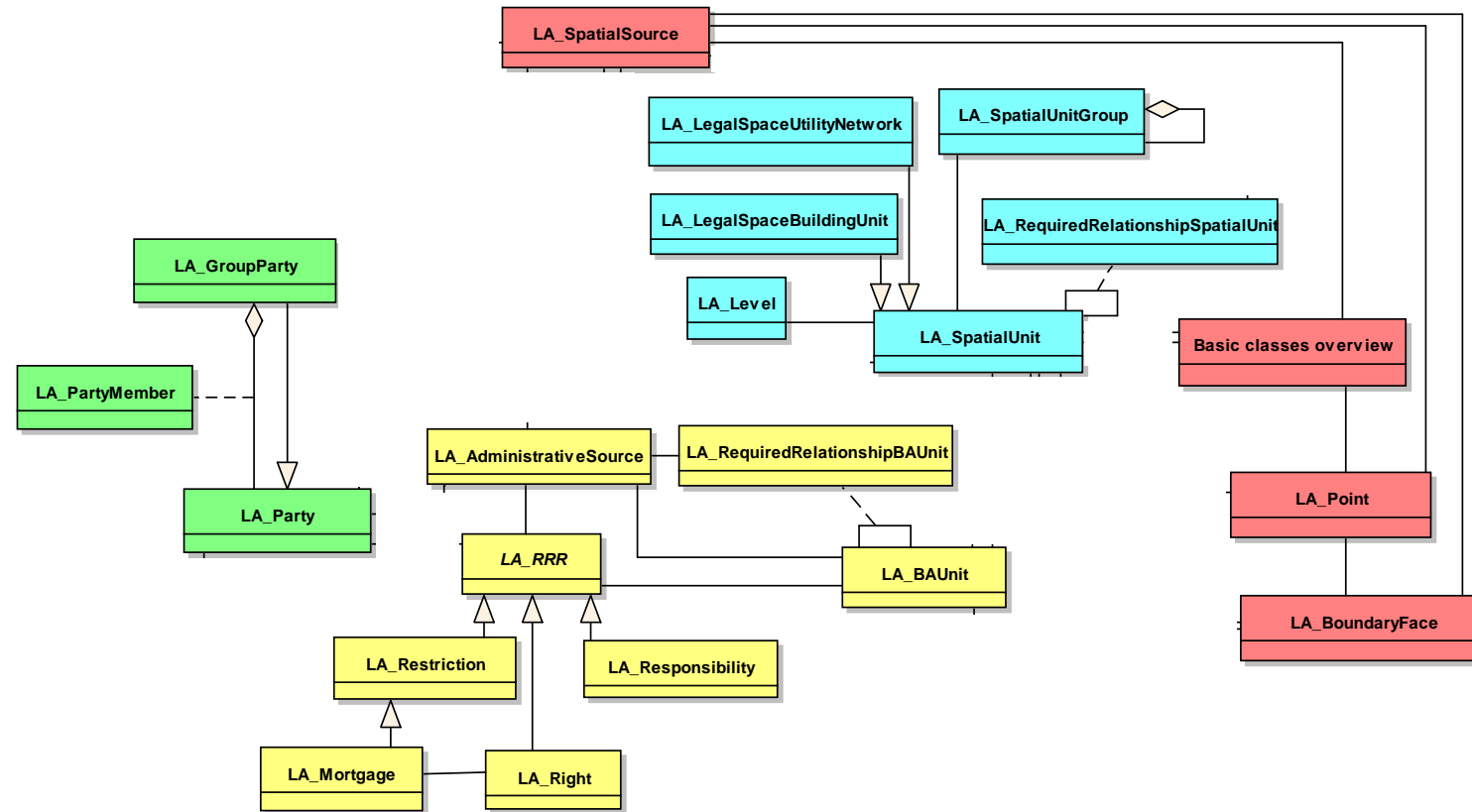
# LADM



# Associations between Classes: distributed responsibilities



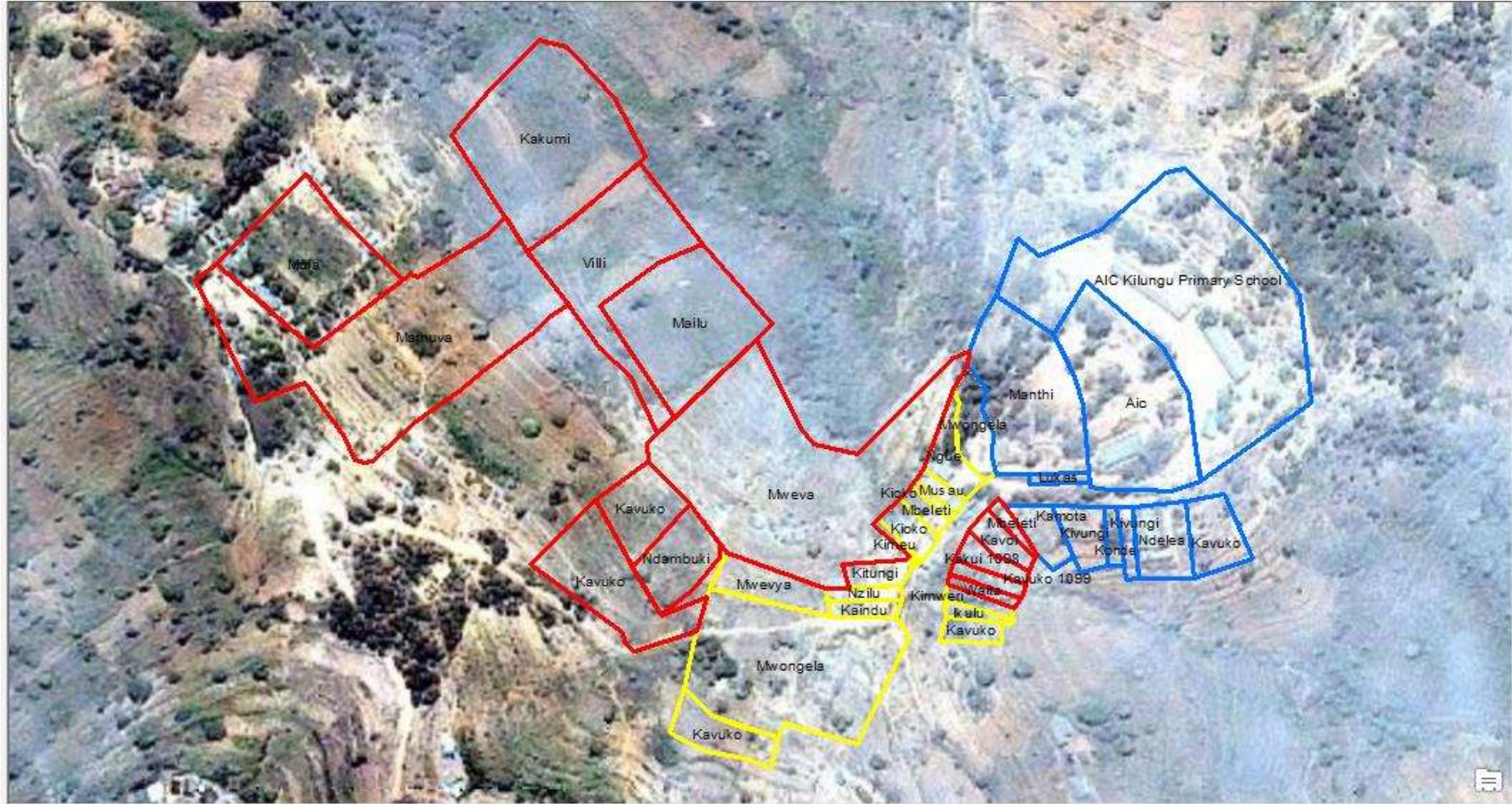
# Associations between Classes: distributed responsibilities



# Participatory Surveying







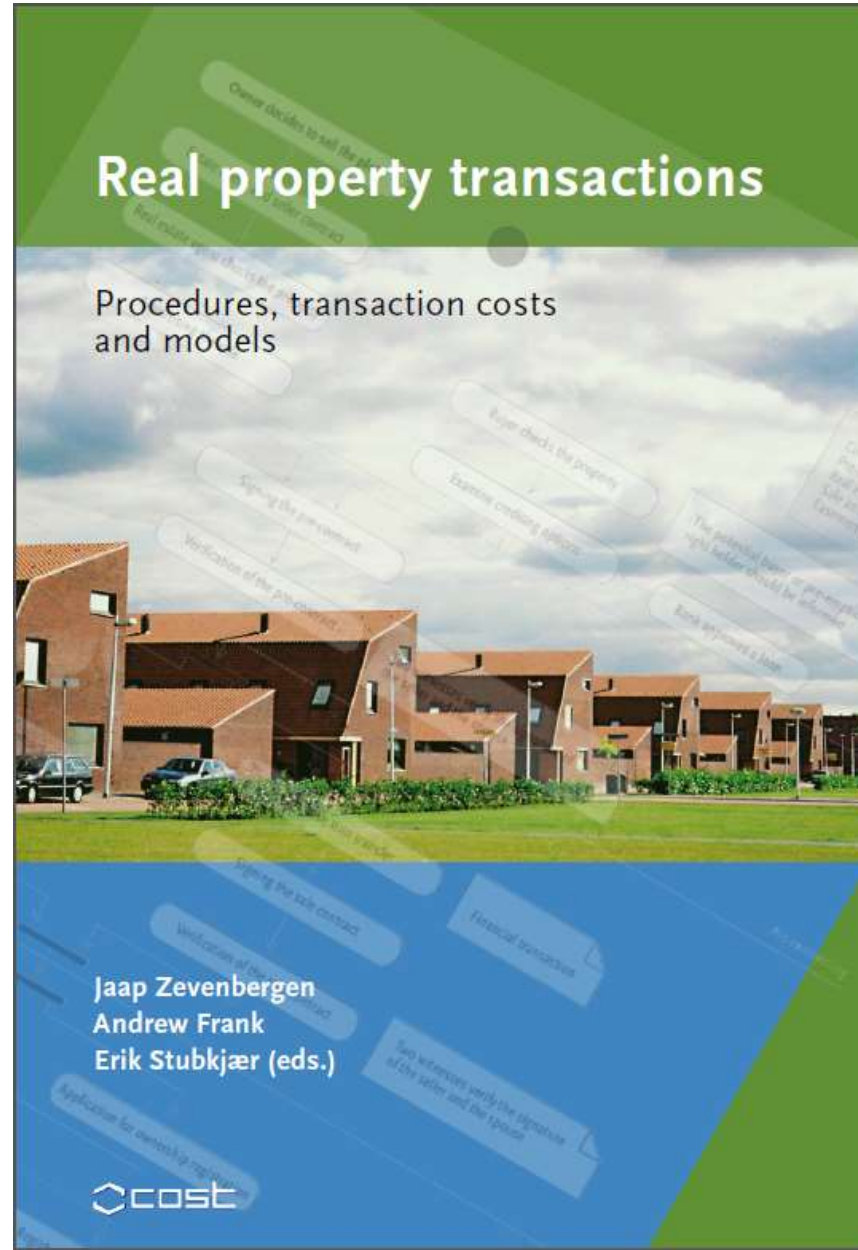




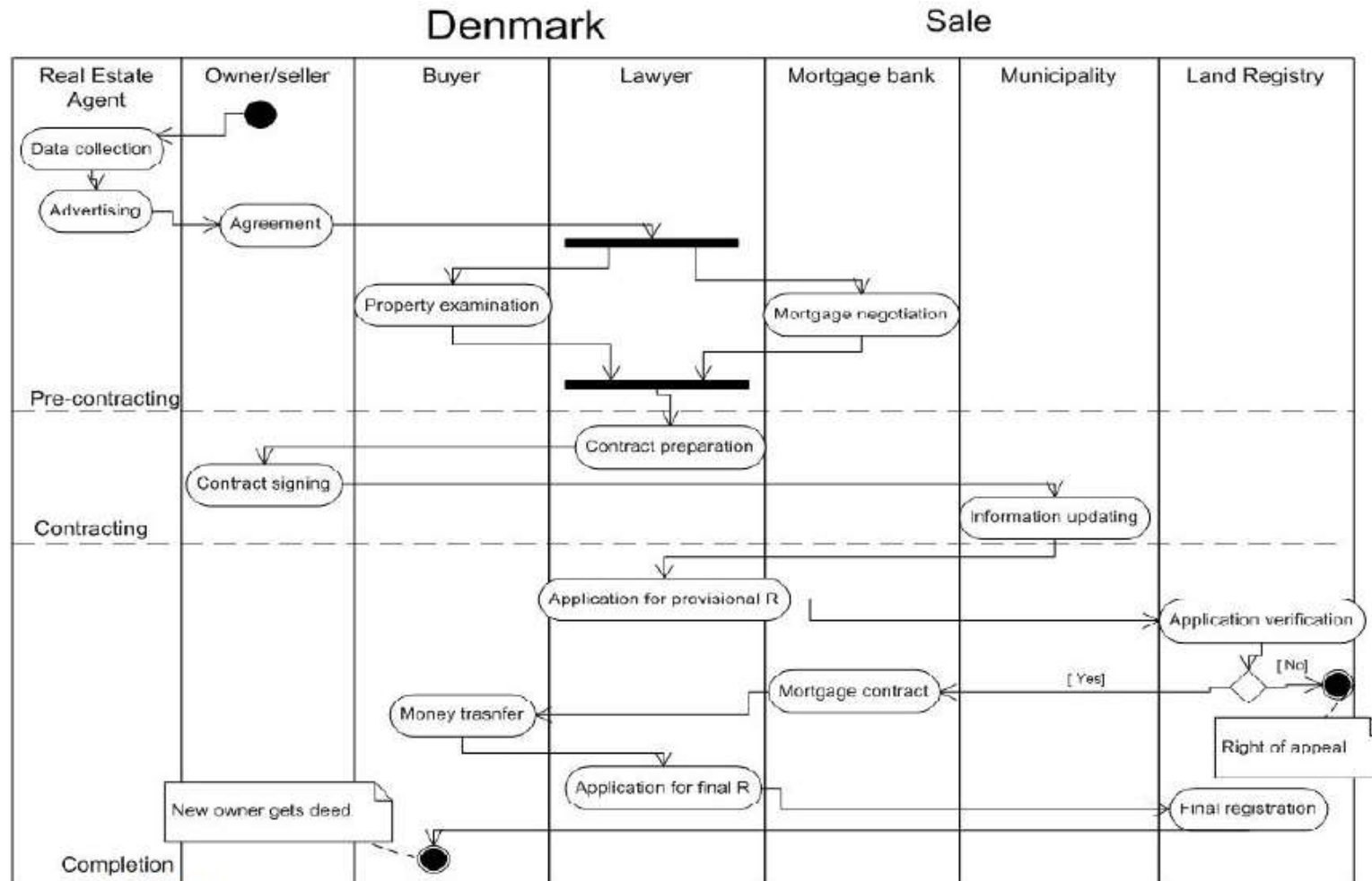




# Transactions



# Activity Diagrams



# Blockchain

Source: Michael Graglia, Christopher Mellon

## Blockchain Registry Integration Framework



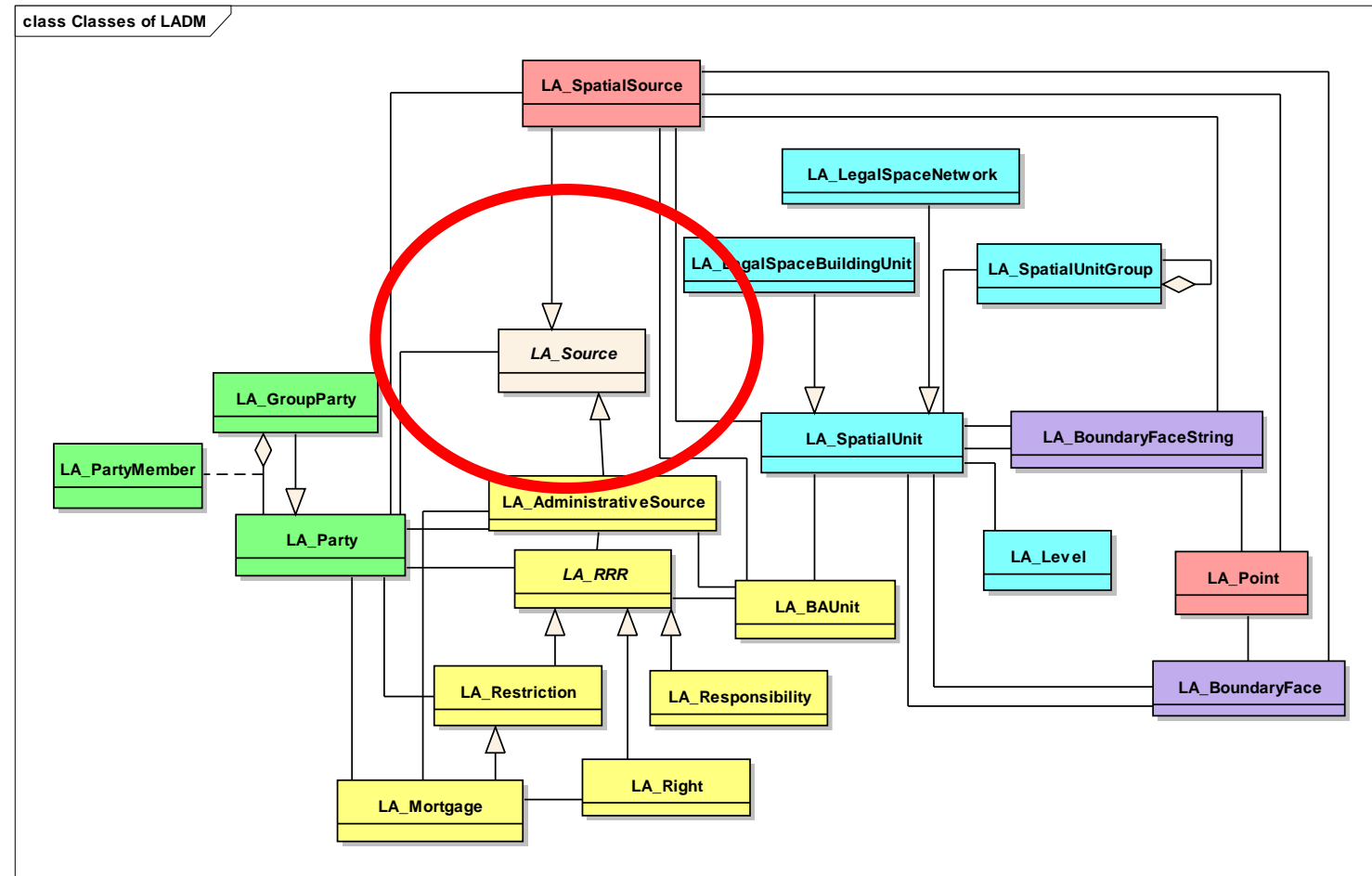
Level	Name	Description	Example
0	No Integration	No use of blockchain	Most of the world
1	Blockchain Recording	Public blockchain used to record documents related to land transactions	Brazil, Georgia, Dubai
2	Smart Workflow	Blockchain used to record progress of a transaction	Sweden, Dubai Properties (Landstream)
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



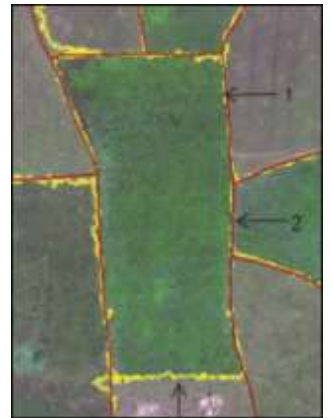
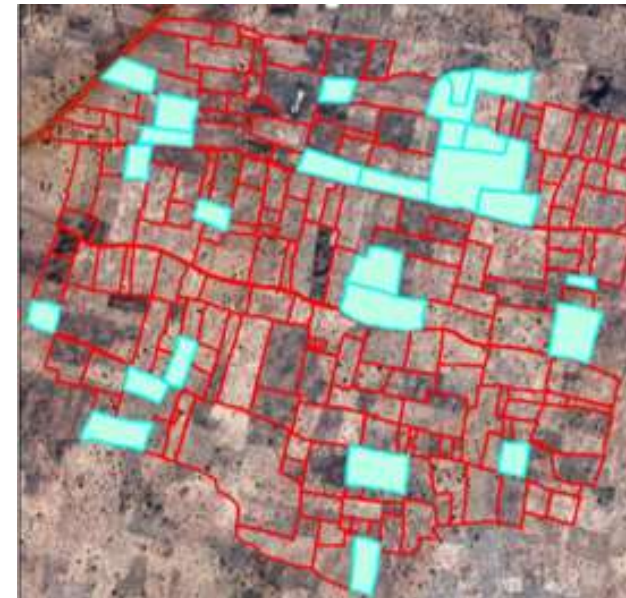
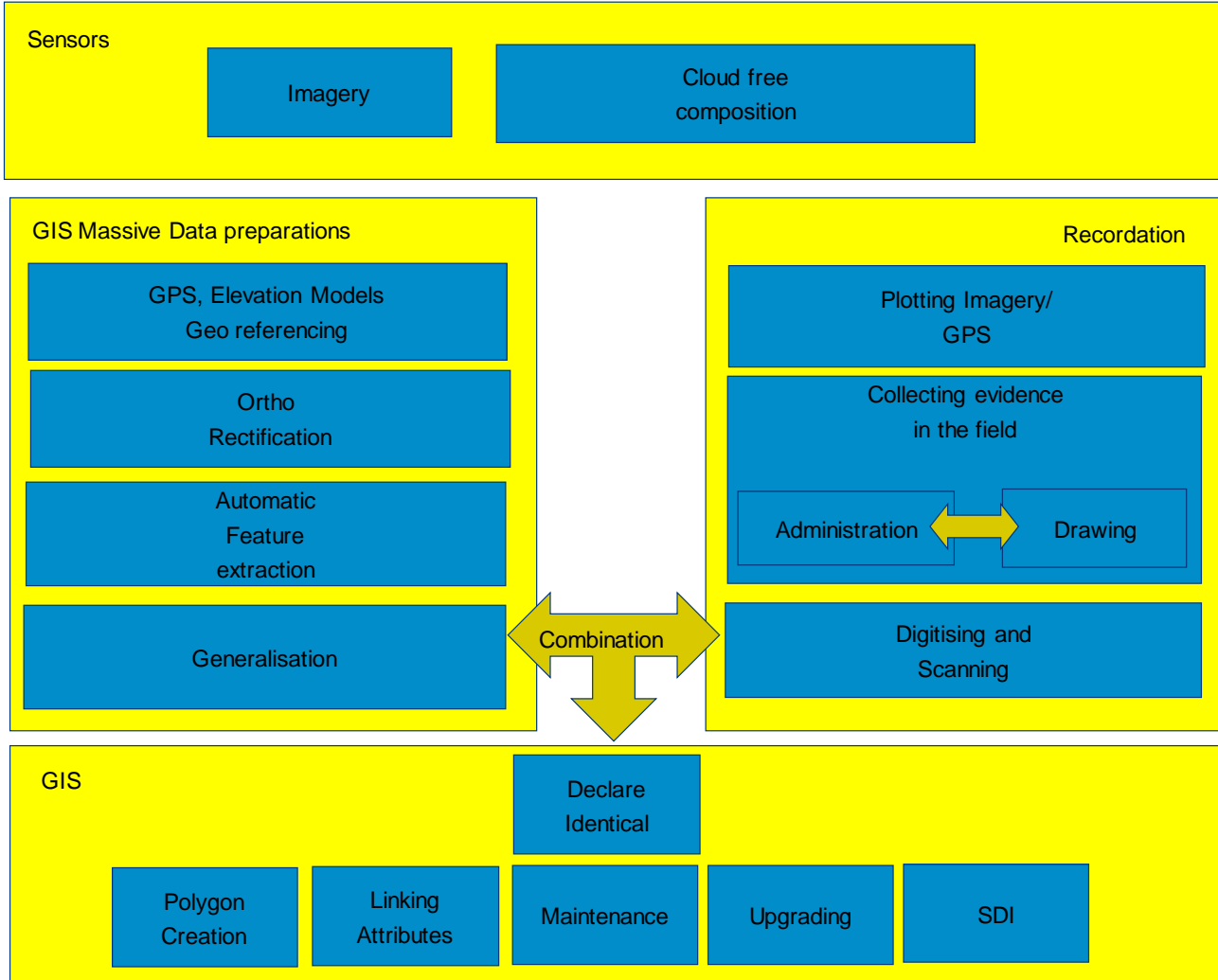
# LA\_Source Basis for Blockchain Application?

## Packages:

- Party Package
- Administrative Package
- Spatial Unit Package – with sub-package Surveying and Representation



# Automated Feature Extraction

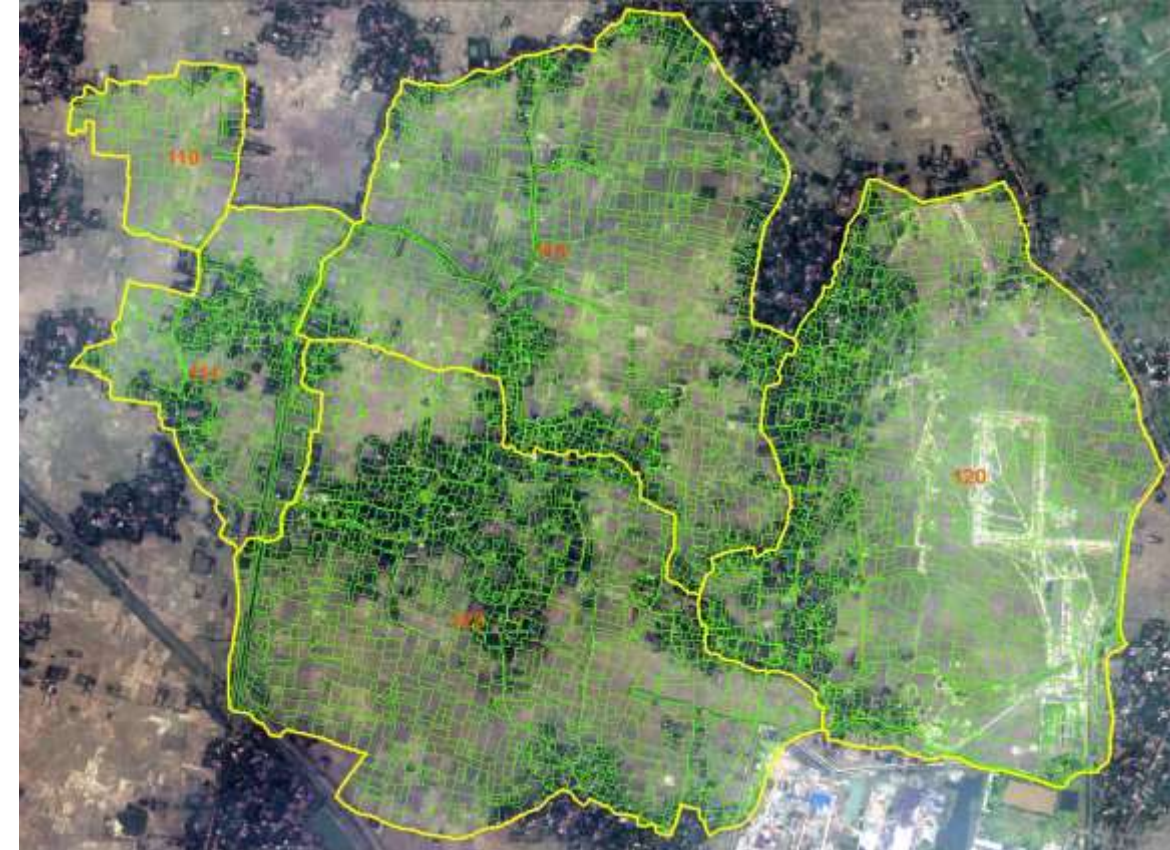
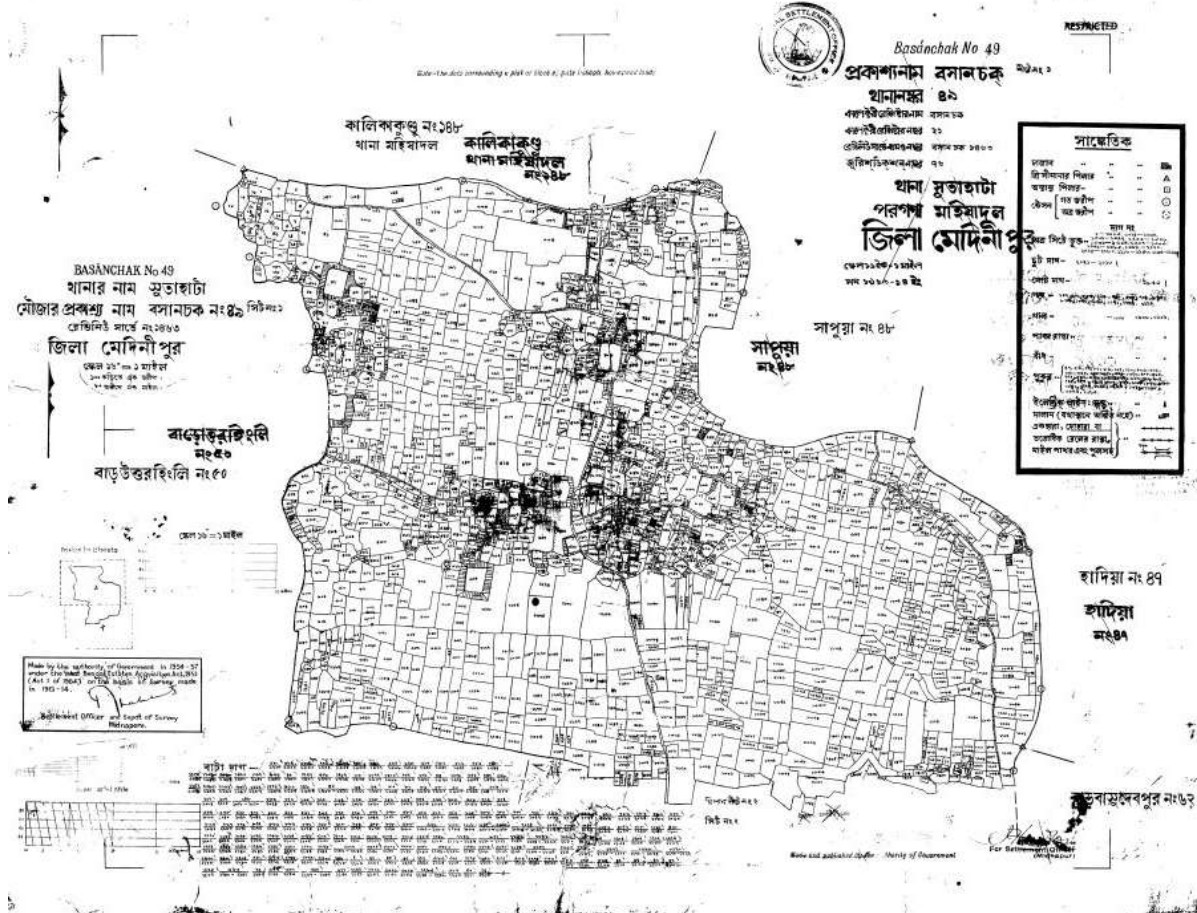


# Participatory: paper – digital...





# Legacy Data



Party

RRR

Spatial  
Unit

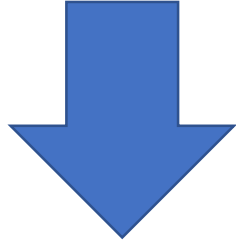




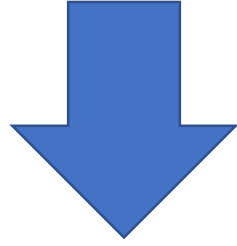
Party

RRR

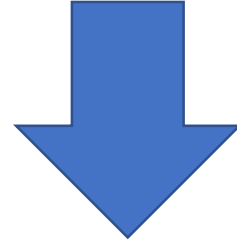
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Unit



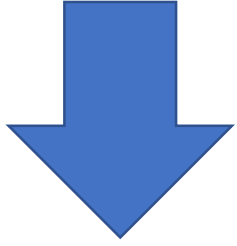
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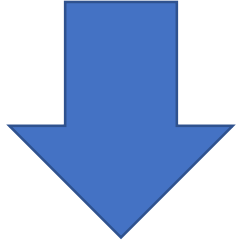
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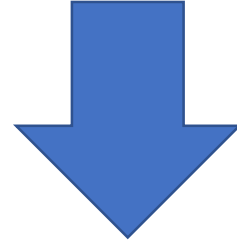
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Unit



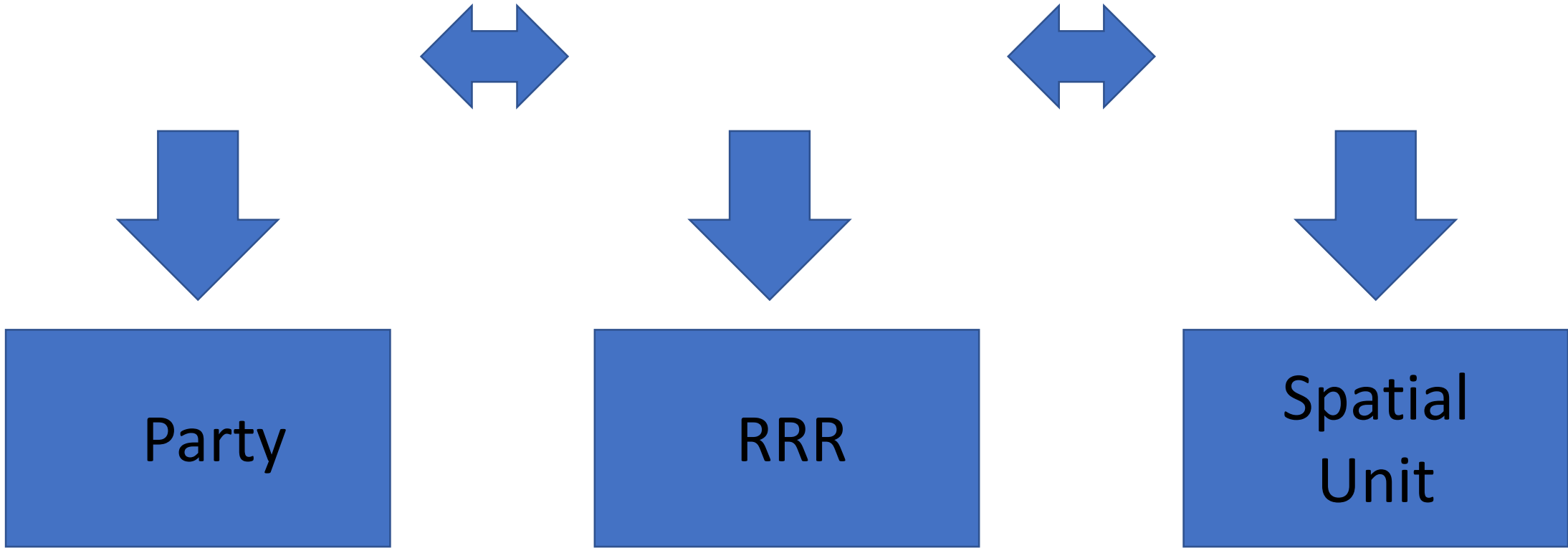
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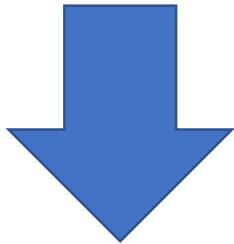
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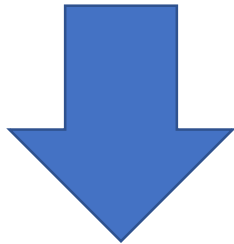
Spatial  
Unit



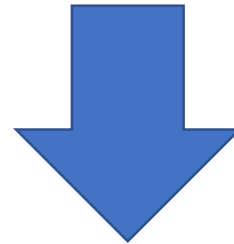
Party



RRR



Spatial  
Unit

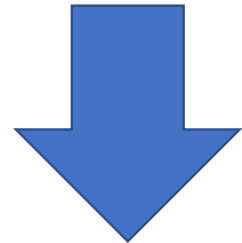
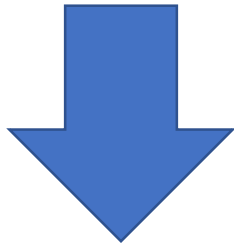
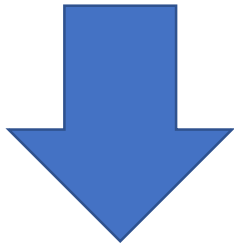


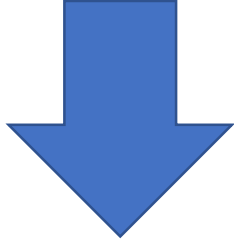


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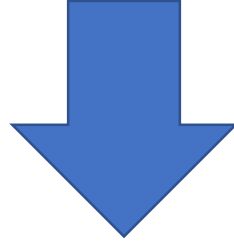
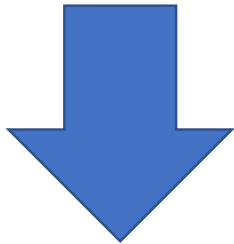
RRR

Spatial  
Unit

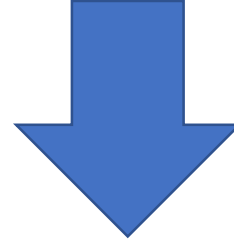
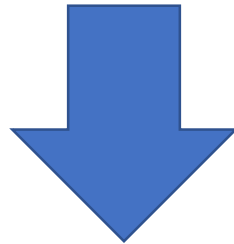




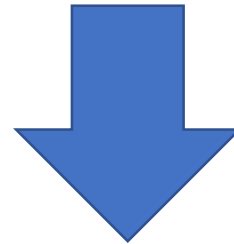
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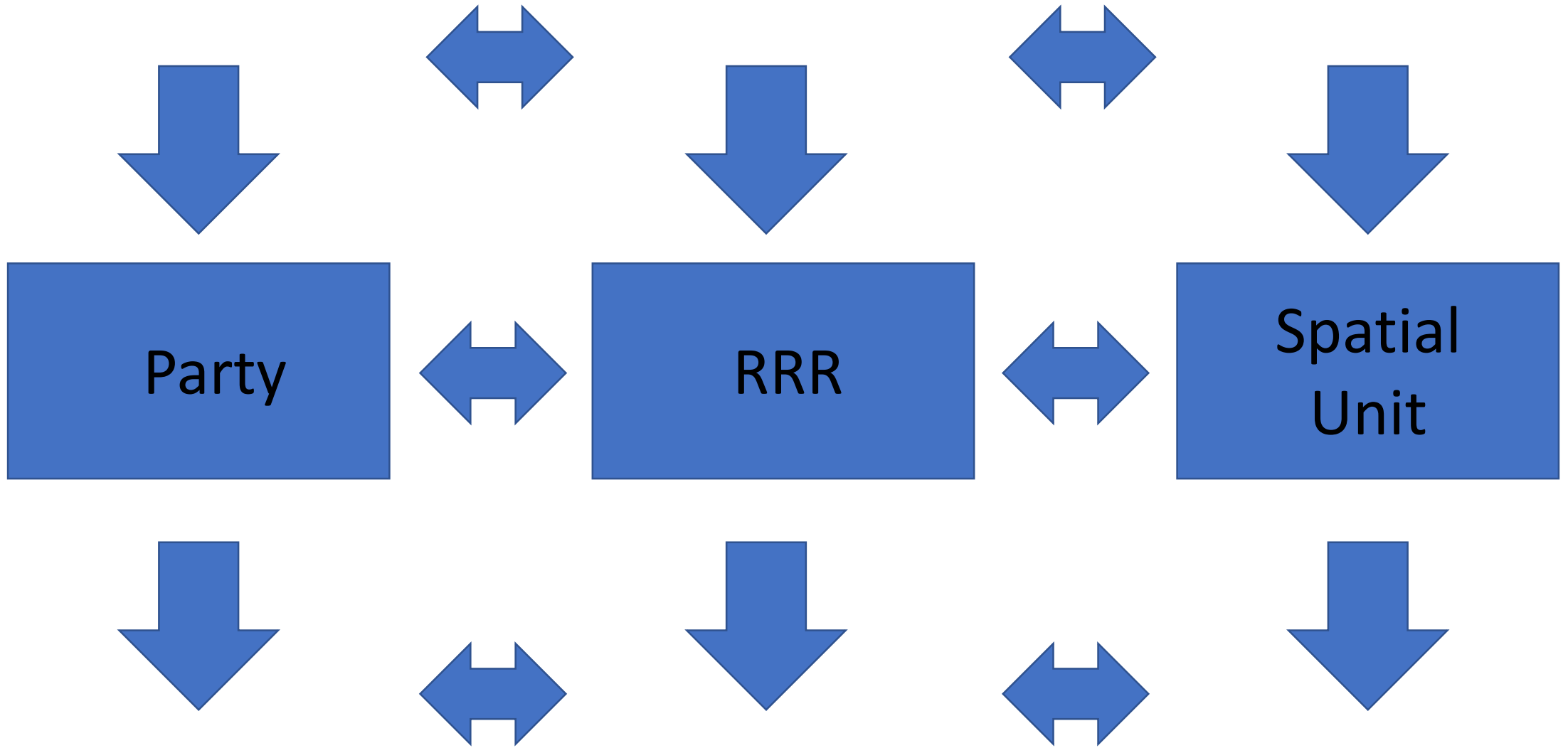


RRR



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