RESEARCH & DEVELOPMENT TELECOMMUNICATION'S INSTITUTE

MapInfo Professional as a Geographic Information System for the Cuba's telecommunications infrastructure

MapInfo Professional como Sistema de Información Geográfica para la infraestructura de telecomunicaciones de Cuba

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INTRODUCTION (1/6)

Cuba

…is **yearly hit by several meteorological events** (e.g. hurricane Irma in September, 2017) affecting the country's telecommunications infrastructure.

INTRODUCTION (2/6)

Irma in numbers…

Communication infrastructure	*	**	***
Base stations (2G, 3G)	864	10	302
WIFI public areas	515	221	120
VSAT terrestrial stations	140	5	43
Radiofrequency link systems	509	28	79
Parabolic antennas	759	71	1

Item	Amount
Collapsed towers	21
Collapsed services (Radio, DTT, Analog TV…)	47
Average affected population	2 767 073

***** Total
****** Secured (disassembled)
******* Damaged

Data source: MINCOM, 2017

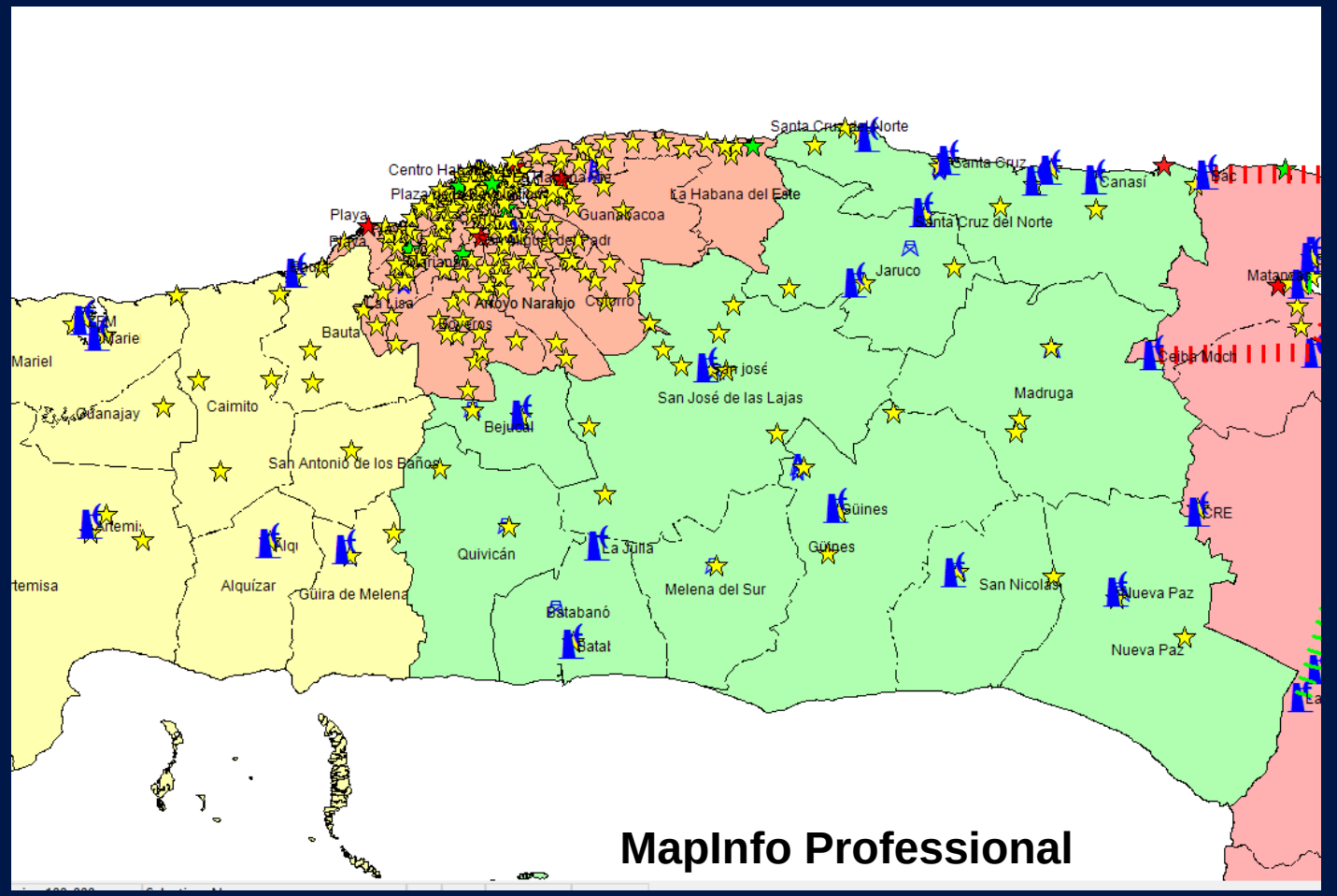
INTRODUCTION (3/6)

Data collecting…

EMPRESA DE TELECOMUNICACIONES DE CUBA S.A. · ETECSA ·

radio cuba RADIOCOMUNICACION

MoviTel S.A. TELECOMUNICACIONES MOVILES



INTRODUCTION (4/6)

There is no a map system for collecting these kind of data and showing them in a structured way …

Consequences:

- There is no a national system for telecommunications infrastructure monitoring.
- The decision-making in the face of catastrophes is very complicated.
- The information is not available for quick inquires (it needs previous collection and processing of the data).

INTRODUCTION (5/6)

Currently, ***LACETEL*** works in the dynamic monitoring of the radiofrequency spectrum through IoT networks.

INTRODUCTION (6/6)

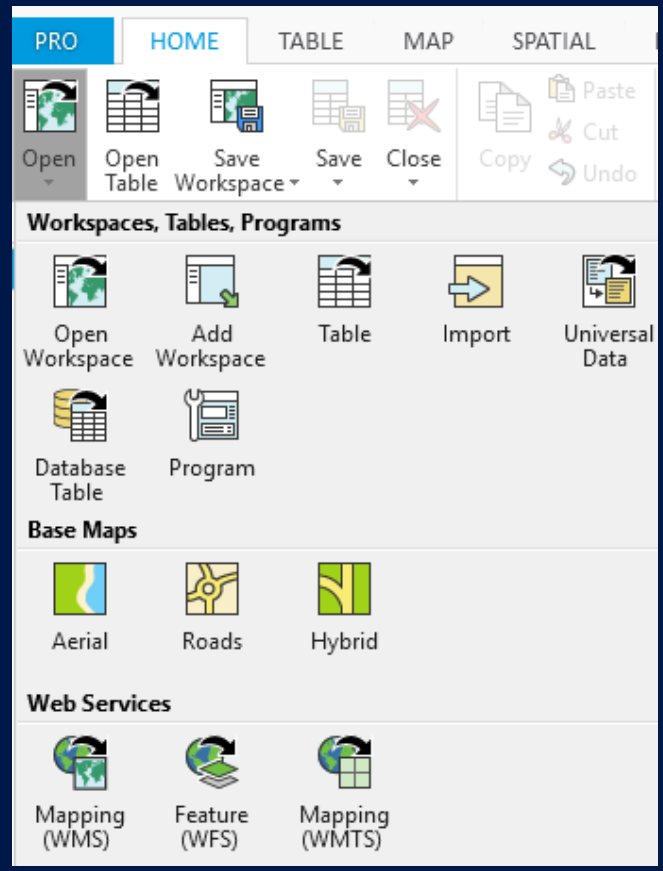
The main aim of this work is to integrate the data from the principal Cuban telecommunications operators and the data collected by sensing network for radiofrequency spectrum monitoring. These data will be shaped as a system for telecommunication monitoring, contributing to:

- optimize the network
  - make your coverage against demographics and in-house data to make smarter decisions.
  - Identify gabs, plan new services and reduce un-served areas.
- compare the planned coverage maps with a real system of radiofrequency spectrum monitoring

Development (1/2)

Why **Mapinfo…?**

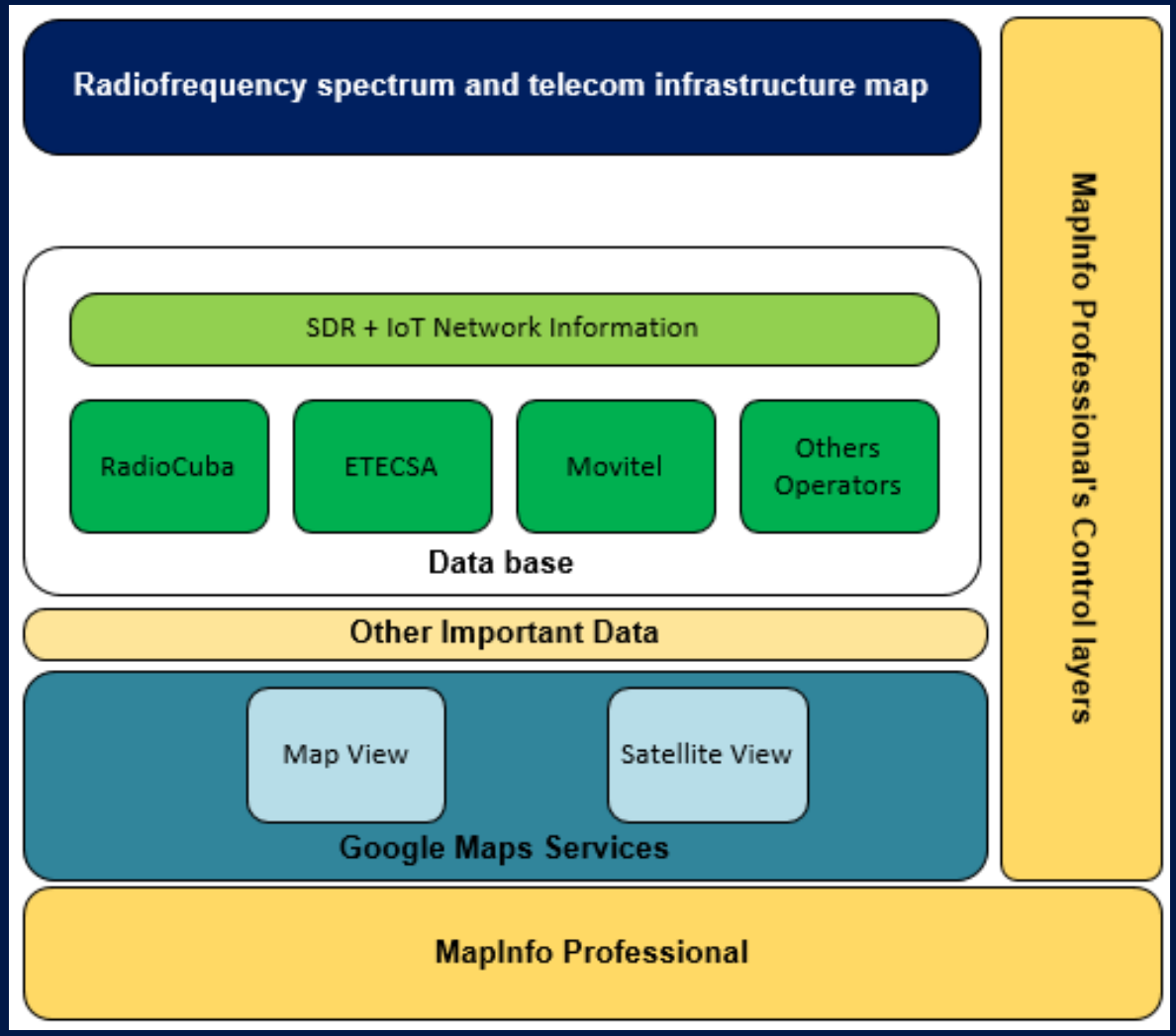
- It supports a lot of maps formats…
  - integration with satellite services, Google maps, Bing maps … (most updated maps)
- It take data from data base (Oracle, SQLite, Microsoft SQL, …)
- It has a powerful tools set (raster data, register maps, …)
- It has **MapBasic**, its own programming language (also compatible with C, C++ and Visual Basic)



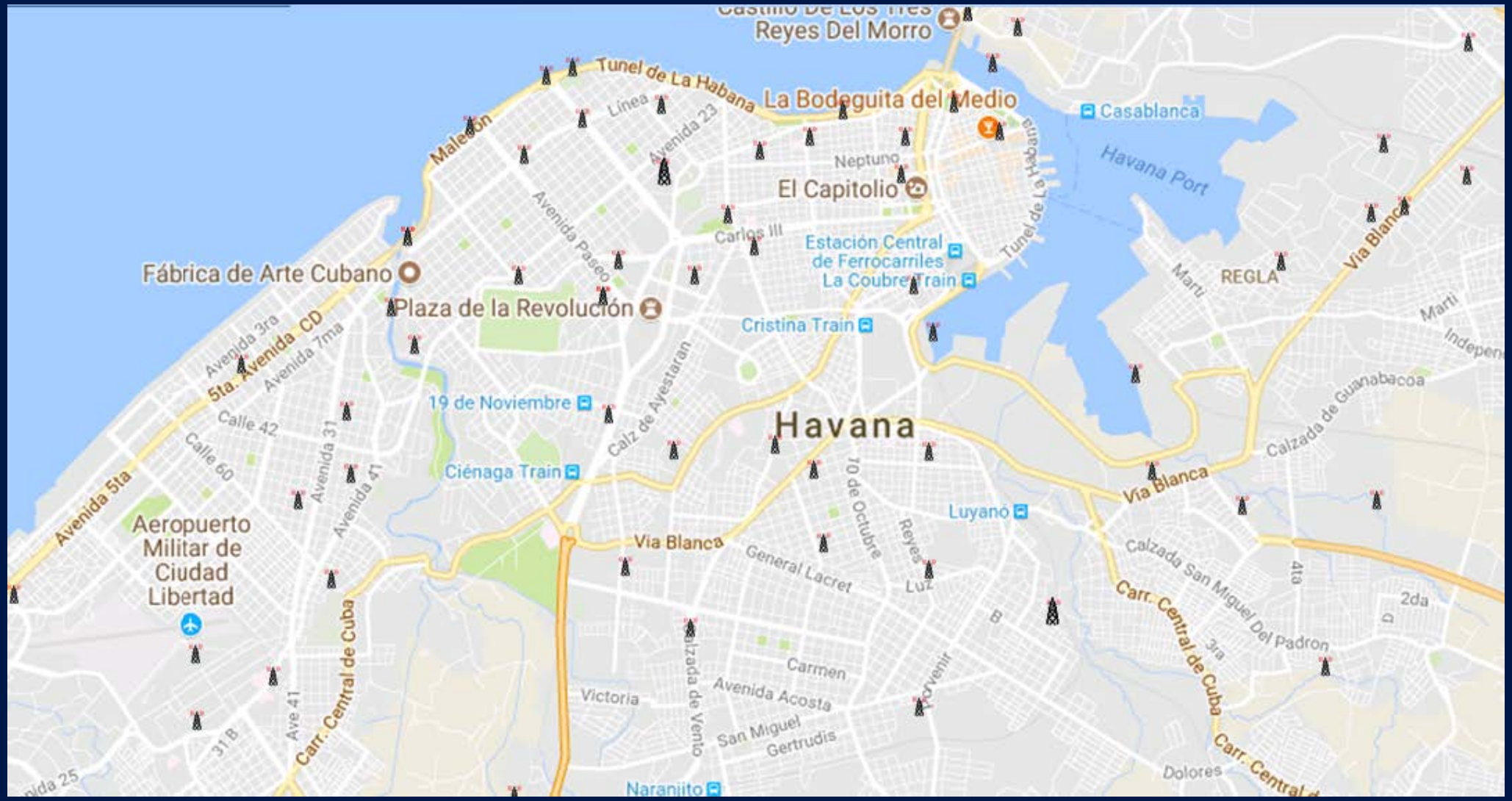
Development (2/2)

System Functional View

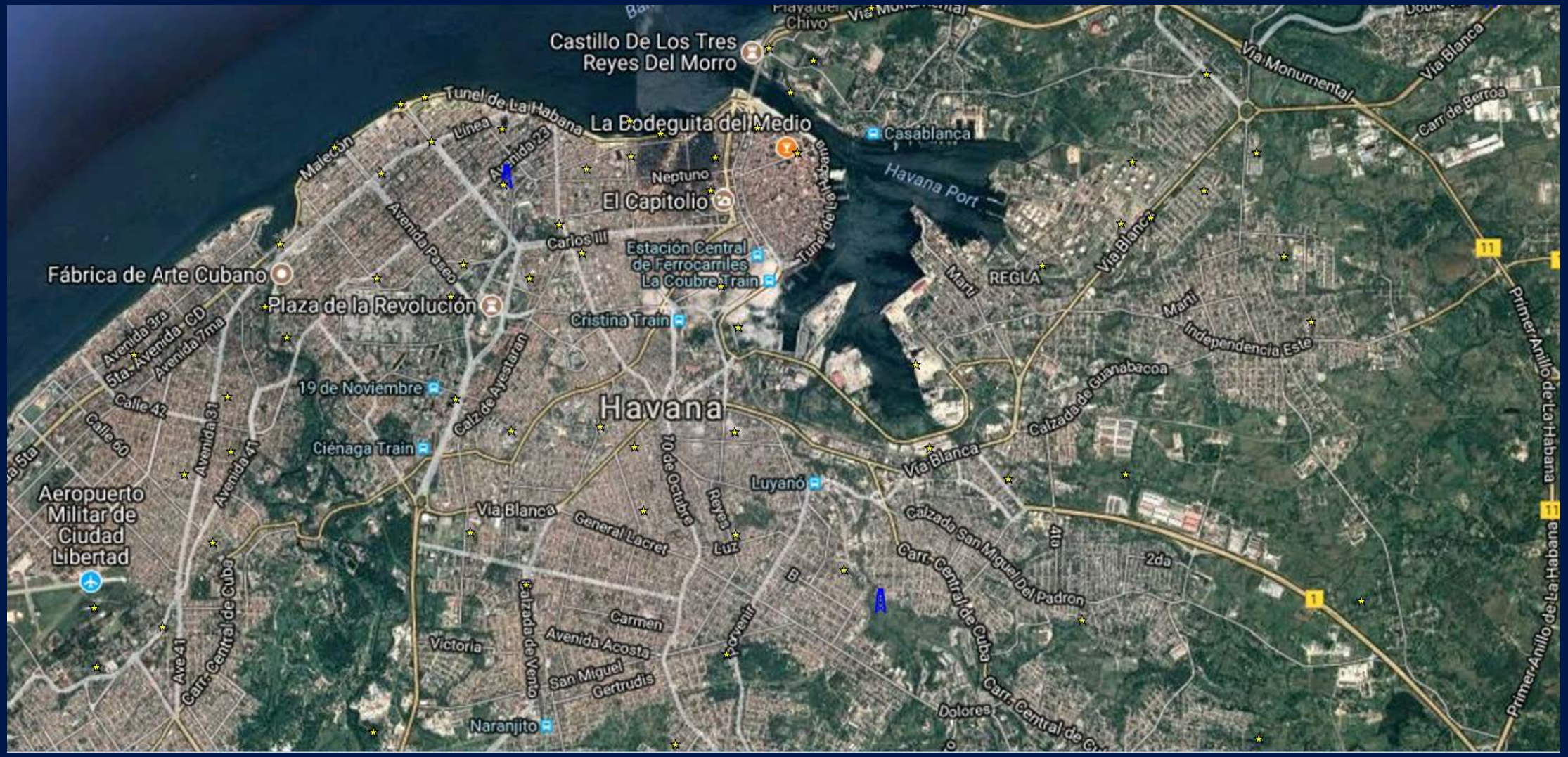
1. Political-administrative division
2. Population
3. Population density
4. Number of DTMB receivers
5. Number of SDR sensors



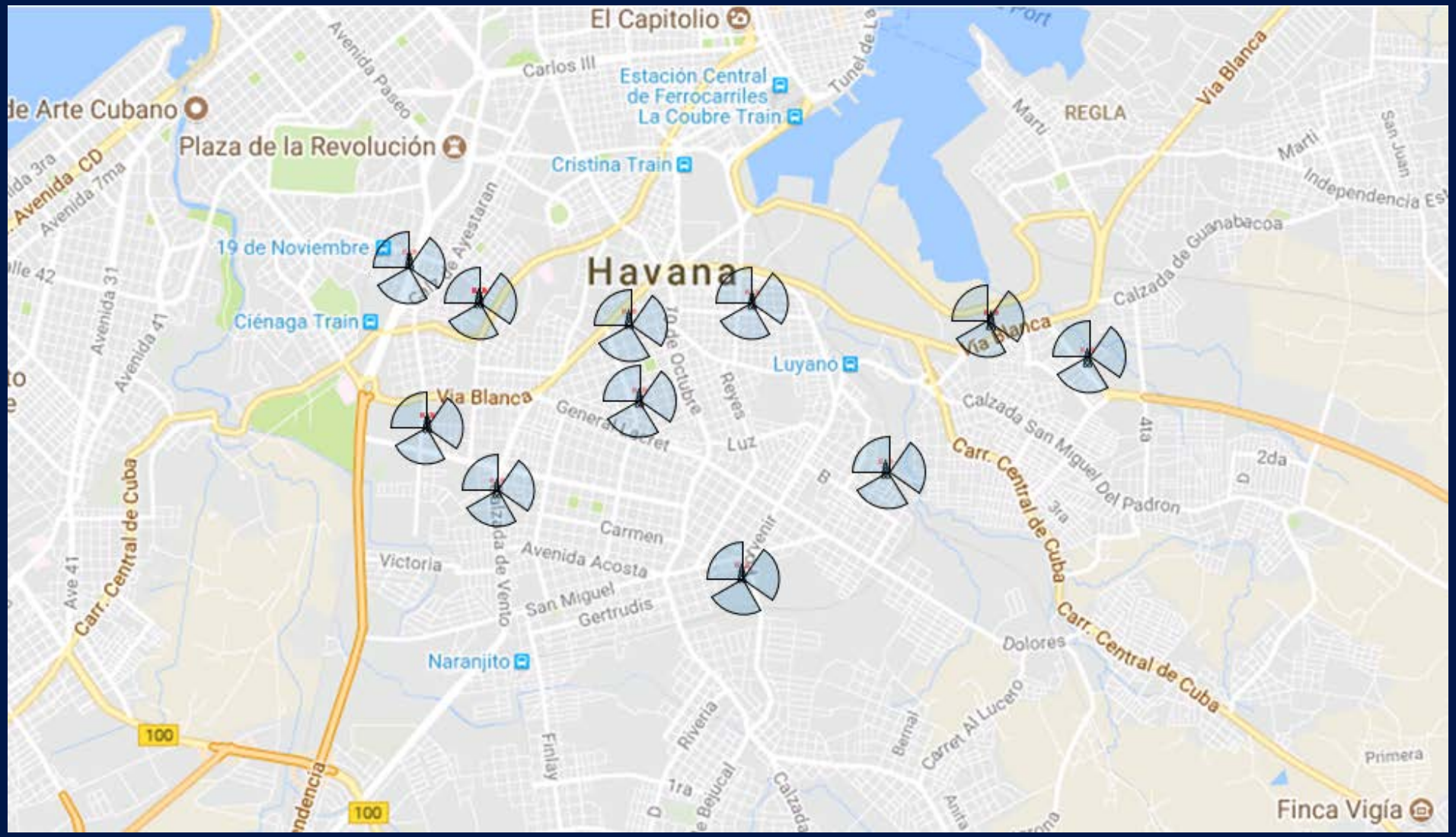
OBTAINED RESULTS (1/2)



OBTAINED RESULTS (2/2)



EXPECTED RESULTS



CONCLUSION

- This work will provide a decision-making tool to the MINCOM and the telecommunications operators.
- It provides a holistic vision as a national telecommunications infrastructure.
- It should have a significant economic impact by monitoring the availabilities of the frequencies to deploy more wireless telecommunications services.

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