Comments on UN-GGIM Global Fundamental Geospatial Data Themes

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UN-GGIM

Minimum list of Global Fundamental Geospatial Data Themes:

- Reference Frame: Global Geodetic Reference Framework
- Addresses
- Buildings and Settlements
- Elevation and Depth
- Functional Areas
- Geographical Names
- Geology and Soils
- Land Cover and Land Use
- Land Parcels
- Orthoimagery
- Physical Infrastructure
- Population Distribution
- Transport Networks
- Water

THE ICONS OF THE GLOBAL FUNDAMENTAL DATA THEMES

Global Geodetic Reference Frame

Transport Networks

Water

Geographical Names

Elevation and Depth

Orthoimagery

Addresses

Population Distribution

Functional Areas

Land Cover and Land Use

Buildings and Settlements

Geology and Soils

Land Parcels

Physical Infrastructure

Global fundamental data themes possible issue:

Functional Areas and Population Distribution

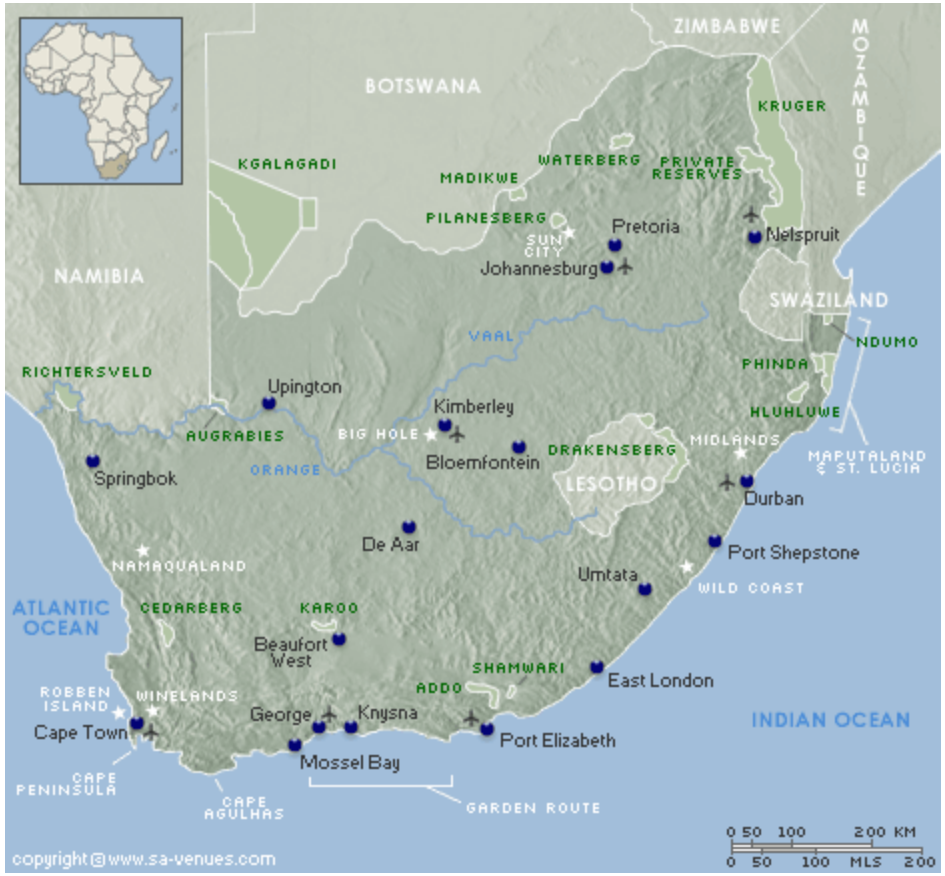
Population Distribution is census statistical information arranged in census areas (various levels), which are Functional Areas

Global fundamental data themes appropriate at global level …

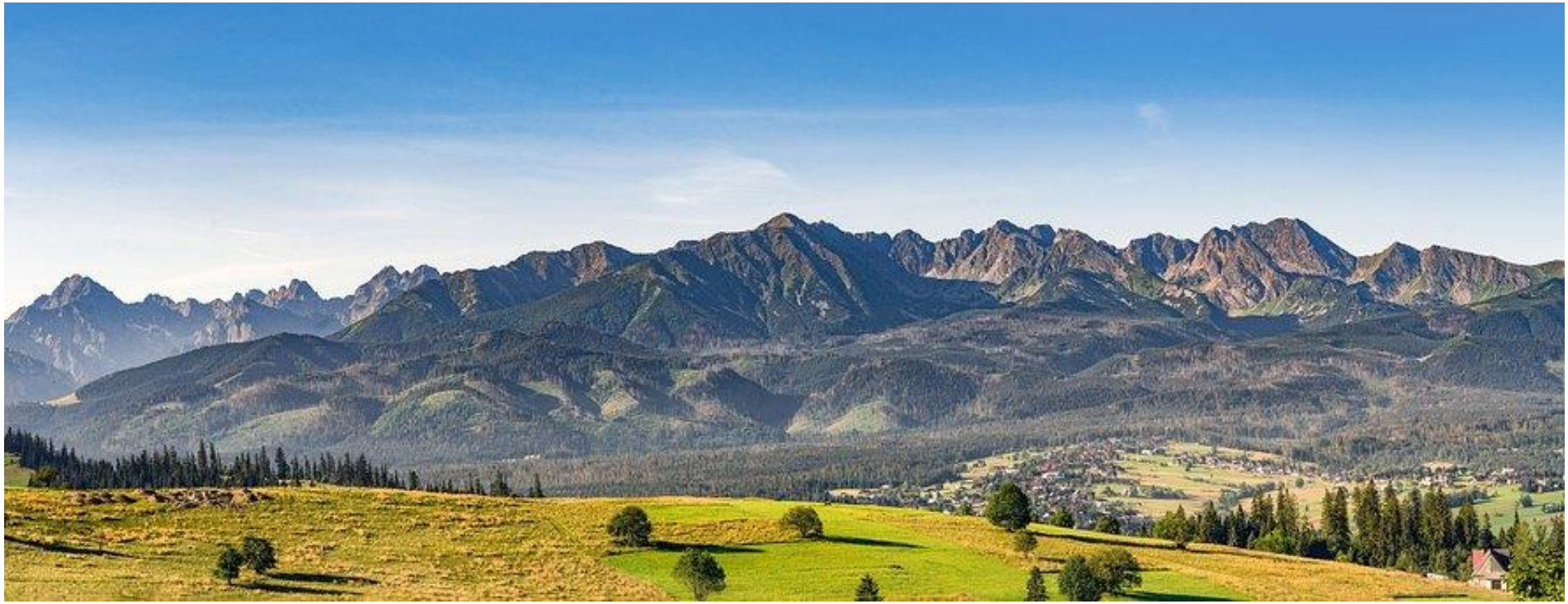
… but need to go to regional level …

… and to national and sub-national level.

The fundamental data must then be at a more detailed level to represent the real world appropriately.



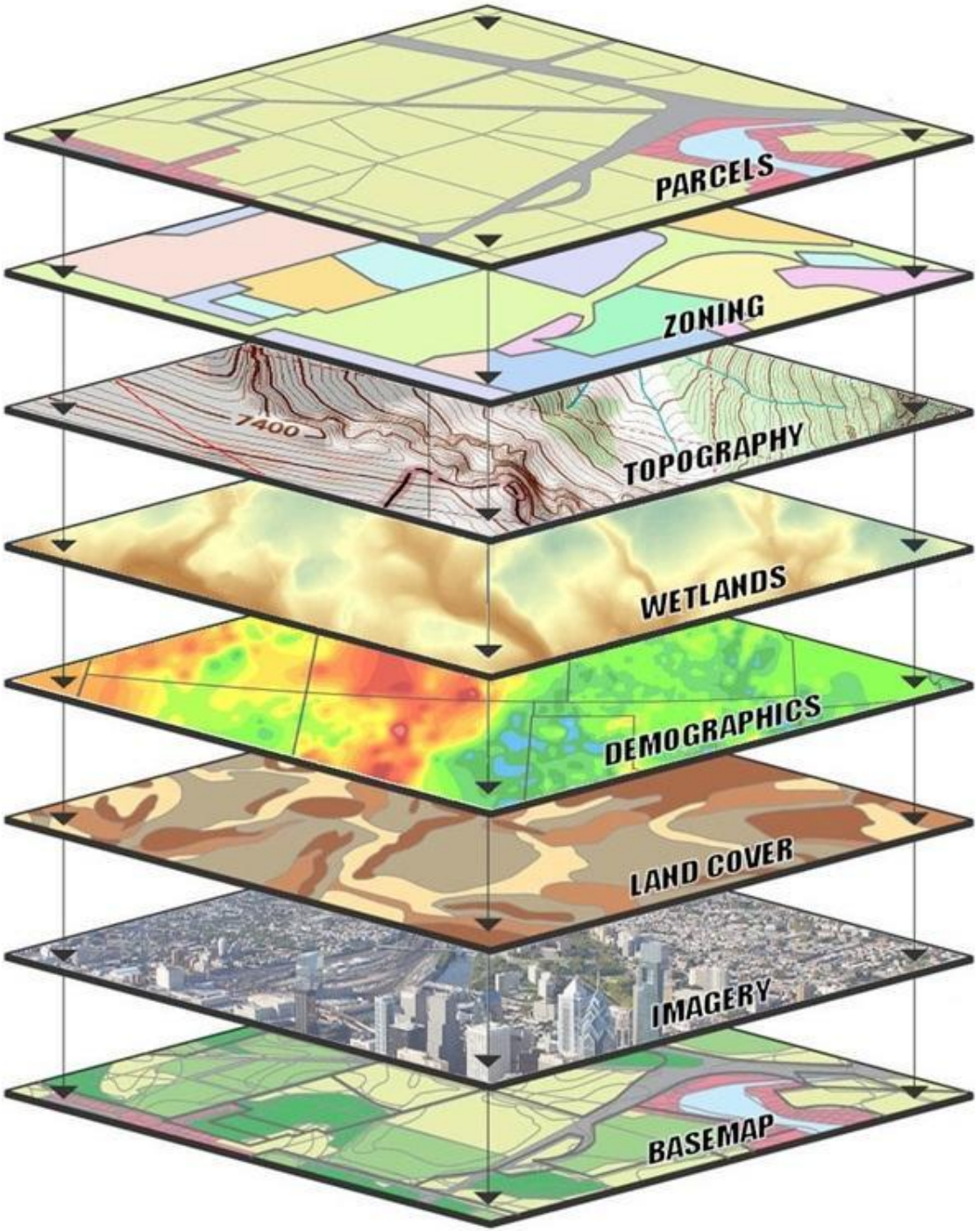
Need to represent the real world …



… which is continuous, often with no clear boundaries between entities (features/objects).
But we model the real world through classification (mostly discrete)

Layers ??

Feature or Object Classification



Fundamental Geospatial Datasets for Africa (draft):

Theme	Dataset Level I	Dataset Level II	Key Attributes
Global Geodetic Reference Framework	Geodetic control network	Geodetic Control Station	Ref. No., Type, Description
		Geoid Model	
		Horizontal Datum	
		Vertical Datum	
Addresses	Address	-	Type, Value
Buildings and Settlements	Building	-	Class
	Settlement	-	Name, Class
Elevation and Depth	Elevation	Digital Elevation Model	Post spacing
		Spot height	Elevation value
		Contour	Elevation value
	Depth	Digital Bathymetric Model	Post spacing
		Bathymetric Sounding	Depth value

Theme	Dataset Level I	Dataset Level II	Key Attributes
Functional Areas	Administrative Area	Country	Name
		International Boundary	Name
		Second-level Administrative Area	Name
		Third-level Administrative Area	Name
		Exclusive Maritime Zone	Name
		Government Functional Administration	Class, Name
	Judicial Area	-	Class, Name
	Conservation Area	-	Class, Name
	Statistical Area	-	Class, Name
	Planning Zone	-	Class, Zoned land use

Theme	Dataset Level I	Dataset Level II	Key Attributes
Geographical Names	Geographical Name	-	Class, Name
Geology and Soils	Geology	Aquifer	Type, Volume
		Lithology	Type
		Mineral Deposit	Type
		Fault line	Type
		Volcano	Status, Name
	Soil Unit	-	Class
Land Cover and Land Use	Land Cover Unit	-	Class
	Land Use Unit	-	Class

Theme	Dataset Level I	Dataset Level II	Key Attributes
Land Parcels	Land parcel	-	Parcel I.D., Land Tenure type
Orthoimagery	Orthoimage	-	Sensor platform, spatial resolution, spectral bands, radiometric resolution, image date

Theme	Dataset Level I	Dataset Level II	Key Attributes
Physical Infrastructure	Structure	Bridge	Type, Span, Bearing weight
		Tunnel	Type, Capacity, Length
		Aqueduct	Capacity
		Dam	Type
	Public utility	Tele-communication	Type
		Electrical Power Generation	Type
		Electrical Power Transmission	Type, Voltage
		Gas Reticulation	
		Waste disposal site	
		Water reticulation	
	Public Service	-	Type
Population Distribution	Demographic census unit	-	Type, Demographic details, Census date

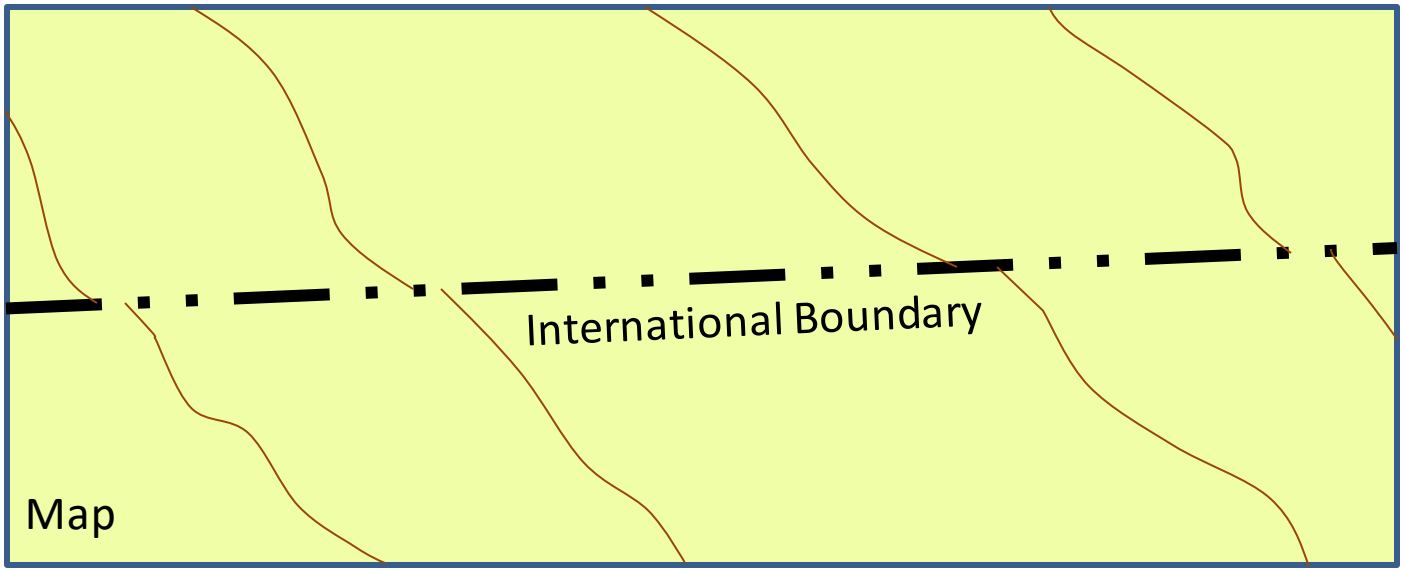
Theme	Dataset Level I	Dataset Level II	Key Attributes
Transport Networks	Road	Road	Class, Surface type
		Street	Surface type, Name
		Path	Class
		Road centre-line	Class, Route Number/Name
	Rail	Railway	Class, Gauge
		Tramway	Route Number
		Funicular cog	Name
		Station	Name
	Water	Inland Waterway	Class,
		Marine Waterway	
		Harbour	Class, Name, Capacity
		Quay	Class
	Air	Air Route	
		Airport/Aerodrome	Class, Name, Facilities
		Navigational Facility	Class

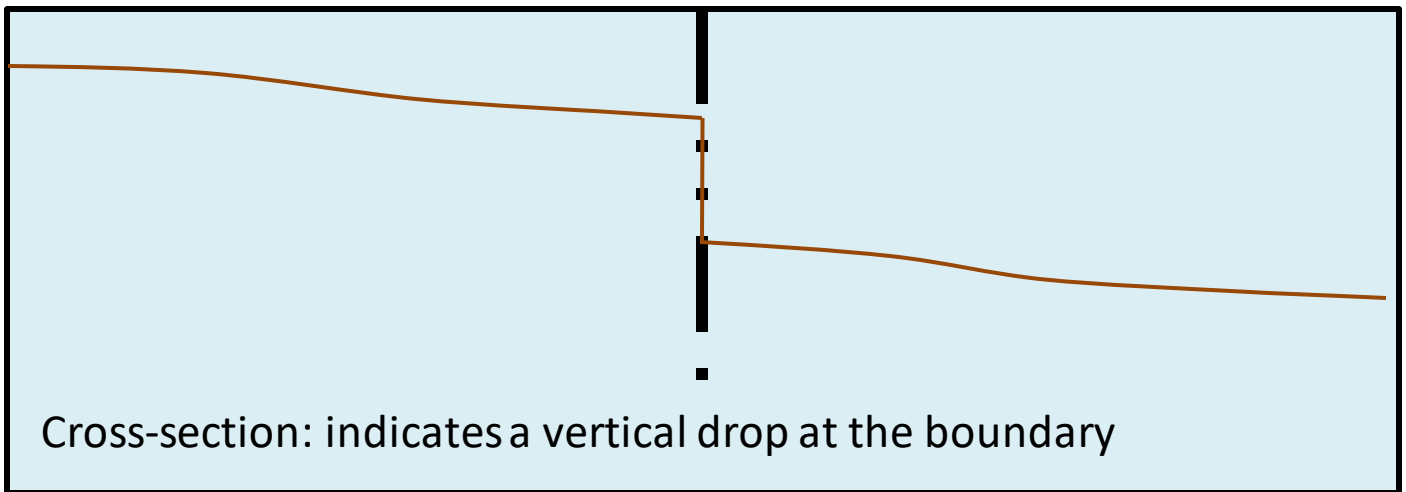
Theme	Dataset Level I	Dataset Level II	Key Attributes
Water	Inland	River	Class, Name
		Lake	Class, Name
		Reservoir	Class
		Fountain/Spring	
		Groundwater	
		Glacier	
	Marine	Ocean/Sea	Name
		Coastline	

Challenges for Developing Regional and Global Geospatial Datasets

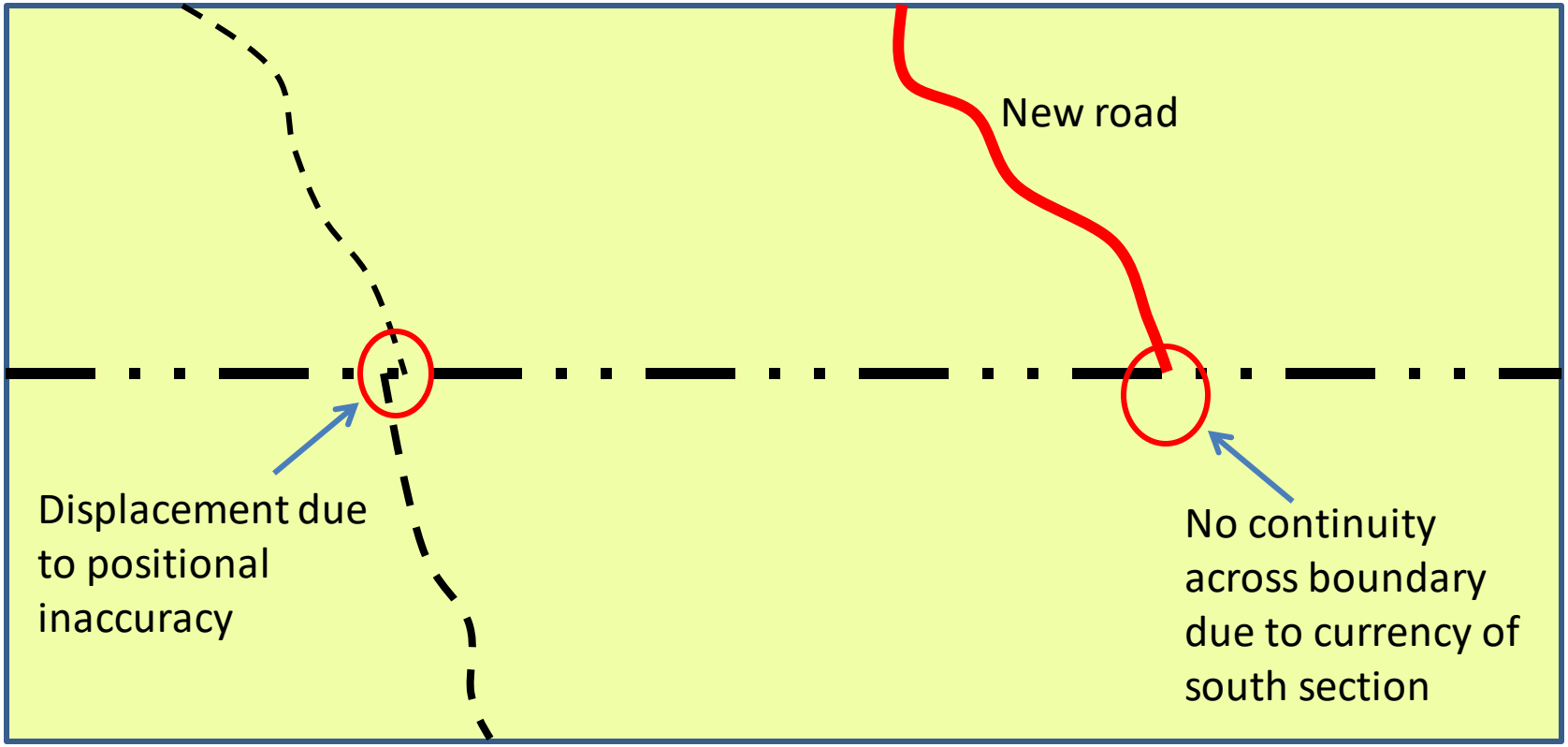
- Different spatial reference frames and datums (horizontal), making integration of datasets across national and regional boundaries difficult.

- Different spatial reference frames and datums (height), making integration of datasets across national and regional boundaries difficult.

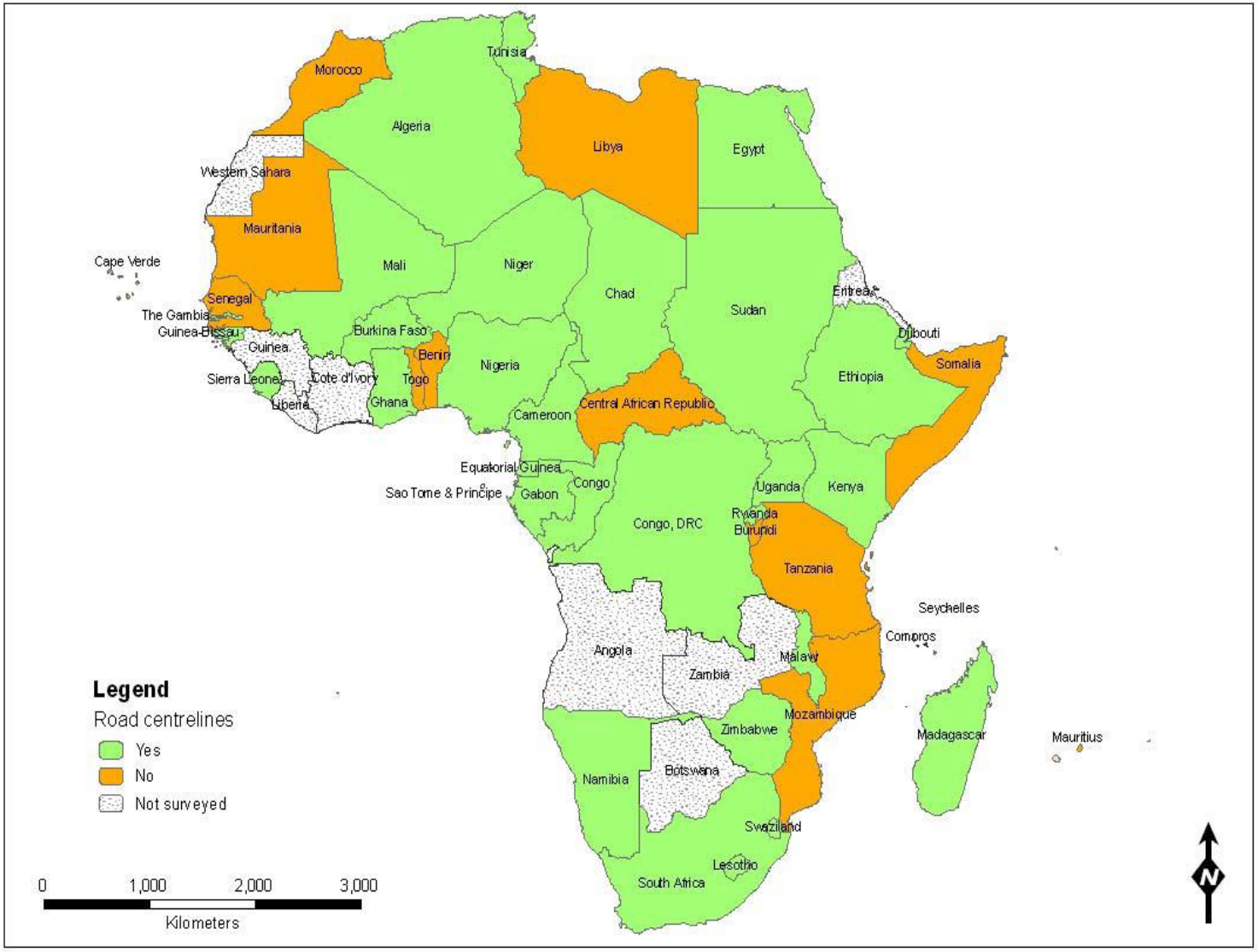




- Varying data quality (currency and positional accuracy) affects integration and usability of datasets across national and regional boundaries.



• Incomplete coverage of available fundamental geospatial datasets results in incomplete regional and global datasets



(cont.)

•Varying data models, data formats and data standards (not open standards) impacts on data integration and usability.

• Different classification schema used from country to country affects integration of datasets e.g. land cover classification.

• Lack of understanding of users' needs for geospatial information results in ineffective and irrelevant data being collected and disseminated.

•Inability to integrate geospatial information with other datasets (linked data), e.g. demographics, reduces the potential of synergistic datasets.

(cont.)

• Geospatial datasets produced by organisations other than authoritative geospatial data collectors does not guarantee complete coverage, quality and longer term availability (commercially viable, altruistic interest, bias).

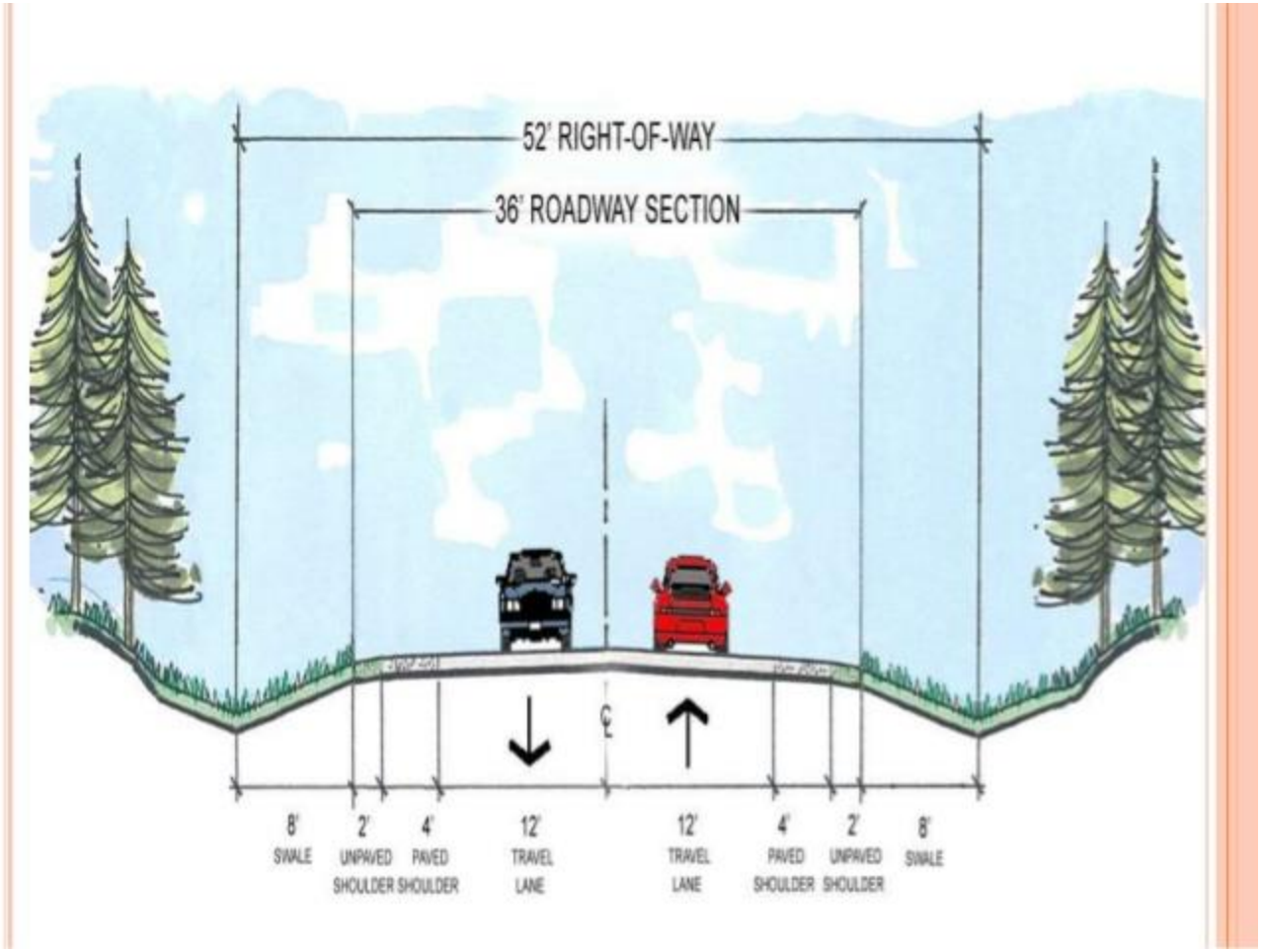
• Semantic differences – mainly across different disciplines and cultures, there are differences in understanding of concepts and objects.

E.g. ‘Road’

How is a road understood?

How is the road represented?

- An engineer's understanding of feature class 'road'



Thank You