



# XXVII FIG CONGRESS

11-15 SEPTEMBER 2022  
Warsaw, Poland

Volunteering  
for the future –  
Geospatial excellence  
for a better living

## Re-Imagining the Role of a National Mapping Agency to Support Spatially Enabled Governance

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[Presentation delivered on behalf of Mark Tabor, Anthony Beck]

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## Megatrends



Urbanisation

Climate Change



Globalisation

## User expectations



The Digital  
transformation

Simplicity,  
transparency, ease of  
transactions



Technology change

## Demands



New markets

Inclusivity



Agenda 2030

## Automated mapping to support monitoring of informal settlement

- The use of geospatial information is critical for good land governance. Fitness-for-purpose and timeliness are also critical characteristics: ideally one should be able to provide appropriate data to support decision making in a timely manner.
- The challenge is that different decisions need different supporting data.
- Our automated digital mapping solution aims to address this challenge.

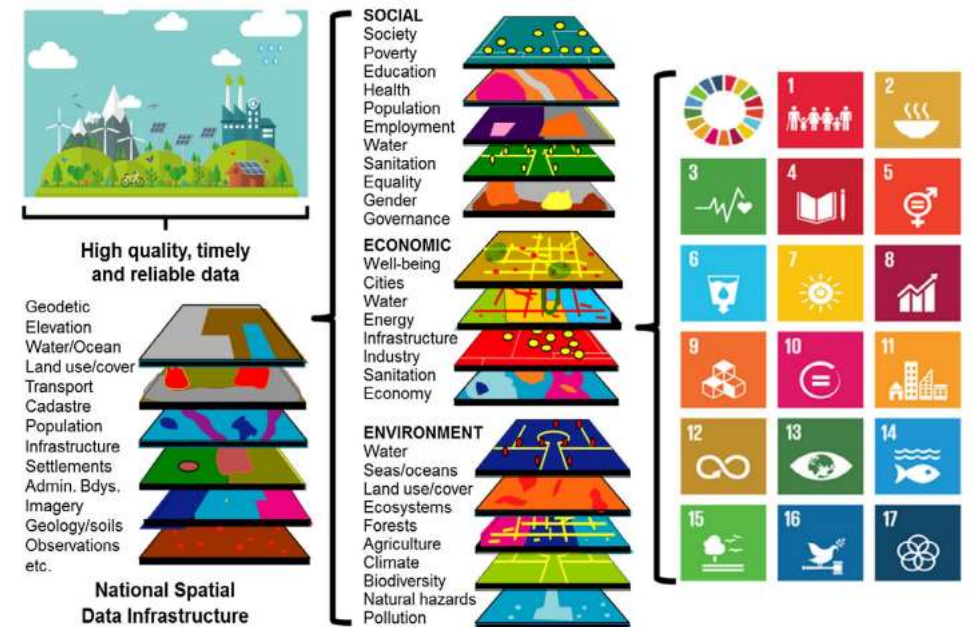


Figure 4. Extending fundamental geospatial data themes within the National Spatial Data Infrastructure (NSDI) to accommodate the SDGs and targets by means of the global indicator framework.

Courtesy of: Greg Scott & Abbas Rajabifard

## Why act now?



Nearly 50% of the projected 2.5 billion increase in the world's urban population to 2050 will be in Commonwealth Countries



65% of the 169 targets underlying the 17 UN's Sustainable Development Goals are linked to territorial and urban development



Focus given to informal settlements which make up over 54% of the urban population in Sub-Saharan Africa



Delivery of well-planned and managed cities is greatly assisted by the availability of high quality, up to date, and disaggregated data

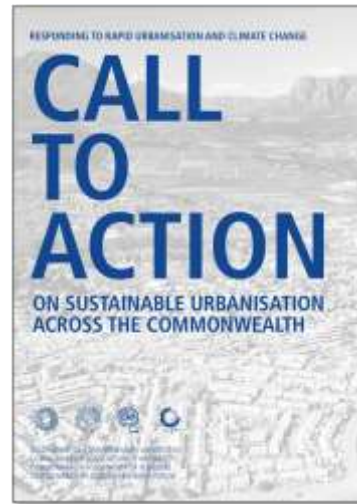
## Call to Action on Sustainable Urbanisation



High Commissioners Briefing



WUF10



Call to Action on Sustainable Urbanisation in the Commonwealth



Online Programme



WUF10

## Developing a National Urbanisation Policy for Zambia



International Growth Centre (IGC) has been working with UN Habitat to support the Zambia Ministry of Local Government



Promote prosperous, inclusive and resilient urban settlements



Demonstrates the need for a better understanding of the city's informal settlements

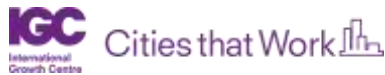
## A powerful partnership supported the push for change



**Ministry of Local  
Government,  
Zambia**



**Ministry of Lands  
& Natural  
Resources, Zambia**



**The International  
Growth Centre  
(IGC)**



**Commonwealth  
Association of  
Architects**



**Ordnance Survey**

## Automated creation of a new base map for Lusaka

Using aerial imagery and automation Ordnance Survey created the base map faster, and more efficiently; 420km<sup>2</sup> of detailed base map was created in just 10% of the time compared to manual methods.

- 256,480 buildings
- 4,067 kms of roads
- 74 kms sq of trees



The map helps Lusaka:

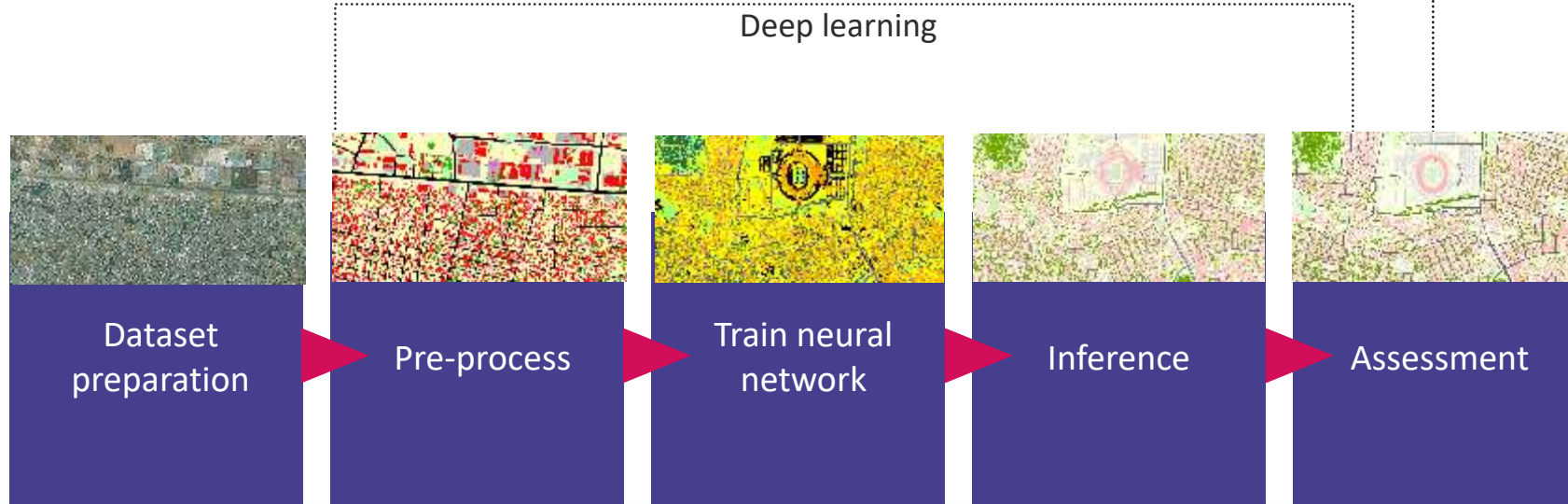
- Identifying and locating informal settlements, their size, and the number of built structures
- How the formal and informal neighbourhoods are served by roads and public spaces
- Assessing the density of population based upon the number of buildings
- Prediction of informal settlement growth, their potential capacity and extents



## Digital Base Map Creation & approach

Creation of new Digital Base Maps via a configurable Automatic Feature Extraction (AFE) process

Segmentation and Rules based Classification approach to Machine Learning





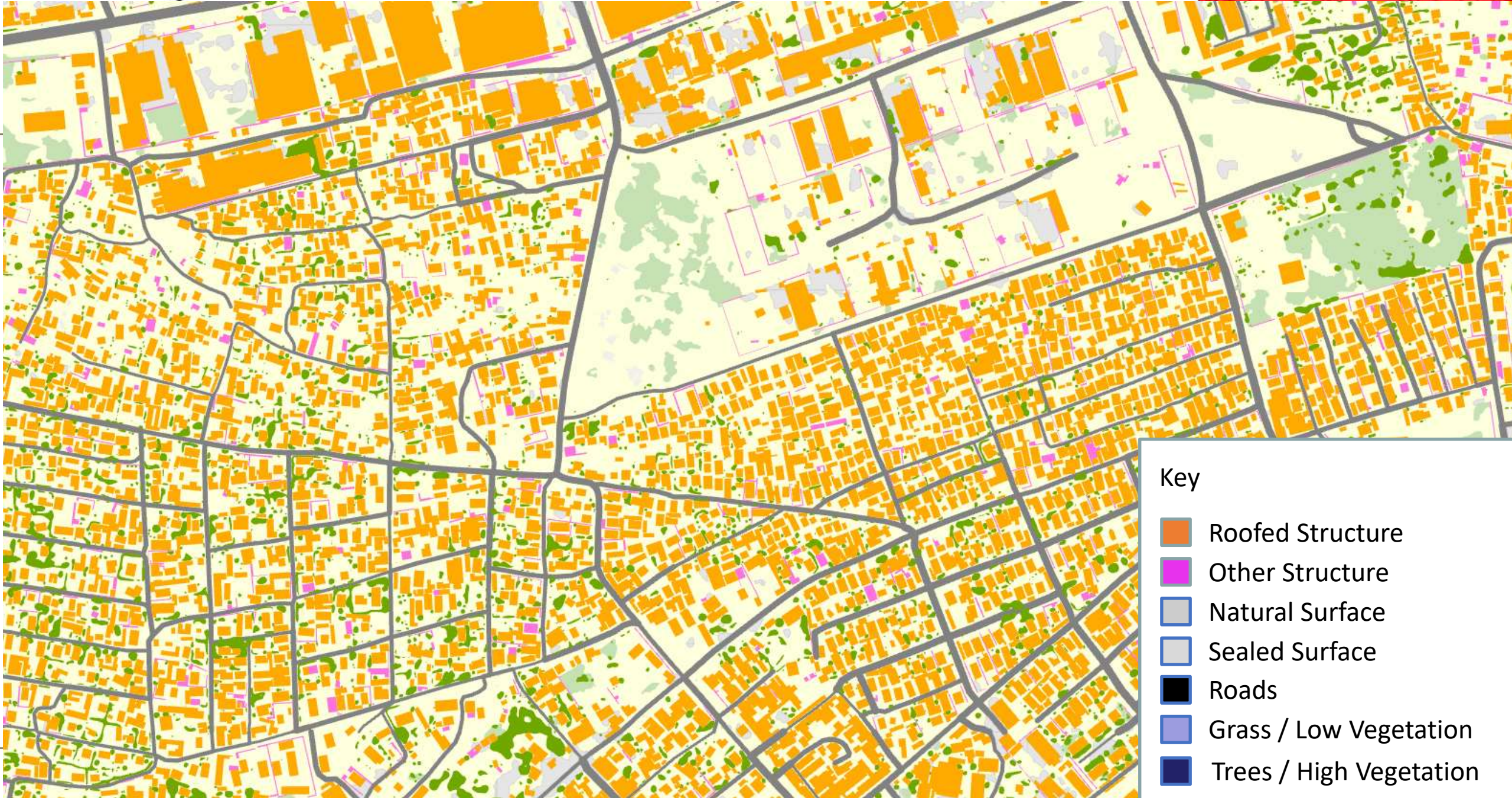
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Key

- Roofed Structure
- Other Structure
- Natural Surface
- Sealed Surface
- Roads
- Grass / Low Vegetation
- Trees / High Vegetation
- Water



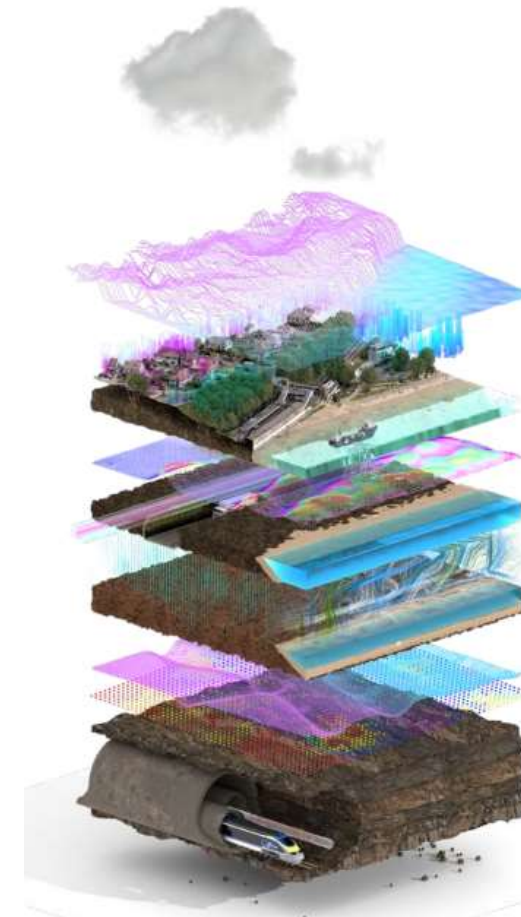
Identify Results










Feature	Value
▼ Buildings	
▼ SettlName	
▶ (Derived)	
▶ (Actions)	
FeatureID	AA3AF6BD-A419-4362-...
Theme	Buildings
ImgCapDate	2017-01-01
BldingArea	141.4398401
SettlName	
StructType	
NumOccups	0
NYUTypCode	0
NYUTypDesc	
ParcelNum	0
TshipName	
TshipPlnnd	Unplanned
TshipLegSt	
TshipUpgr	
TshipType	Squatter Settlement
WaterProxM	0.0000000

- The driver for the data generated for Zambia was the identification and monitoring of informal settlements to support government planning and service provision.
- Additional uses of this data are now being explored and additional value extracted.

Census	Use of building level information to better plan enumeration area, undertake the census and analyse the data collected
Transport	Provision of transport services to/from informal settlements to support population in travelling to/from business district area to help with employment opportunities
Health	Provision of appropriate health and WASH services to meet demands/needs of those living within informal settlements
Disaster Management	Flood, Pandemic management of multiple emergency responders
Energy and Infrastructure	Provision of energy services into informal settlements and public infrastructure to support them



## The power of location

-  Infrastructure
-  Transport
-  Housing
-  Environment
-  Public health
-  Emergency response
-  Ocean economy
-  Retail
-  Finance

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