



National Center of Mapping  
and Remote Sensing  
C.N.C.T



# Big spatiotemporal data for a smart and resilient city (Focus on Geospatial data management)

**Mohamed Amine Ben Rhaïem- Geospatial application development and scientific Methodologies**

4<sup>th</sup> of May 2023, Rotterdam, the Netherlands

# Plan

- CNCT INTRODUCTION
- INIG – NSDI (IGIF)
- SMART CITIES
- PROJECT OVERVIEW



# CNCT INTRODUCTION



CNCT



## EPNA under MOD

### supervision

- **Corporate Council chaired by Mr. MDN**
- **Scientific Advisory Board**

**11 July 1988**  
Law n°88-83 du 11 juillet 1988

• **CNT Creation**



**Decree N° 21-2004**

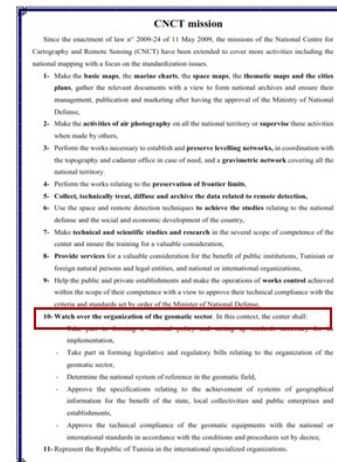
**Fusion: DSGHA + CNT**

**11 Mai 2009**

**Law N° 24-2009**



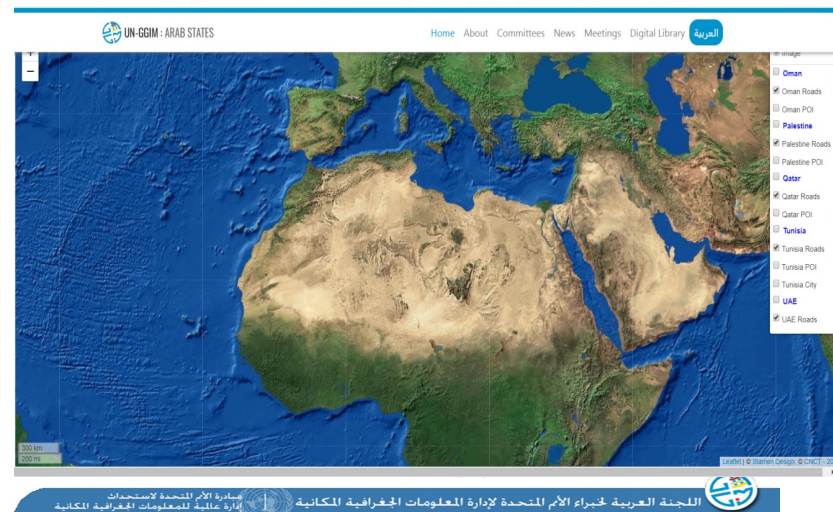
• **CNCT : Centre National de la Cartographie et de la Télédétection**



# CNCT INTRODUCTION



UN-GGIM : ARAB STATES



Development of a holistic geoportal accessible to the different arabic states which allows to integrate and visualize their geographic informations basically the topographic ones like the road network and the points of interest.

# CNCT INTRODUCTION



Approve the specifications related to the achievement of systems of geographical information for the benefit of the state, local collectivities and public enterprises and establishments,

Approve the technical compliance of the geomatics equipment with the national or international standards in accordance with the conditions and procedures set by decree.

# CNCT INTRODUCTION



Take part in forming a national policy and setting up methods necessary for its implementation

Take part in forming legislative and regulatory bills related to the organization of the geomatics sector,

Determine the national system of reference in the geomatics field,



## **How the National Geographic Information Infrastructure (INIG) was inspired by the ‘IGIF’?**

# INIG – NSDI (IGIF)



2009

**National survey (needs, expectations,...)**

2010

**Private and public sectors Identification and Analysis ;**

2012

**National Workshop – Geomatics situation in Tunisia :State of the art and perspectives (to design and develop country-level Action plan with the help of stakeholders and end users)**

2015

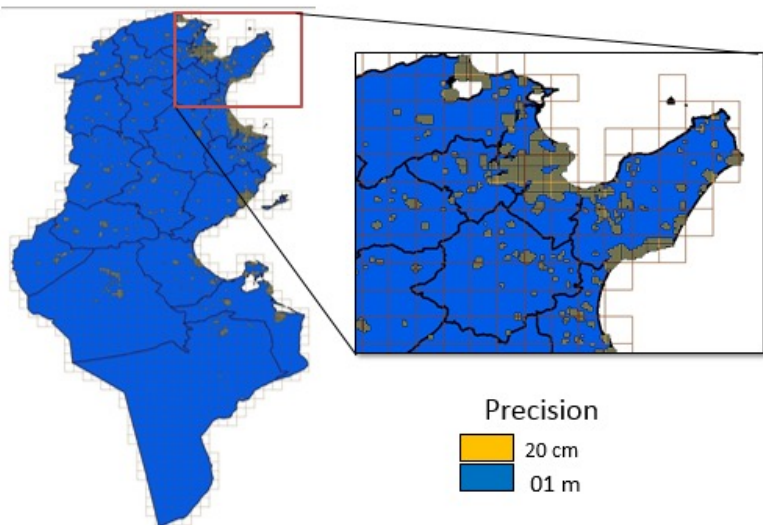
**National Workshop → Geomatics national policy (vision; missions and goals) Ad' hoc Commissions – Technical – legal - Economic**

2017-  
2028

**National Tunisian SDI (INIG) implementation**

# INIG – NSDI (IGIF)

## Project databases



### 13 Themes

- geodetic control ;
- orthophotos ;
- Road network ;
- Energy network;
- Rail network;
- Hydrography ;
- Constructions ;
- Designated areas;
- Vegetation ;
- Land shapes;
- Limits ;
- Toponymy ;
- Zonate ;
- Addresses ;
- Point Of Interest
- Cadaster



## Business Model

## KPIs



1000  
bachelors



**2000**  
indirect jobs



**127**  
land surveys

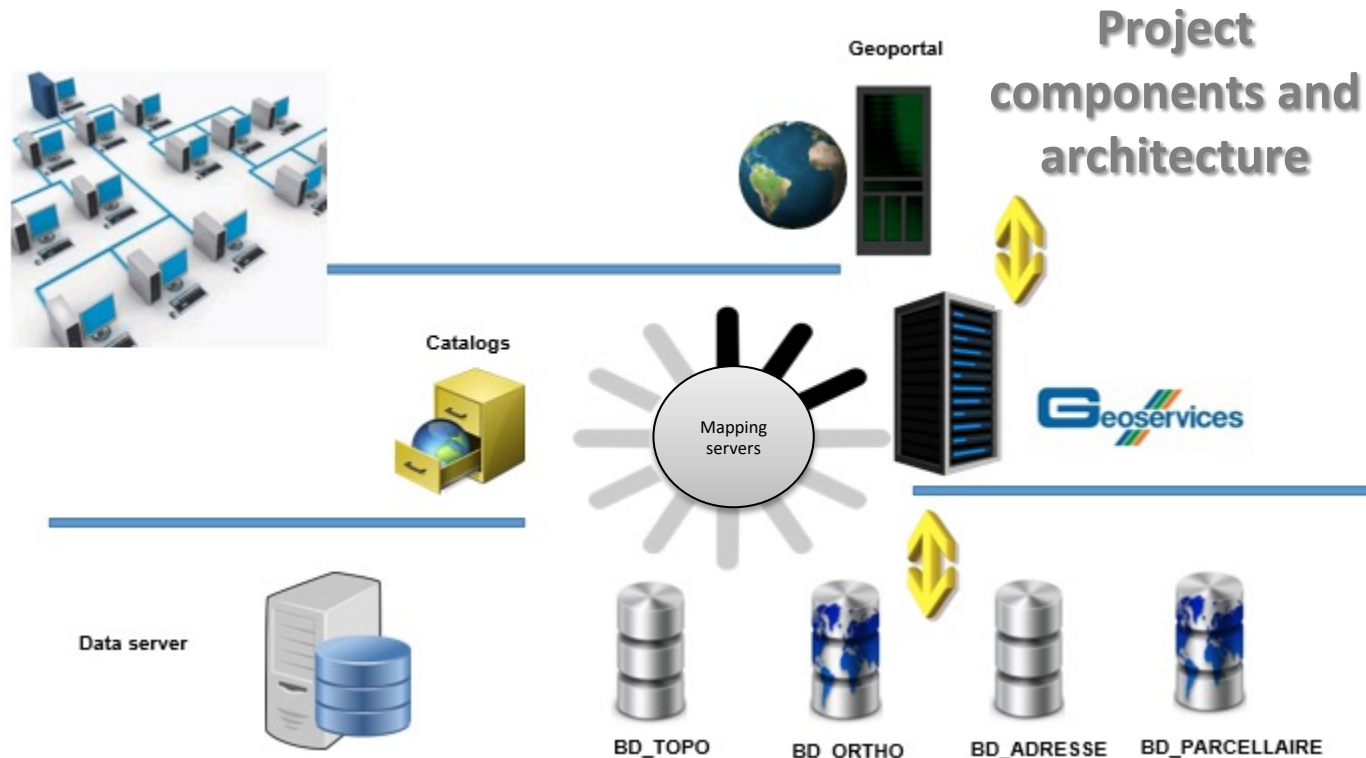


## Startup

**1238**  
Startups



## 30 stakeholders



# SMART CITIES

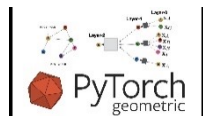


- The government announced in 2019 the launch of the national program Tunisia Smart City.
- Tunisia's membership in the Smart Africa alliance.
- The national program for sustainable cities which is in its second phase.
- The cities of Tunis, Bizerte, and Sfax are in the process of creating a Smart City unit within the city hall."

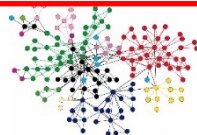


# PROJECT OVERVIEW





**AI Layer**



Big Geospatial Knowledge graph



**Semantic layer**  
 Taxonomy      GraphQL      Ontology      GeoSPARQL      Big data graph



**Meta Data layer**  
 Source      W3C      Time      Contributor      Fabrication data      Fabrication data      Coverage      RDF



**Data layer**  
 Photos      Census      Reports      BIM      RM      VGI      IoTs      Aerial imagery      INIG DBs  
 Apache Flink      PostGIS      nifi      QGIS      LoRaWAN      kafka      spark

Traffic

Wildfire

Air quality

Anarchic building

