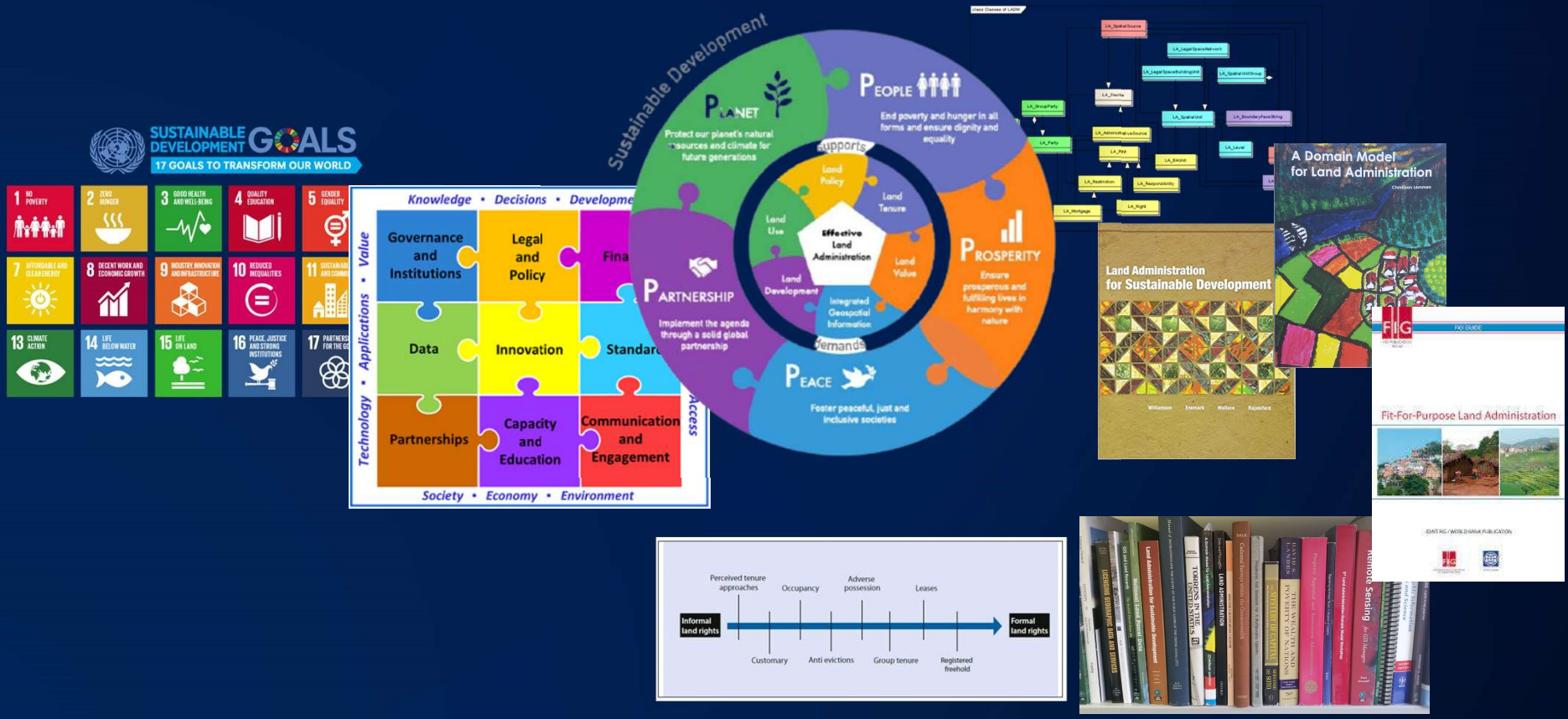
UN-GGIM: Expert Group on Land Administration & Management
Aligning Technology with
Global Initiatives

Global Standards, Frameworks, Initiatives, Models, Data…..

The cookbook for modernizing land administration,,,,,



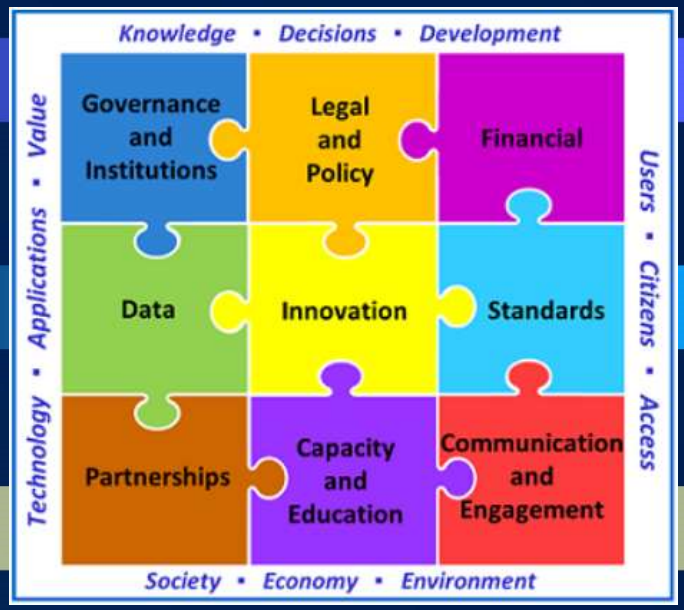
Integrated Geospatial Information Framework

Framework for Effective Land Administration

GOVERNANCE

TECHNOLOGY

PEOPLE



FELA Goals	FELA Requirements	FELA Pathways
Transparency and accountability increased	Accountable and transparent governance	Governance, Institutions and Accountability*
Gender-responsive and inclusive of vulnerable groups	Inclusive and recognizes all forms of tenure	Policy and Legal
Affordable investments and economic return assured	Affordable with sustainable business models	Financial
Reliable data and service quality attained	Data maintained, secure and not duplicated	Data
Responsible and innovation oriented	Upgradable systems and approaches	Innovation
Interoperability and integration supported	Considers internationally agreed standards	Standards
Cooperation, partnerships, and participation leveraged	Strengthens partnerships and supports collaboration	Partnerships
Capacity, capability, knowledge transfer and exchange attained	Facilitates capacity development and knowledge transfer and exchange	Capacity and Education
National engagement and communication enhanced	Advocates for effective land administration	Advocacy and Awareness*

A Framework for Implementing Modern SDI Driving Effective Land Administration….

Strategic Pathway #6

Standards

Open Standards and Formats

KML
XLSForm
WFS
GML
WCS
WMS
WWW
IFC
SQL
Web Scene (I3S)
OPeNDAP
SLD
SOAP
WMTS
LERC
JSON
LAS
CSW
REST
WaterML
INSPIRE
WPS
NetCDF
Shapefiles
ISO
GeoPackage
OneGeology
CityGML

OGC Principal Member

Many OGC Certifications

Systems Integration

MS Office
Adobe Creative Cloud
SharePoint
SQL Server
Azure
Jupyter Notebooks
Power BI
Netezza
Teradata
AWS
Python
R
AutoCAD
SAP HANA
IBM Cognos
Oracle

Open Software

Open Data Access
Open APIs & SDKs
Extensible Architecture
Embeddable Components
Open-Source Contributions (500+)
Open-Source Integration

Data Interoperability

Legal Interoperability
Semantic Interoperability
Technical Interoperability

Strategic Pathway #4

Data

Data Acquisition and Management:

Data Agnostic

Multiple Data Collection Pathways (mobile, drone, imagery, GeoAI, etc.)

Industry Templates, Data Models, & Workflows

Open Data

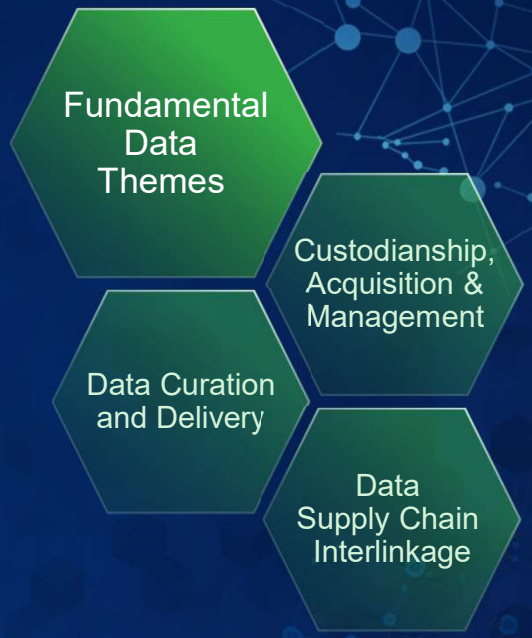
Data Access:

Living Atlas of the World

- Global Base Maps

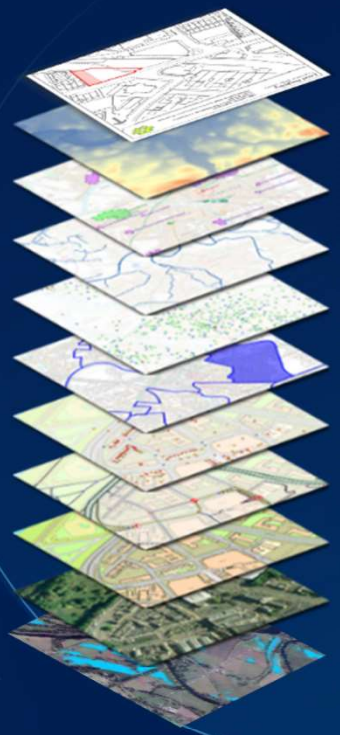
- Imagery

- Demographic Data



Infrastructural Data

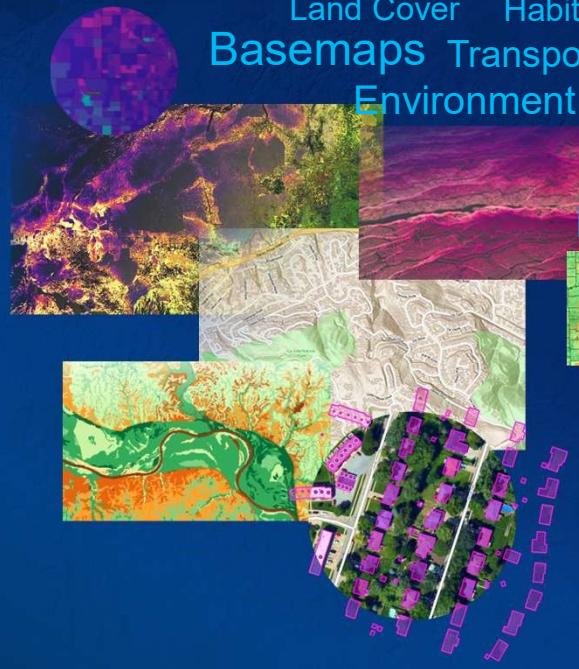
Fundamental Data Themes



- Geodetic Reference Frame
- Geographical Names
- Addresses
- Functional Area
- Settlements
- Land Parcels
- Transport Networks
- Elevation/Depth
- Population Distribution
- Land Cover/Use
- Geology/Soils
- Physical Infrastructure
- Imagery
- Water

Source: https://ggim.un.org/documents/E-C20-2018-7-Add_1-Global-fundamental-geospatial-data-themes.pdf

Global Maps and Data



Living Atlas

Land Cover Habitats Biodiversity
Basemaps Transportation Landscape
Environment Movement Infrastructure
Hydro Traffic Business
Elevation Boundaries
Demographics Imagery
POI Oceans Hazards
Weather Soils
Authoritative
Community Content

- Thousands of High-Quality Maps, Layers and Datasets
- Updated Regularly
- Billions of Requests Daily

Monthly Unemployment Statistics (BLS)

Real-Time Observations

OpenStreetMap Layers

Global & Local Geographic Content . . .
About Everything

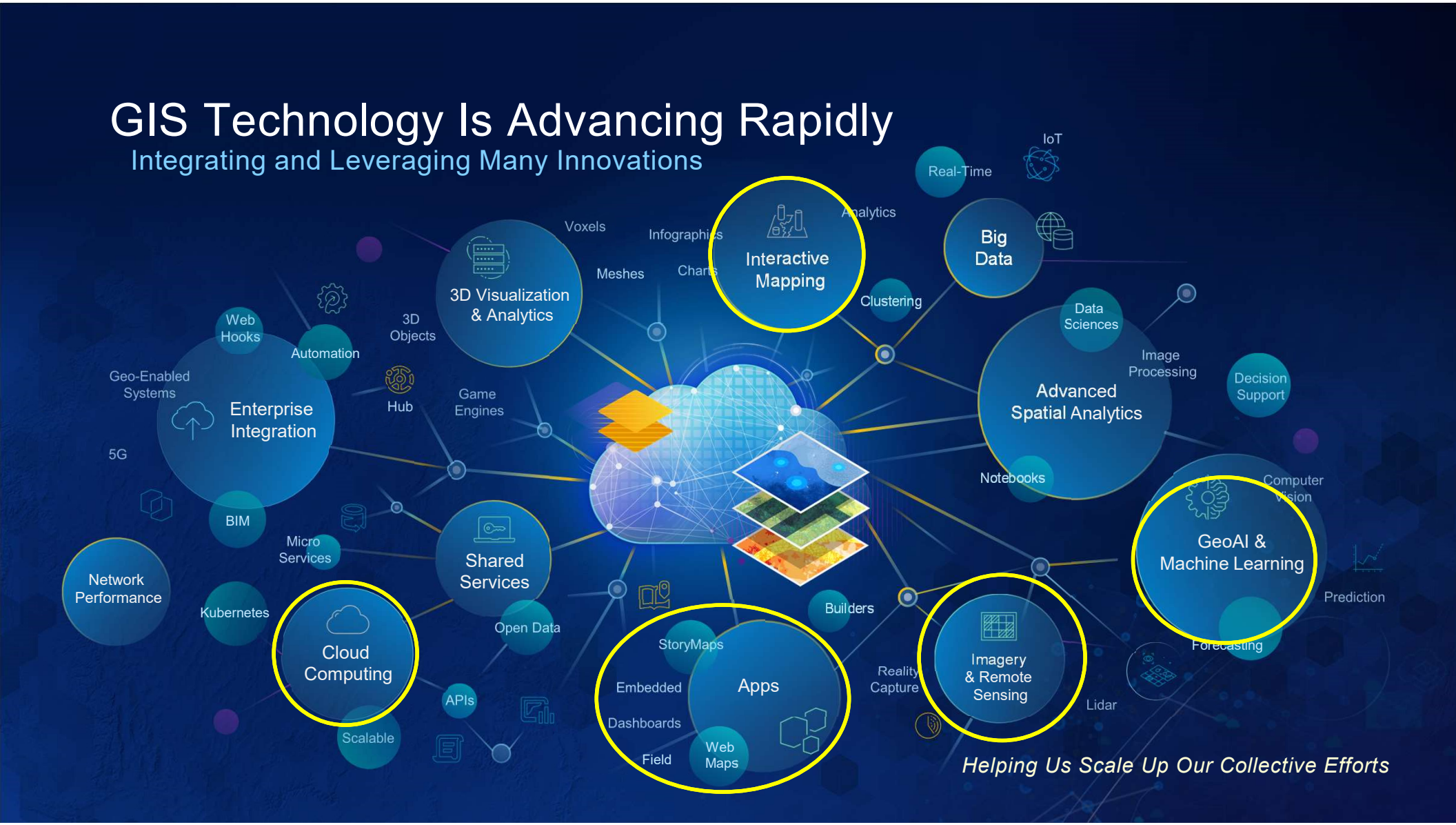
Strategic Pathway #5

Innovation

GIS enables many innovations….

GIS Technology Is Advancing Rapidly

Integrating and Leveraging Many Innovations



What's Coming!

Continuously growing

Available globally…..

Geo-Enabled Systems
Location Services
Services
Geo AI
Machine Learning
High Fidelity 3D
3D
Enhanced Usability
SaaS
Augmented Reality
Graph Databases
Kubernetes
IoT
Situational Awareness
Image Exploitation
Cloud Native
Accessibility
Volumetric Data
Instant Apps
Knowledge Graphs
Spatiotemporal
Microservices
Indoors
BIM
Terrain Editing
Mapping
Link Analytics
Predictive Analysis
Unstructured Data
Digital Twins
Developer Experience
Containerization
Big Data
Voice Assisted Capture
Voxels
3D Reality Capture

. . . GIS continues to leverage broad technology advancements….

Phönix-Iⁿ
Ellice-(Lagunen)-Iⁿ
Tokelau-(Union)-Iⁿ
Samoa-Iⁿ
Fidschi-(Viti)-Iⁿ
Viti Levu
Tonga-Iⁿ
Brisbane
K.Byron
Macquarie
Hunter I.
Tuvana-Iⁿ
Tongatabu
Manihiki
Rotuma
Keppel-B.
Hervey-B.
Bartle Frere
Koralle
Meer
QUEENSLAND
AUSTRALIEN
NEU-SÜD-WALES
Deutsche Kolon
Z E A N
NW
SE

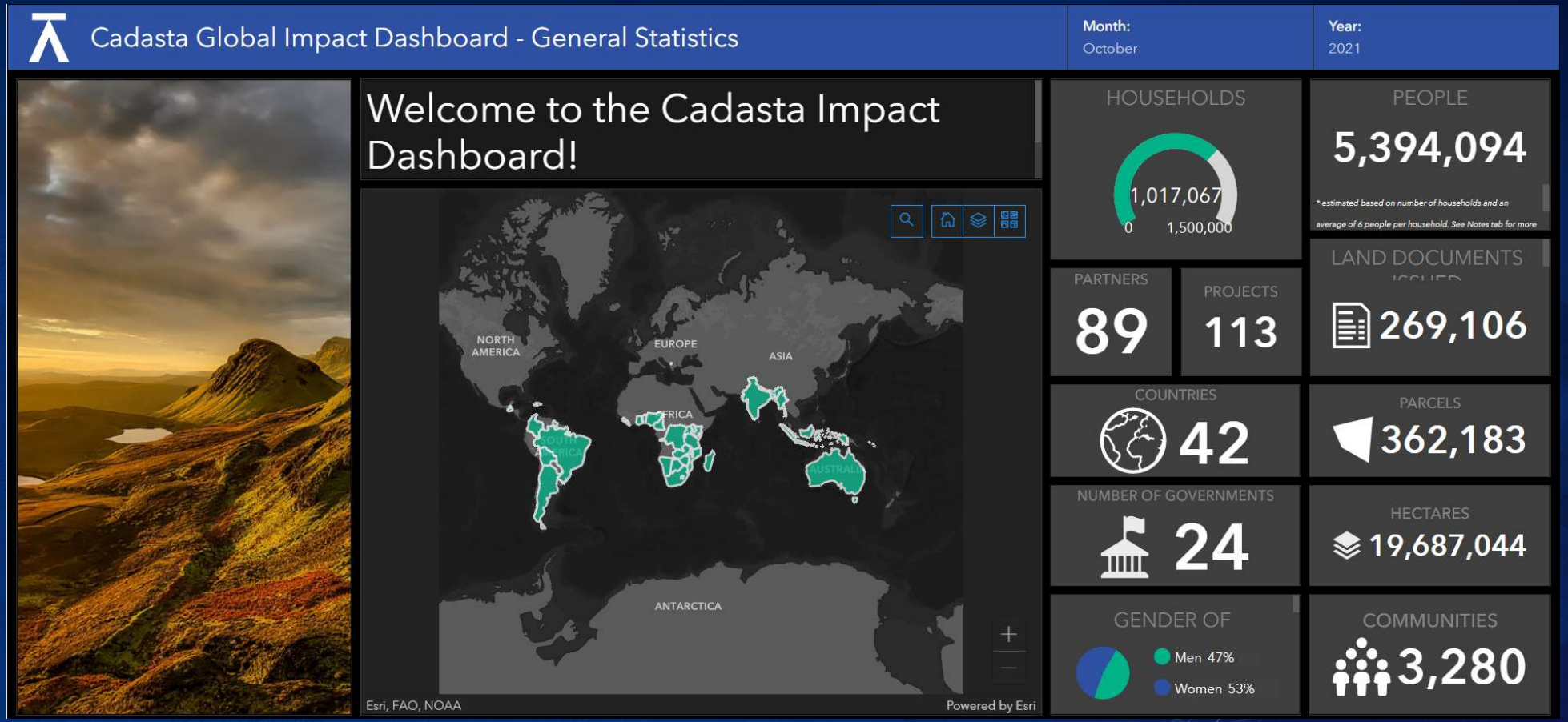
270
330
240
W
N
0
210
30
S
180
E
60
150
90
120
296°
NW
Naples
FL
26°7'48" N 81°48'22" W
10 ft Elevation

SAMSUNG
Vodafone NL: Welkom in Colombia. Bellen naar
STREAM

Aligning Technology

Frameworks
Standards
Best Practices
Data Models
Initiatives
Vision
Global Contributions

Cadasta

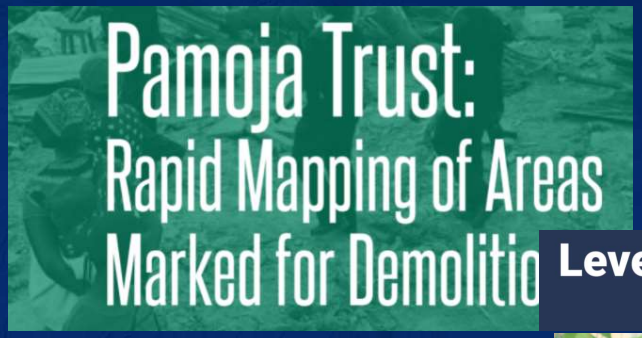

Cadasta Global Impact Dashboard - General Statistics
Month:
October
Year:
2021
Welcome to the Cadasta Impact Dashboard!
NORTH AMERICA
EUROPE
ASIA
ANTARCTICA
Esri, FAO, NOAA
Powered by Esri
HOUSEHOLDS
1,017,067
0
1,500,000
PEOPLE
5,394,094
* estimated based on number of households and an average of 6 people per household. See Notes tab for more
PARTNERS
89
PROJECTS
113
LAND DOCUMENTS
269,106
COUNTRIES
42
PARCELS
362,183
NUMBER OF GOVERNMENTS
24
HECTARES
19,687,044
GENDER OF
Men 47%
Women 53%
COMMUNITIES
3,280

Odisha India

CADASTA

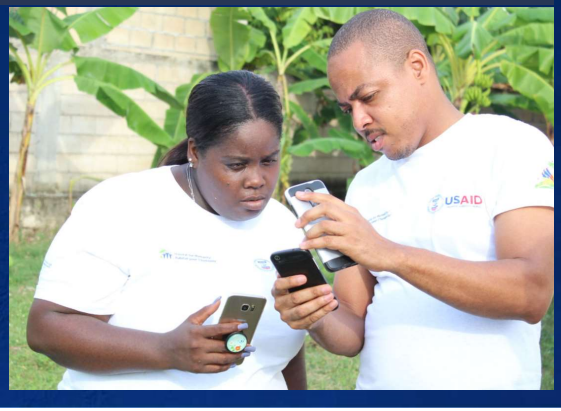
https://www.esri.com/about/newsroom/blog/how-one-million-people-in-indias-odisha-slums-gain-land-rights/

World's Largest Slum Titling Initiative Wins the UN-Habitat Award with Help from Cadasta

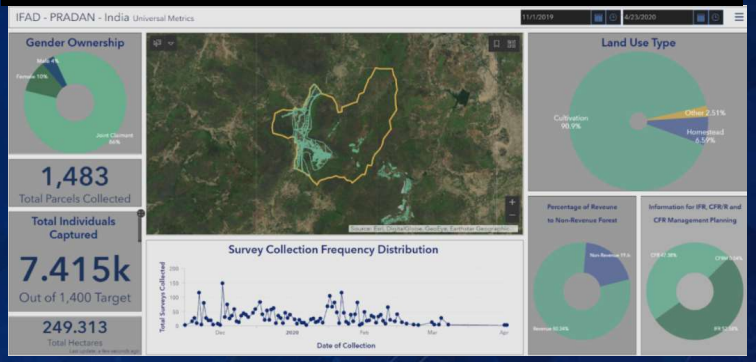


Leveraging Land in Haiti

Cadasta & USAID



Protecting India's Forest-dwellers' Right to Land



CADASTA

https://cadasta.org/cadasta-stories/

Kadaster International

Post conflict areas need sustainable empowerment

Land in Peace project in Colom

Providing security during reconstruction in Nepal

kadaster

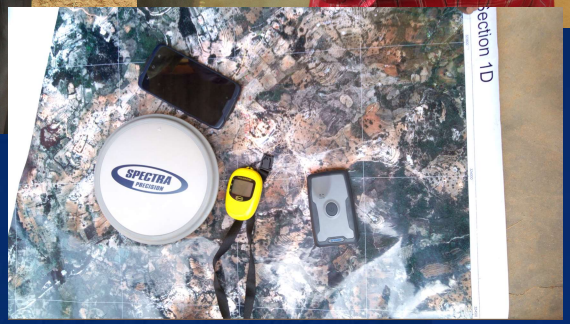
https://www.kadaster.com/

Colombia

kadaster

https://www.esri.com/about/newsroom/blog/how-one-million-people-in-indias-odisha-slums-gain-land-rights/

Kenya



https://www.esri.com/about/newsroom/blog/how-one-million-people-in-indias-odisha-slums-gain-land-rights/

Sustainability Requires . . .

Seeing the World as One Single Ecosystem

Geography Provides the Science & Language to Do This

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