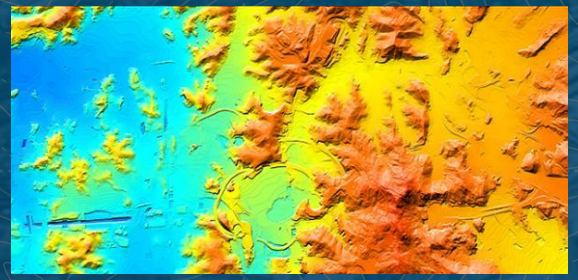
ROLE OF 2D AND 2.5D MAPS TO SIMPLIFY ACCURATE 5G PLANNING

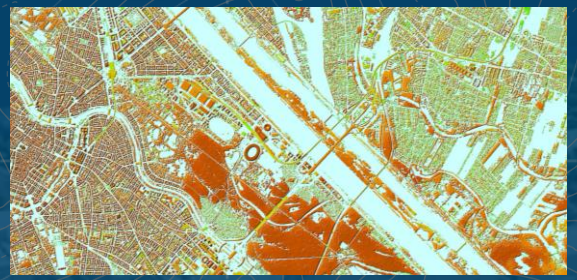
Why Are 2D and 2.5D Maps Important?



INITIAL PLANNING AND MACRO ANALYSIS

LARGE-SCALE COVERAGE ESTIMATIONS

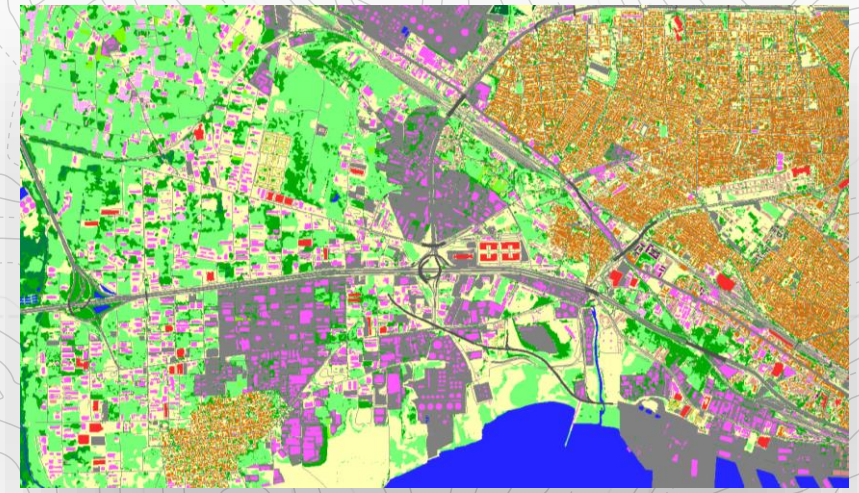
LONG-TERM INFRASTRUCTURE PLANNING



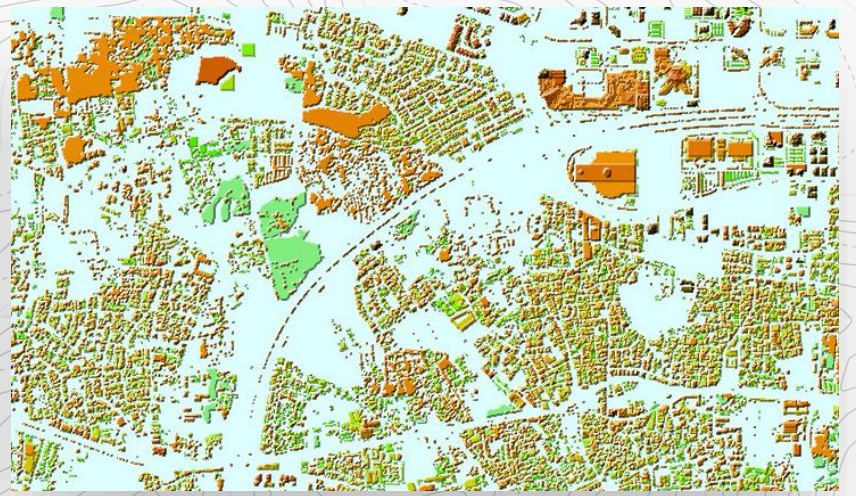
COST SAVING

ROLE OF 2D AND 2.5D MAPS TO SIMPLIFY ACCURATE 5G PLANNING

2D NATIONWIDE MODELS



2.5D NATIONWIDE MODELS



KEY BENEFITS

- Delivery in any RF/GIS tools formats
- Compatibility with any propagation model
- Support any raytracing models
- Fitted to requirements of mmWave frequencies
- Contain the most up-to-date information

We understand the specific needs of each country in diverse regions and have data that precisely meets those needs

ADVANCED ACCURACY IS REQUIRED FOR 5G NETWORK PLANNING

5G radio-planning processes requires more detailed, accurate and up-to-date maps in comparison with previous networks generations

Because of the sensitivity of radio waves, it is necessary to have an adequate level of maps details, which tends to grow – 3D buildings with roofs features; 3D vegetation, which also can affect the signal propagation, with crown and trunk features

1M or 2M RESOLUTION 3D MAPS

- **3D Buildings** include small roof details
- **3D Trees Model** with separate crowns
- **3D Bridges** displaying precise and detailed engineering constructions

2D 5M and 10M RESOLUTION MAPS

2D maps play an important role, in the early stages of network planning or for analyzing large areas.

- Large-Scale Coverage Estimations
- Faster Modeling
- Integration with existing Data
- Long-Term Infrastructure Planning

2.5D 5M and 10M RESOLUTION MAPS

- Improved clutter classification
- **Clutter Heights for obstacles**
- Detailed street/road network

2D AND 2.5D REGIONAL MAPS LINE

CREATED USING AI TECHNOLOGY OF SATELLITE IMAGES RECOGNITION

PRODUCTS FEATURES

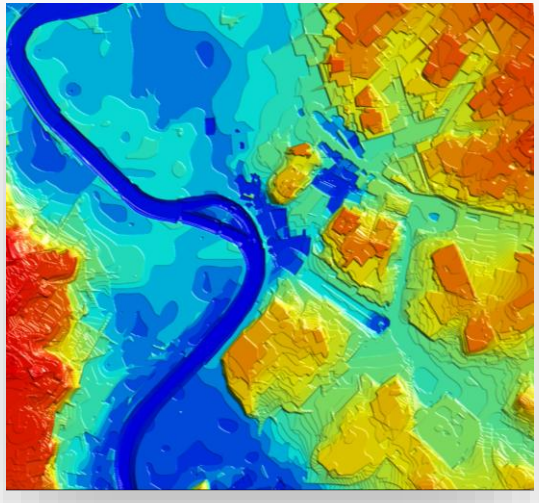
- 5m or 10m resolution
- Accurate land use classification
- Last available administrative division
- PopMap as option

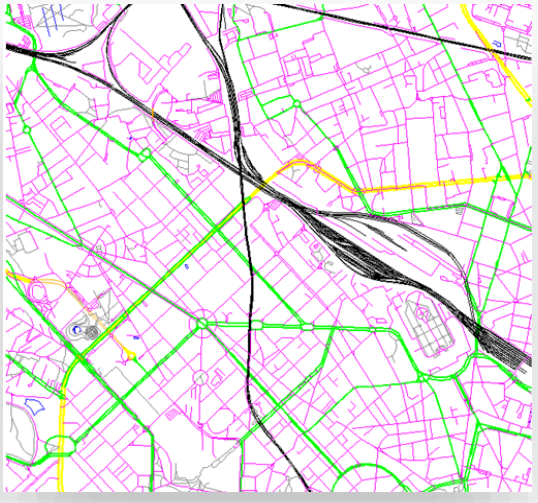
DATA FORMATS

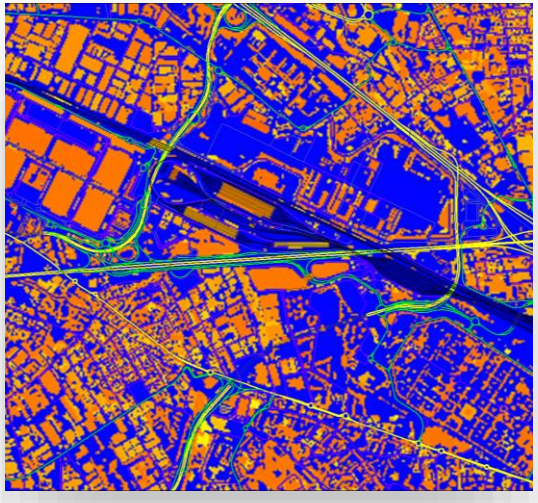
Atoll Forsk, Mentum Planet, Aircom Asset, ESRI ArcGIS, MapInfo, ICS Telecom, CelPlanner, NetPlan, Ranplan Professional, Pathloss, and any other

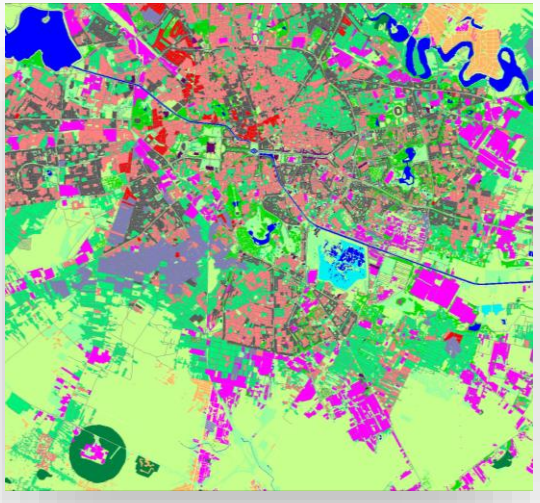
SOURCES: 5m and 10m resolution images

DATA VINTAGE: 2024-2025









PRODUCTS OVERVIEW

DELIVERED DATA LAYERS

2D URBAN
2D REGIONAL MODELS

Digital Terrain Model
Clutter/Land Use Model
Vector Model (Linear Objects)

OPTIONALLY:

Population Distribution Model
Orthoimage

2.5D CITY | 2.5D URBAN
2.5D SUBURBAN MODELS

Digital Terrain Model
Clutter/Land Use Model
Vector Model (Linear Objects)
Clutter Heights Model - matrix

OPTIONALLY:

Population Distribution Model
Orthoimage

PRODUCTS FEATURES

Accuracy in plane: 10-15m

Accuracy of DTM: 7m

19+ Clutter Classes

Detailed administrative boundaries

MMU (minimal object area): 300-400 sq.m

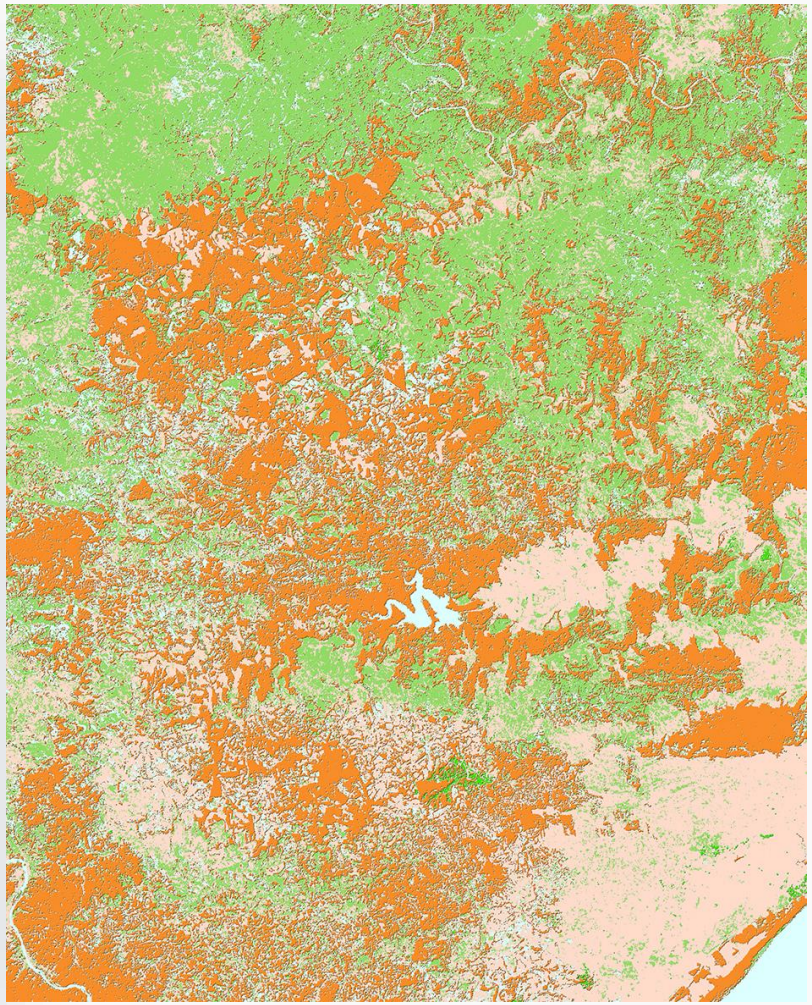
Clutter Heights Model accuracy: 5-7m

Last available satellite images as sources

2D AND 2.5D REGIONAL MAPS LINE

KEY BENEFITS

- **Improving signal attenuation** predictions and finding the optimal location of BS within a country or large region
- **Cost-Effectiveness** - balance the need for detailed data with budget constraints using a mix of 3D, 2D, and 2.5D maps
- **Integration with** Population distribution model provides a better representation of land use and density ratios of urban classes



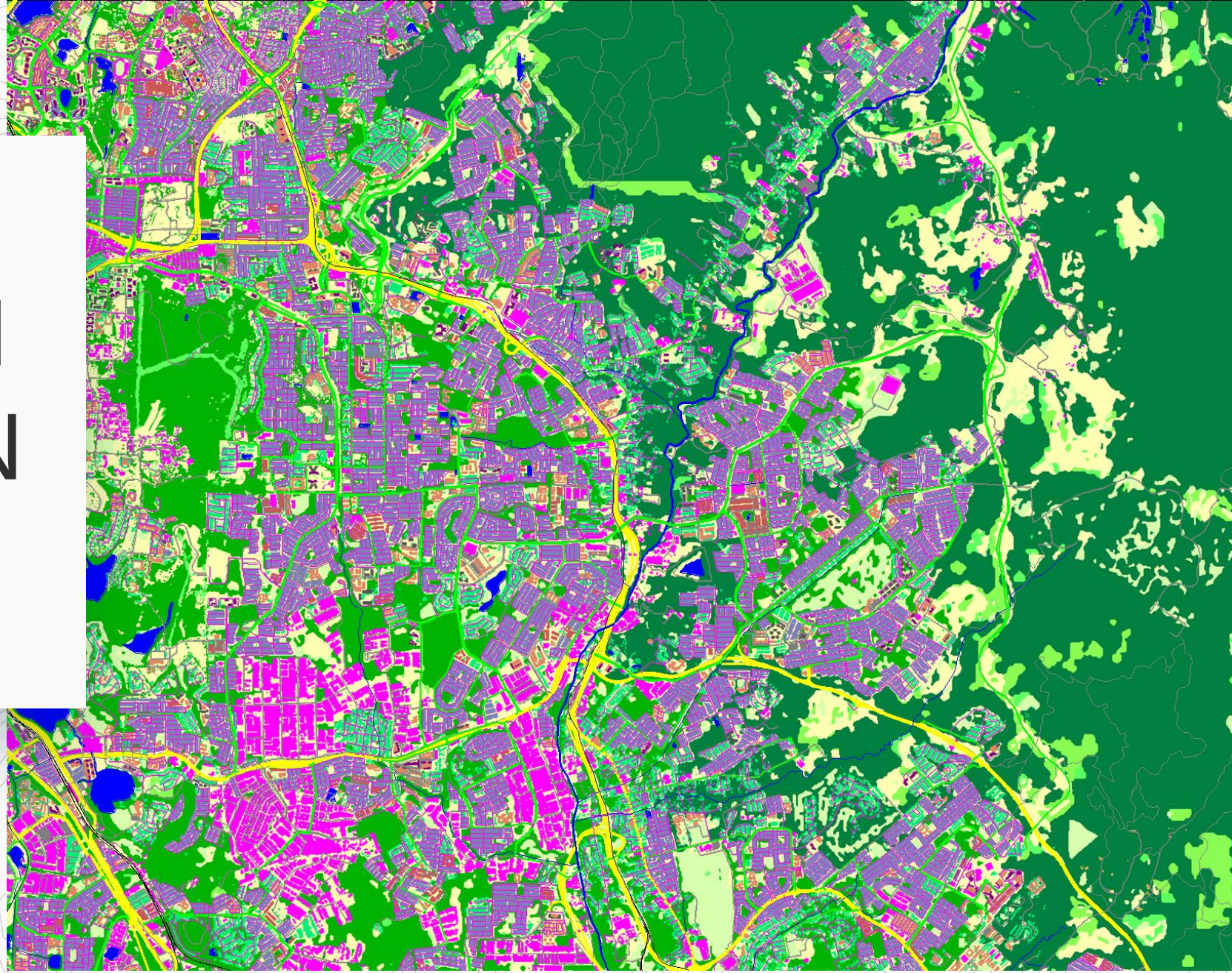
The best choice for 5G rollout in large regions is a 5m and 10 m resolution Regional model with an extended set of clutter classes, more detailed building structure classification and type of vegetation layers, and 5m vertical accuracy in DTM

2D map provides valuable information about the surrounding environment, which helps predict radio wave propagation, interference patterns, and signal strength in regions

2.5D maps allow wireless planners to improve predictions of signal attenuation and assist in finding the optimal location of network base stations and other wireless system transmitters within a country

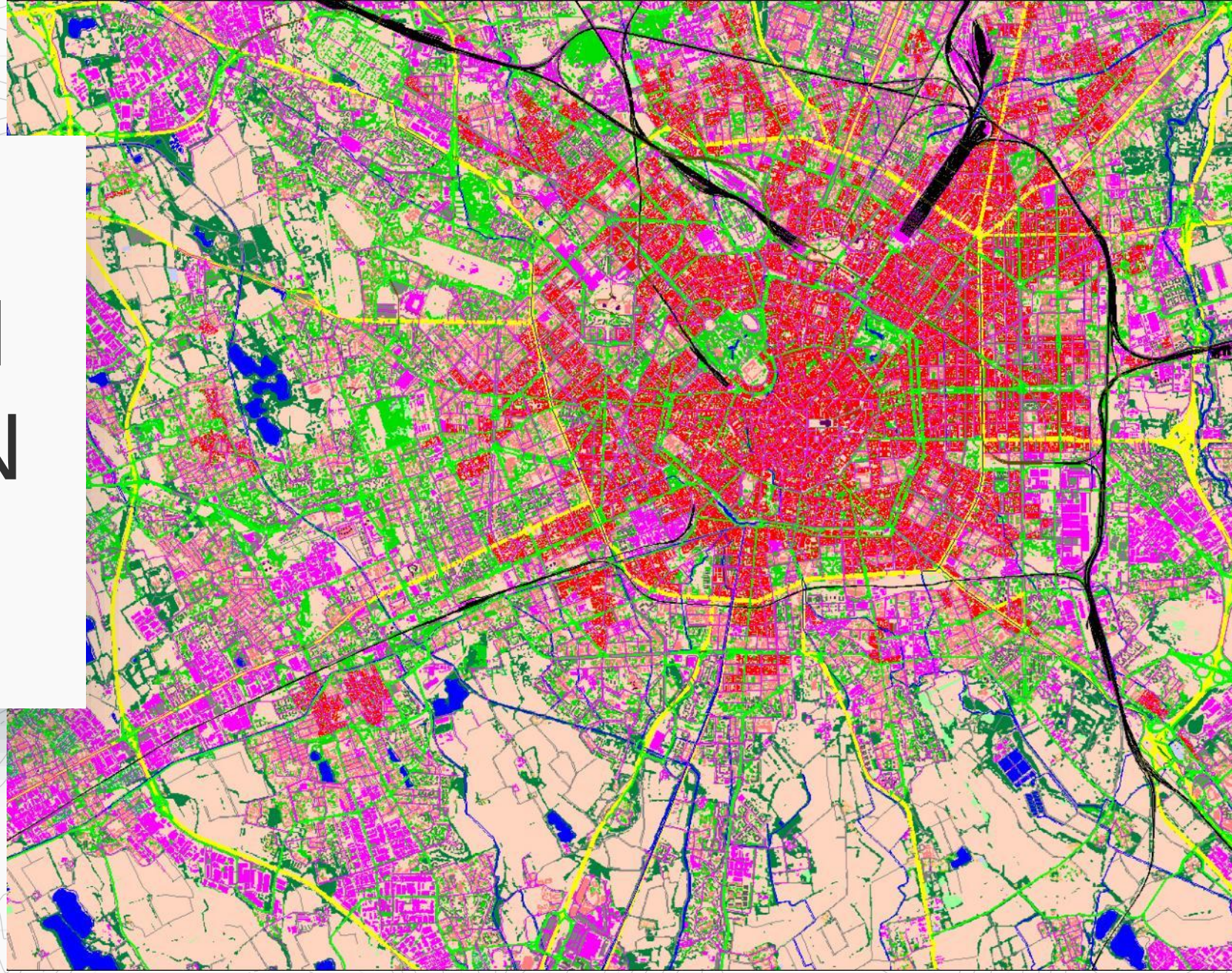
CLUTTER MODEL, 10 M RESOLUTION

DATA PREVIEW

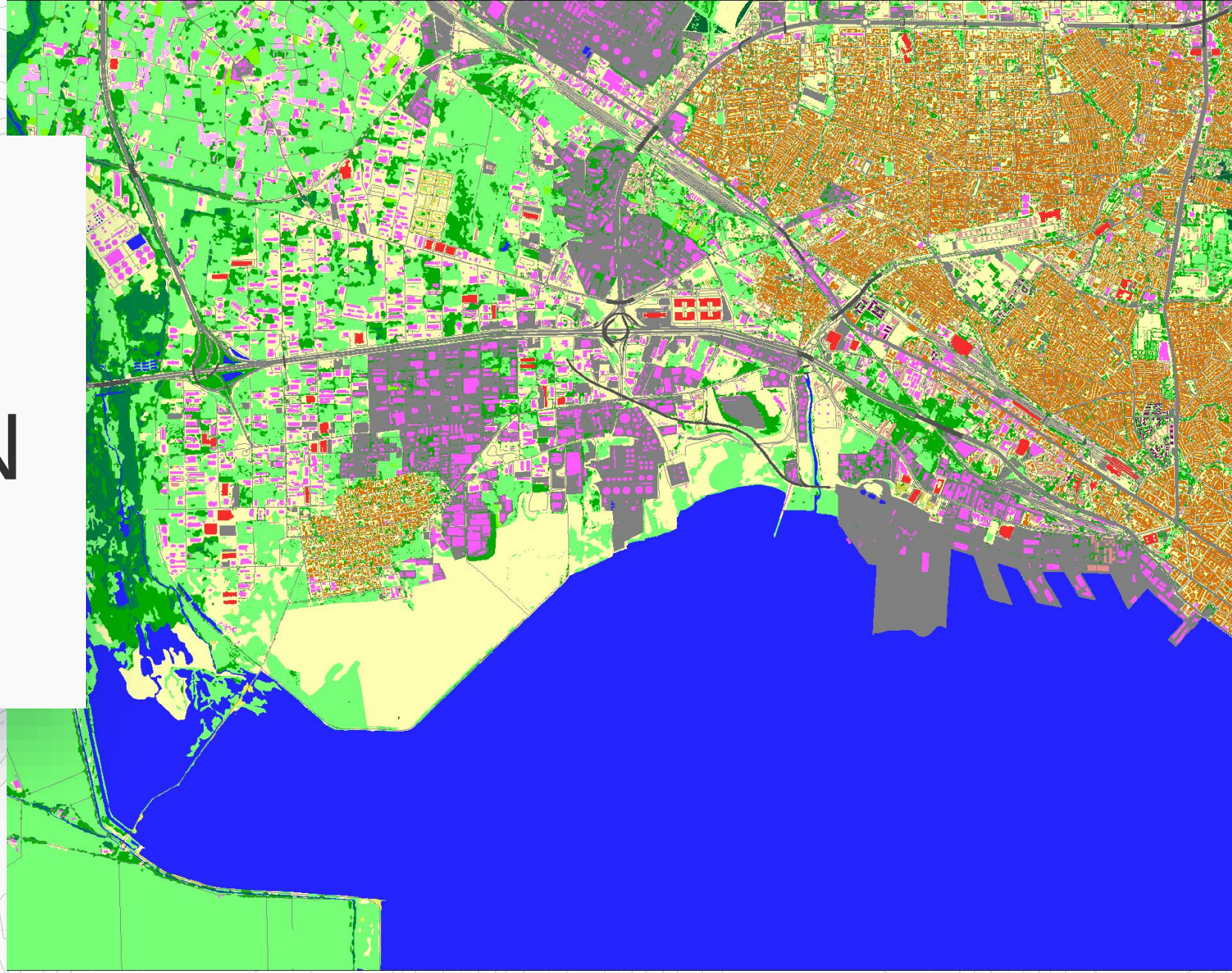


CLUTTER MODEL, 10 M RESOLUTION

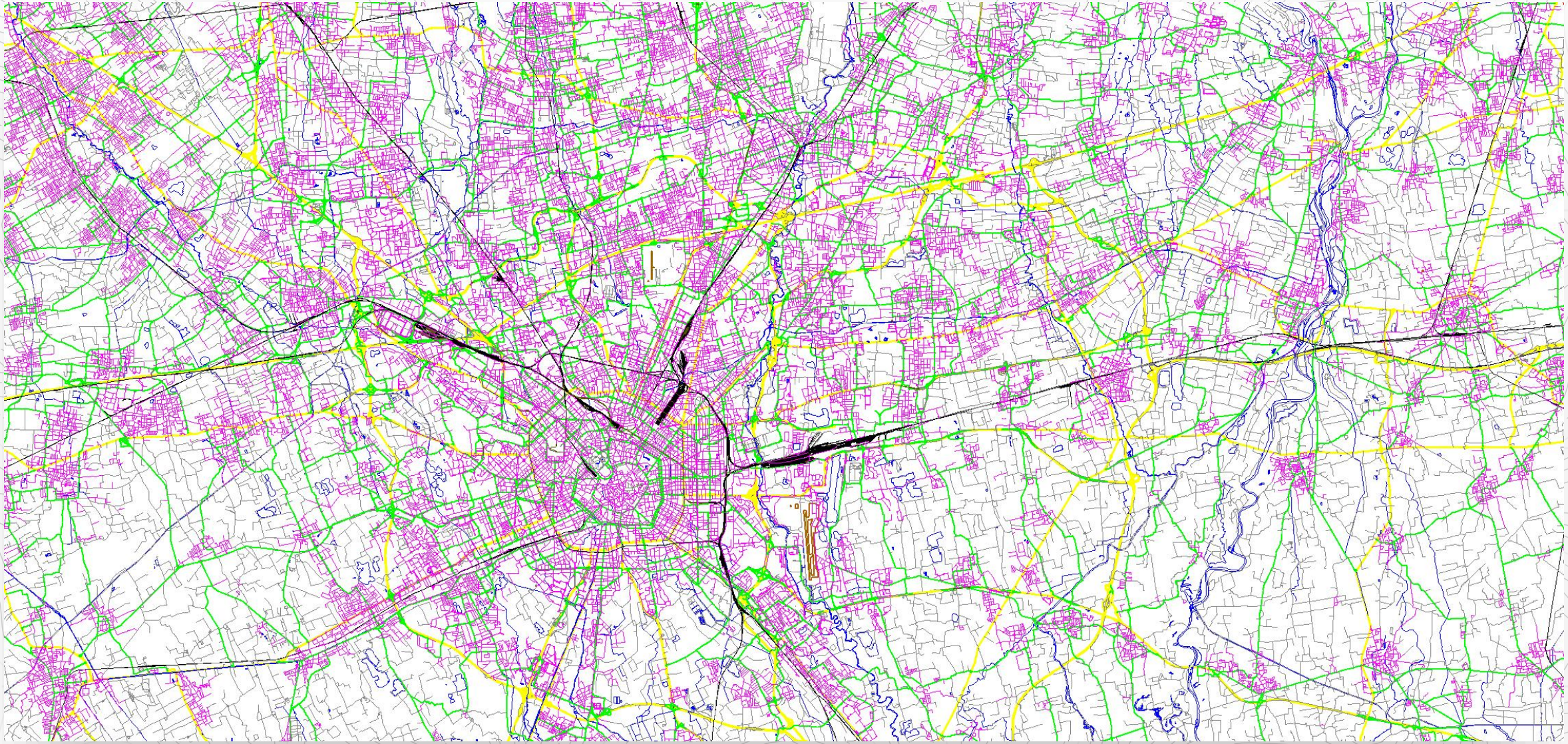
DATA PREVIEW

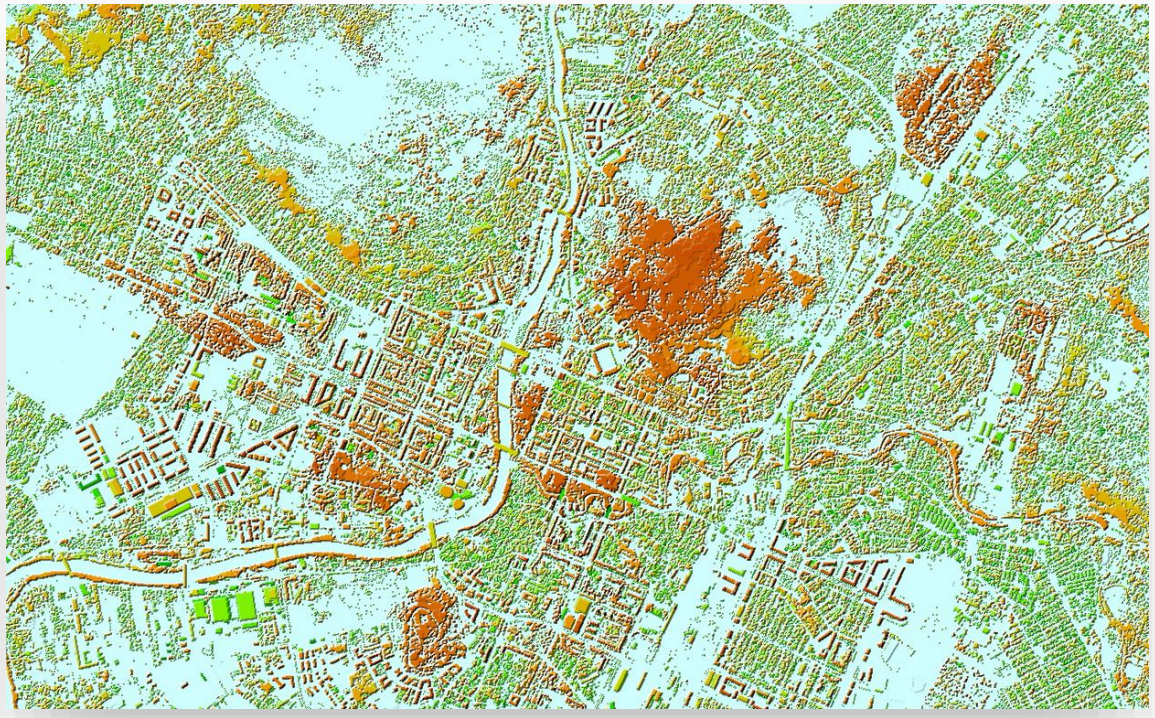


CLUTTER MODEL, 5 M RESOLUTION



VECTOR MODEL – STREET/ROAD NETWOKS, BOUNDARIES, WATER OBJECTS





BALANCE COST AND ACCURACY WITH 2.5D NATIONWIDE COVERAGE

2.5D Models are usually produced for suburban / rural areas outside big cities as more budget solution in comparison with 3D Models that are strictly required for 5G planning inside big cities

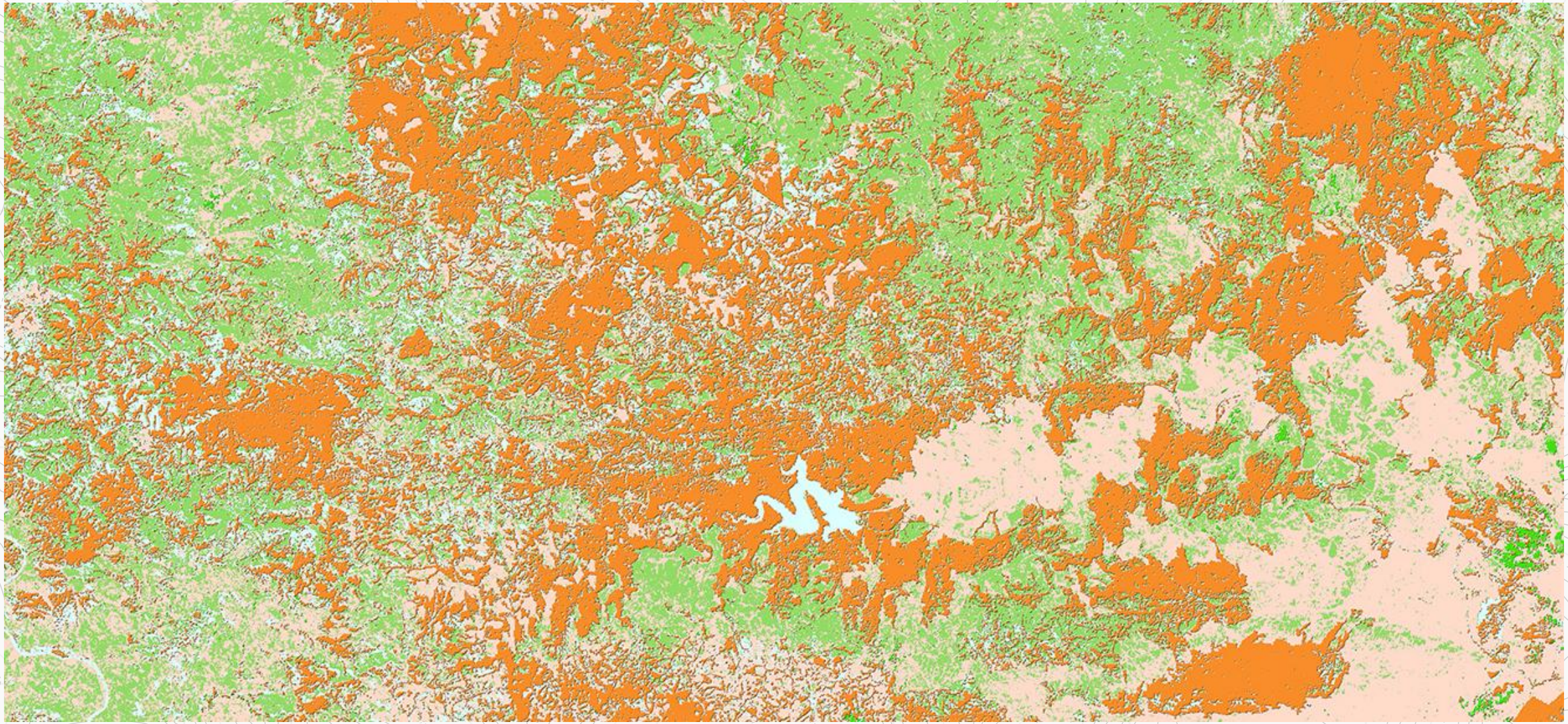
The Clutter Height layer or Digital Heights Model (DHM) is an essential part of 2.5D maps that represents the elevation differences in the terrain, providing detailed data on the height of the surface at specific points.

Clutter height data helps to determine the best locations for communication towers and antennas.

Clutter Heights model is a matrix with a height attribute defined for each pixel of clutter matrix separately as an individual value

CLUTTER HEIGHT MODEL (DHM), 5m resolution

CLUTTER HEIGHT MODEL (DHM), 10m resolution



2.5D DATA FOR 5G RAIL PLANNING

PRODUCTS FEATURES

- 5m resolution in 500 m or 1km buffer zone along the railway
- All terrain features are represented
- All artificial obstacles are included

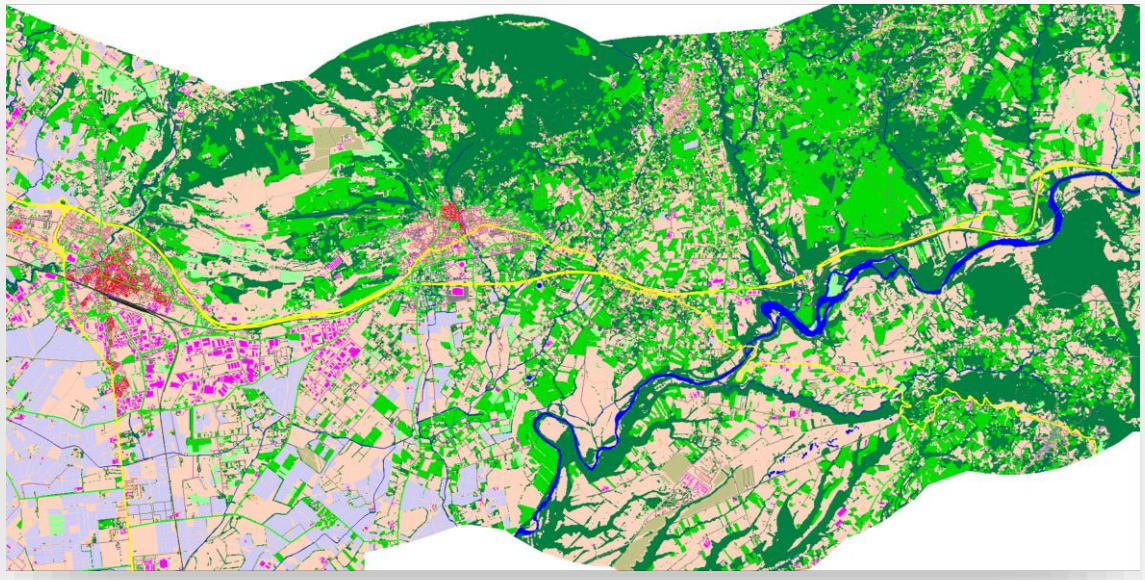
KEY BENEFITS

- Improving signal attenuation predictions and finding the optimal location of base stations
- Cost-Effectiveness - balance the need for detailed data with budget constraints

WHY IT MATTERS

The railway sector is adopting new strategies aimed at enhancing ecological initiatives and global connectivity, as well as improving passenger experience. Modern railway systems focus on increasing passenger comfort, connectivity, and information systems.

To improve connectivity along railway routes, 5G technology is indispensable. All of this requires high-quality and accurate digital maps along the railway network.

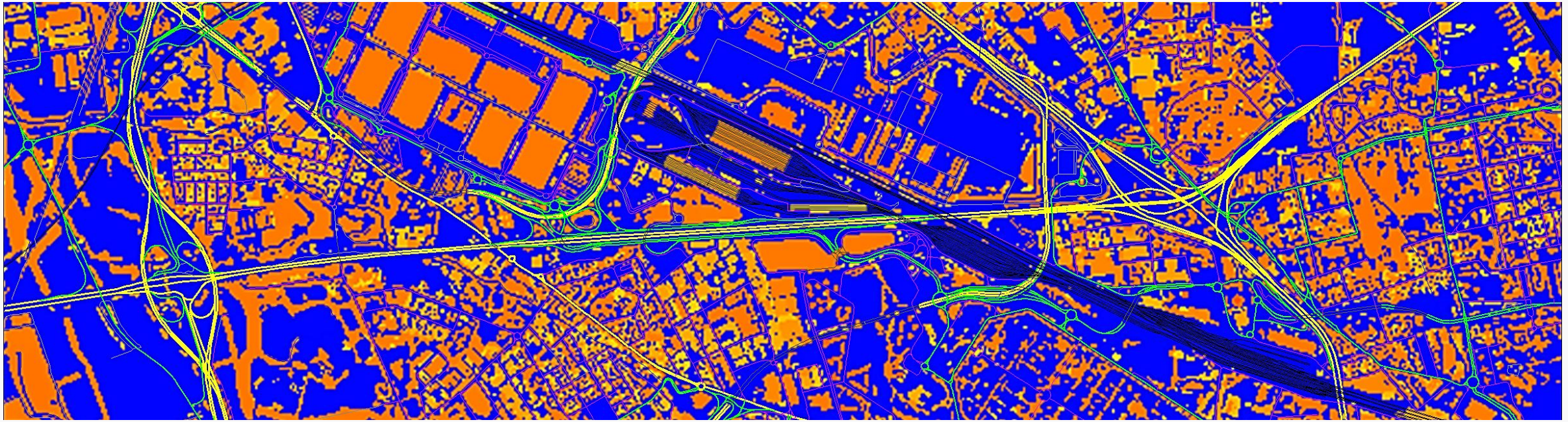


5G IN SMART RAILWAYS

One of the key requirements and cornerstones of effective 5G planning on railways is high-resolution RF geodata and a 500m buffer zone along the railway, particularly in complex terrains.
2.5D map data ensures you can accurately predict your 5G network coverage in complex environments and deliver the quality of service your customers expect.

WE UNDERSTAND THE NEEDS AND REQUIREMENTS OF RF ENGINEERS INVOLVED IN 5G RAILWAY DEVELOPMENT

We have completed several projects for the railway networks of Germany, Luxemburg, Switzerland and Australia, providing accurate and detailed digital solutions that support the development and modernization of these infrastructures.



VISICOM®

5M AND 10M RESOLUTION NATIONWIDE MODELS

helps accelerate 5G rollout, improve network performance, and ensure cost-effective solutions, making it indispensable for the future of mobile connectivity

WHAT WE PROPOSE?

- HIGH QUALITY AND ACCURACY MAPS
- FREE DATA SAMPLE OR TRIALS
- HIGHLY COMPETITIVE AND FLEXIBLE PRICES
- MEETING ALL CUSTOMER REQUIREMENTS