

KNOW WHERE YOU ARE. SEE WHERE YOU'RE GOING



Mitrelli

GEODATA



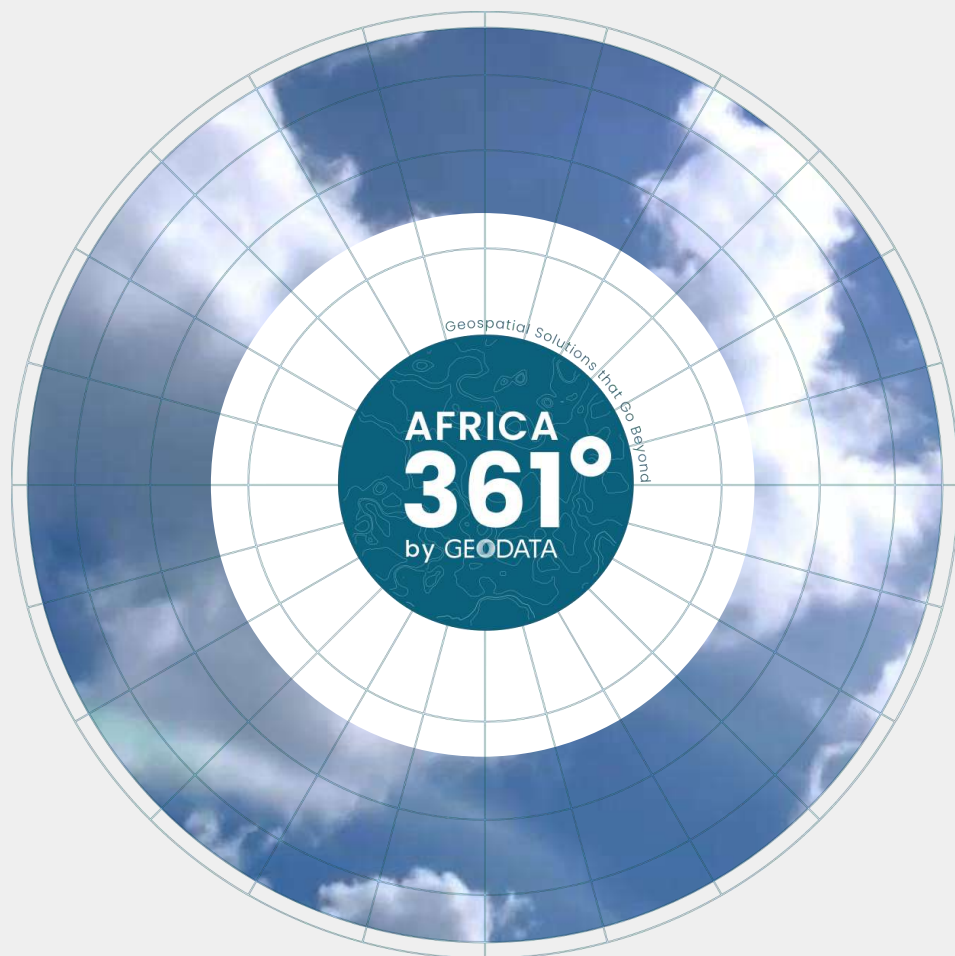


GEODATA

KEYNOTE:
RAPHAEL AMINOV



Africa GIS 2021



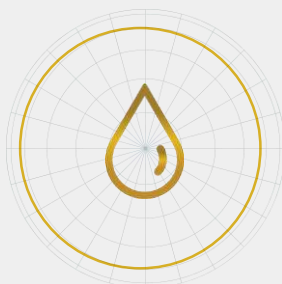
GEOSPATIAL SOLUTIONS FOR URBAN CADASTER AND PROPERTY REGISTRATION



An international Group of subsidiaries, creating sustainable large-scale infrastructure projects that impact on economic prosperity and quality of life



Agriculture
& Fisheries



Water



Energy



Health



Education &
Professional
Training



Housing &
Construction



Electromechanics

Fields Of activity



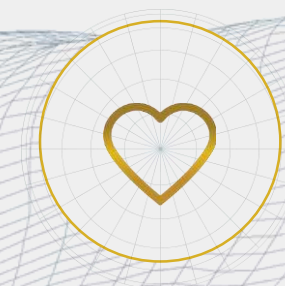
Information &
Communication
Technologies



Geographical
Information
Solutions



Culture
Tourism &
Leisure



Social
Responsibility



GEODATA

Plan, manage and control solutions based on mapping and geospatial information

Boosting up countries, businesses & communities through land and resource management and geographical infrastructure

LAND
MANAGEMENT

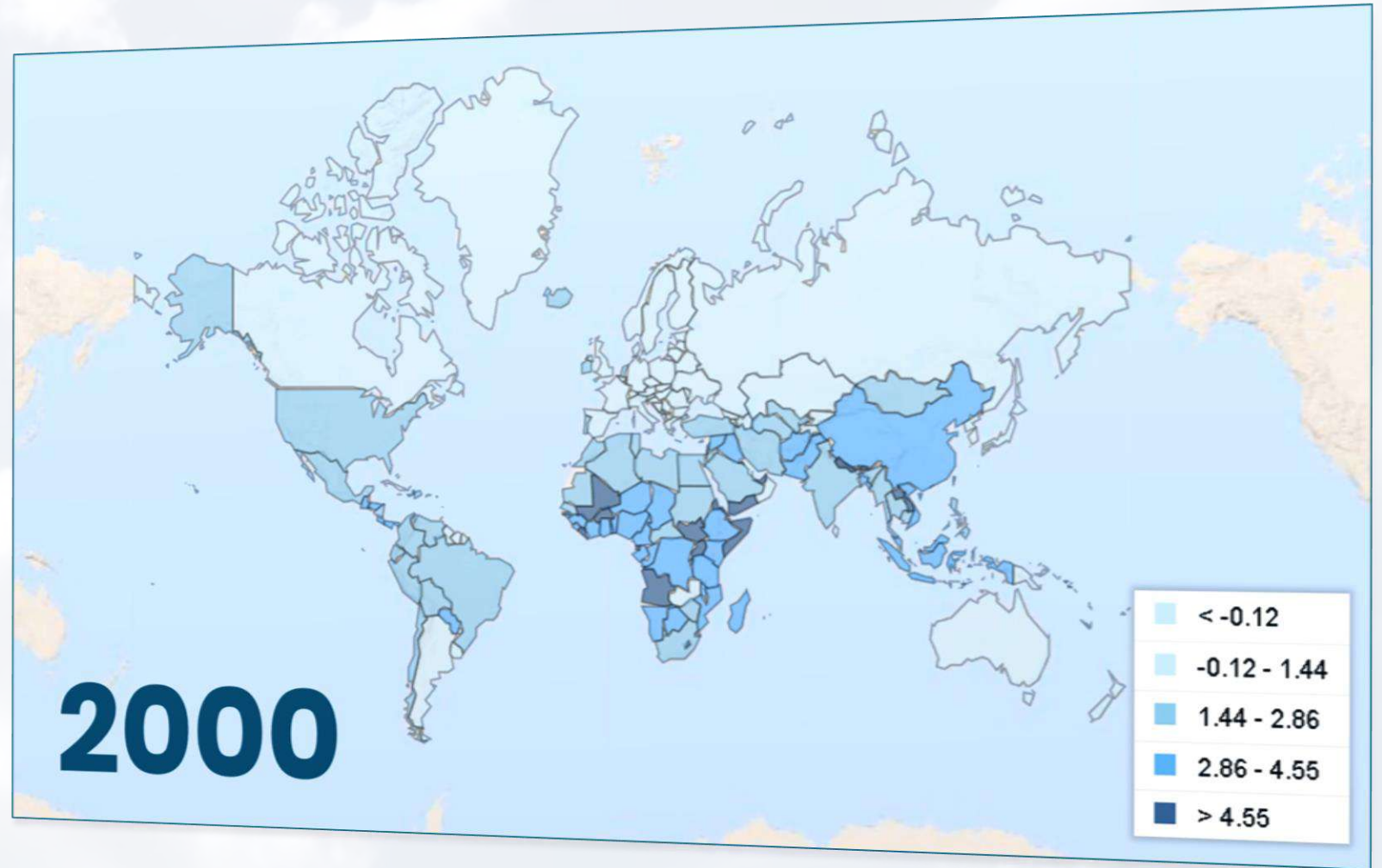
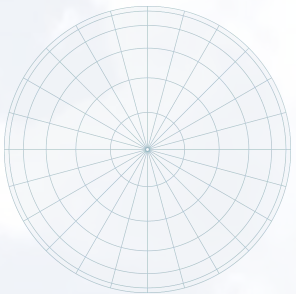
MAPPING

RESOURCE
MANAGEMENT

CADASTER

GEOGRAPHICAL
INFRASTRUCTURE

Urban population growth (annual%)





The challenges of gallop urbanization growth in Africa

Challenges



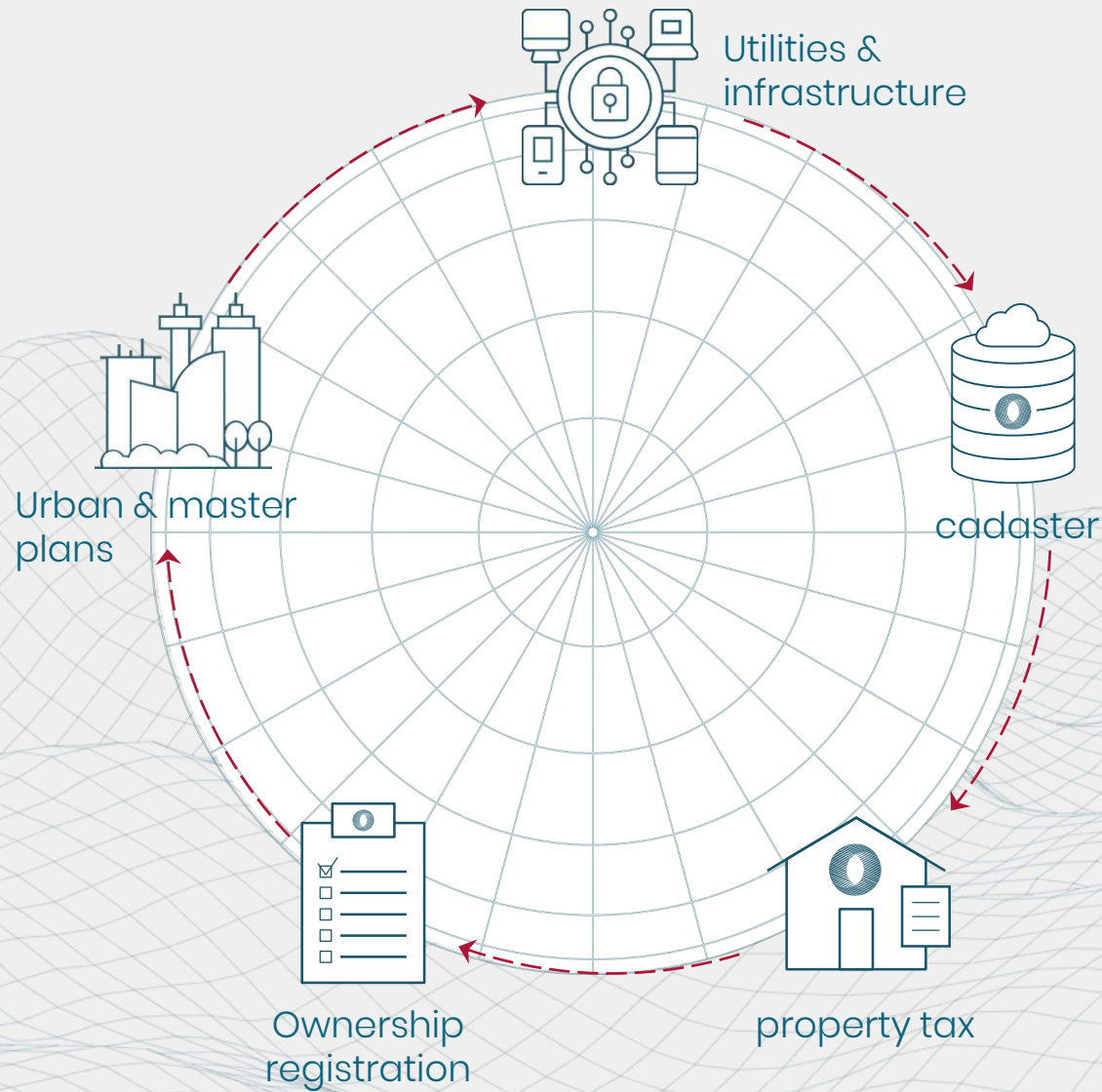
Land & property
management



Land & property
tenure security



basic urban services
such as fresh water,
sewage and waste
collection



Geospatial solutions are the key





Case Study: **Angola**

6200 SqKm



Aerial and drone
Survey

400 SqKm



Digital mapping

6400 Km



Street View

70 SqKm



Address Survey

450,000 Parcels



Urban Cadaster

1



Cadaster System

7



Law Legislation

25 Cities



Urban Plans

2.4M Documents



Scanned and
Digitized

100,000



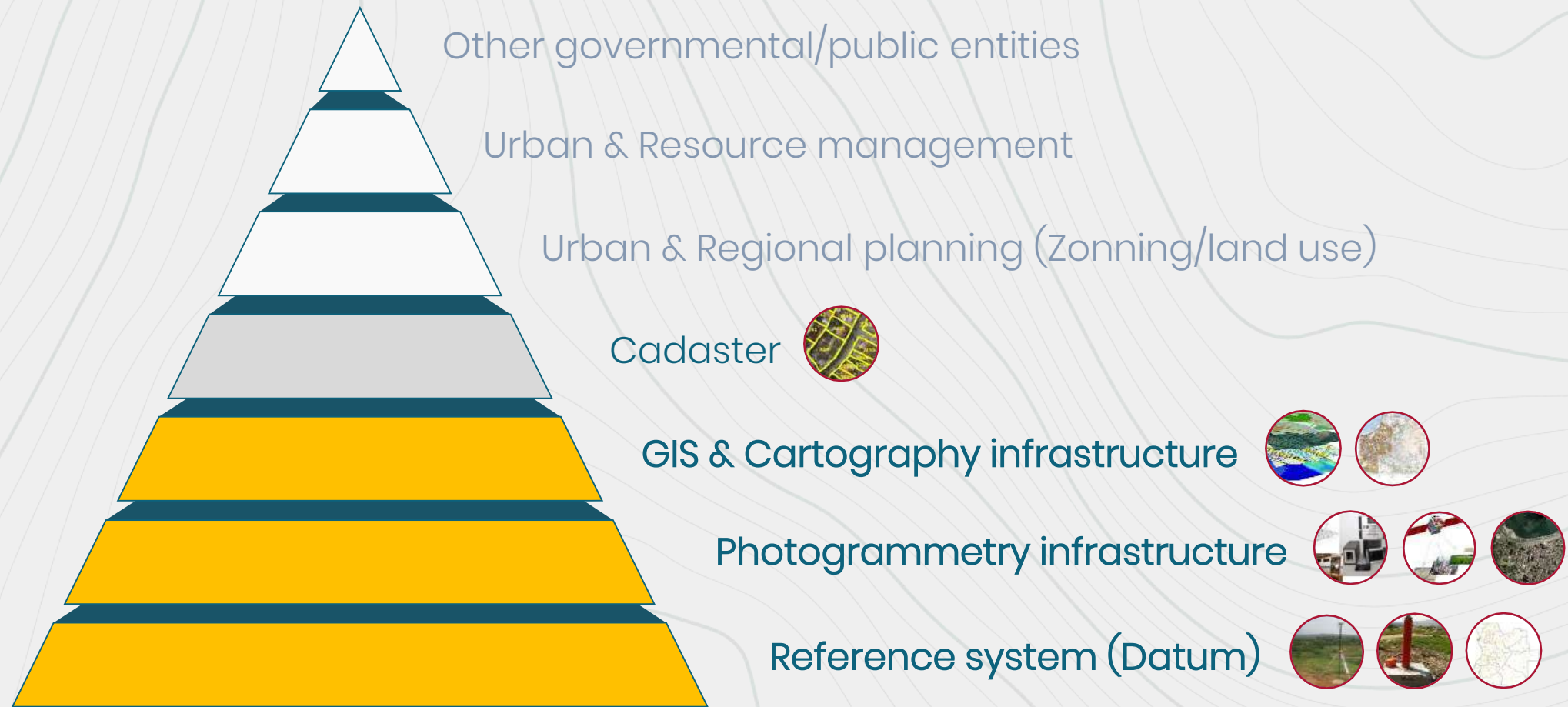
Property Registration

1



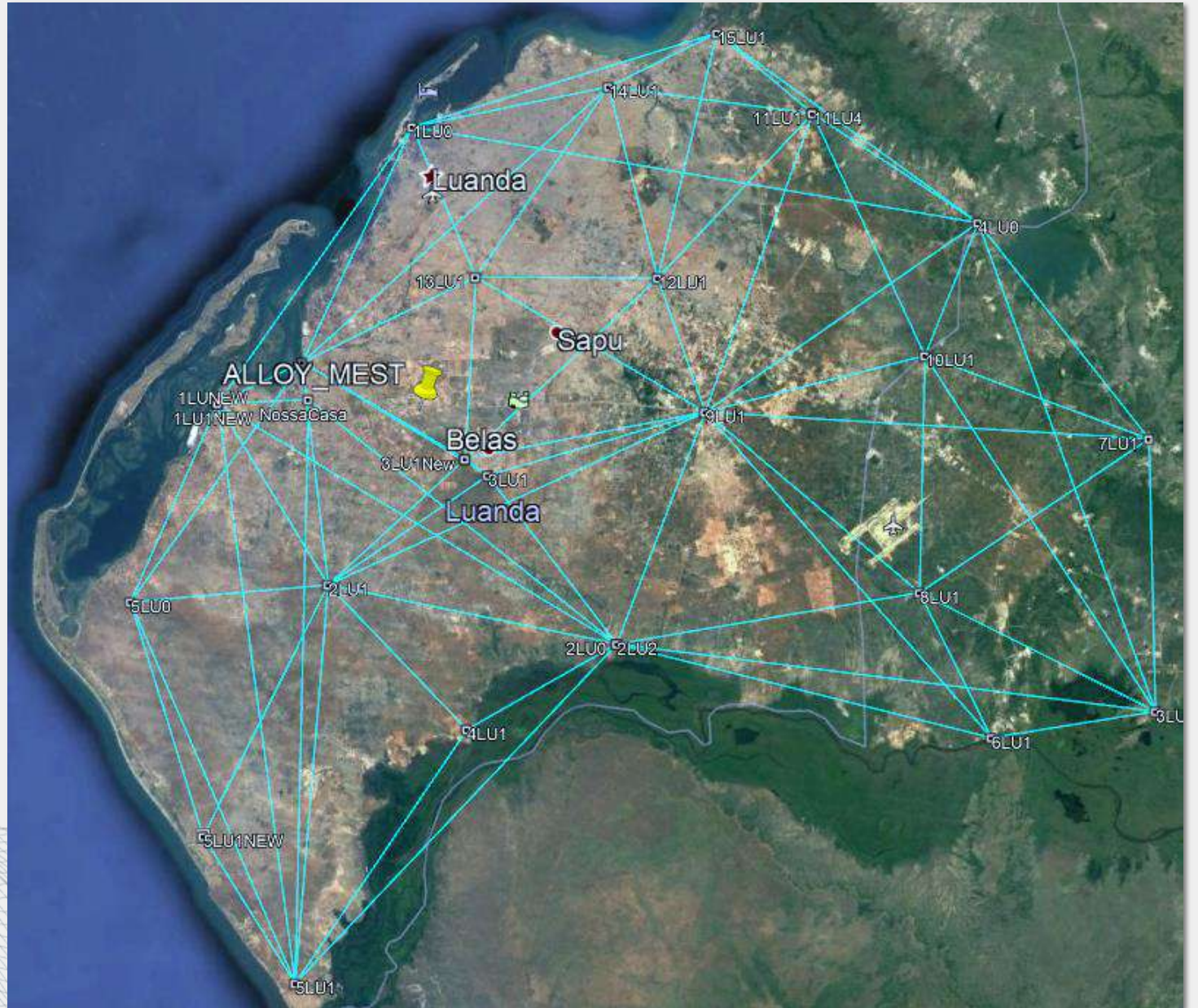
Property
Registration System

Mapping Infrastructure



Geodetic Network

- Rehabilitation of the national geodetic network
- Establishment of a geodetic network of control points
- High accuracy ground control points ~ 1cm
- Critical for assuring high accuracy cadaster





Aerial Survey

- Luanda 3500 Km²
- 38 additional cities ~2200 Km²
- Resolutions: 5cm - 7.5cm GSD
- Accuracy better than 1:500 scale

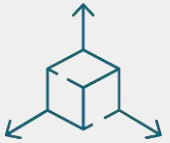


Drone Survey

- Cover large areas and fly under almost any weather conditions
- Area: 28 cities ~500Km²
- Resolutions: 2-4 cm GSD
- Accuracy: 1:250



3D Photogrammetric mapping



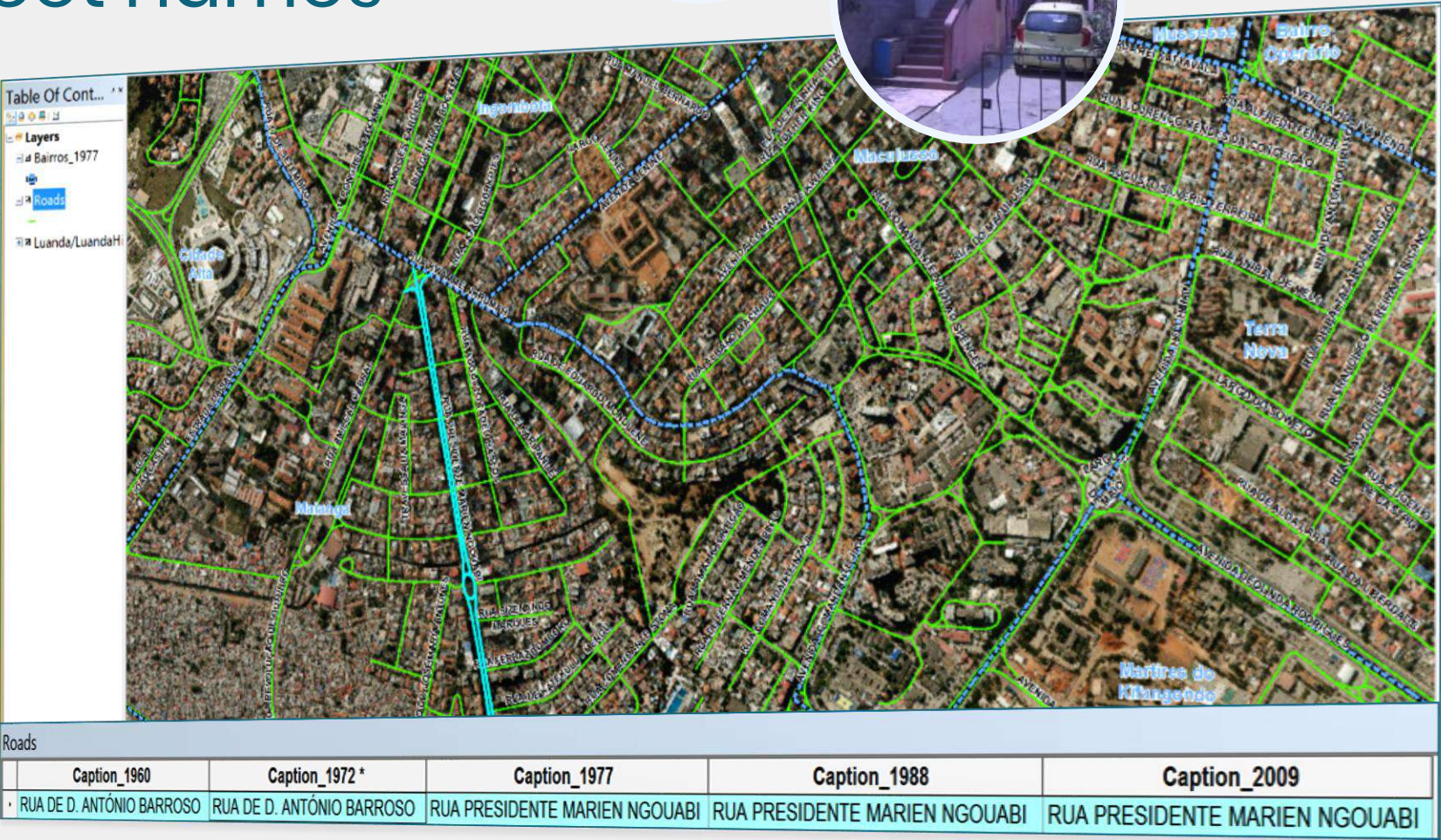
Stereo Mapping (3D)



As Built Mapping



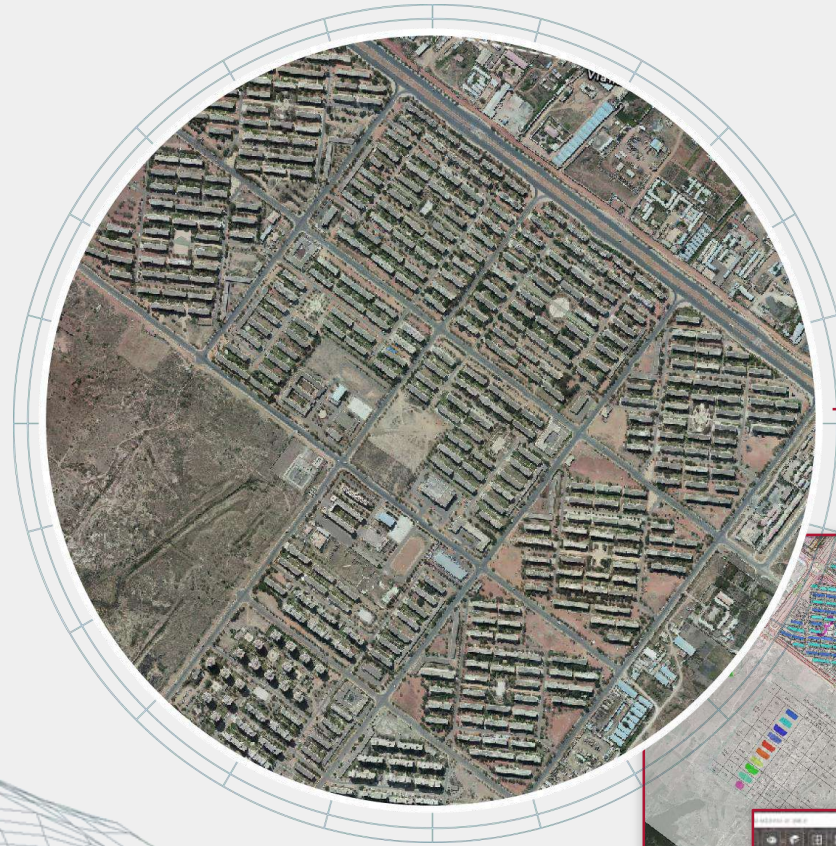
Address Survey – Toponymy, Street names & House no.





Street View

New Centralities Registration





Data from the
construction and
urban plans

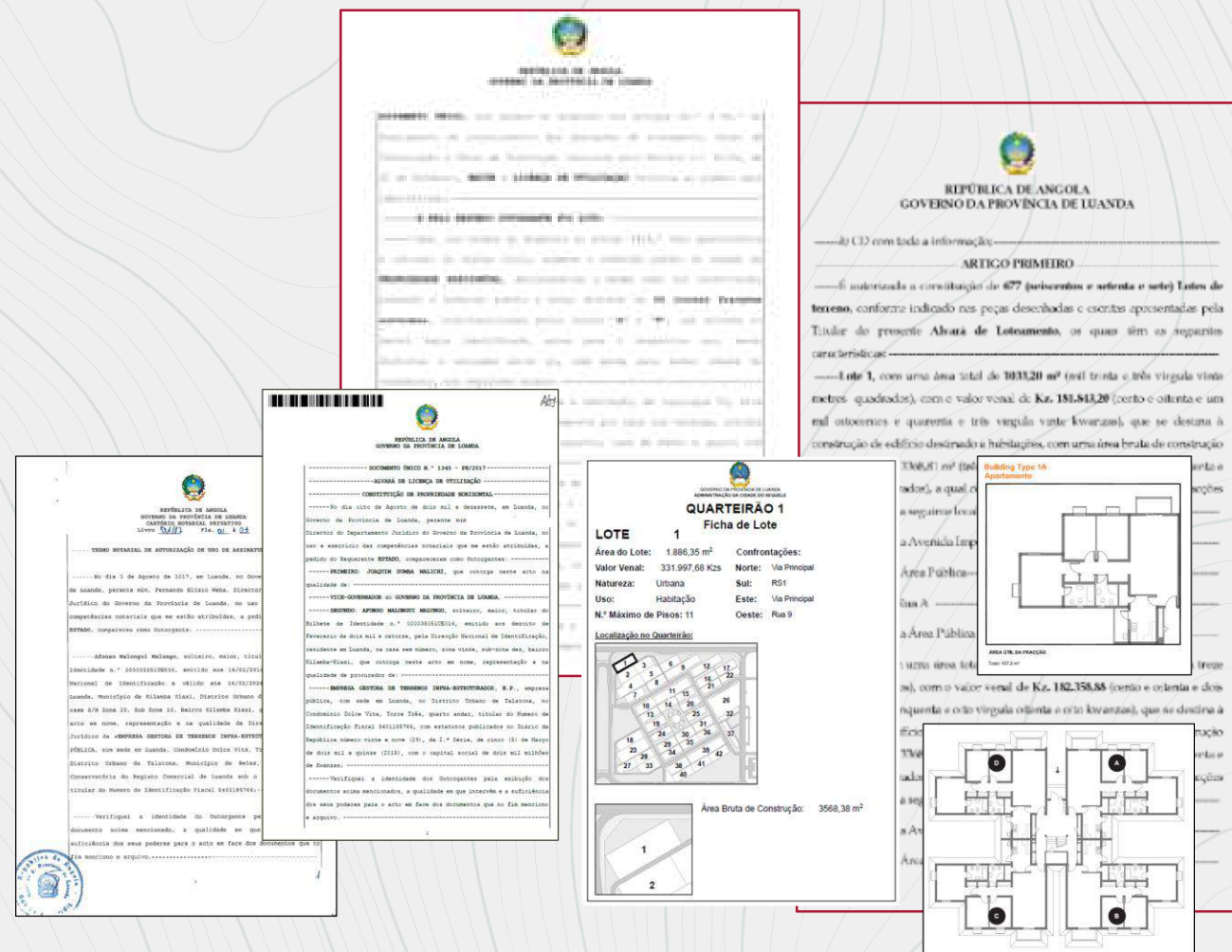


Registration System

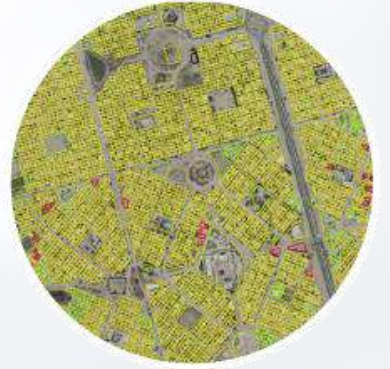
- Implemented in all the registration offices Online with a central national database
- Bi-directional interface with the GIS
- Supports mass registration
- Dashboards and reports

Legal Framework

- Define the legal framework for regularization and legislation
- Ensure processes implementation
- Implement information technologies in the cadaster legalization process
- Preparation of necessary documentation for registration
- Urban plans

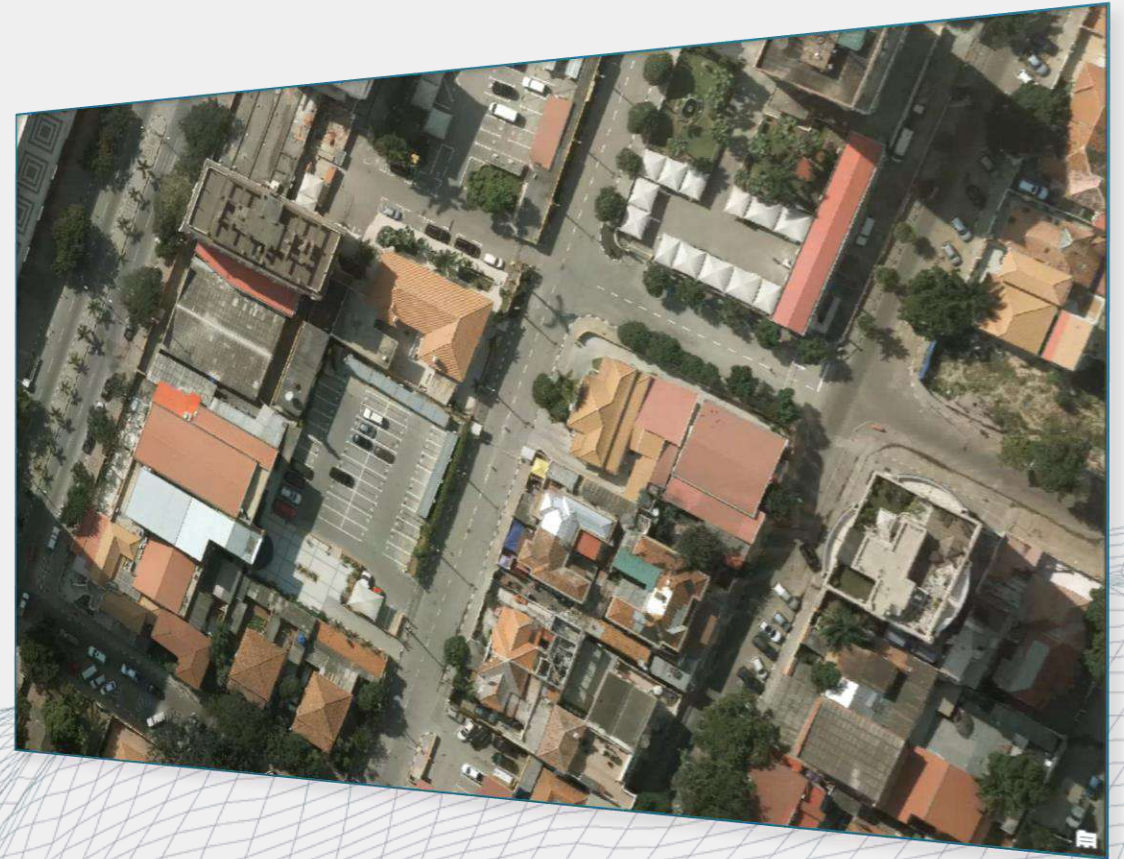


Urban Cadaster



Approach

- Fit for Purpose approach
- As-Built based Cadaster and Properties
- Adjust legal framework
- Use of very accurate (1:500) aerial/drone imagery
- Detailed photogrammetric mapping with complementary field surveys
- Digital Database managed by a registration and cadaster systems
- Use of existing data, maps and documents
- Modern and easy to use equipment and software
- Training, knowledge transfer & long-term technical assistance



The Cadaster Process

```
graph TD; GN[Geodetic Network] -.-> AS[Aerial Survey]; MDC[Maps and Documents Collection] -.-> AS; AS --> OP[Orthophoto Production]; AS --> GR[Geo-referencing]; MDC --> OP; AS --> ASQC[Addr. Survey QC]; ASQC --> DB[DB]; OP --> PM[Photogrammetric Mapping]; OP --> DPO[Drone Processing & Orthophoto]; DPO --> DB; SV[Street View] --> PM; SV --> CFS[Cadaster Field Survey Completion]; PM --> PQC[Photog. QC]; PQC --> DB; PM --> PC[Parcels Creation]; PC --> PQ[Parcels QC]; PQ --> PNMQC[Parcel Numbers, Maps & QC]; PNMQC --> DB; CFS -- Needs --> PC; PC -- Results --> CFS; DB --- IT[IT Systems]
```

The diagram illustrates the Cadaster Process, showing the flow from data collection to final parcel creation and database storage.

Data Sources:

- Geodetic Network
- Maps and Documents Collection
- Address Survey
- Drone Survey
- Street View

Core Processes:

- Aerial Survey (receives input from Geodetic Network and Maps and Documents Collection)
- Orthophoto Production (receives input from Aerial Survey and Maps and Documents Collection)
- Photogrammetric Mapping (receives input from Orthophoto Production and Street View)

Quality Control and Processing:

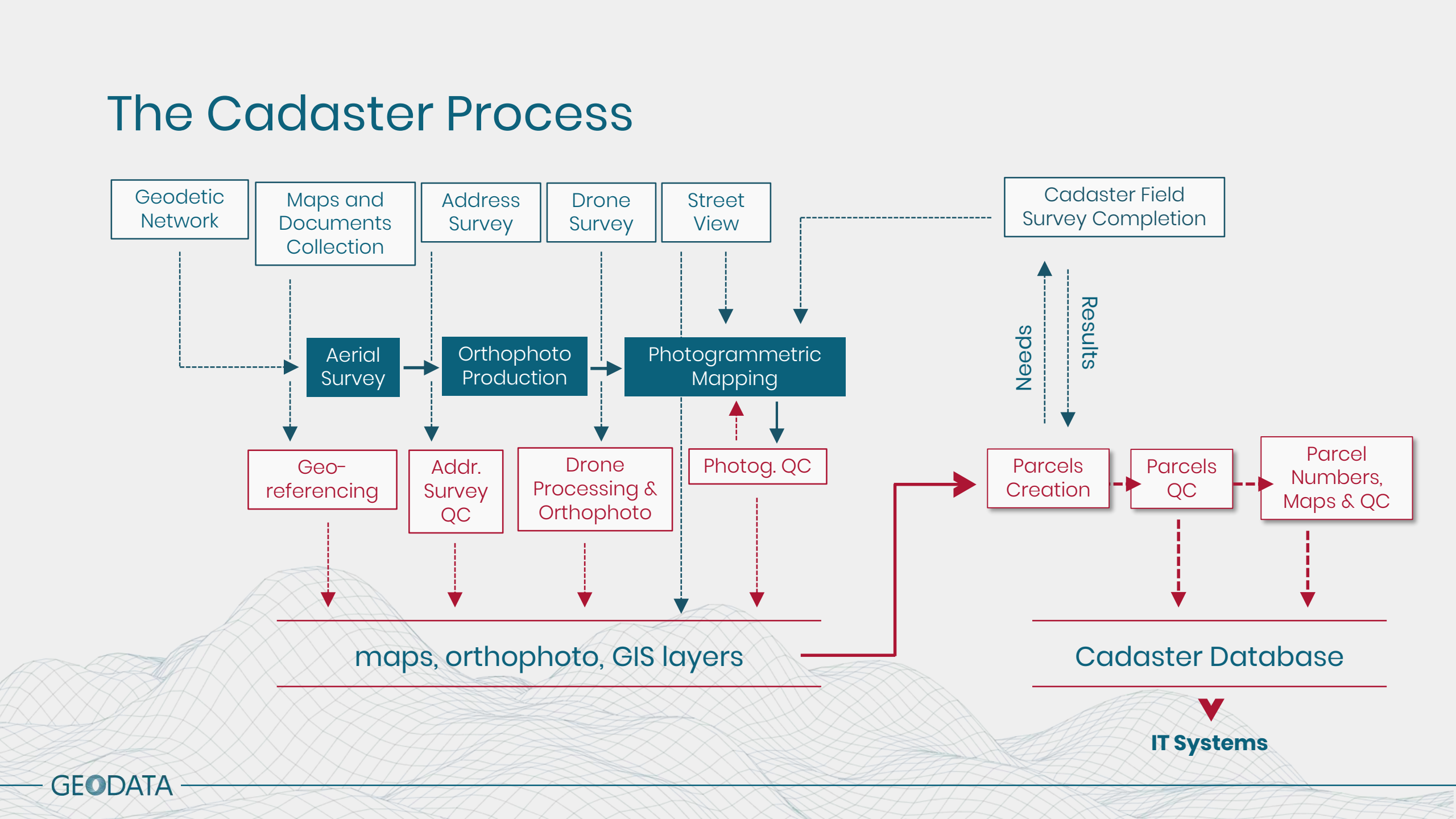
- Geo-referencing (receives input from Aerial Survey)
- Addr. Survey QC (receives input from Aerial Survey)
- Drone Processing & Orthophoto (receives input from Drone Survey)
- Photog. QC (receives input from Photogrammetric Mapping)

Output and Database Integration:

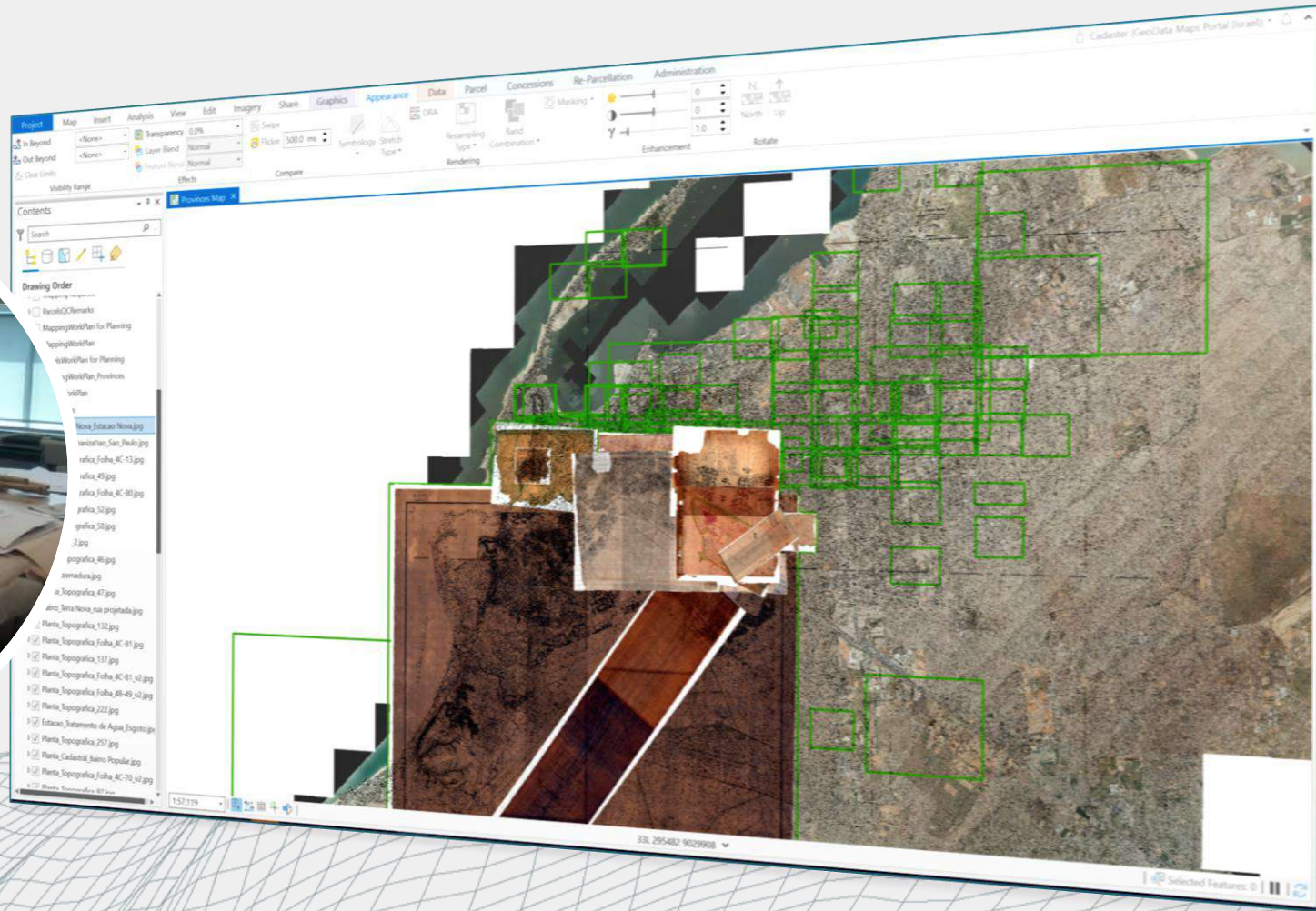
- maps, orthophoto, GIS layers (receives output from Geo-referencing, Addr. Survey QC, Drone Processing & Orthophoto, and Photogrammetric Mapping)
- Parcels Creation (receives input from Photogrammetric Mapping and needs from Cadaster Field Survey Completion)
- Parcels QC (receives input from Parcels Creation)
- Parcel Numbers, Maps & QC (receives input from Parcels QC)

Final Output:

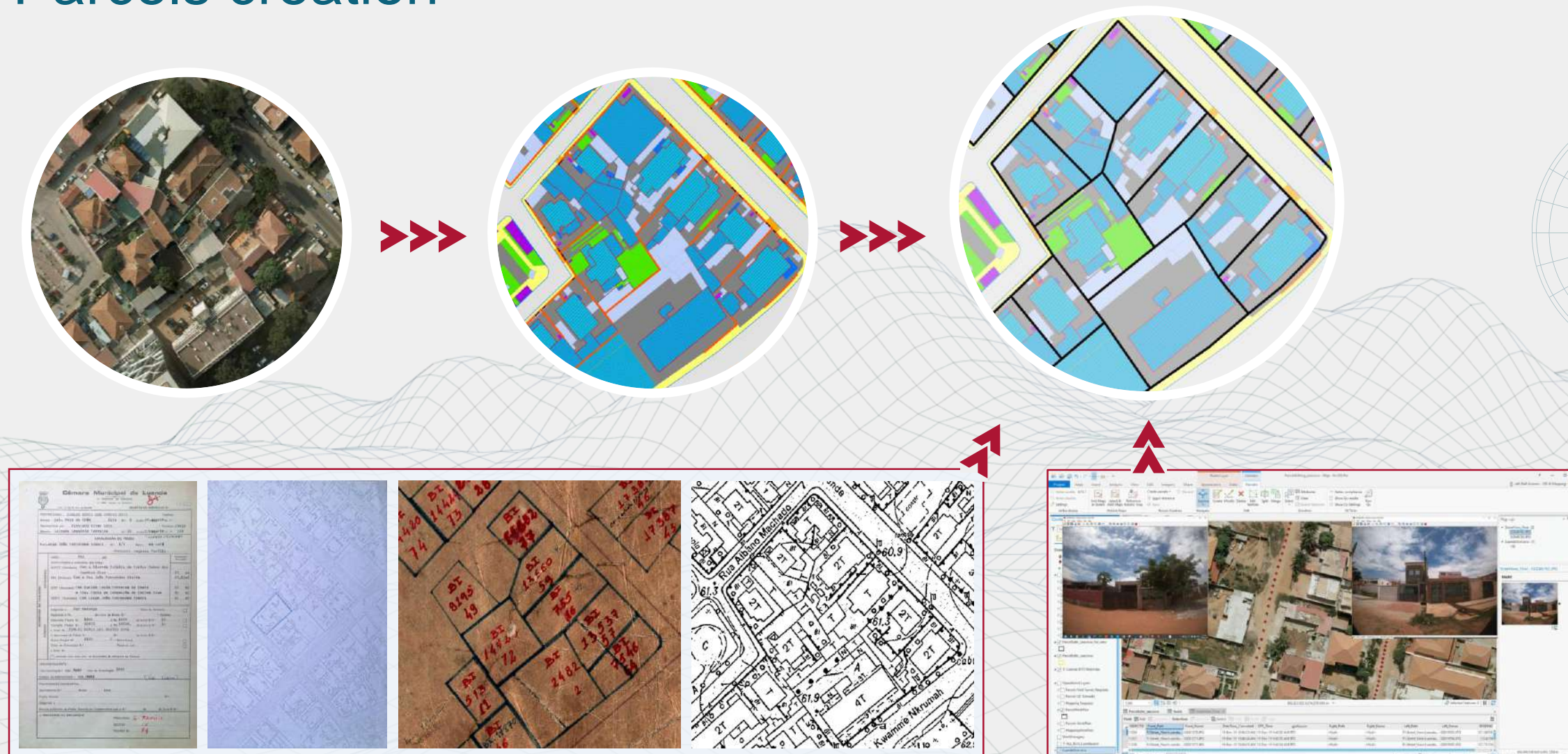
- Cadaster Database (receives output from maps, orthophoto, GIS layers, Parcels QC, and Parcel Numbers, Maps & QC)
- IT Systems (connected to the Cadaster Database)



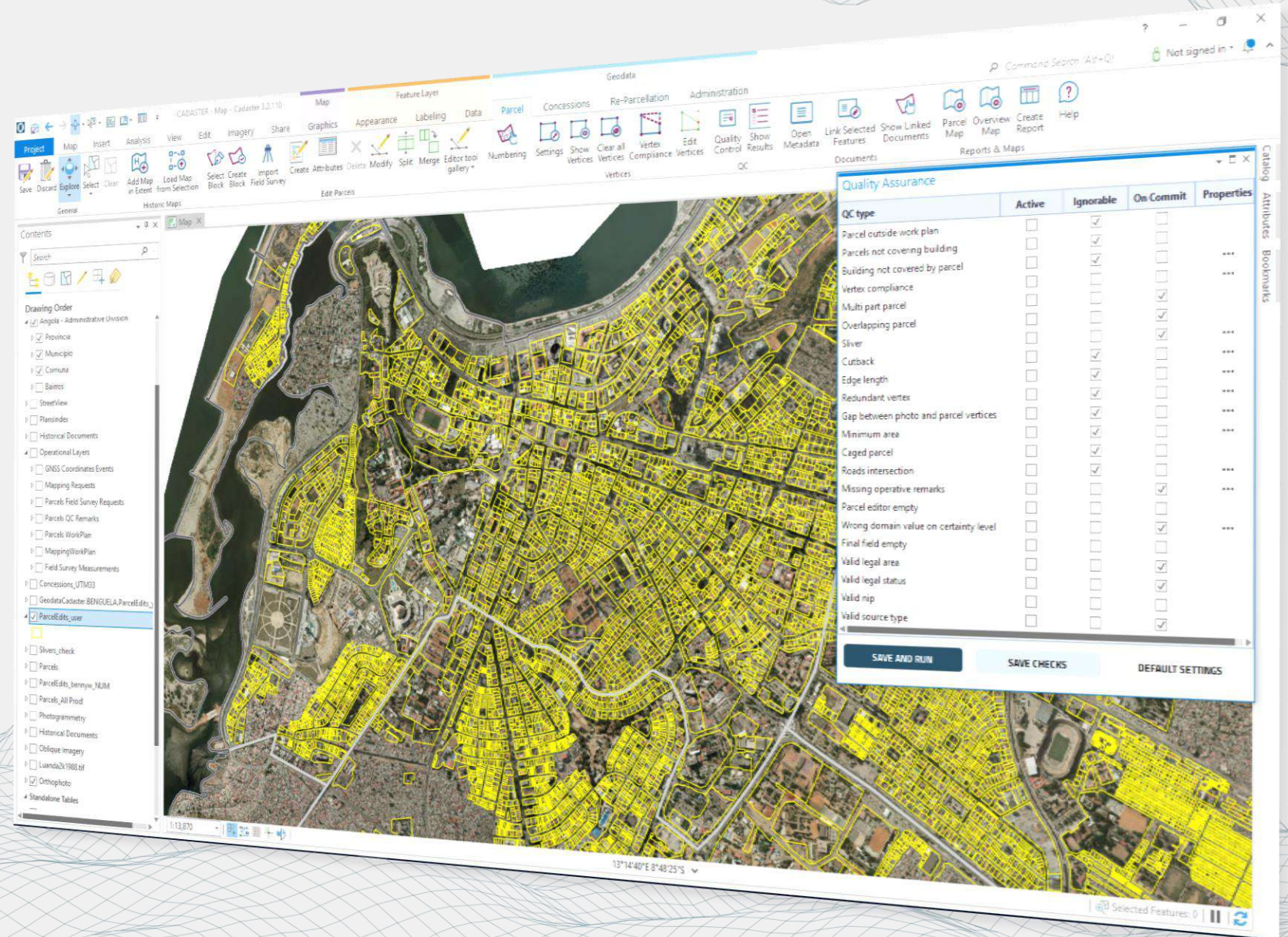
Scanning & Georeferencing maps & documents



Parcels creation

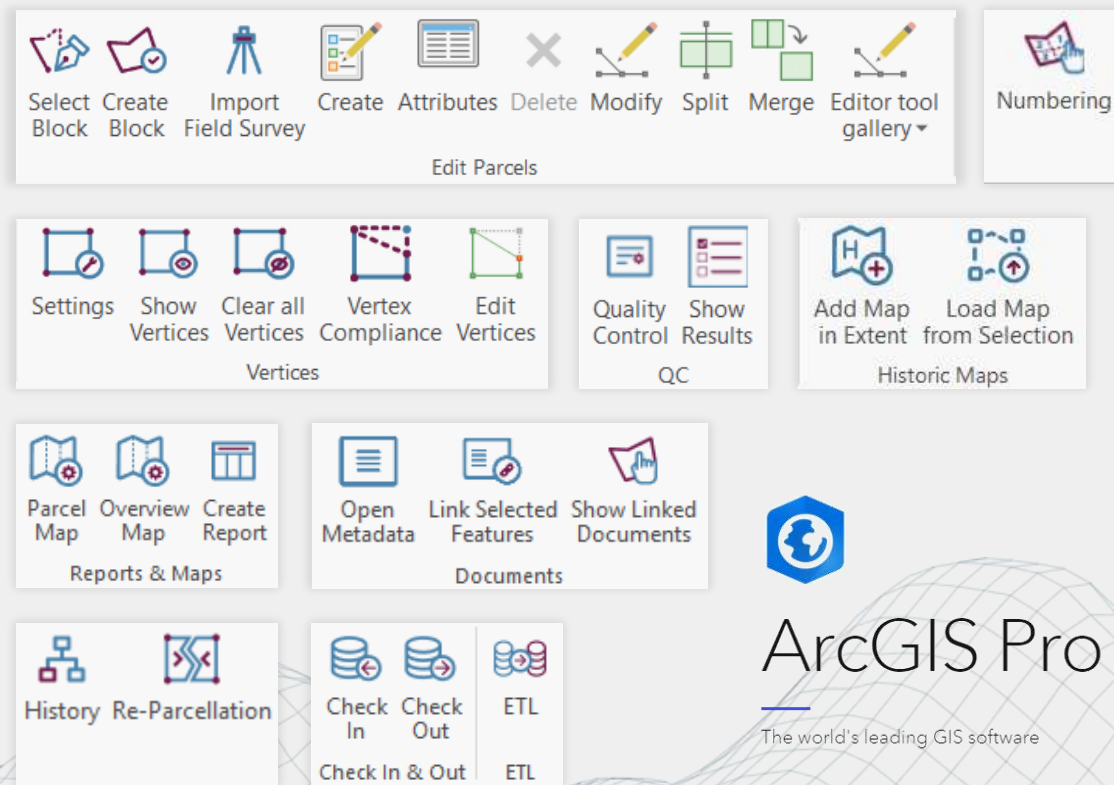


Cadaster system



Desktop Added System Functionality

- Rich & “Smart” parcel editing tools
- Historic maps & docs retrieval
- Interactive parcel numbering
- Thorough Quality Control
- Import field survey data
- Maps & Reports
- Input & Link documents
- Re-parcellation Wizards
- Storage and display of parcels history
- Database management & ETL





Cadaster WEB system

Training & Knowledge transfer





Summary

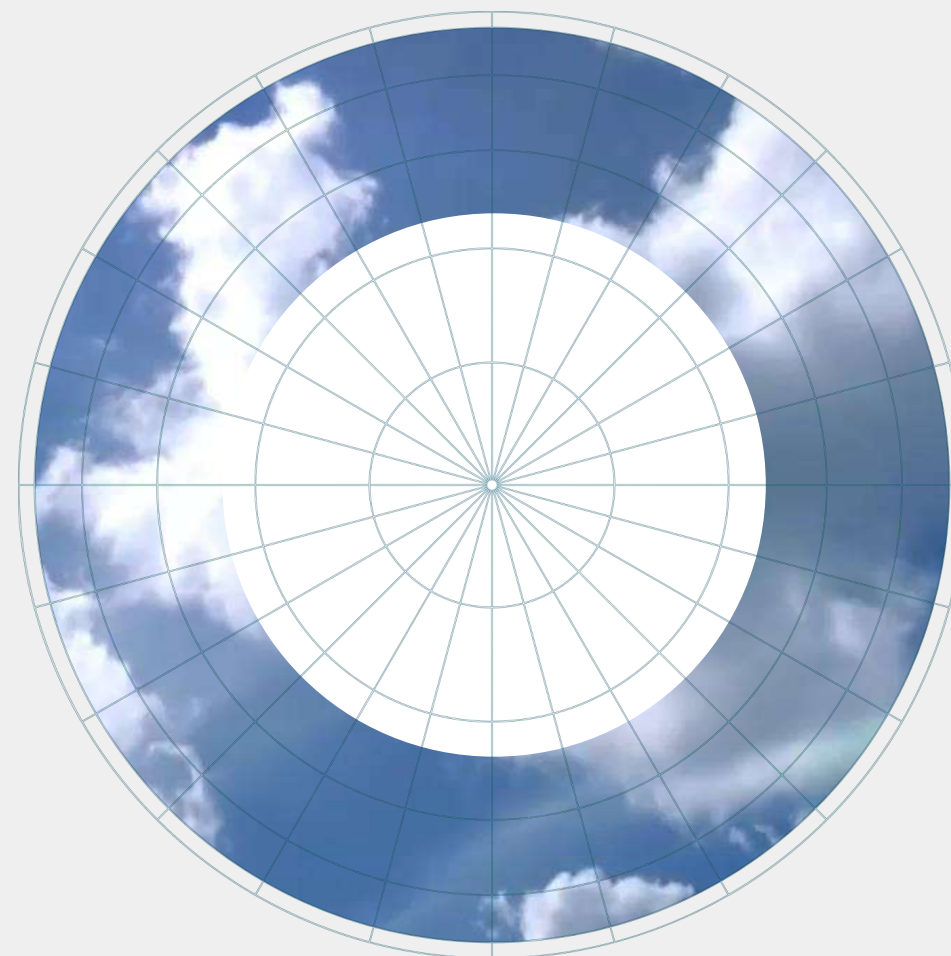
- Complete holistic solution by GEODATA
- Geospatial as the basis for all



THANK YOU!

Meet at the booth 4-5

A detailed technical
workshop will be held
Wednesday at 11:30,
room ODIENNE



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