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Protecting
Our World,
Conquering
New Frontiers

Cadastral Base-Map Management in Indonesia

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Ministry of Agrarian Affairs and Spatial Planning/National Land Agency

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1. Introduction



Map Scale : 1:1.000, 1:2.500, 1:10.000

Production Year : 1994 - now

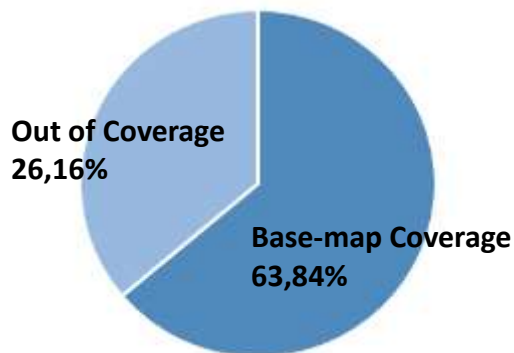
Indonesia

Total Land Area : 189,07 million hectares

Non-forest Area : 64,32 million hectares

Base-map Coverage: 41,06 million hectares

**2022 data*

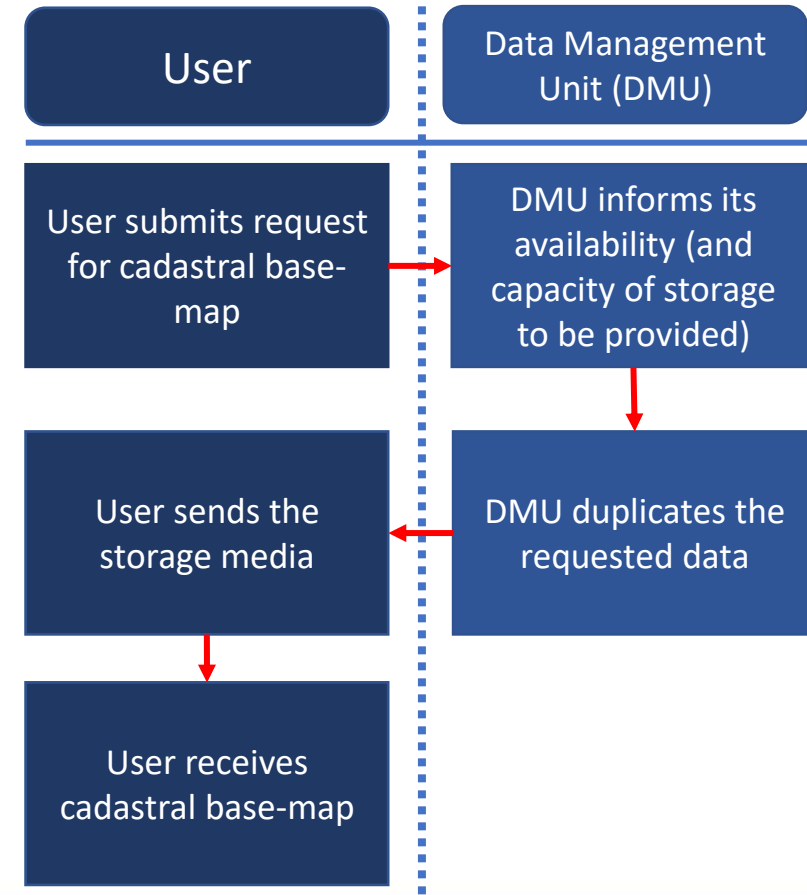


2. The problem

- Poor data management, especially old base map data
- Many data storages are damaged and lost
- Inefficient data publication and delivery



Base-map data exchange



3. The momentum

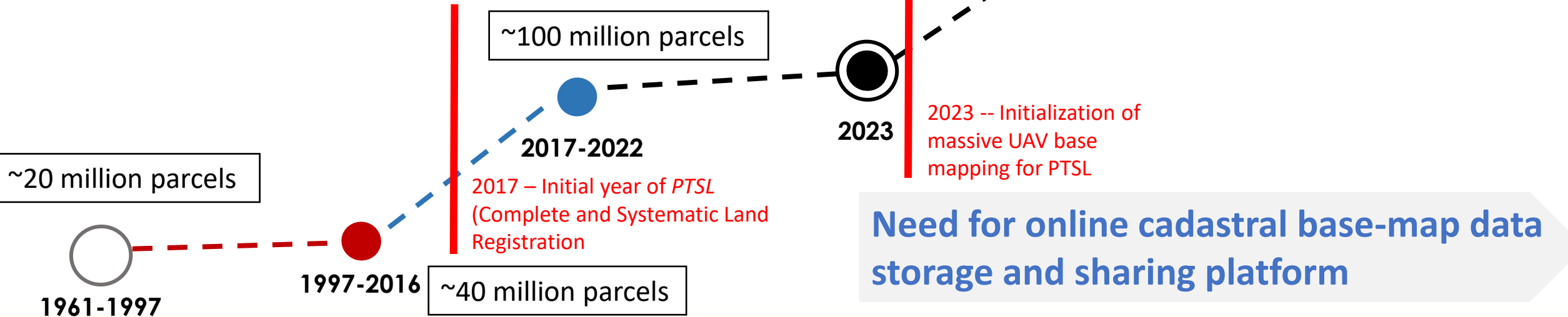
Ministry's road map

2020	2021	2022	2023	2024
Quality Improvement	Electronic-based	Electronic-based	Legal certainty guarantee	World-class Institution

Digital transformation road map

2020	2021	2022	2023	2024
Quality Improvement	Information Modernization	Innovation Era	Fully Digital Data	World-class Institution

All (~126 million) parcels are mapped and registered by 2025



4. What we have done

- Build base-map module, along with surveyor, equipment, and forest boundary module, as infrastructure database system
- Serving as data repository, data are stored in their original format (*.tiff)

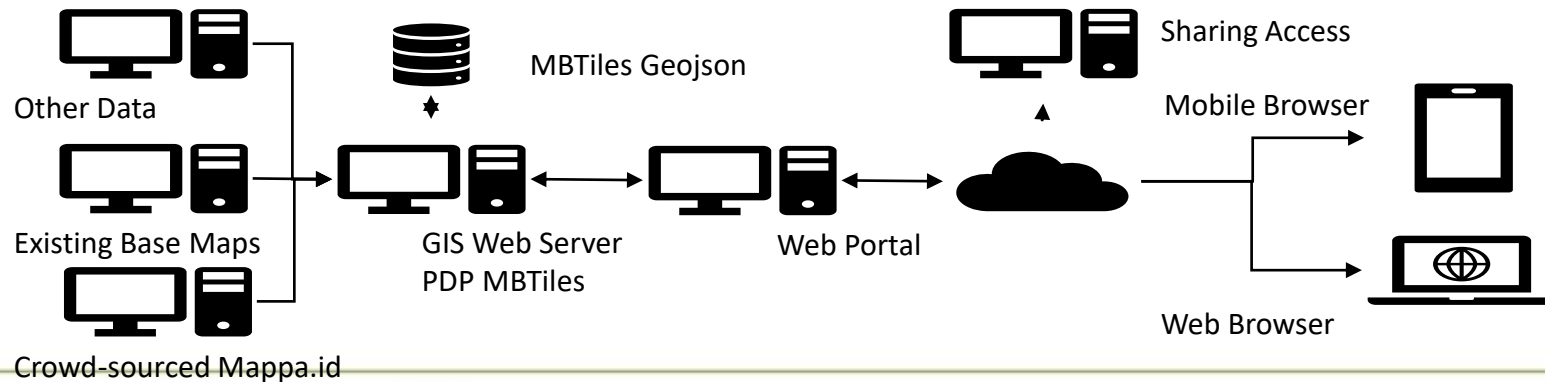
Evaluation

- Data are hardly displayed and accessed
- Low-rate data transfer of storage server
- Handling raster images is difficult as we deal with large data

Redesign database management

4. What we have done

- Rebuild the base map module to enhance data rendering and delivery in 2022
- Process base map data into tile images (MBTiles)
- Embedded metadata (year, resolution, accuracy)
- Crowd-sourced map (Mappa.id)



Tile-image specifications

File format	.mbtiles	
Number of bands	3 (RGB)	
Mbtiles format	.jpg (75%)	
Type of Imagery	Resolution	Zoom Level
Orthophoto (aerial imagery)	<0.25 m	16 – 21
Satellite imagery	0.25 - 0.75 m	12 – 19

BANDICAM UNREGISTERED

MONITOR HDMI GAMEPAD

REC

1920x1080 - (0, 0), (1920, 1080) - Display 1

Home

General

Video

Image

About

Options

Output folder

C:\Users\refir\Downloads\Video ... Open

Bandicam window always on top

Start Bandicam minimized to tray

Run Bandicam on Windows startup Advanced

Scheduled Recording

There are no scheduled recordings. Settings

Auto Complete Recording

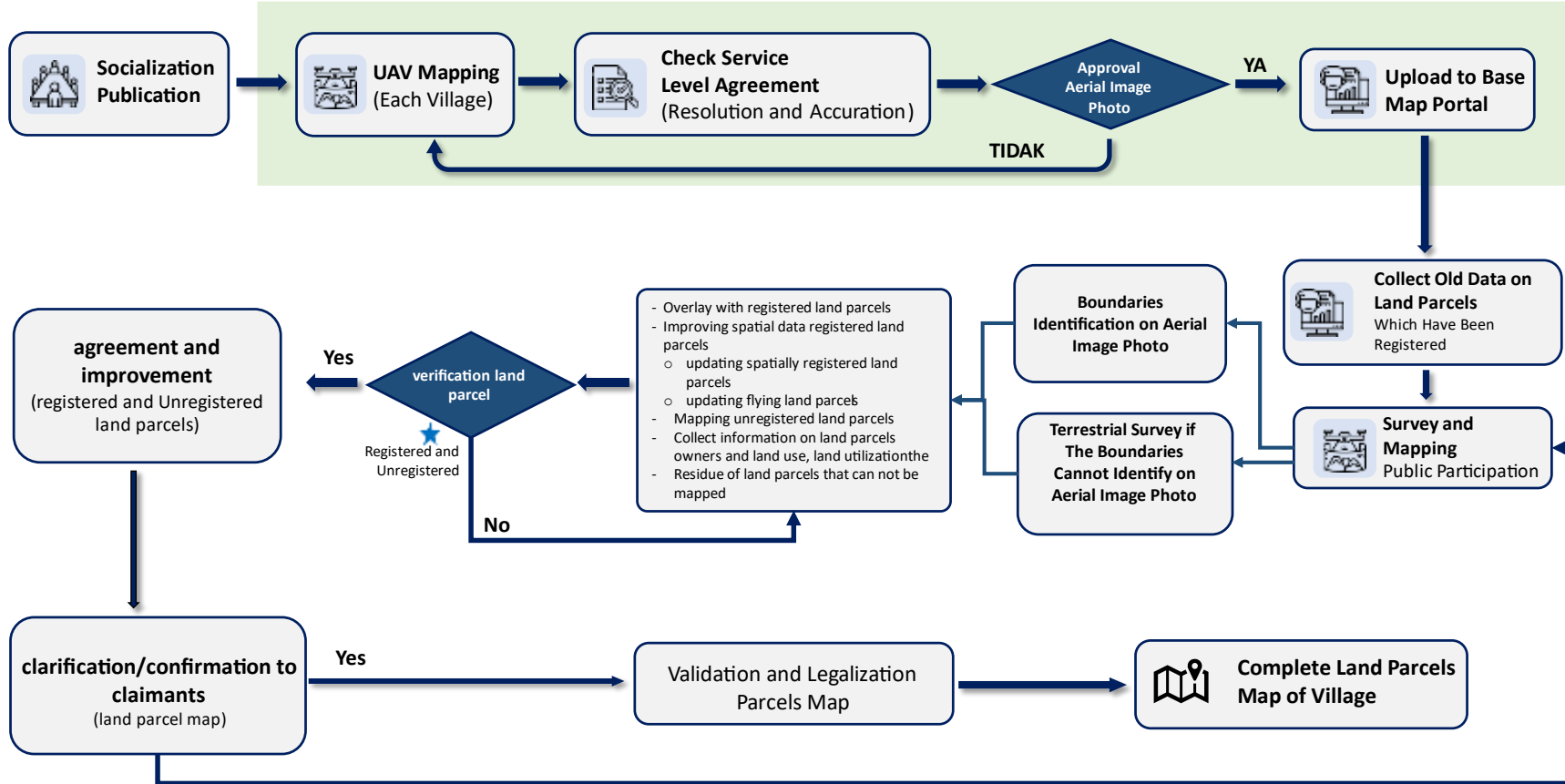
Disable Settings

BANDICUT

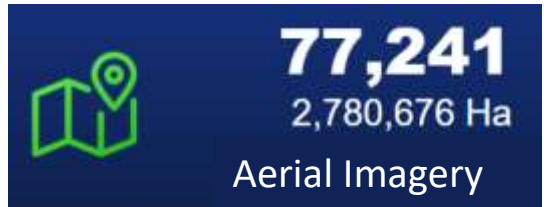
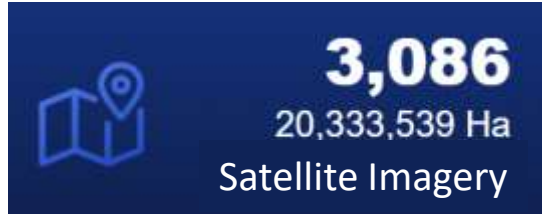
Gmail Images

oogle

How to record your PC for 24 hours, 365 days



Current statistics



5. Development plan

- Keep the platform running smoothly to support the land registration program
- Continue creating MBTiles for old data
- Deployment of cloud server storage
- Sharing using API service
- 3D visualization

6. Summary

- Digital transformation has driven many changes in cadastral base map management.
- Digital cadastral base-map management has provided a useful tool to support the acceleration of land registration in Indonesia