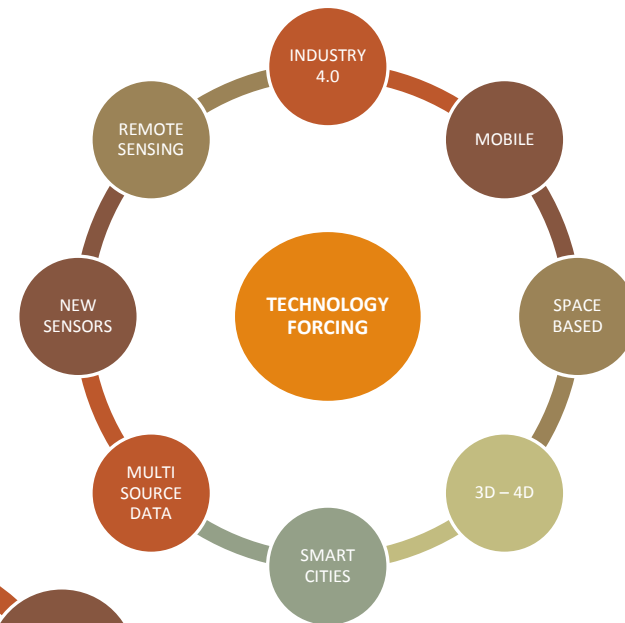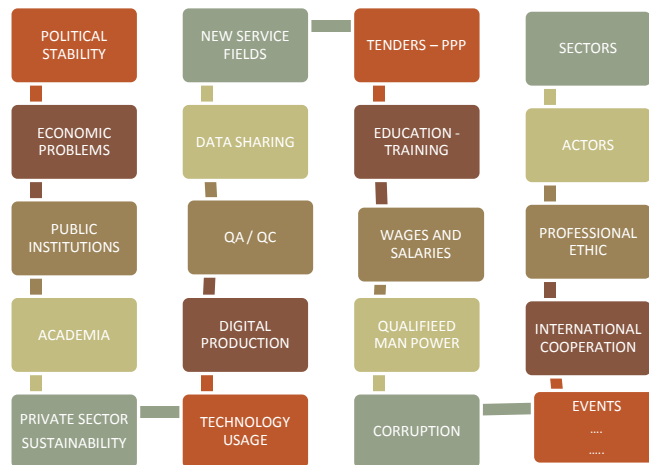# LAND ADMINISTRATION IN THE CROSS-SECTION OF SUSTAINABLE DEVELOPMENT GOALS AND DISRUPTIVE TECHNOLOGIES

DR. ORHAN ERCAN
FIG VICE PRESIDENT
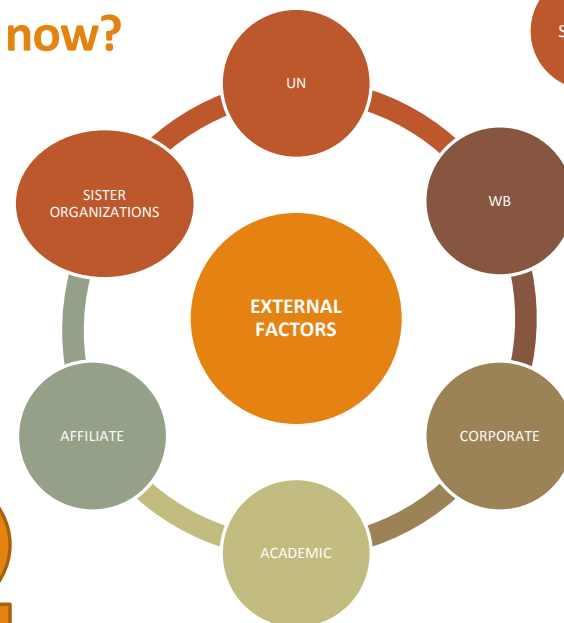
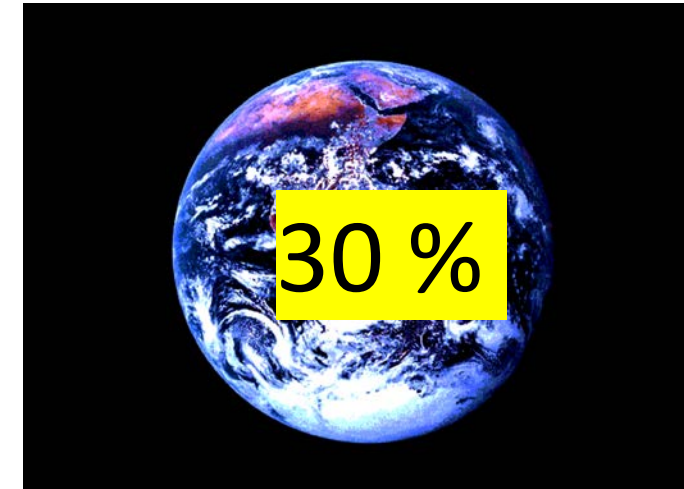SURVEYOR'S EXPECTATION

LA ECO SYSTEM
Where are we now?

Dr Orhan ERCAN, September 24 - 2019, CLUJ

DILEMMA
What are we doing?
## Where are we going?

70 %

100 %

30 %

Policy framework
Land registry
Land cadastre
Geodetic framework
Land value
Land use
Land consolidation
Land development plans

Spatial data
Technical standards
Institutional structure
Capacity building
Budget limitations
Modern technology usage
Feudalism
Etc……

Misuse of national resources
Urbanization problems
Land grabbing
Rural collapse
Corruption
Social problems
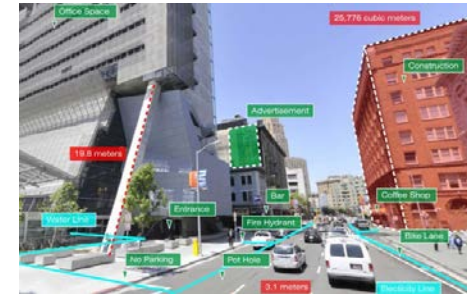
Innovation
International networks
Spatially enable
Water management
User centric
Technology transfer
Etc

People – land relation exist
Institutional structure
Land administration is a part of
sustainable development
Data collecting, management and sharing
is dynamic
SDI needs
Quality improvement of land registry
system and records
Modern technology usage
Automation
Sustainable business model
Citizen oriented
etc

- 17 GOALS,
- 169 TARGETS, AND
- 230 INDICATORS
- THE GOALS AND TARGETS INTEGRATE ECONOMIC, SOCIAL AND ENVIRONMENTAL ASPECTS

- DIGITAL CADASTRE
- DIGITAL LAND REGISTRY
- INCREASED EFFICIENCY

SUSTAINABLE DEVELOPMENT GOALS (SDG's)

LAND ADMINISTRATION SYSTEMS (LAS)

DISRUPTIVE TECHNOLOGIES

INDUSTRY 4.0

- ML&AI
- IoT
- CLOUD / BIG DATA
- BLOCKCHAIN

- INTEROPERABILITY
- INFORMATION TRANSPARENCY
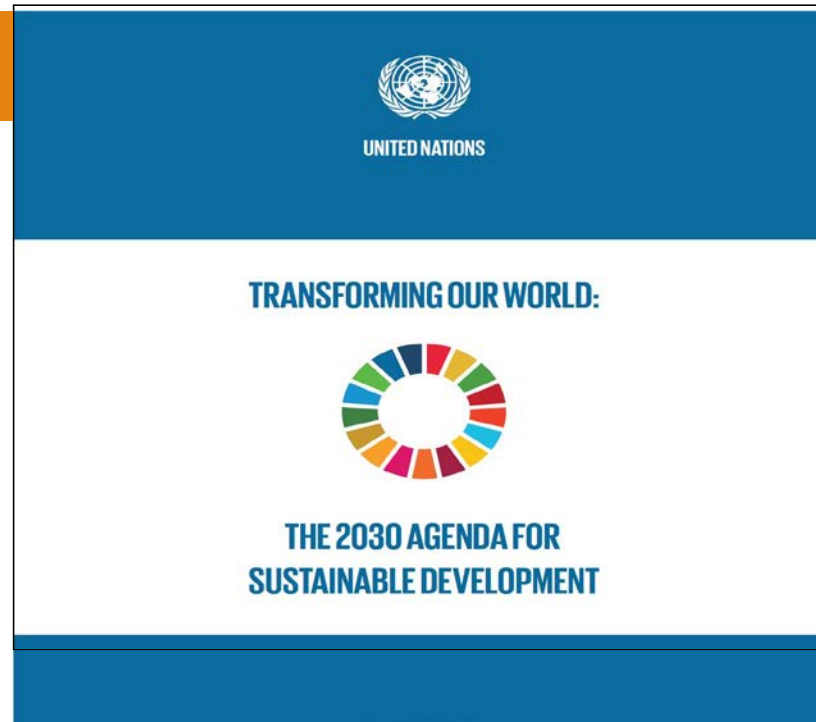- DECENTRILAZED DECISIONS
- TECHNICAL ASSISTANCE

NO TURNING BACK, RIGHT, LEFT GO AHEAD

THE 2030 AGENDA

INCLUSION IS AT THE CORE OF THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT.

LEAVE NO ONE BEHIND

TO REACH THE FURTHEST BEHIND FIRST

UNITED NATIONS

TRANSFORMING OUR WORLD:

THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

Source:https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20S

DECLARED IN 2015….. SHOULD BE ACHIEVED BY 2030

Task Force on Sustainable Development Goals = SDGs

TF on SDGs

→ **IDENTIFY THE GOALS WERE OUR PROFESSION HAS POTENTIALLY THE BIGGEST IMPACT**

→ **COORDINATE THE ACTIVITIES INSIDE FIG**

SUSTAINABLE DEVELOPMENT GOALS

✓ 17 GOALS,
✓ 169 TARGETS, AND,
✓ 230 INDICATORS

THE GOALS ARE ACTION ORIENTED, GLOBAL IN NATURE AND UNIVERSALLY APPLICABLE.

TARGETS ARE DEFINED AS ASPIRATIONAL GLOBAL TARGETS, WITH EACH GOVERNMENT SETTING ITS OWN NATIONAL TARGETS GUIDED BY THE GLOBAL LEVEL OF AMBITION, BUT TAKING INTO ACCOUNT NATIONAL CIRCUMSTANCES.

THE GOALS AND TARGETS INTEGRATE ECONOMIC, SOCIAL AND ENVIRONMENTAL ASPECTS AND RECOGNISE THEIR INTERLINKAGES IN ACHIEVING SUSTAINABLE DEVELOPMENT IN ALL ITS DIMENSIONS.

Source: https://sustainabledevelopment.un.org/?menu=1300

8 out of 17 Goals directly underpinned by solutions to global LAND issues

Dr Orhan ERCAN, September 24 - 2019, CLUJ
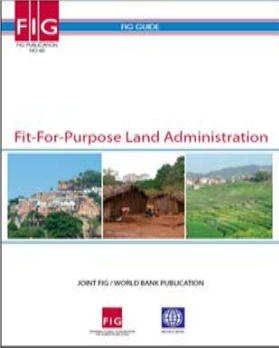
SUSTAINABLE DEVELOPMENT GOALS

8 out of 17 Goals directly underpinned by solutions to global LAND issues

5 goals are indirectly related (6 – 7 – 8 – 9 – 10)

75% OF THE TARGETS ARE RELATED TO GEOSPATIAL TECHNOLOGIES AND LAND ADMINISTRATION.

'FIT FOR PURPOSE (FFP)' LAND ADMINISTRATION

- LAND ADMINISTRATION IS A FUNDAMENTAL INFRASTRUCTURE FOR THE SUSTAINABLE ECONOMIC AND SOCIAL DEVELOPMENT OF ALL SOCIETIES.
- A SIMPLE INDICATION OF PROPERTIES AND BOUNDARIES IS OFTEN ADEQUATE TO MEET BASIC LAND ADMINISTRATION NEEDS IN LESS DEVELOPED COUNTRIES. THEREFORE THE WORLD BANK AND THE INTERNATIONAL FEDERATION OF SURVEYORS (FIG) DEVELOPED THE 'FIT FOR PURPOSE' APPROACH.
- THE IDEA BEHIND 'FIT FOR PURPOSE' IS THAT LAND ADMINISTRATION SHOULD BE DESIGNED TO MEET THE NEEDS OF PEOPLE AND THE ENVIRONMENT. IT ALSO SHOULD IDENTIFY THE WAY LAND IS OCCUPIED AND USED WITHIN A RELATIVELY SHORT TIME AND AT RELATIVELY LOW COSTS.
- BUILDING SUCH SPATIAL, LEGAL AND INSTITUTIONAL FRAMEWORKS WILL ESTABLISH THE LINK BETWEEN PEOPLE AND LAND.
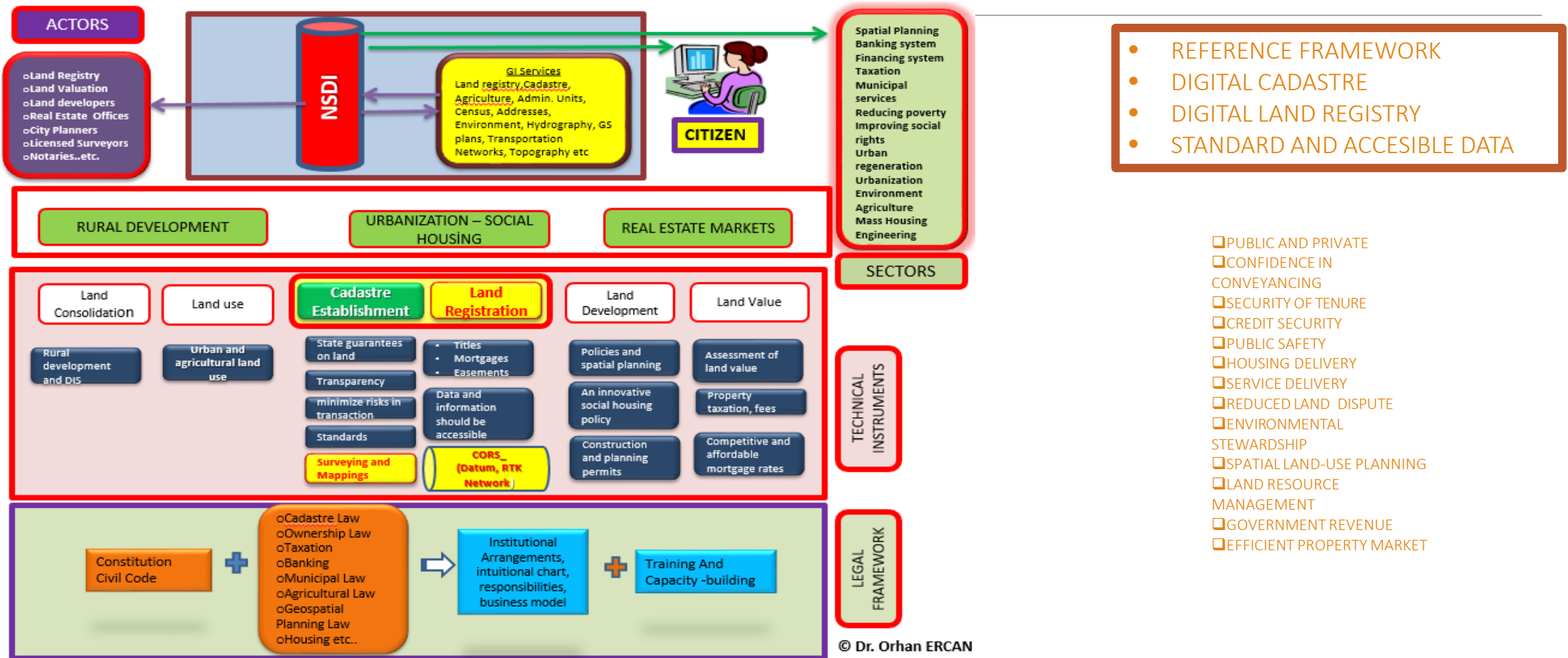
MANY OF THE SDG's WILL NOT BE ACHIEVED WITHOUT THE GLOBAL LAND GOVERNANCE, ADMINISTRATION AND MANAGEMENT ISSUES BEING RESOLVED AT SCALE.

SOLUTIONS TO THE OVERALL GLOBAL LAND ISSUES RELATE TO ALLEVIATION OF:
- POVERTY,
- SOCIAL INCLUSION AND STABILITY,
- INVESTMENTS AND ECONOMIC DEVELOPMENT,
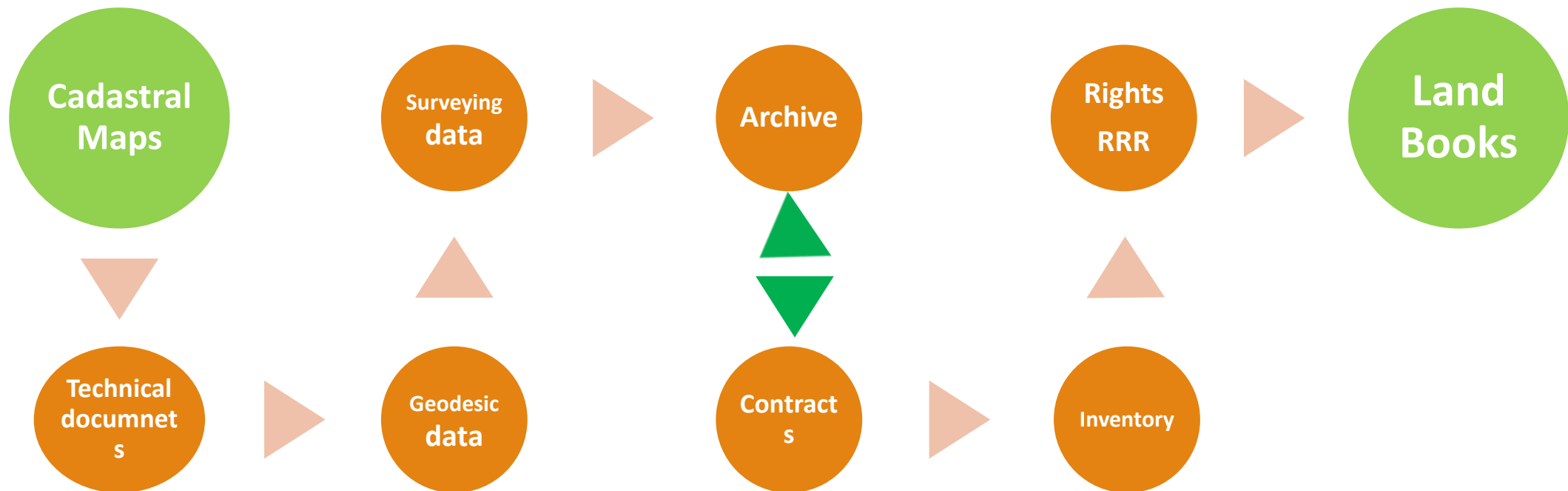- ENVIRONMENTAL PROTECTION AND NATURAL RESOURCE MANAGEMENT.

MODERN LAND ADMINISTRATION SYSTEM

LAS PROVIDE THE INFRASTRUCTURE FOR
IMPLEMENTATION OF LAND POLICIES AND LAND MANAGEMENT STRATEGIES IN SUPPORT OF SUSTAINABLE DEVELOPMENT.

- REFERENCE FRAMEWORK
- DIGITAL CADASTRE
- DIGITAL LAND REGISTRY
- STANDARD AND ACCESIBLE DATA

- ❑ PUBLIC AND PRIVATE
- ❑ CONFIDENCE IN CONVEYANCING
- ❑ SECURITY OF TENURE
- ❑ CREDIT SECURITY
- ❑ PUBLIC SAFETY
- ❑ HOUSING DELIVERY
- ❑ SERVICE DELIVERY
- ❑ REDUCED LAND DISPUTE
- ❑ ENVIRONMENTAL STEWARDSHIP
- ❑ SPATIAL LAND-USE PLANNING
- ❑ LAND RESOURCE MANAGEMENT
- ❑ GOVERNMENT REVENUE
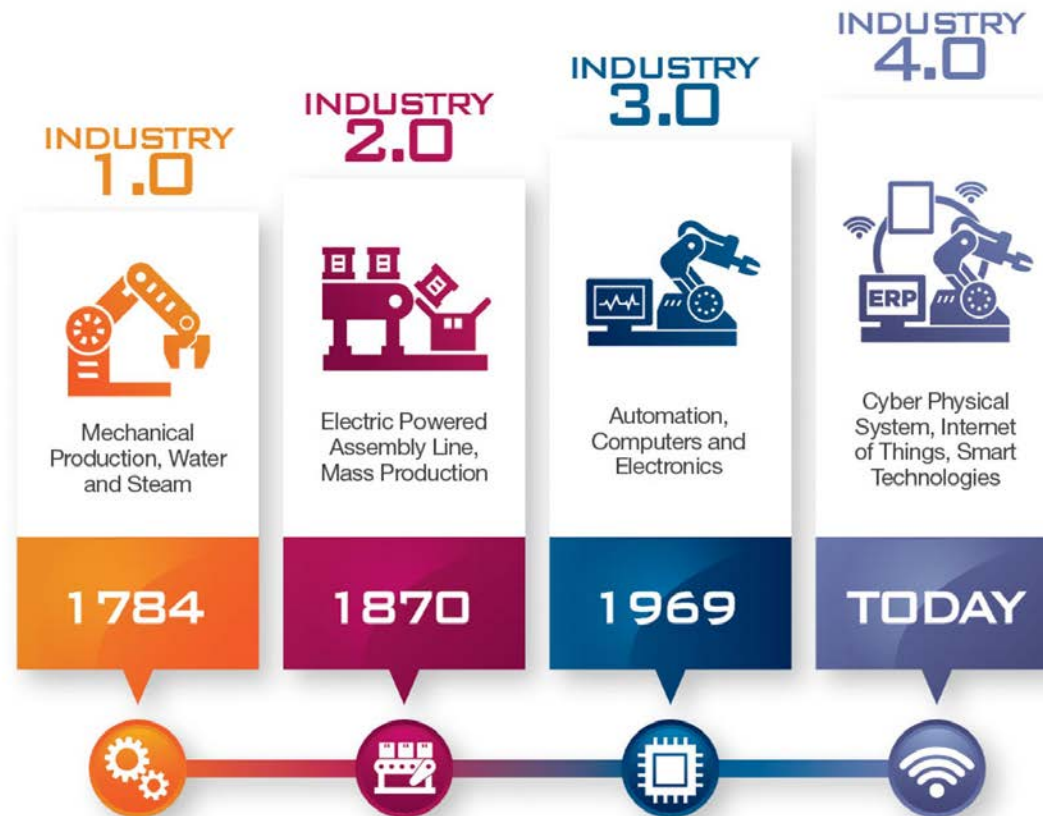- ❑ EFFICIENT PROPERTY MARKET

© Dr. Orhan ERCAN
August 2016

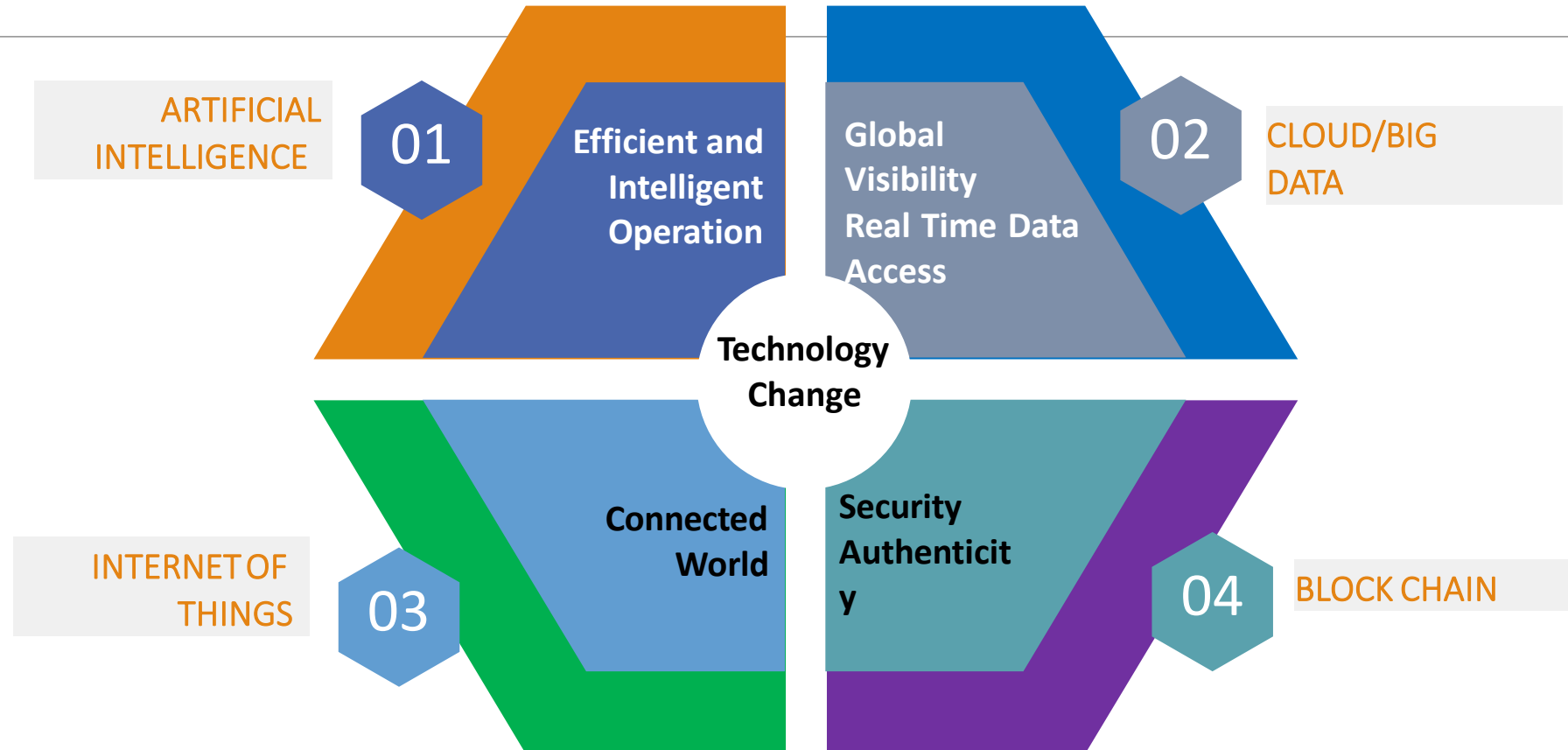# LAND ADMINISTRATION COMPONENTS

WHAT WE UNDERSTAND FROM INDUSTRY 4.0?

INDUSTRY 4.0 OR 4TH INDUSTRIAL REVOLUTION, CONTAINS MANY MODERN AUTOMATION SYSTEMS, DATA EXCHANGE AND MANUFACTURING TECHNOLOGIES.

THE INDUSTRIAL REVOLUTION IS AN ALLIANCE OF VALUES WHICH IS FORMED *BY INTERNET OF THINGS, INTERNET SERVICES AND CYBER PHYSICAL SYSTEMS.*
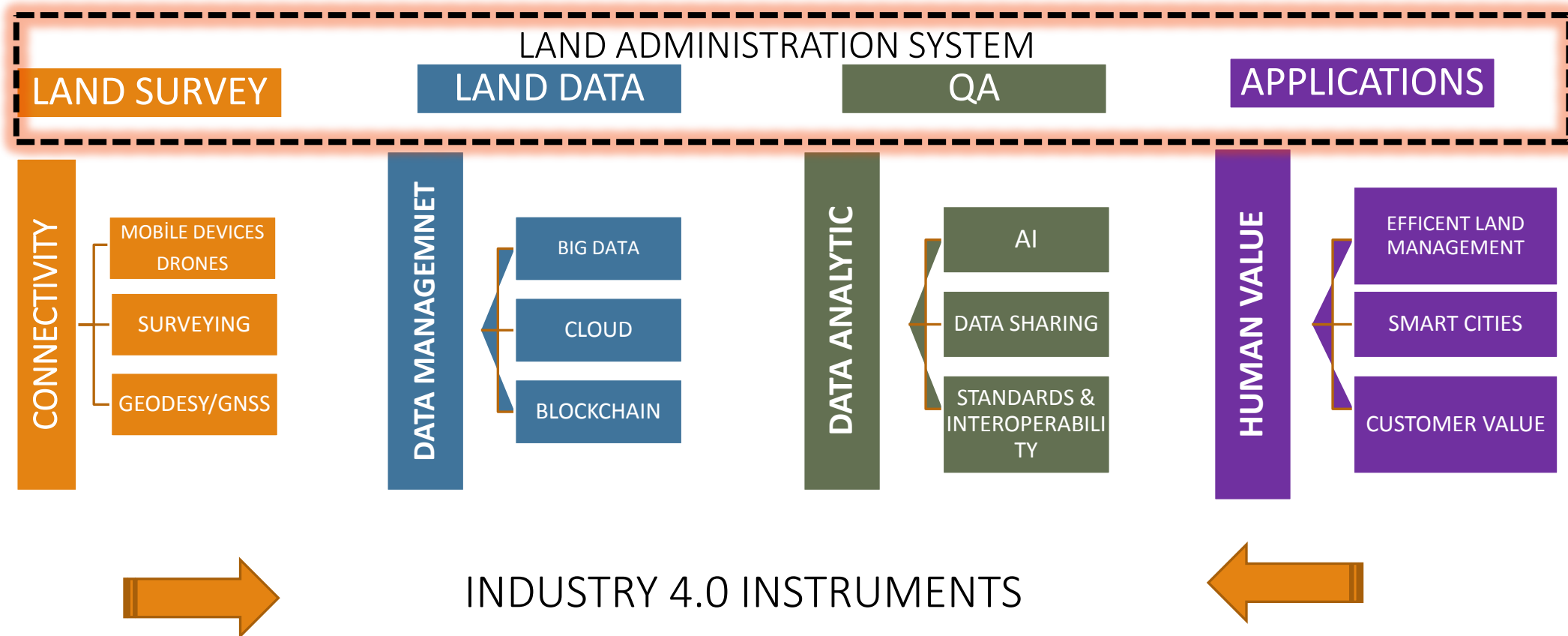
THIS REVOLUTION, ALLOWS THE COLLECTION AND ANALYSIS OF INDIVIDUAL DATA IN A PRODUCTION ENVIRONMENT.

DISRUPTIVE TECHNOLOGIES.........

ARTIFICIAL INTELLIGENCE — 01 — Efficient and Intelligent Operation

Global Visibility Real Time Data Access — 02 — CLOUD/BIG DATA

Technology Change

INTERNET OF THINGS — 03 — Connected World

Security Authenticity — 04 — BLOCK CHAIN

Source: Willy Govender

DISRUPTIVE TECHNOLOGIES – LAND ADMINISTRATION

LAND SURVEY
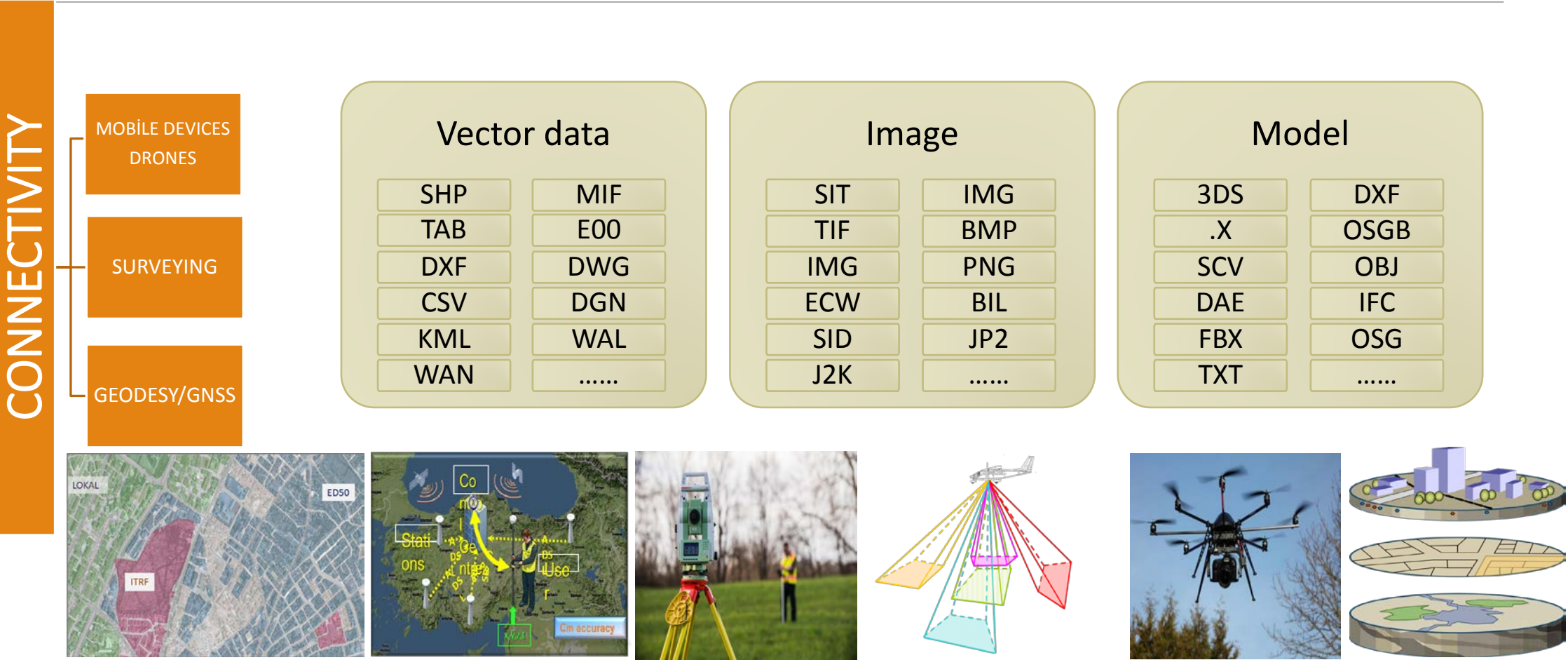
CONNECTIVITY

MOBİLE DEVICES
DRONES

SURVEYING

GEODESY/GNSS

Vector data	
SHP	MIF
TAB	E00
DXF	DWG
CSV	DGN
KML	WAL
WAN	......

Image	
SIT	IMG
TIF	BMP
IMG	PNG
ECW	BIL
SID	JP2
J2K	......

Model	
3DS	DXF
.X	OSGB
SCV	OBJ
DAE	IFC
FBX	OSG
TXT	......

3D CADASTRE

LOD 2.3

DATA COLLECTION
- Geodetic data
- Auxiliary data (flight)
- 2d legal cadastral data
- Land registry data

DIGITIZATION
- Cadastral data
- Land registry data
- Architectural designs
- Attributes

3D MODELING
- Oblique and near vertical images
- Architectural data
- Integration

DATA MANAGEMENT
- Spatial data
- Tabular data

VISUALIZATION
- Publish data service
- 3D visualization & query
- Legality check
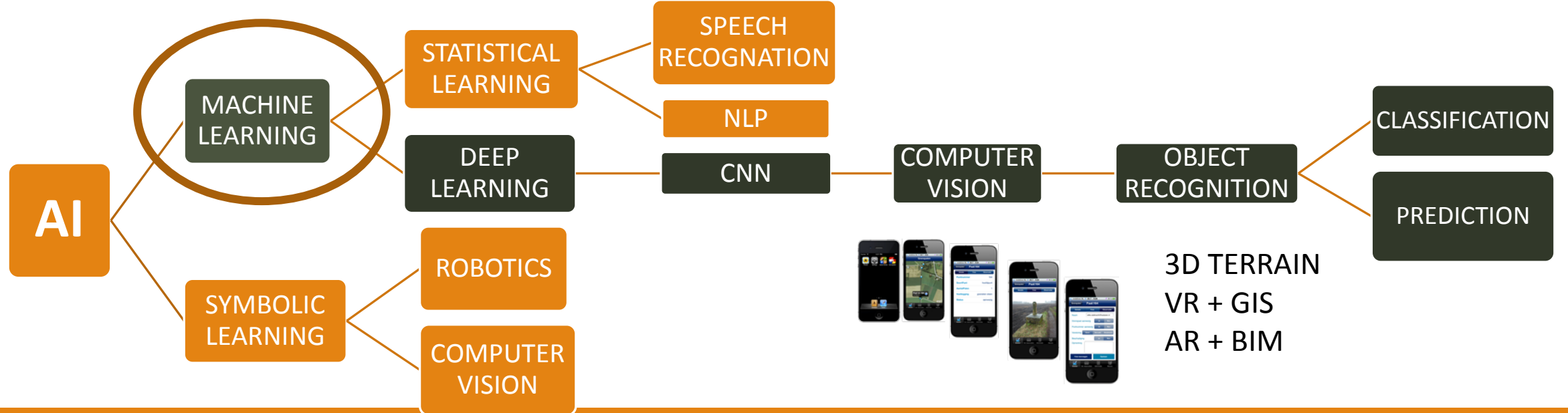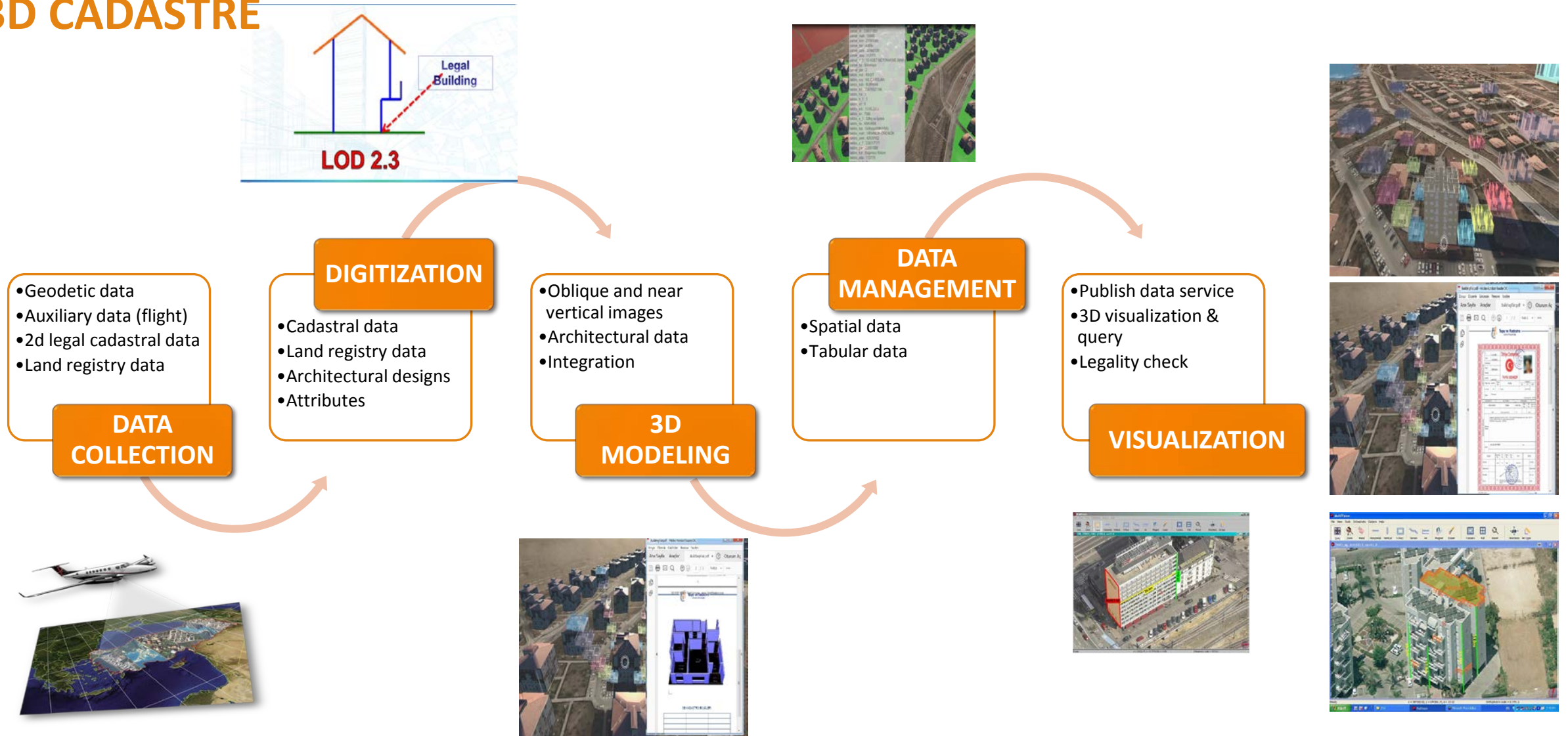
BLOCKCHAIN IN LAS

ISO/TC 307
Blockchain and distributed ledger technologies

Archived Land Transactions

Land Title Certificate Information

USERS

Land Title Verify

User Credential

Verify Transaction

User Credential

Integrated Land Management Information System

Land Transactions

BLOCKCHAIN

Send

Request

Biometrics & Land Title Transaction
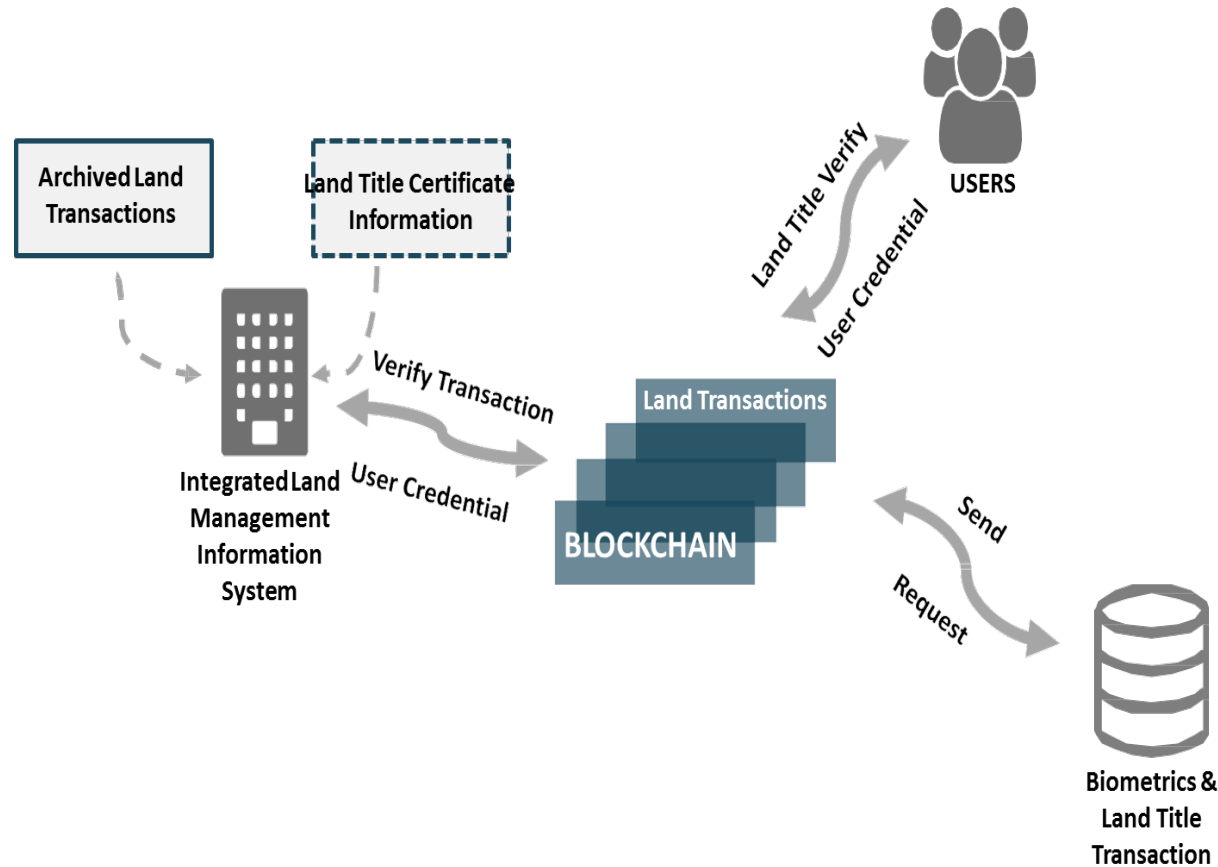
LAND REGISTRY
- TRANSACTION
- MORTGAGE

RESIDENCE PERMITS
ADRESSING
VALUATION
TAXATION
DEVELOPMENT CONTROL
LAND DISPUTES
SPATIAL PLANNING
ETC

USAGE AND DISTRIBUTION OF DISRUPTIVE TECHNOLOGIES

Source: Anonymous -web
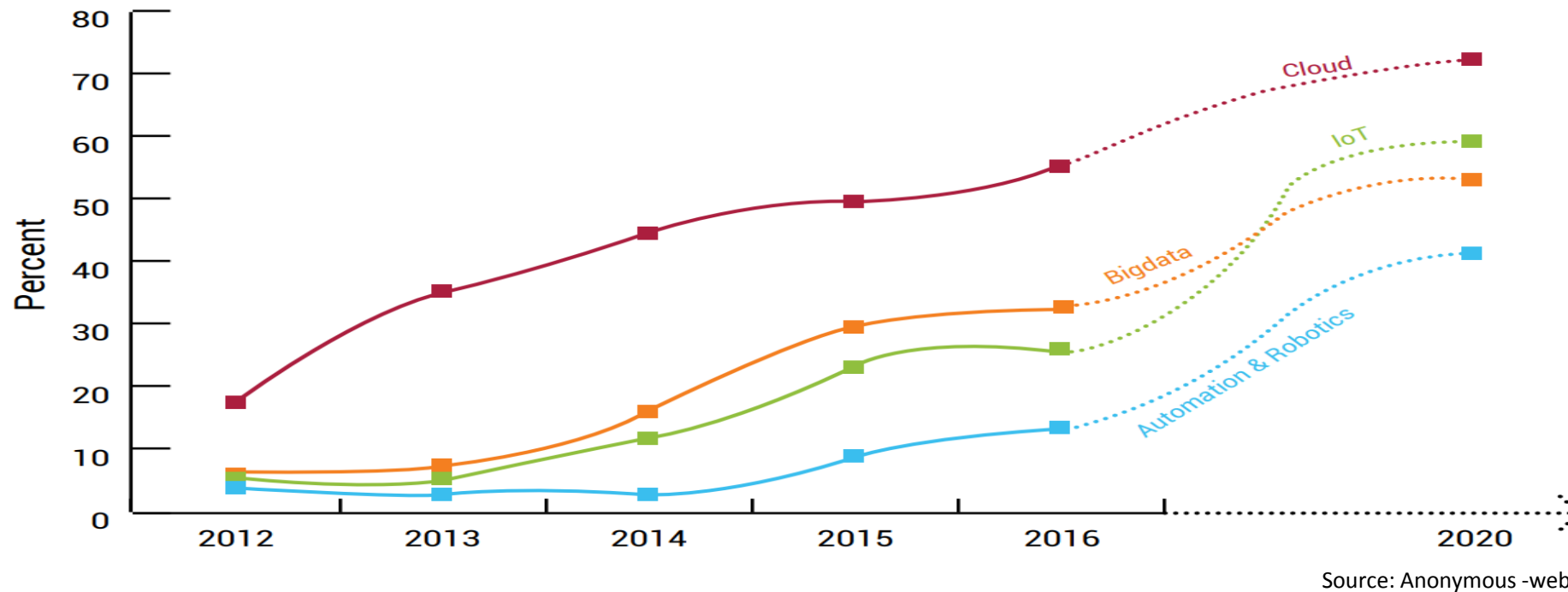
CONCLUDING REMARKS AND FUTURE PERSPECTIVES

CURRENT LAND ADMINISTRATION POLICIES & SOLUTIONS ARE NOT SCALABLE & FAILING DEVELOPING COUNTRIES!!!!

SUSTAINABLE DEVELOPMENT IS JUST RHETORIC WITHOUT APPROPRIATE LAND ADMINISTRATION AND SPATIAL DATA INFRASTRUCTURES

IN LINE WITH SDG'S OBJECTIVES, FFP CADASTRE ESTABLISHMENT HAS BEGUN IN MANY COUNTRIES AROUND THE WORLD.

SOLUTION: FIT FOR PURPOSE LAND ADMINISTRATION
- IS IT AN OPTIMUM SOLUTION? – OF COURSE NOT
- IS IT A CHEAPEST, FASTEST AND PRAGMATIC APPROACH? – DEFINITLY YES
- WHAT WILL BE THE NEXT STEPS? – SHOULD BE DISCUSSED CAREFULLY

DIGITIZATION IS ALREADY IMPACTING BUSINESS AND GEOSPATIAL TECHNOLOGIES IS GETTING IN A DEFAULT IN OUR DAILY LIFE.

IT IS THE ABILITY OF THESE TECHNOLOGIES TO CHANGE OUTCOMES THE TRULY EMPOWER PEOPLE ON THE WORLD AND DRASTICALLY IMPROVE THE EFFICIENCY OF BUSINESS AND ORGANIZATIONS.

LAND ADMINISTRATION AND GEOSPATIAL DATA AND TECHNOLOGIES ASPIRES TO BE AN INTEGRAL PART OF DISRUPTIVE JOURNEY.

IT IS ESTIMATED THAT SDG's WILL PROVIDE 12 TRILLION DOLLARS OF NEW ASSET BY 2030. James Kavanagh, RICS

ON THE ONE HAND, FFP CADASTRAL WORKS ARE UNDERWAY AND ON THE OTHER HAND THE DIGITAL / TECHNOLOGICAL TRANSFORMATION OF THE EXISTING CADASTRES CONTINUES.

IN THIS CONTEXT;
- NEW BUSINESS MODELS,
- TECHNOLOGY-ORIENTED PROJECTS,
- RESTRUCTURING NEEDS IN INSTITUTIONS,
- NEW ACADEMIC TOPICS,
- NEW CURRICULA's
- PRIVATE SECTOR - PPP

ISSUES ARE ON OUR AGENDA.

THE FUTURE IS BRIGHT,
BUT
ARE WE READY FOR THE FUTURE?

TECHNOLOGY WILL CHANGE US IF WE DON'T CHANGE!!!

READY ONES WILL SUCCEED IN A SHORT TIME AND OTHERS WILL STUMBLE.
BUT THEY WILL SURELY KEEP UP WITH THIS TRANSFORMATION.

LETS MAKE IT TOGETHER
Dr Orhan ERCAN