



XXVII FIG CONGRESS

11-15 SEPTEMBER 2022
Warsaw, Poland

Volunteering
for the future –
Geospatial excellence
for a better living

Digital Transformation of Land Administration Stages, Status, and Solutions

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kadaster

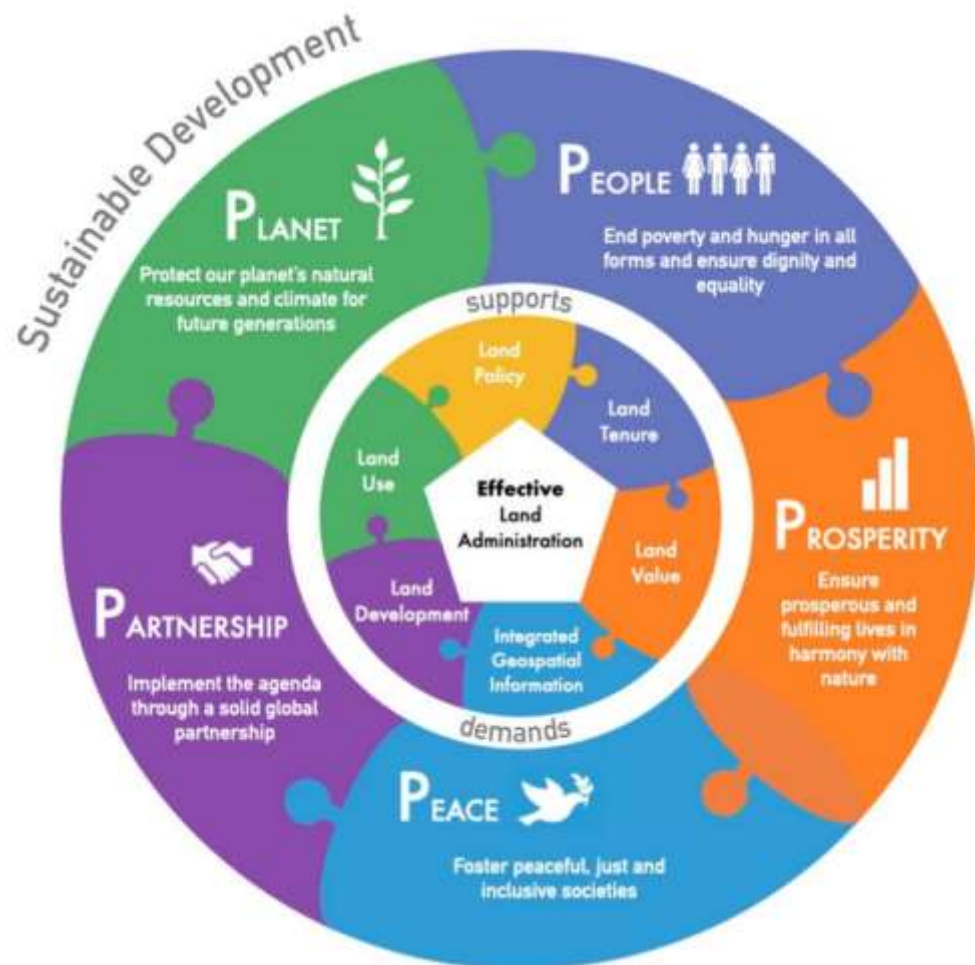


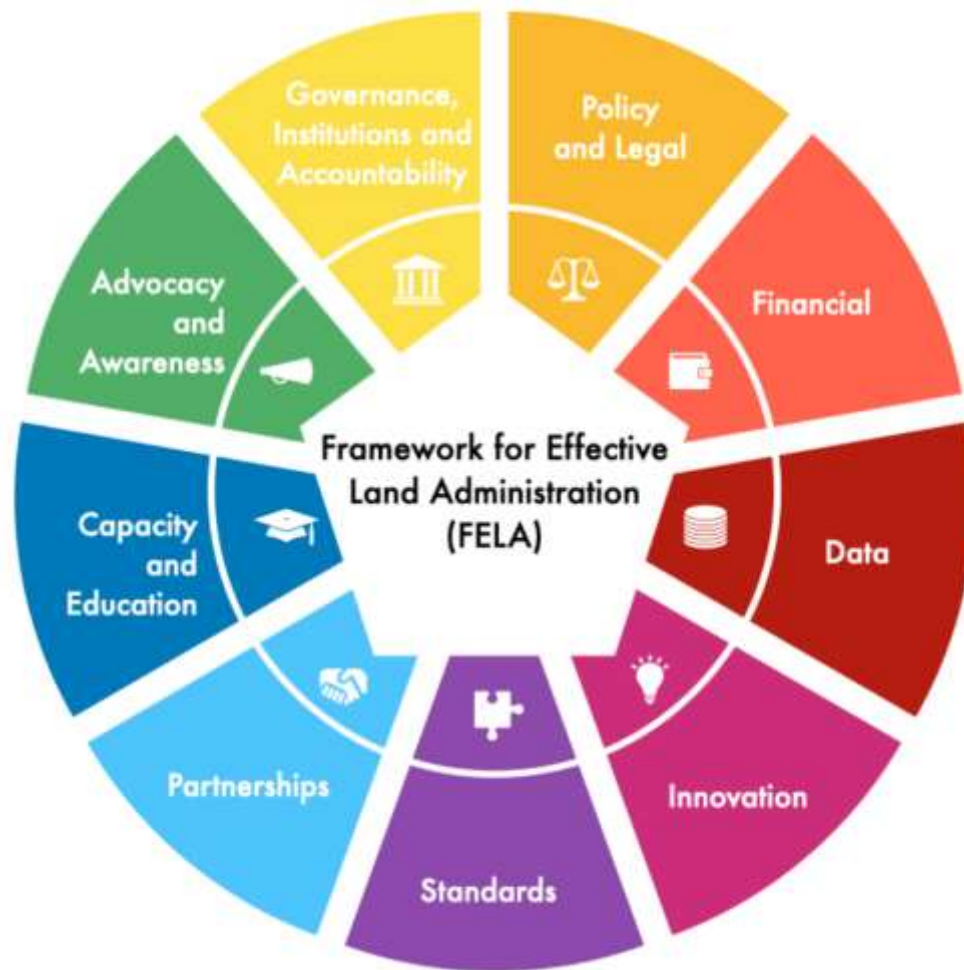
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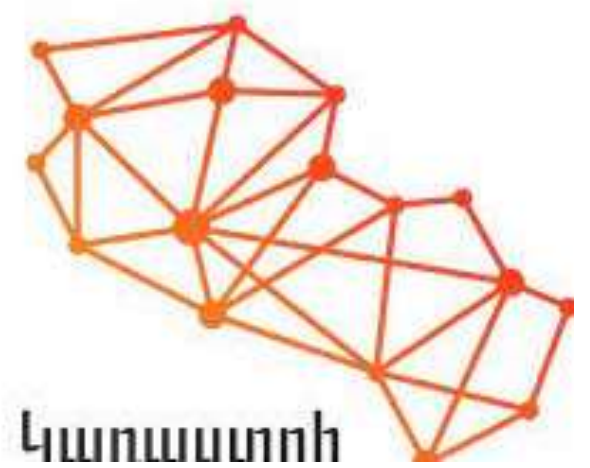


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Armenia

- 2.9 M population
- **Cadastre Committee**
- 2.4 M cadastral 'cases'
- 123 M individual pages
- 4 territorial subdivisions
- 5 year digital transformation plan





Food and Agriculture
Organization of the
United Nations



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FUNDING DIGITAL TRANSFORMATION OF LAND ADMINISTRATION



FAO
INVESTMENT
CENTRE

INVESTMENT
BRIEF

The digital transformation of land administration systems (LADS) is critical to ensuring the world meets its climate goals, because secure, available, forward-looking data is fully delivered by digital technologies (Vlaar, 2018), ensuring no one is left behind. It brings increased activity and efficiency in land markets, improves land revenues for government, and stimulates economic growth through new data products and services. It also increases accountability, transparency, and equality for all land sector stakeholders.

Investment in LAD digital transformation is essential to meet quality policy goal 10 (SDG 10), 11 (SDG 11), and other information on future rights and needed land administration policy goals, plan actions, and enable ongoing monitoring and evaluation. Of the 14 Sustainable Development Goals identified by the United Nations, 10 (SDG 10) is critical for every nation (Peters, 2020). It requires full access to information on land administration, spatial and other information on future rights accessible to achieve the Sustainable Development Goals (SDGs). United Nations, 2015) that encourage, or the national policy level.

Despite the economic, social, and environmental benefits that LAD offers, digital transformation for digital transformation is challenging (Chang and Pether, 2018). The infrastructure can be largely invisible, taken for granted, or simply not understood by key decision-makers. To be sustainable, modern LADs demand systematic, context, and feasible digital transformation plans that align with each country's priorities.

The International Federation of Digital Topographic, and Land Administration, comprehensive practice from the UNCTAD region and beyond, developed by the Food and Agriculture Organization of the United Nations (FAO), the United Nations Economic Commission for Europe (UNECE), and the International Federation of Surveyors (IFS), it provides practical guidance and input on how to develop action plans to support the digital transformation of LADs. The guidance is for higher-level LAD decision-makers, leaders and practitioners. It aims to help them communicate with economic donors, or finance ministries to improve their enterprises.



INTERNATIONAL FEDERATION
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FELA in action – an example of its application in digitizing archives

IGIF and FELA ensure a holistic perspective on LAS digital transformation. For example, a country-level digital policy priority may envisage removing all paper-based services to reduce corruption. For LAS, this requires converting paper archives into digital records while FELA and IGIF ensure the required broad range of questions are answered.

KEY QUESTIONS TO CONSIDER

Governance and institutions

Who governs the digitization process? Which agency is responsible for the new digital archive? Where will it be housed? Who is responsible for the old paper-based archive and its storage? How will accountability be guaranteed?

Policy and legal

Which records need to be scanned, only contemporary ones or all historical records? Can the old paper records be destroyed or archived for a limited time period? Does digitization require legislative changes to ensure the new digital archive is legal? Are digital records or paper documents the legal point of truth? What happens if there are discrepancies between paper and digital records? What is the impact on other land administration laws?

Financial

How will the archive digitization be funded and sustained? What is the size and scale of the investment needed? What is the long-term business model? Does storage of the old paper archive also need sustainable financing?

Data

How will the data be captured? How much will be created? How will data be organized and stored? What about the underlying data model? What are the data quality requirements? What does this mean for scanner and technology specifications? How will the data be disseminated and shared?

Innovation

Which technologies are most relevant to complete the digitization? Are optical character recognition (OCR) or intelligent character recognition (ICR) relevant here? How will the archive be future proofed against obsolescence from new technologies?

Standards

Which national and international standards will be used to preserve the old paper archive and create and maintain the new digital archive? Which data formats will be used? How will the process ensure interoperability with national spatial data infrastructures (NSDI) standards? What are the security and risk management standards?

Partnerships

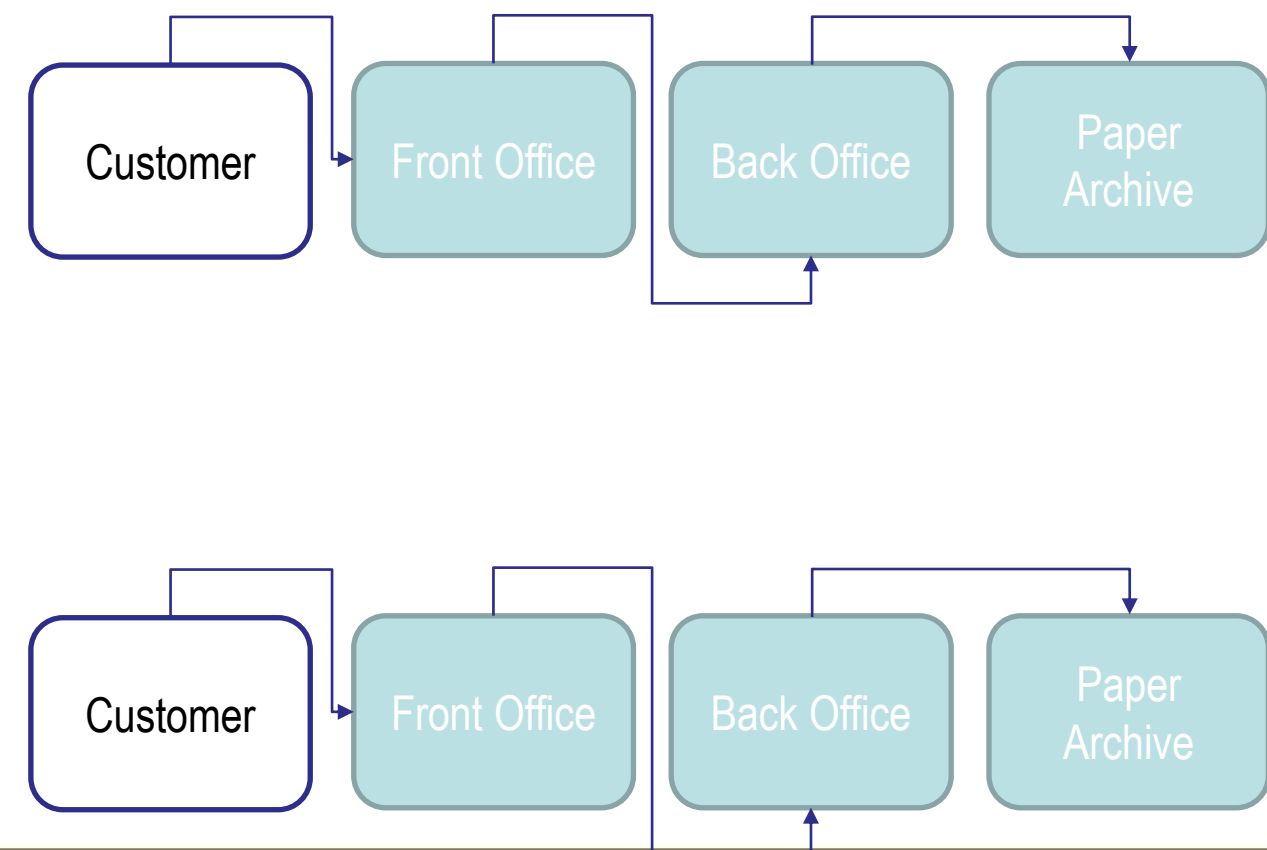
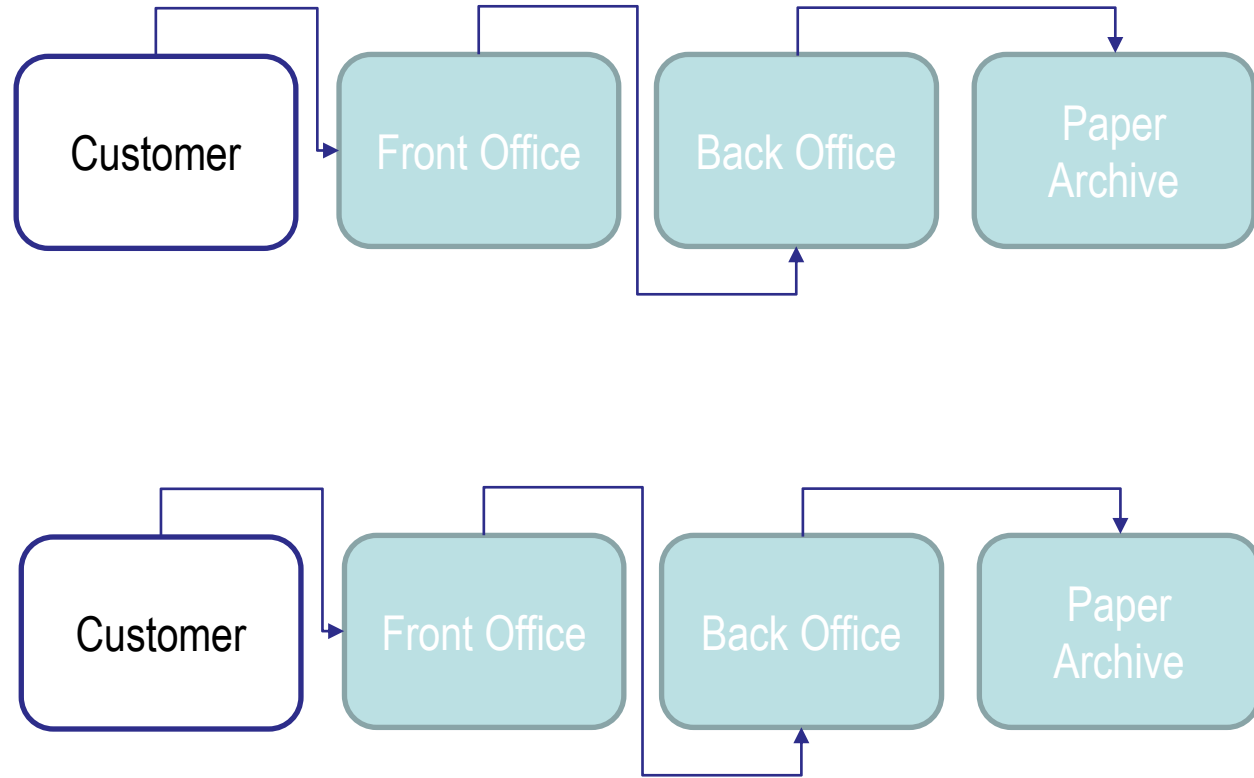
Will external donors support creation of the digital archive? Will it be available to the private sector or academia? What are the baseline service level agreement (SLA) requirements? Will external partners have access to the archive to create value-added services?

Capacity and education

How many people are needed for the initial archive digitization and ongoing maintenance of both the paper and digital archive? Which skillsets are required? What kind of training and upskilling are needed, including private sector actors (e.g. notaries)? Who can provide these?

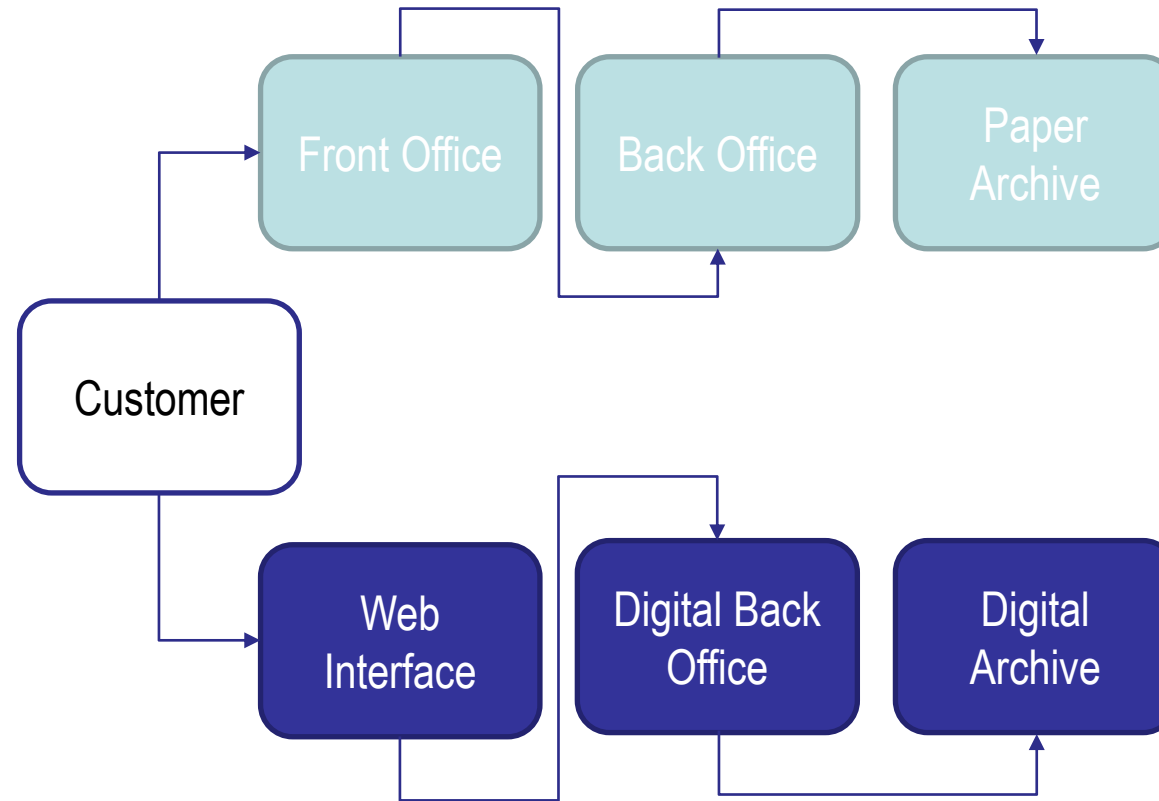
Communication and engagement

Can citizens participate and contribute to the system design? How will the new archive be introduced and explained to staff and external stakeholders? Are awareness campaigns and specific resources needed?

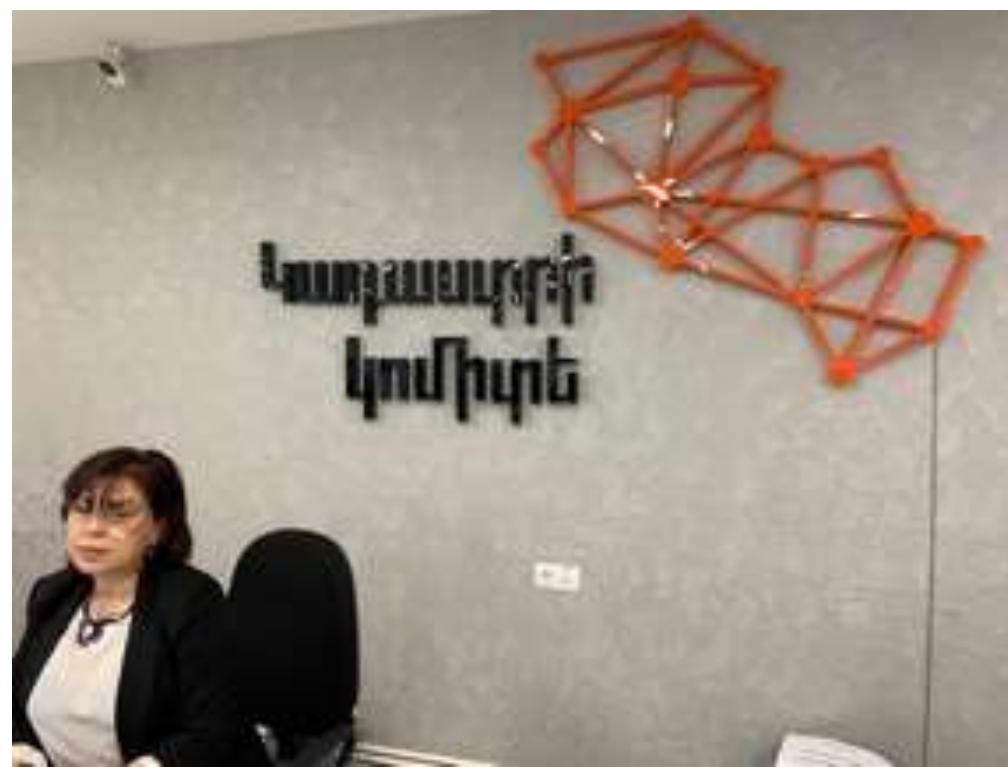


Scenario 1

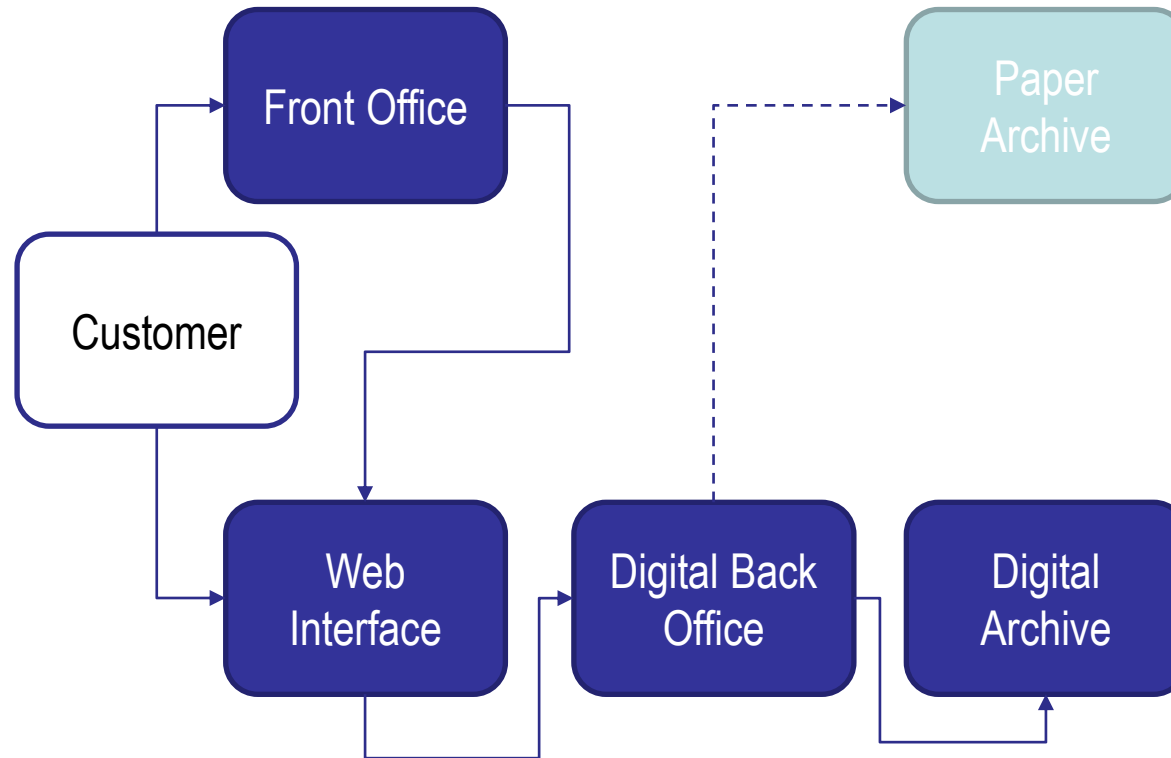
Parallel Systems (2021~2024)



- Paper archive digitization
- **Paper archive storage and maintenance**
- Digital identities
- **Differences between digital and paper**
- Financing two systems
- **Data Quality (40K disputes)**



Scenario 2 Fully Digital (~2030)



- Legal changes needed
- **Digital standards (data and processes)**
- Retirement of paper system
- **Citizen awareness**
- Leveraging off the data (sharing and exchanging)
- **Partnering with other agencies**
- Training and capacity (IT)



E-SERVICES PLATFORM OF CADASTRE COMMITTEE



NEWS APPLICATIONS CONTRACTS REGIONS COMMUNITIES MAPS ԳԵՍՏԱՏՈՂՆԵՐ ԳՈՒՆԵՐ GUIDE

PROPERTY CLEARANCE EXTRACT		ՏԵՂԵԿԱՏՎՈՒԹՅԱՆ ՏՐԱՄԱՂԻՈՒՄ	
PROPERTY TAX CALCULATOR		VIEW DOCUMENTS	
INFORMATION REQUEST		MAP	
SURVEYING		CADASTRAL MAP REQUEST	
CONTRACTS		REGIONS	
			MY REAL ESTATES
			APPLICATION STATUS
			COMMUNITIES

Indonesia

200 M Population

126 M Parcels

ATR/BPN

OneMap Program + Project

+450 Local Land Offices

1 National Data Centre

5000 transactions / 30 min





Paper



Digital

Digitize

Digitalize

Transform

Catastre, Land Registry
and Mapping Agency
Badaster International



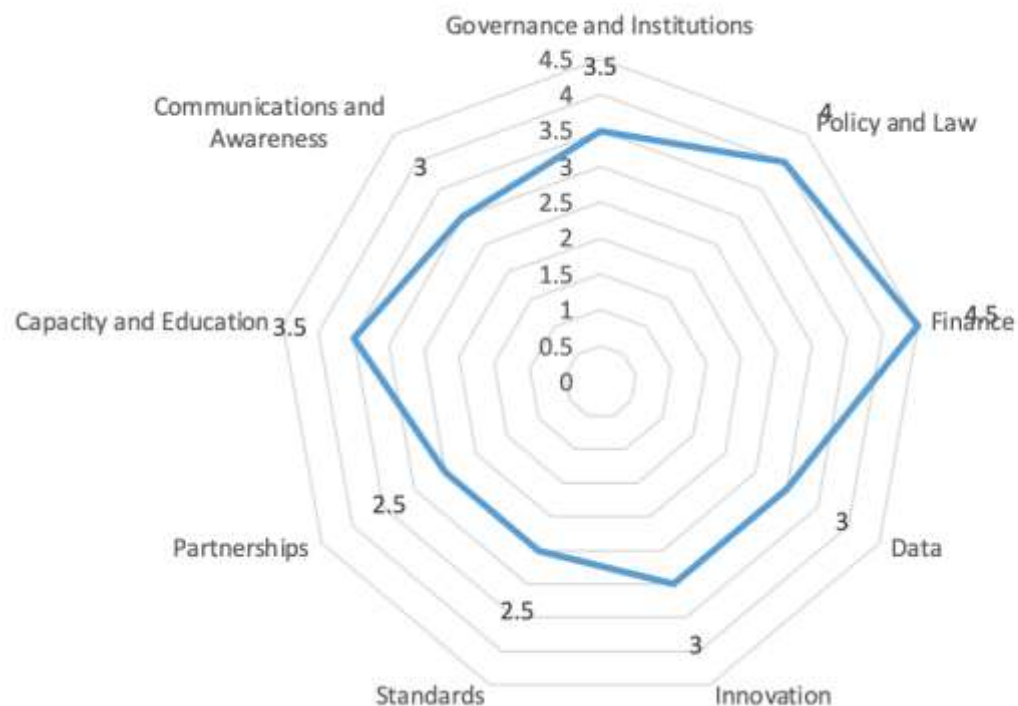
Improving Modern Land Registration in Indonesia IMLRI

Result 1.3
Digital Transformation State-of-Play and
Forwarding Strategy

DRAFT



Digital Transformation - IGIF Scores



Pathway	Opportunities and Challenges
Governance, Institutions and Accountability	Vision for ATR/BPN digital transformation that is holistic Digital transformation champions at multiple levels Alignment of digital strategies with ATR/BPN and with external stakeholders
Law and Policy	Legislative and regulatory harmonisation Assessment of a positive system of land registration Ensuring workable, enforceable, and are adequately resourced law
Finance	Sustainable business model post-2025 Government business enterprise model exploration Audit and assessment of PPP service models Performance metrics redesign around benefits realisation and SDGs
Data	Vision for data governance across ATR/BPN, post-2025 R&D audit and review on cadastral and land registration data Fast-tracking mapping 126M parcels by 2025 (keep going!) Developing and implementing better quality assurance standards Ensuring a robust federated database infrastructure is developed
Innovation	Formalised innovation bench making program across ATR/BPN Incentive schemes at all levels Formalise R&D collaborations across sector Digital divide audit
Standards	Audit governance of standards in ATR/BPN Assess range of technology and data initiatives in terms good practices Development of both internal and industry-wide certification protocols Fostering of a community of practice to support awareness raising
Partnerships	Reviewing partnership and establishment new partnership ecosystem (NGOs) Assess PR 38/2015 with regards to land sector PPPs PaLaR (i.e., FFPLA) review on embeddedness into PTSL Donor-working group creation for optimisation
Capacity and Education	Plan for keeping capacity in ATR/BPN Fast-tracking skill areas for maintaining the data Support professional bodies and encourage self-accreditation
Communications and Awareness	Revisit key stakeholder lists and related communications plans Ensure World Bank project comms are institutionalised Examining the current monitoring and evaluation mechanisms





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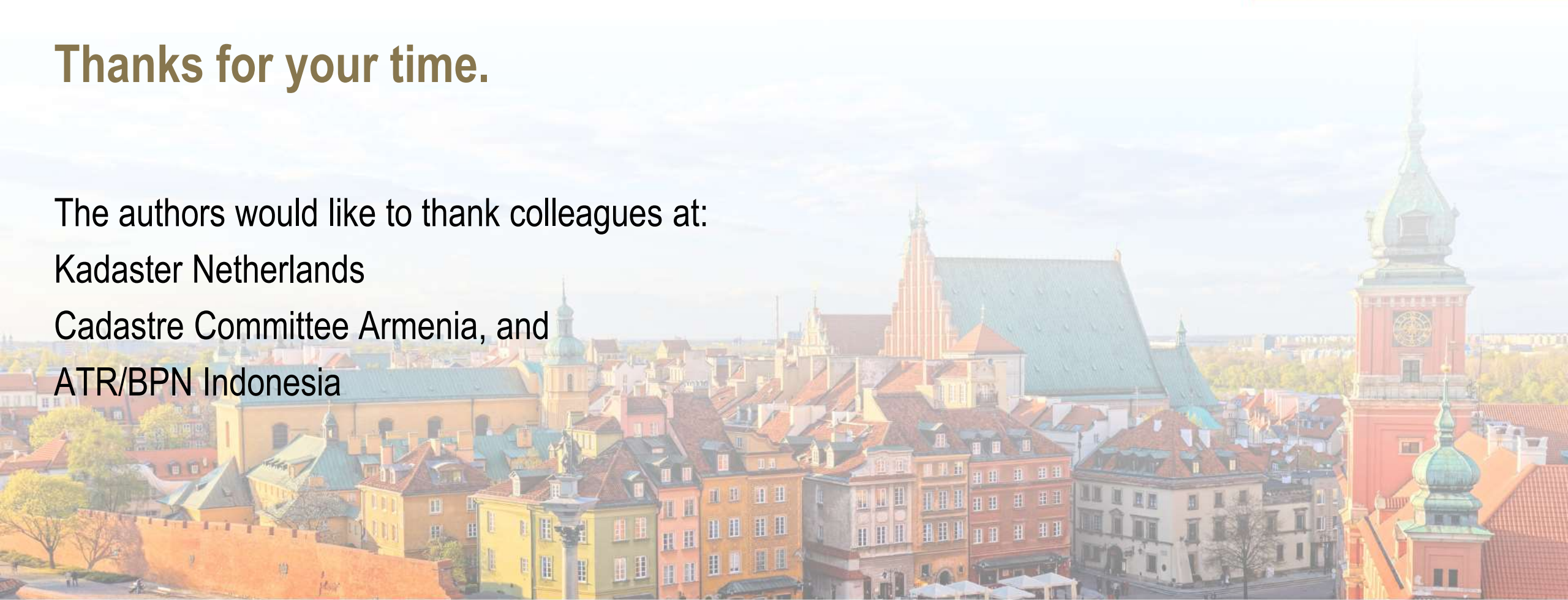
Thanks for your time.

The authors would like to thank colleagues at:

Kadaster Netherlands

Cadastre Committee Armenia, and

ATR/BPN Indonesia



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