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Maksym KALYTA

UGANDA AND TANZANIA LAND ADMINISTRATION MODERNIZATION BASED ON IT-LEAP CONCEPT & LADM

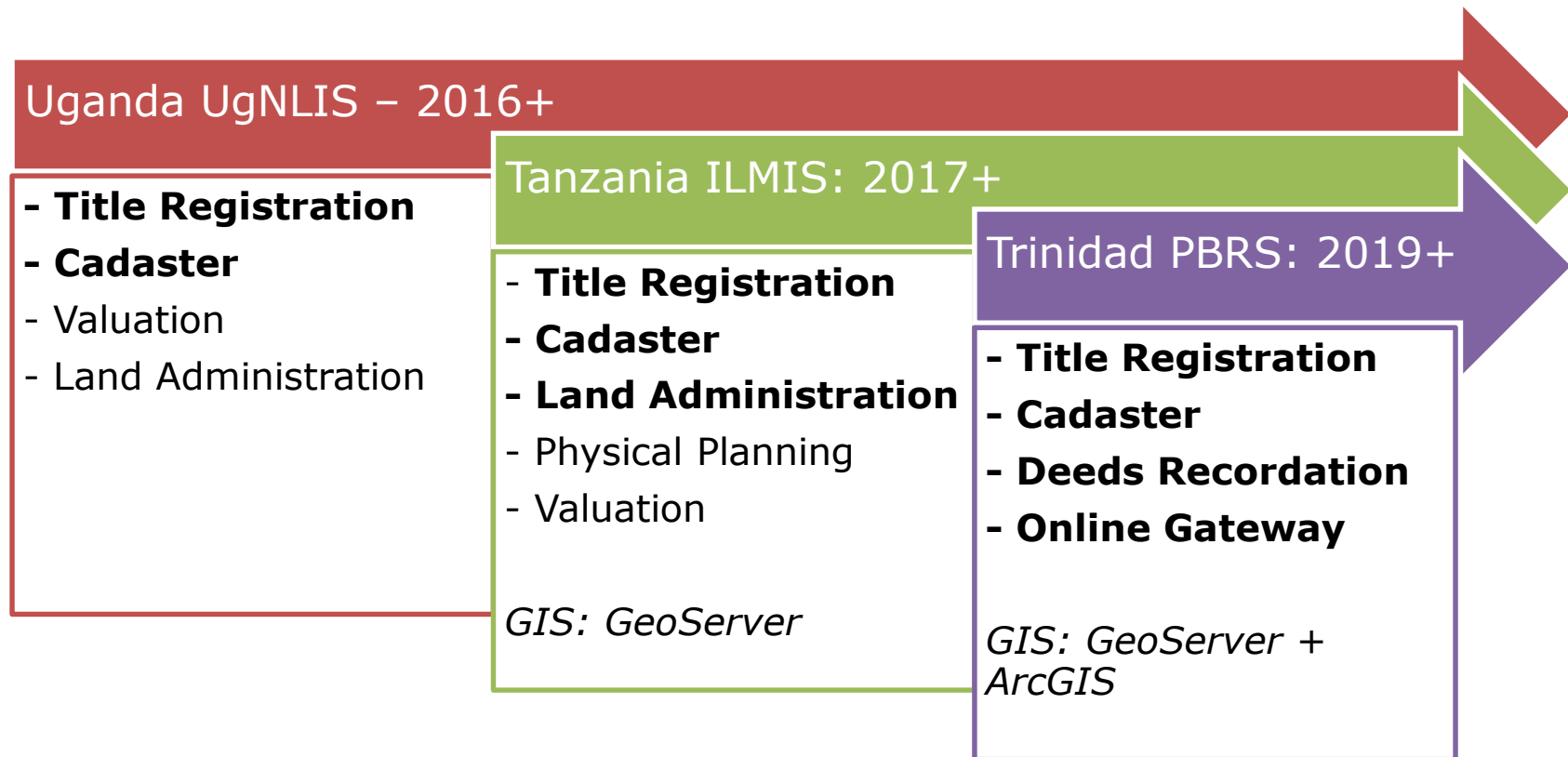
IGN FI, GEOFIT, INNOLA SOLUTIONS

03 October 2019
ISO LADM CONFERENCE



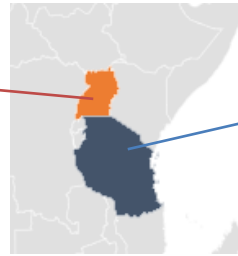
BACKGROUND

- Over past several years the group of three companies - IGN FI, GeoFIT and Innola Solutions – is implementing projects in Africa and Caribbean region using Innola Framework as a LADM-based software solution for Land Administration.
- Additionally to core system and processing objects in Innola, each project has own extensions and logic to the base LADM model.





DESINLIS



ILMIS

2015 – 2020

Beneficiary: Ministry of Lands, Housing and Urban Development (MLHUD)

Funded by The World Bank.

National wide project

Pilot stage (DESILISOR 2010- 2015)

2016 – 2019

Beneficiary: Ministry of Lands, Housing and Human Settlements Development (MLHHSD)

Funded by The World Bank.

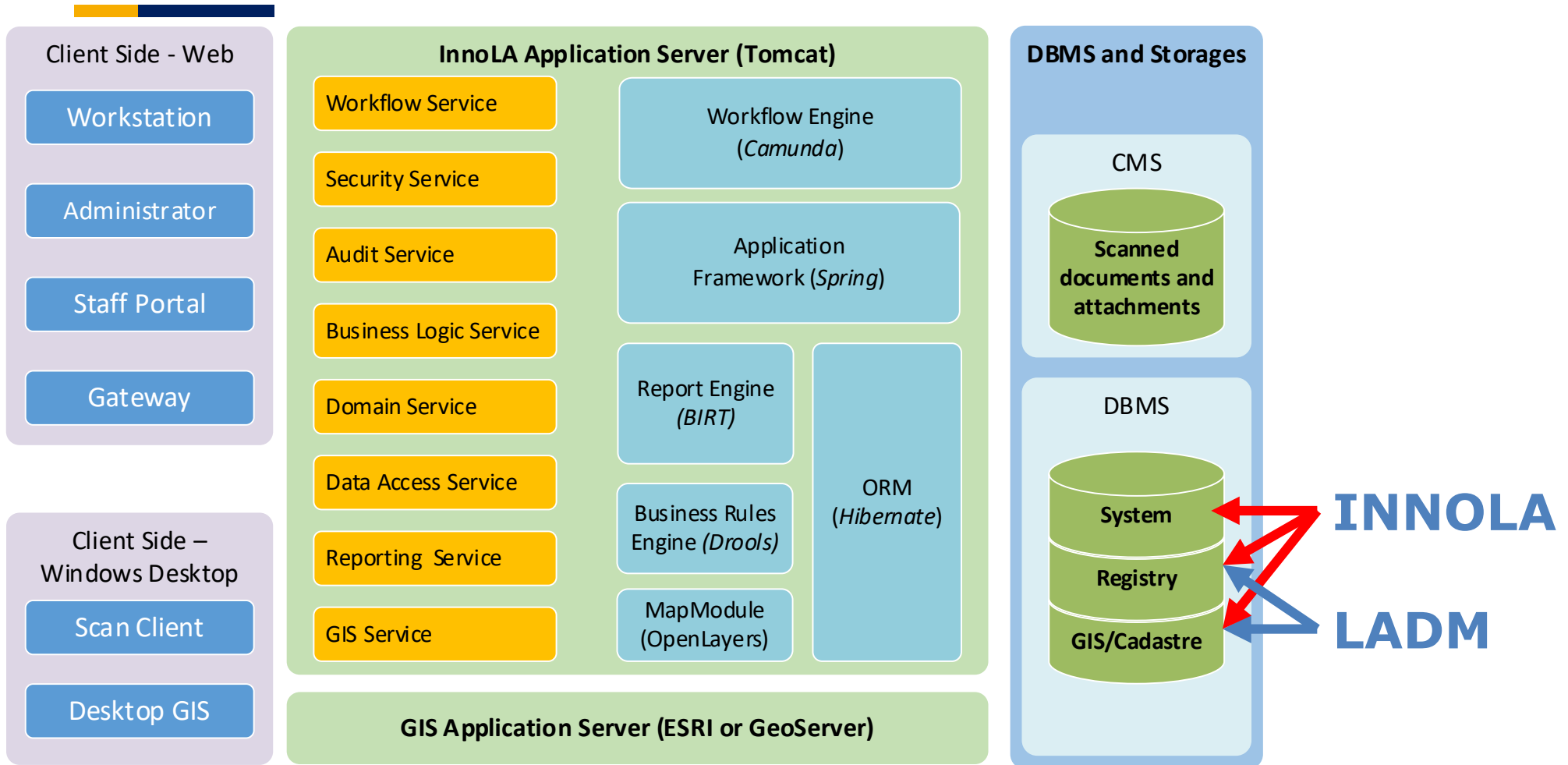
Pilot in Dar es Salaam Region but designed to be easily scaled up for all Zonal Offices in Tanzania.

ILMIS APPLICATION - IT-LEAP



- ILMIS is built on second version of the Innola Framework. The Core data model does not change between projects significantly, but only extended as needed.
- Like in all projects, the principal questions that are not covered by ISO LADM were as follows:
 - Country specific practices - like using Tenancy in Common shares to track ownership of 3Dunits without changing parent land title
 - Extending base LADM with Valuation sub-model
 - Extending base LADM with Town Planning sub-model

ILMIS ARCHITECTURE



LA_BAUNIT & LA_SPATIALUNIT UI EXAMPLE

☰ Tanzania ILMIS – Portal
Dar es Salaam Zonal Office Cadastral Integration
🔍 ⓘ 🏠

Transaction No. KND01060232, Grant of Right of Occupancy Close

Summary

Documents

Payments

Properties

Conditions

LAD Review

RTU Review

RTU Checklist

LAD Checklist

Map

Persons

Interests

History

Properties/Titles ✍ [View](#)

TITLE NUMBER	TYPE	TENURE	LD NUMBER	TOTAL AREA	LAND RENT	TOTAL VALUE	VERSI...	STATUS	REGISTRATIO...
DSMT1000446	General Land	Right of Occup...	KNDD2000316	345 Square M...	5,865 TSh	0 TSh	1	Active	20000181990

Spatial Units

TYPE	DISTRICT	LOCATION	BLOCK	NUMBER	USE TYPE	GROUP/CLASS	SURVEY AF
Plot	Kinondoni	Bunju A	A	1886	Residential	A(c),A(a)	345 Squar

Type Plot

General

Legacy Parcel Neighbours

Region	Dar es Salaam	District	Kinondoni	Location	Bunju A	
Block	A	Number	1886	UPID	DCP0108234	
Ward		Sub-ward		Reg. Plan No	83911	
* Survey Area	345.0000	Square Metr	345.9200	Square Metr		
Address					Plan Name/Number	E1/301/1152
Use Type	Residential				TP Drawing No	1/708/692 & KND/57/112004B
Group/Class	A (a) and (c)					
Notes						

Implemented in "canonical" way, no changes. But significantly extended...

LA_RRR & LA_PARTY –INTERESTS & PARTIES ASSOCIATED WITH TENANCY TYPE AND SHARE

Tanzania ILMIS – Portal Dar es Salaam Zonal Office Cadastral Integration

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Summary Documents Payments Properties Conditions LAD Review RTU Review RTU Checklist LAD Checklist Map Persons **Interests** History

Interests View

INTEREST	TENANCY TYPE	TERM	COMMENCEME...	END DATE	DOCUMENT	TITLES	STATUS	FD NUMBER	IID
Right of Occupa...	Single Tenancy	ninety nine (99) ...	01/Oct/2018	30/Sep/2117	180917562...	DSMT1000446 (Right ...	Active		205001...

Grantors

SHARE	PARTY ROLE	NAME
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Occupier

SHARE	PARTY ROLE	NAME
1/1	Occupier	Faustini Damian Kisongo

In real word, RRR and Party implementation are more complex to support "traditions" and legal practices...

LA_SPATIALUNIT, LA_POINT, LA_BOUNDARY_FACE_STRING – REPRESENTATION OF THE PARCELS LINKED TO THE TITLE CADASTRE LAYER

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- UTM Grid
- Grid Arc60
- Geodetic Co...
- Cadastral Data
 - Labels
 - IPC
 - Parcels
 - Points
 - Bound...
 - Parcels
- No information
- Accuracy A (0-0.2m)
- Accuracy B (0.2-0.5m)
- Accuracy C (0.5-5m)
- Accuracy D (> 5m)
- Job Areas

Spatial Units

GEO...	TYPE	UPID	REG. PL...	DISTRICT	LOCATION	BLOCK	NUMBER	SURVEY...	ALLOCATION ...	VER...	STAT...
✓	Plot	DCP0108...	83911	Kinondoni	Bunju A	A	1886	345 Squar...	Allocated		2 Active

LA_SOURCE – CERTIFICATE OF TITLE LINKED TO THE BAUNIT, LA_PARTY AND LA_RRR

Tanzania ILMIS – Portal Dar es Salaam Zonal Office Cadastral Integration

Title DSMT1000446 Close

General Certificates

Right Holders 07/Feb/2019 KND01060...
Grant of Right of Occupancy

Related Titles

Certificates

Conditions

Interests

Valuations

Transactions

Properties

Document ID 19020722774

Document No. 19020722774

Document Certificate of Title/Occupancy

Issued Date 07/Feb/2019

Created Date 07/Feb/2019

Instrument FD Number

Estimated Pages 0 Scanned Pages 1

Description

THE UNITED REPUBLIC OF TANZANIA
CERTIFICATE OF OCCUPANCY
 THE LAND ACT, Cap 113
 (Under Section 29)

Title Number: DSMT1000446 Date of Registration: 06-Dec-2018 [07:17]

REGISTRAR OF TITLES
 (07-Feb-2019)
 Registered under section 27 of the Land Registration Act (Cap 334).

I. REGISTERED OCCUPIER AND TENURE

THIS IS TO CERTIFY that FAUSTINI DAMIAN KISONGO of P.O. BOX 2820, Dar es Salaam (hereinafter called "the Occupier") is entitled to the Right of Occupancy (herein called "the Right") in and over the land described herein (hereinafter called "the land") for a term of ninety nine (99) years from the first day of October two thousand and eighteen according to the true intent and meaning of the Land Act and subject to the provisions thereof and to any regulations made thereunder and to any encumbrance in substitution thereof amendment thereof and to special conditions.

II. DESCRIPTION OF THE PROPERTY

District: Kinondoni
 Location: BUNJU A
 Block: A
 Plot No.: 1886
 Area: 345.00 Square Metres
 Reg. Plan No.: 83911

Plot Reference Points (Part of):

TAREF11 / UTM ZONE 37S	
X	Y
1	511447.64 9267802.87
2	511471.09 9267807.03
3	511473.66 9267791.46
4	511448.47 9267790.36

III. CONDITIONS OF THE RIGHT

- The Occupier having accepted the terms and conditions of the Right as prescribed by the Land Act and the regulations made thereto, shall thereafter pay annual rent in advance on the first day of July in every year of the term without deduction PROVIDED that the amount of rent payable may be revised by the Commissioner.
- The land is general land and shall be used for Residential purposes only. Use Group(s) and Use Class(es) A (a), (c); as defined in Urban Planning (Use Groups and Classes) Regulation, 2018.
- The President may revoke the Right for good cause or in public interest.
- Any other conditions prescribed under the Land Act and any other written law or regulations.

Actual implementation of Source file/image depends on CMS in use.

'APPLICATION' & 'TRANSACTION' – EXTENSION CLASSES

Tanzania ILMIS – Portal Dar es Salaam Zonal Office Cadastral Integration

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Application Summary

Transaction No	Office	Re-Lodge Transaction
KND01060232	Kinondoni District Off	
Submitted	Trans. Status	Lodged
17/Sep/2018	Completed	06/Dec/2018 07:17

Processing Comments

DAT... ↓	COMMENT	USER	TASK
07/Feb... 11:15	Transaction registration was approved by Brenda Kuringe and all data were committed into the registry.	System	Approve Final Docum...
21/Dec... 15:09	signature of the mortgagor differs with that in land registry	Brenda Kuringe	Approve Final Docum...

Persons

APPLICANT ROLE	NAME	↑	TYPE	NIDA/ID DOC. NO
Applicant	Faustini Damian Kisongo		Individual	19580228-14125

Capacity: Individual Applicant Role: Applicant

General Address Related Persons Photo

First Name: Faustir Middle Name: Damia Last Name: Kisong Minor:

Gender: Male Occupation: Birth Date: Incapacitated Deceased:

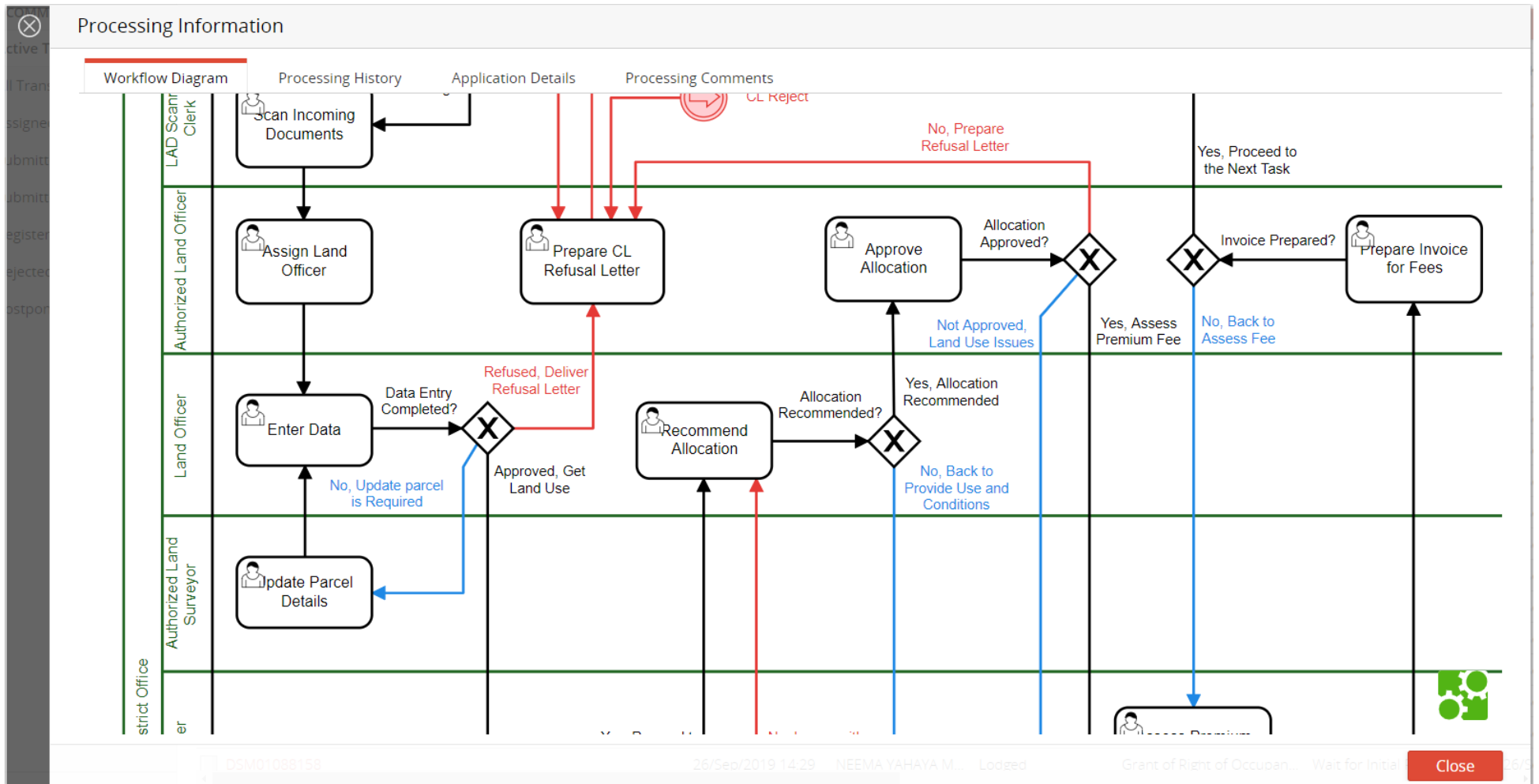
Citizenship of: Tanzania NIDA ID No.: 19 TIN:

ID Document: Nation ID Doc. No. Phone: 078 M Email:

Notes:

'When?' and 'By Whom?' and 'How'? registry is changed is very critical for developing countries. Not covered by ISO LADM...

EXTENSION CLASSES - 'SYSTEM TRANSACTION', 'WORKFLOW'



WORKFLOW HISTORY – SYSTEM EXTENSION TO TRACK ACTIONS

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Application History

TASK	TASK CREATED	TASK ENDED	ROLE	ASSIGNEE
Receive Application	17/Sep/2018 13:50	17/Sep/2018 13:50	Intake Clerk	Jane Mwaipyana
Wait for Initial Payment	17/Sep/2018 13:50	19/Sep/2018 12:27	Payment Gateway	Geofrey Mwamsojo
Scan Incoming Documents	19/Sep/2018 12:27	11/Oct/2018 13:05	Scanning Clerk	Emmanuel Segeja
Assign Land Officer	11/Oct/2018 13:05	11/Oct/2018 16:26	Authorized Land Officer	Geofrey Mwamsojo
Enter Data	11/Oct/2018 16:26	15/Oct/2018 10:49	Land Officer	Asturmius Rugemalira
Provide Use and Conditions	15/Oct/2018 10:49	17/Oct/2018 08:51	Town Planner	Ramadhani Mnindwa
Recommend Allocation	17/Oct/2018 08:51	17/Oct/2018 13:35	Land Officer	Asturmius Rugemalira
Approve Allocation	17/Oct/2018 13:35	22/Oct/2018 17:12	Authorized Land Officer	Geofrey Mwamsojo
Assess Premium Fee	22/Oct/2018 17:12	24/Oct/2018 12:11	Valuer	Ruth Shadrack
Prepare Invoice for Fees	24/Oct/2018 12:11	19/Nov/2018 16:17	Authorized Land Officer	Geofrey Mwamsojo
Deliver Fee Invoice	19/Nov/2018 16:17	21/Nov/2018 13:42	Deliverv Clerk	Asturmius Rugemalira

Processing Comments

DATE ADDED	COMMENT	USER	TASK
07/Feb/2019 11:15	Transaction registration was approved by Brenda Kuringe and all data were committed into the registry.	System	Approve Final Documents
21/Dec/2018 15:09	signature of the mortgagor differs with that in land registry	Brenda Kuringe	Approve Final Documents

Registration/system transaction history. BPMN standard.

'PAYMENT' – EXTENSION TO SUPPORT FEES

Tanzania ILMIS – Portal Dar es Salaam Zonal Office Cadastral Integration

Transaction No. KND01060232, Grant of Right of Occupancy Close

Summary Documents **Payments** Properties Conditions LAD Review RTU Review RTU Checklist LAD Checklist Map Persons Interests History

Payments

BILL NUM... ↑	CONTROL N...	SUBMITTED ...	STATUS	DUE DATE	PAYER	PAYER PHONE	AMOUNT	AMOUNT PAID	PAID DATE
Grant of Right of Occupancy - #KND01060232									
KND00001781			Paid	01/Oct/2018	Faustini Dami...	0784417768	20,000 TSh	20,000 TSh	19/Oct/2016
KND00004854	991171429027	19/Nov/2018	Paid	03/Dec/2018	Faustini Dami...	0784417768	145,804 TSh	145,804 TSh	26/Jan/2014
Total							165,804 TSh	165,804 TSh	

Bill Items General GEPG

FEE TYPE	CALCULATED	AMOUNT	CALCULATED DATE	SP SUBCODE	ACCOUNT
Application Fee (Occupancy)	20,000 TSh	20,000 TSh	17/Sep/2018	1001	800801

While fee collection is not necessarily the part of LADM, it is critical for every registration authority to ensure payment requirements are met

ILMIS LADM IMPLEMENTATION SUMMARY



The Innola physical model is an implementation of the conceptual LADM Model, which was a good starting point.

However, the full model contains modifications on the LADM model in order to:

- Collect processing and transactional data in more details for auditing and tracking purposes
- Be more flexible and reusable for different contexts and country –specific cases
- Make object processing easier

ILMIS PHYSICAL DATA MODEL

LADM VERSIONING IS IMPLEMENTED, EACH OBJECT HAVE INHERITED THE VERSIONED ATTRIBUTES:

LA_BAUNIT, LA_RRR, LA_PARTY, LA_SPATIALUNIT, LA_POINT, LA_BOUNDARYFACESTRING ETC.

- VERSION_LIFE ON UNIQUE OBJECT DEFINED BY ITS OID
- BEGIN_LIFE
- END_LIFE

ADDED BY INNOLA:

- VERSION NUMBER
- STATUS (PENDING, REGISTERED, PREVIOUS, ARCHIVE, REJECT)

Title
+ dm_aux_baunit_source
+ dm_aux_baunit_spatsource
+ dm_aux_baunit_spunit
+ dm_aux_interest_baunit
+ dm_aux_interest_source
+ dm_aux_party_role
+ dm_aux_party_source
+ dm_aux_rr_party
+ dm_aux_spatialunit_landuse
+ dm_aux_spatsource_baunit
+ dm_aux_spatsource_party
+ dm_address
+ dm_baunit_condition
+ dm_condo_plan
+ dm_condo_plan_phase
+ dm_inconsistency
+ dm_la_association
+ dm_la_baunit
+ dm_la_baunit_related
+ dm_la_groupparty_members
+ dm_la_interest
+ dm_la_party
+ dm_la_party_related
+ dm_la_rr

Survey
+ dm_aux_bf_point
+ dm_aux_bfs_point
+ dm_aux_spatialunit_class
+ dm_aux_spatialunit_surveyplan
+ dm_aux_spatsource_bface
+ dm_aux_spatsource_bfacestr
+ dm_aux_spatsource_point
+ dm_aux_spatsource_spatialunit
+ dm_aux_spatunit_boundface_minus
+ dm_aux_spatunit_boundface_plus
+ dm_aux_spatunit_boundfacestr_minus
+ dm_aux_spatunit_boundfacestr_plus
+ dm_aux_spatunit_point
+ dm_aux_spunit_group
+ dm_aux_surveyinstruction_tpdrawing
+ dm_aux_surveyplan_othefocation
+ dm_aux_surveyplan_source
+ dm_aux_surveyplan_tpdrawing
+ dm_aux_val_spatial_unit_view
+ dm_la_area_value
+ dm_la_boundary_face
+ dm_la_boundary_face_string
+ dm_la_level
+ dm_la_point
+ dm_la_spatial_unit
+ dm_la_spatial_unit_group
+ dm_la_spatialunit_related
+ dm_la_volume_value
+ dm_panel_neighbours
+ dm_registered_surveyor
+ dm_registered_surveyors_version
+ dm_survey_instruction
+ dm_survey_plan
+ dm_tp_drawing

System
+ hibernate_sequences
+ meta_counter_mono
+ meta_counter_mono_pool
+ meta_counter_stereo
+ meta_counter_stereo_pool
+ sys_aux_appgroup_approle
+ sys_aux_appuser_apogroup
+ sys_activity_stream
+ sys_appgroup
+ sys_appuser
+ sys_auth_access
+ sys_bc_holiday
+ sys_bc_weekday
+ sys_bc_weekday_parts
+ sys_bootstrap_history
+ sys_package
+ sys_package_content
+ sys_queue_item
+ sys_reportjob_param
+ sys_scan_filter
+ sys_scan_profile
+ sys_scan_profile_param
+ sys_scheduled_reant
+ sys_scheduled_job
+ sys_sms
+ sys_task_config
+ Dictionary
+ Reports

Transaction
+ dm_aux_application_source
+ dm_aux_transaction_source
+ dm_application
+ dm_application_note
+ dm_checklist
+ dm_la_transaction_baunit
+ dm_la_transaction_spunit
+ dm_memo
+ dm_rejection_reason
+ dm_transaction
+ dm_transaction_approval
+ dm_transaction_attribute
+ dm_transaction_info
+ dm_transaction_property

Document
+ dm_document_body
+ dm_la_source
+ dm_la_source_page

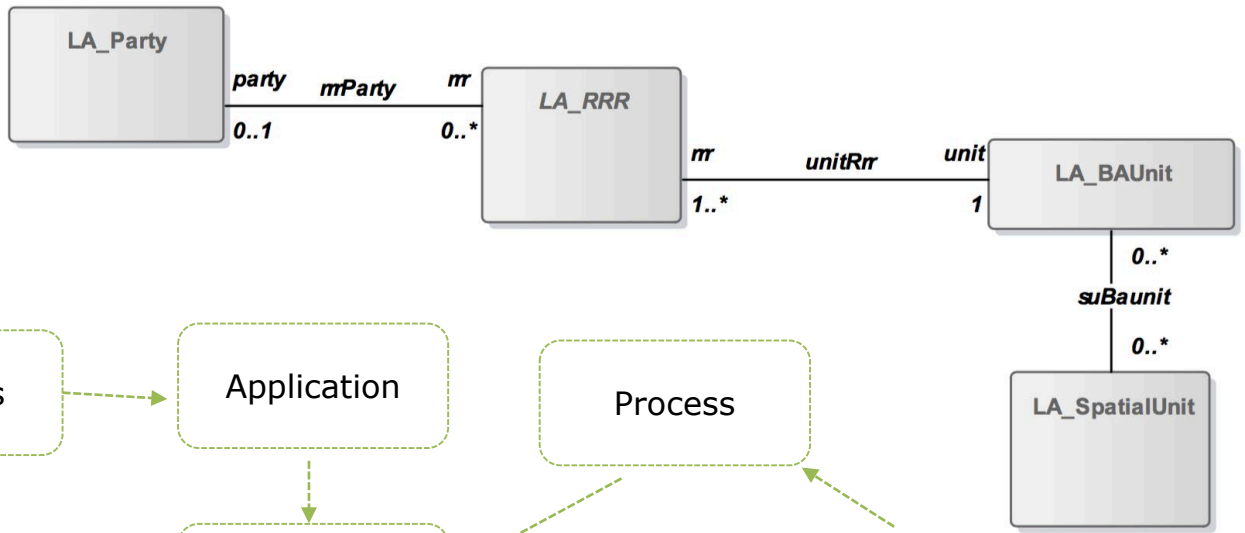
Finance
+ dm_aux_baunit_baunitrethistory
+ dm_aux_val_spatial_unit_yard
+ dm_annual_land_rent
+ dm_gepg_bill_payment
+ dm_gepg_bill_response
+ dm_la_baunit_rent_history
+ dm_la_valuation_building_unit
+ dm_la_valuation_spatial_unit
+ dm_la_valuation_unit
+ dm_payment
+ dm_payment_transaction
+ dm_rent_rate_dictionary

Records Management
+ rts_box
+ rts_item
+ rts_location
+ rts_order
+ rts_order_notes

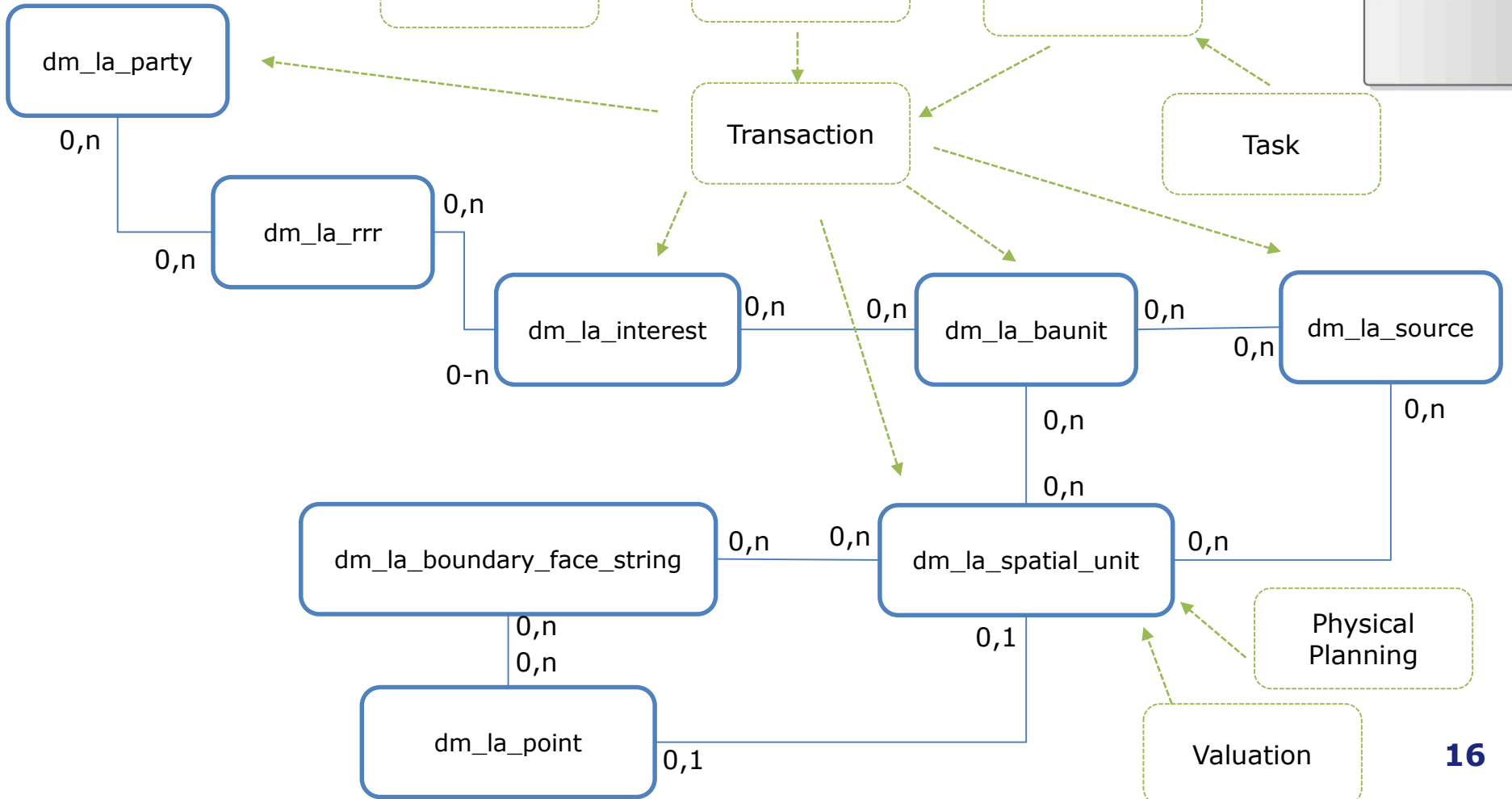
GIS
+ dsm_roads
+ gop
+ index
+ lnd_ipc
+ location_draw
+ tz_district
+ tz_grid
+ tz_region
+ tz_ward
+ tz_water_body

Source package

LADM



ILMIS



CONCLUSION – LADM MODEL IN INNOLA



Includes all necessary LA objects and relation in the core



Allows to extend easily the model



ISO LADM sometime too restrictive in term of relation to implement and maintain it in a real-life system. Should it be simplified?



The versioning conception is well defined and can be improved with status and version number attribute to manage object in short and long life, and make user firendly



Management of the class LA_RRR can be optimized in order to not have duplicates of RRR for each party involve in the RRR. *That is why we use LA_Interest in between.*



Spatial objects except parcels are managed as GIS layers in a specific schema (e.g. administrative boundaries)

CONCLUSION – LADM MODEL POSSIBLE ROADMAP?



To add some recommendations to add others business units objects involved in LA - *at least basic minimal data* - for Valuation, maybe Town Planning and Finances. This is still part of Land Administration...



To propose and standardize transaction/processing classes



Cover cases for mixed legal systems – both Title and Deeds at the same time in the same database/applications



Extend with more practical cases on specific rights – Legal Representatives, Guardians etc.

Thank you.

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