8TH BLACK SEA PORTS & SHIPPING 2019

CiViTAS
Cleaner and better transport in cities

2020 CiViTAS PORTIS

Promoting Sustainable Mobility in Port Cities under OBOR initiative. A Comparative Analysis of Constanta and Ningbo

Prof. Eden MAMUT

"Ovidius" University of Constanta

Black Sea Universities Network

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EUROPEAN UNION

PORTIS

Port Cities: Sustainable Development by Innovation

01st September 2016 – 31st August 2020

Budget 16.376.774,63 EUR

Aim: *To identify innovative solutions regarding the use of mobility and accessibility in the EU port cities for improving the operational and social cohesion between the city and the port in a sustainable way and enhancing the economical growth in the city and the metropolitan area*

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Specific Objectives

- **Improving the governance by enhanced cooperation between the cities and the ports in order to plan and implement innovative mobility solutions and of integrated structures of spatial planning**

- **Creating a more sustainable and healthier city-port environment**

- **Development of a transport infrastructure and of an integrated mobility system to attract residents and to support the diversification of the local economy**

- **Improving the efficiency of the urban freight transport in the cities in relation with the port**

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PORTIS Consortium

ANTWERP - Belgia	Antwerp
	Apa
	Provant
	De Lijn
	NMBS
	Traject
	Bam
ABERDEEN – Scoția	ACC
	Ashire
	AHB
	Nestrans
	Rgu
TRIESTE - Italia	Comune di Trieste
	TPA
	AREA Science Park
	TT
	Units - DIA
CONSTANTA - România	**U.A.T. Municipiul Constanța**
	ADI ZMC
	CED
	Universitatea Ovidius
	MedGreen
	Port of Constanta
KLAIPEDA - Lituania	KMSA
	Klaipedos keleivinis transportas
	SC LT
NINGBO - China	NBU
International expertise & consultancy	UNIABDN
	TML
	EIP
	FGM-AMOR
	VECTOS
	ISINNOVA

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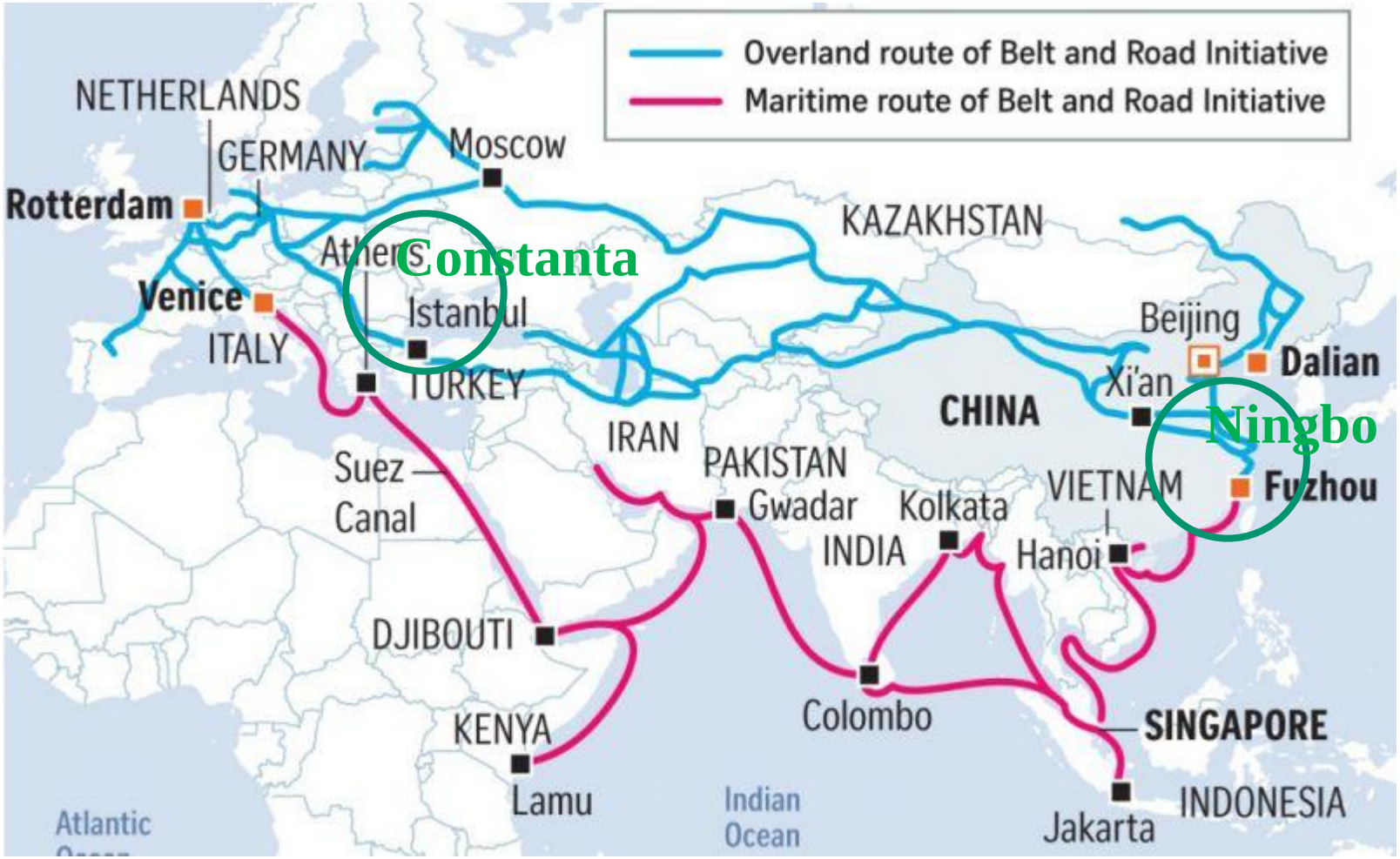
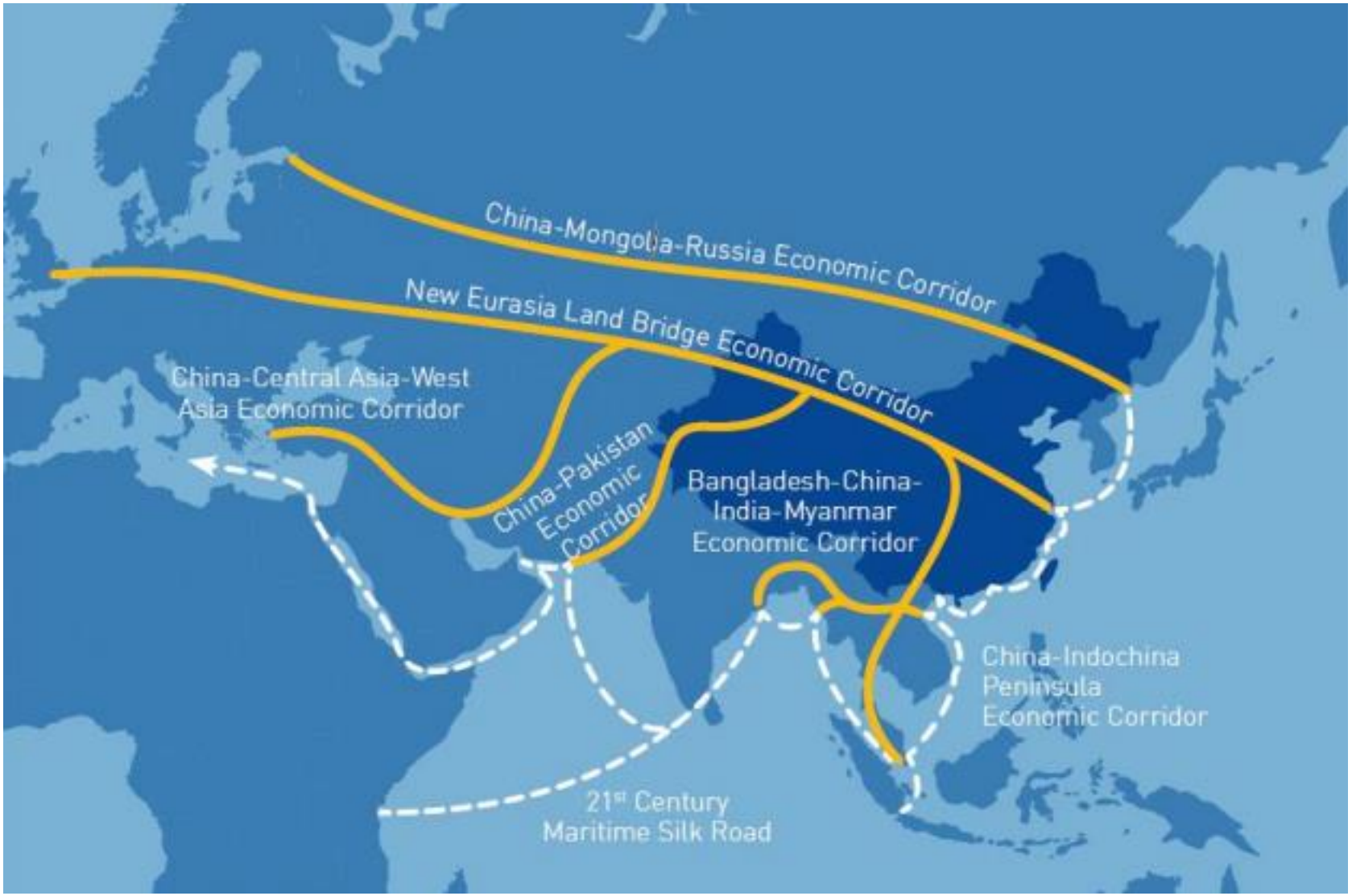
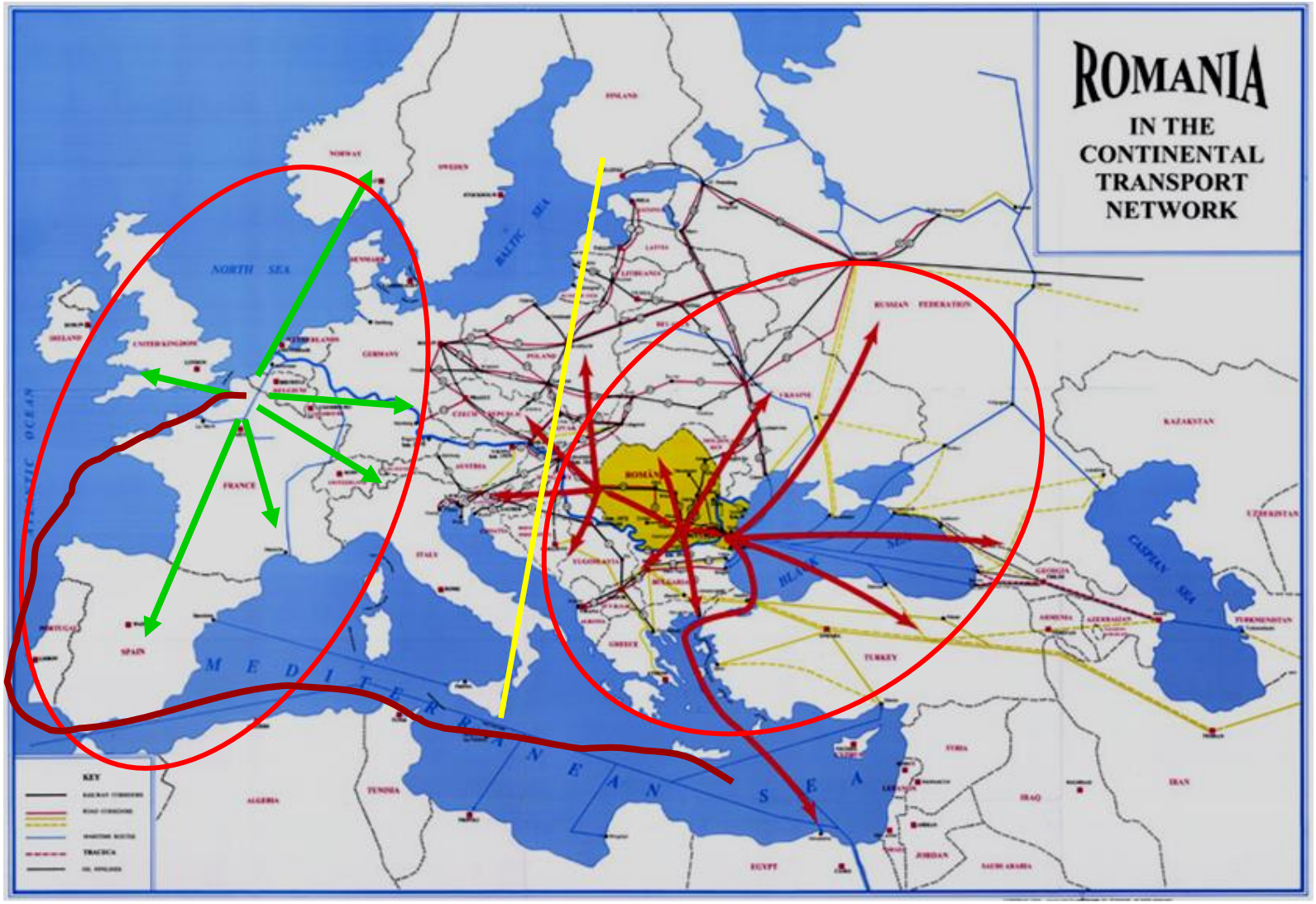
One Belt One Road Initiative



One Belt One Road Initiative

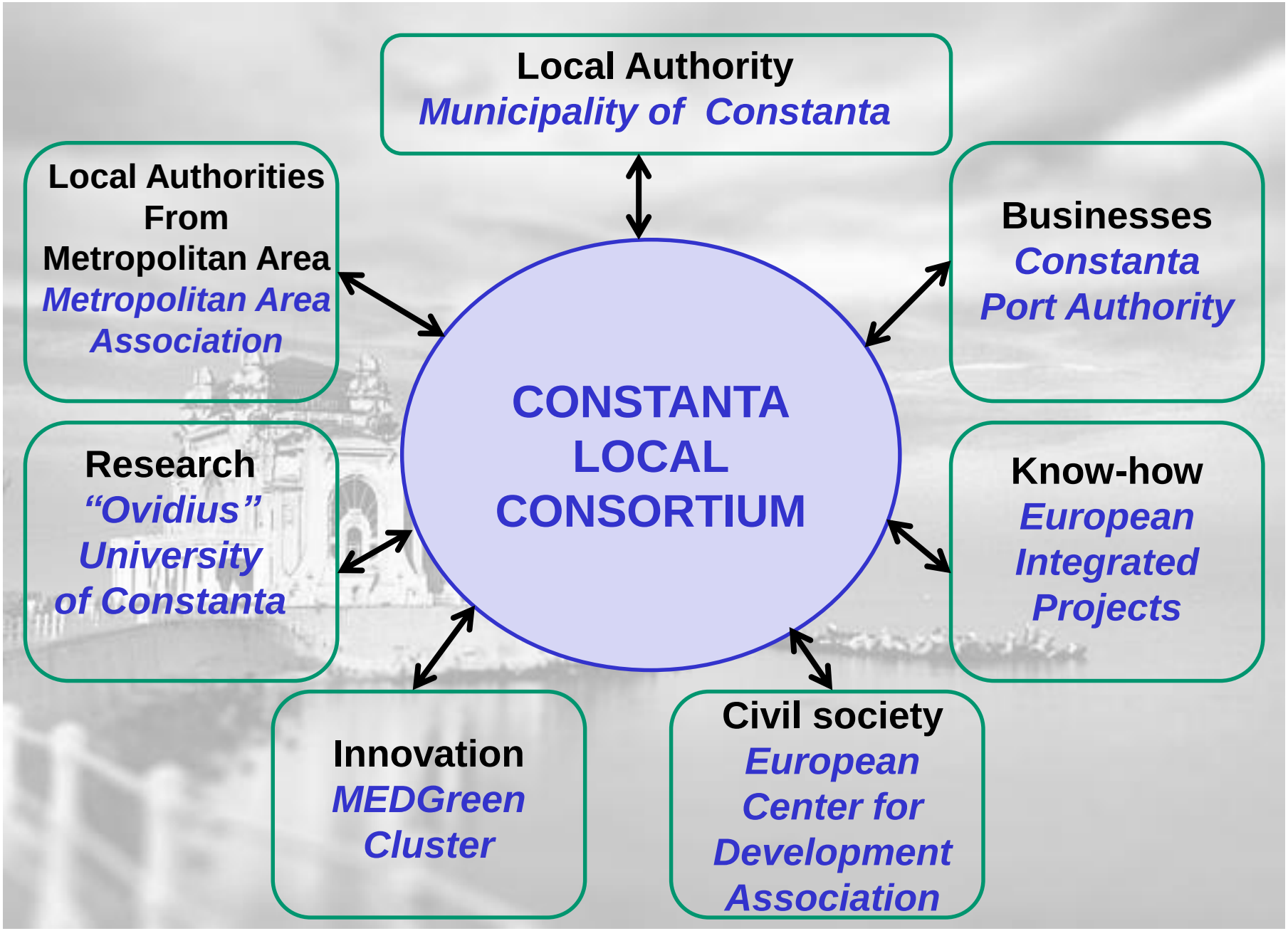


CONSTANTA


ROMANIA
IN THE
CONTINENTAL
TRANSPORT
NETWORK
NORTH SEA
BALTIC SEA
FRANCE
SPAIN
ITALY
GREECE
TURKEY
M E D I T E R R A N E A N S E A
BLACK SEA
CASPIAN SEA
RUSSIAN FEDERATION
KAZAKHSTAN
UZBEKISTAN
IRAN
IRAQ
EGYPT
KEY

CONSTANTA PORT

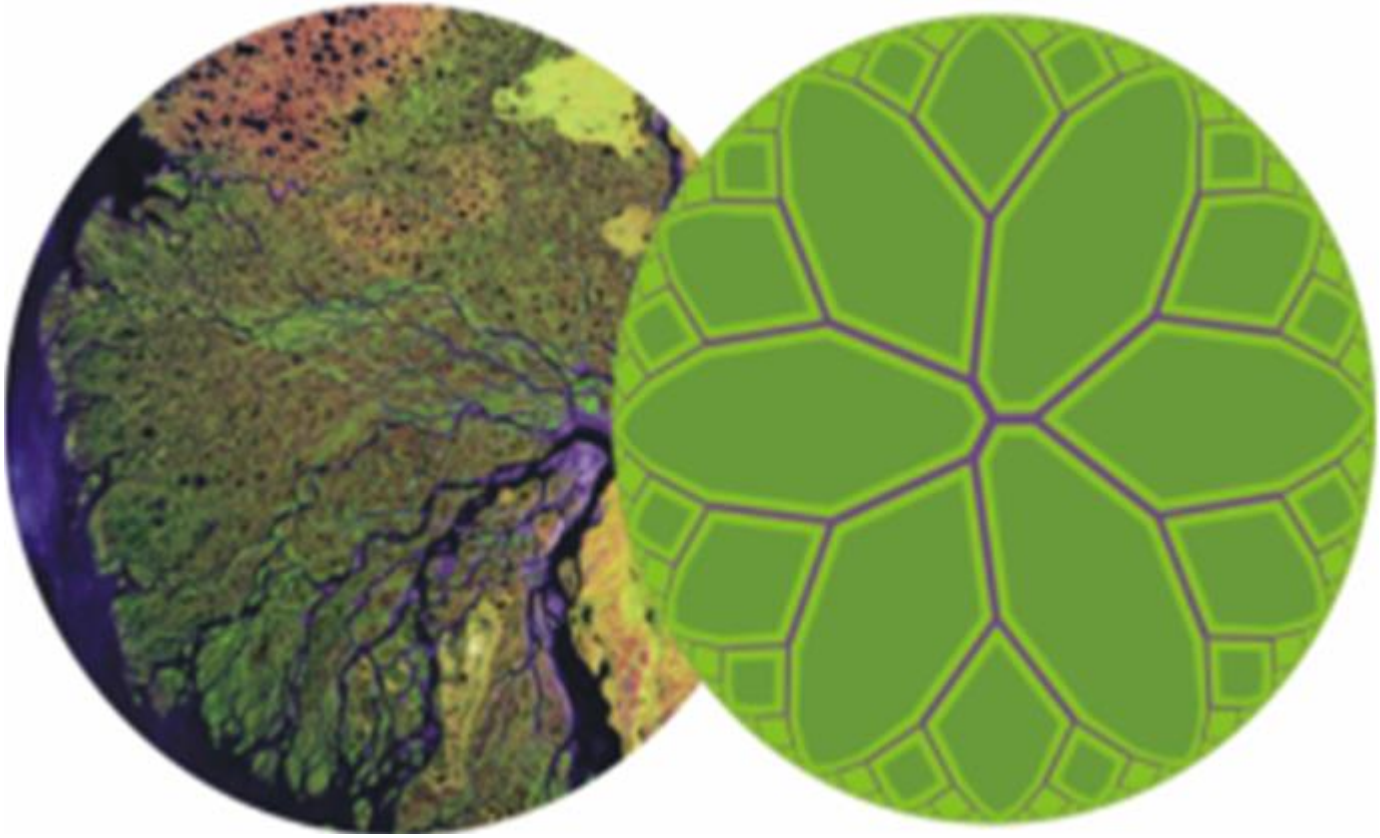
CONSTANTA PORT


Local Authority
Municipality of Constanta
Local Authorities From Metropolitan Area
Metropolitan Area Association
Businesses
Constanta Port Authority
CONSTANTA LOCAL CONSORTIUM
Research
"Ovidius" University of Constanta
Know-how
European Integrated Projects
Innovation
MEDGreen Cluster
Civil society
European Center for Development Association

CONSTRUCTAL THEORY

"For a finite-size system to persist in time (to live), it must evolve in such a way that it provides easier access to the imposed currents that flow through it."

A. Bejan, 1996



Specific measures for Constanta

- **New models of mobility governance for port cities:**
  - 1CTA1 – Demonstration of SUMP strategies to strengthen the core to growth pole accessibility for economic and social cohesion
  - 1CTA2 – Establishing decision-support forum
- **Life styles based on new types of mobility to port cities:**
  - 2CTA1 – Allocating road space for walking and cycling
  - 2CTA2 – Reducing car dependency for port workers
  - 2CTA3 – Raising awareness
  - 2CTA4 – Implementing virtual e-mobility

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Specific measures for Constanta

- **Efficient and sustainable mobility for port cities:**
  - 3CTA1 – Transferring real-time information
  - 3CTA2 – Improving seamless mobility through TEN network nodes
  - 3CTA3 – Charging e-busses with alternative energy
  - 3CTA4 – Enforcing parking strategy
- **insuring a harmonized and effective model for goods transport:**
  - 4CTA1 – Mapping freight traffic flows and designing a distribution plan

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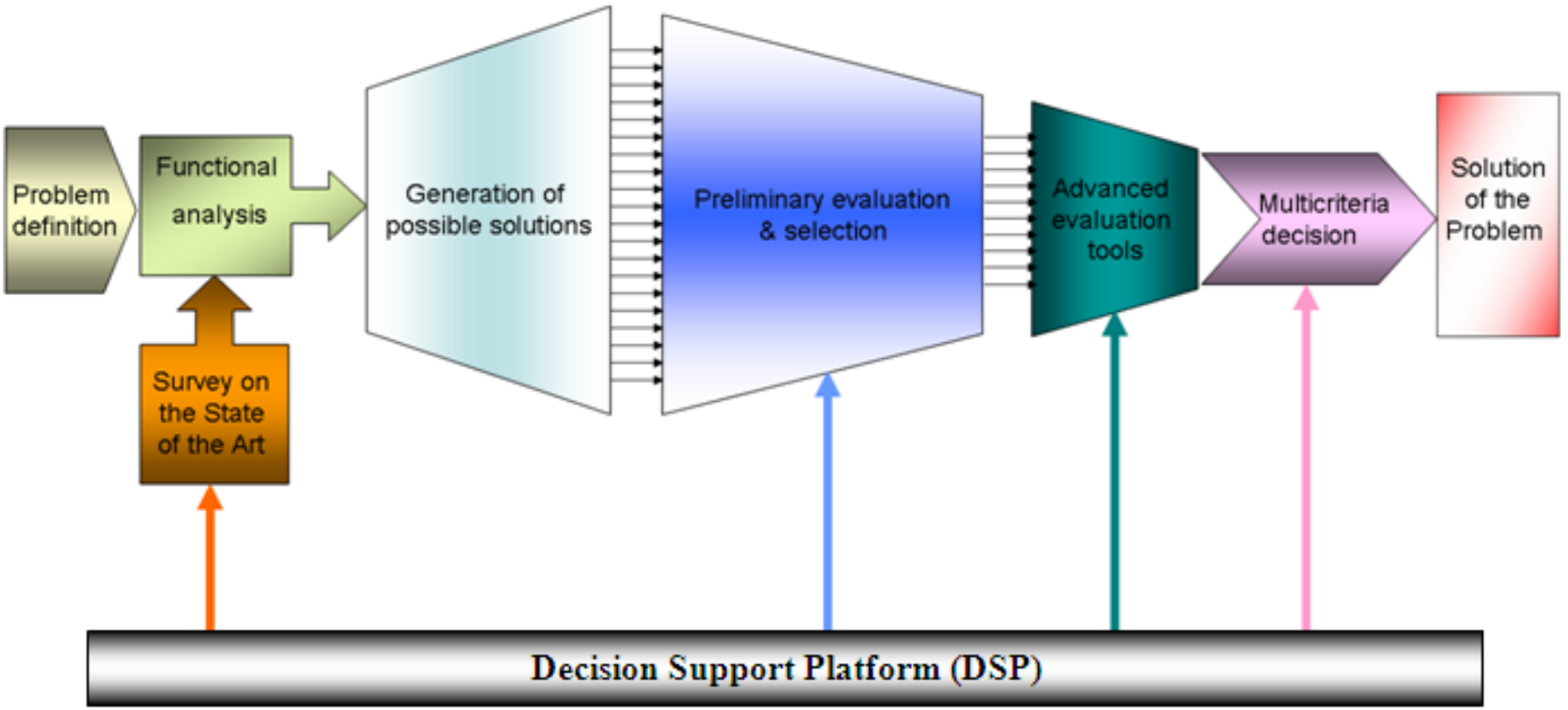
GREEN PORT


N


Western
Seashore
C.F.R
Palas
DN3
DN3
Constanța
Insulă
Medeea
Zona Industrială
Zona Cet
Șoseaua Industrială
Viile Noi
Km 4
Km 4-5
SketchUp

VISUM MODELING

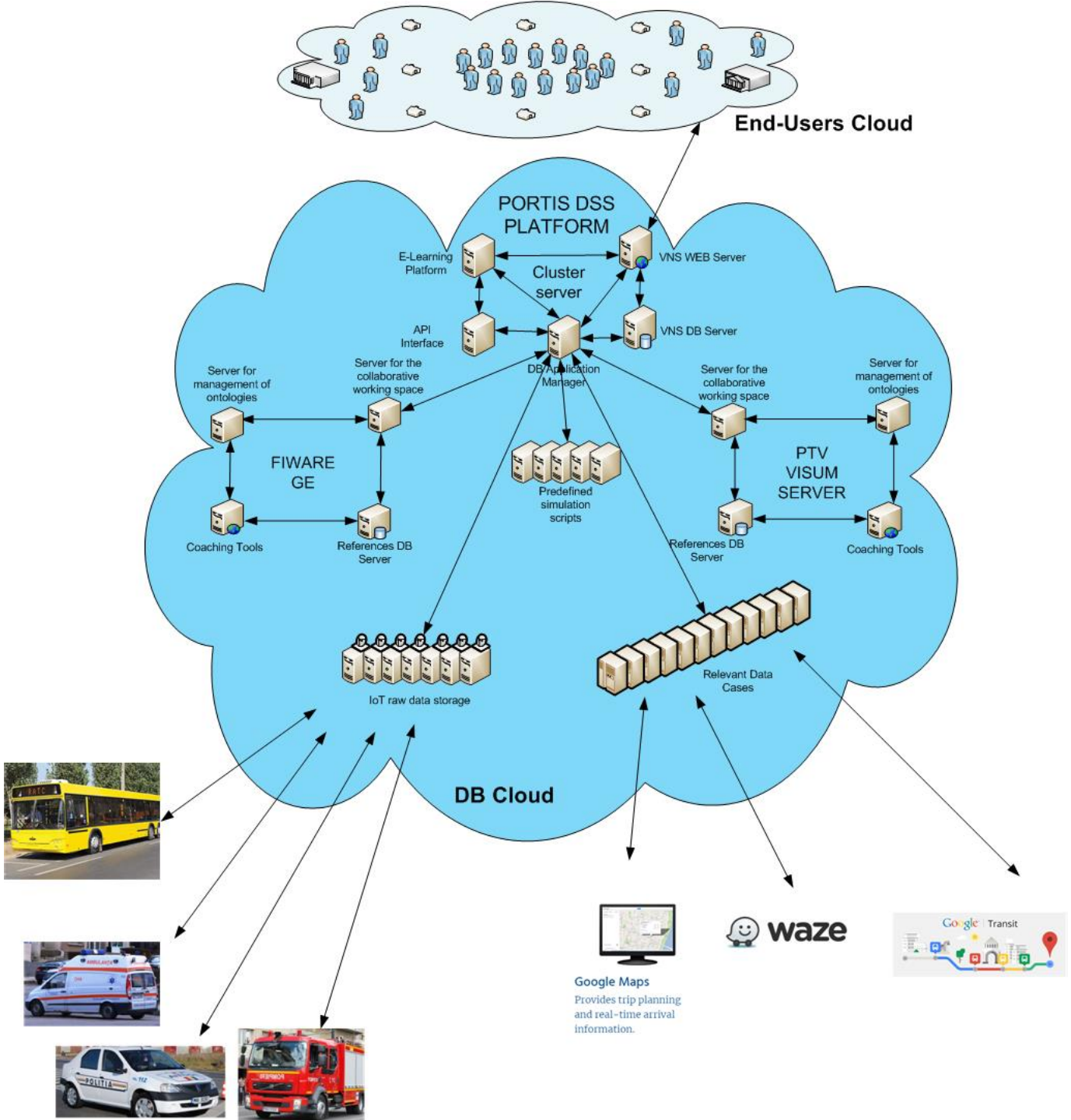
DECISION SUPPORT SYSTEMS FOR INNOVATION



PLATFORM FUNCTIONALITY

- Traffic Data Analyses
- Pollution Data Analyses
- Modeling, Simulation & Optimization
- Decision support
- Scenario building
- Simulation of alternative cases
- Sensitivity analysis
- Trip planning, step-by-step directions and schedules
- Bus estimated time of arrival to bus stops, estimated time of arrival to destination, live bus locations and stops
- Complete bus line information
- Points of interest, display Points of Interest that can be visited with the public transport in a given time
- Feedback inputs
- EVALUATION !!!!

CONCEPT


End-Users Cloud
PORTIS DSS PLATFORM
E-Learning Platform
VNS WEB Server
Cluster server
API Interface
VNS DB Server
DB/Application Manager
Server for management of ontologies
Server for the collaborative working space
Server for the collaborative working space
Server for management of ontologies
FIWARE GE
PTV VISUM SERVER
Predefined simulation scripts
Coaching Tools
References DB Server
References DB Server
Coaching Tools
IoT raw data storage
Relevant Data Cases
DB Cloud
Google Maps
Provides trip planning and real-time arrival information.
waze
Google Transit

Internet of Things - IoT

Dynamic Applications

Rapid Application Dev. Platform

MASHUP BUILDER | SQUEAL | 3RD PARTY TOOLS

REST APIs

SYSTEM SERVICE INTEGRATION

BUSINESS LOGIC
Properties/Services/Events

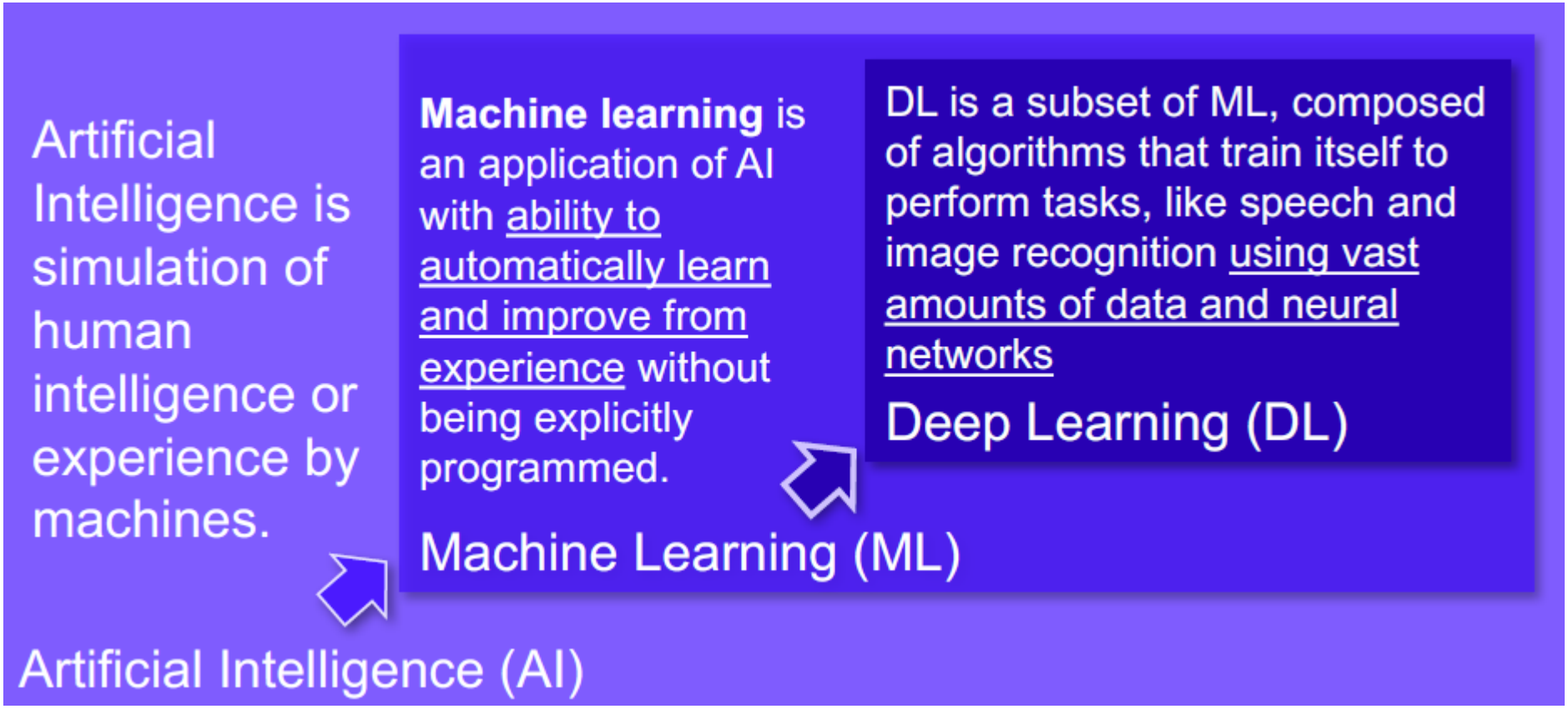
3D STORAGE ENGINE

COMMUNICATIONS AlwaysOn™, REST, API, MQTT, Sockets, etc.

The Network

Sensors, Devices & Equip.

ARTIFICIAL INTELLIGENCE



USER INTERFACE

Acehopper

Provides schedule and real-time information.

For Android, Apple iOS

Apple Maps

Provides trip planning, step-by-step directions and schedules. Siri enabled.

For Apple iOS, Apple Watch

bus@portland

Provides bus arrival time based on bus stop, finds nearby stops and routes.

For Android

City Transit App

Provides real-time Portland Streetcar arrival information and notifications.

For Android

Dadnab™

Provides public transit directions (trip planning) via text messaging.

For phones with text messaging

ezRide Offline Transit Planner

Provides offline TriMet trip planning combined with real-time transit info.

For Android, Android Watch

Google Earth

TriMet stops and stations are included in the "Transportation" layer under "Places of Interest."

For PC, Mac, Android, Apple iOS

Google Maps

Provides trip planning and real-time arrival information.

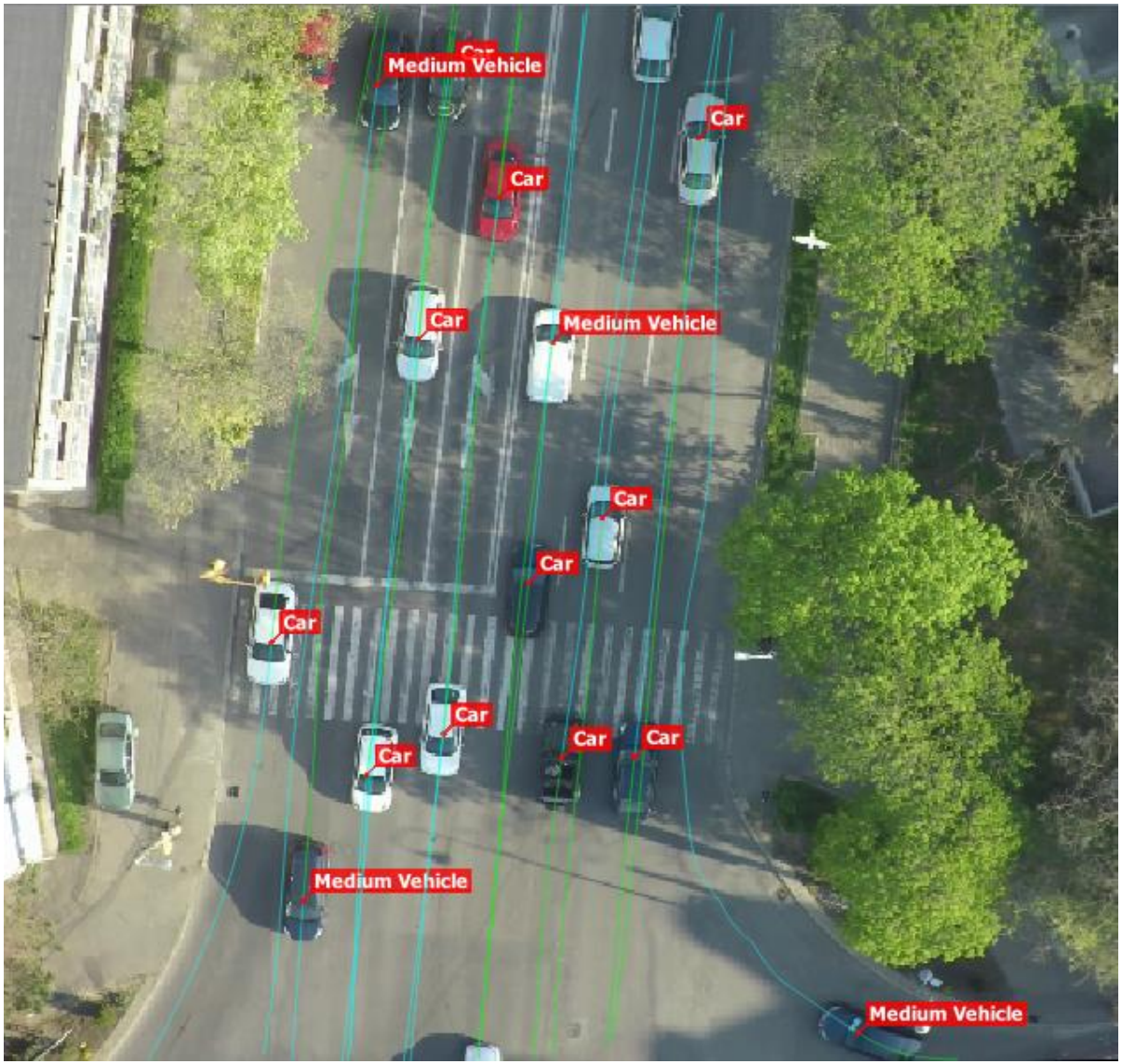
For Android Watch, Apple Watch, web browsers and various mobile devices

DIGITAL ROBOTS

VIRTUAL REALITY

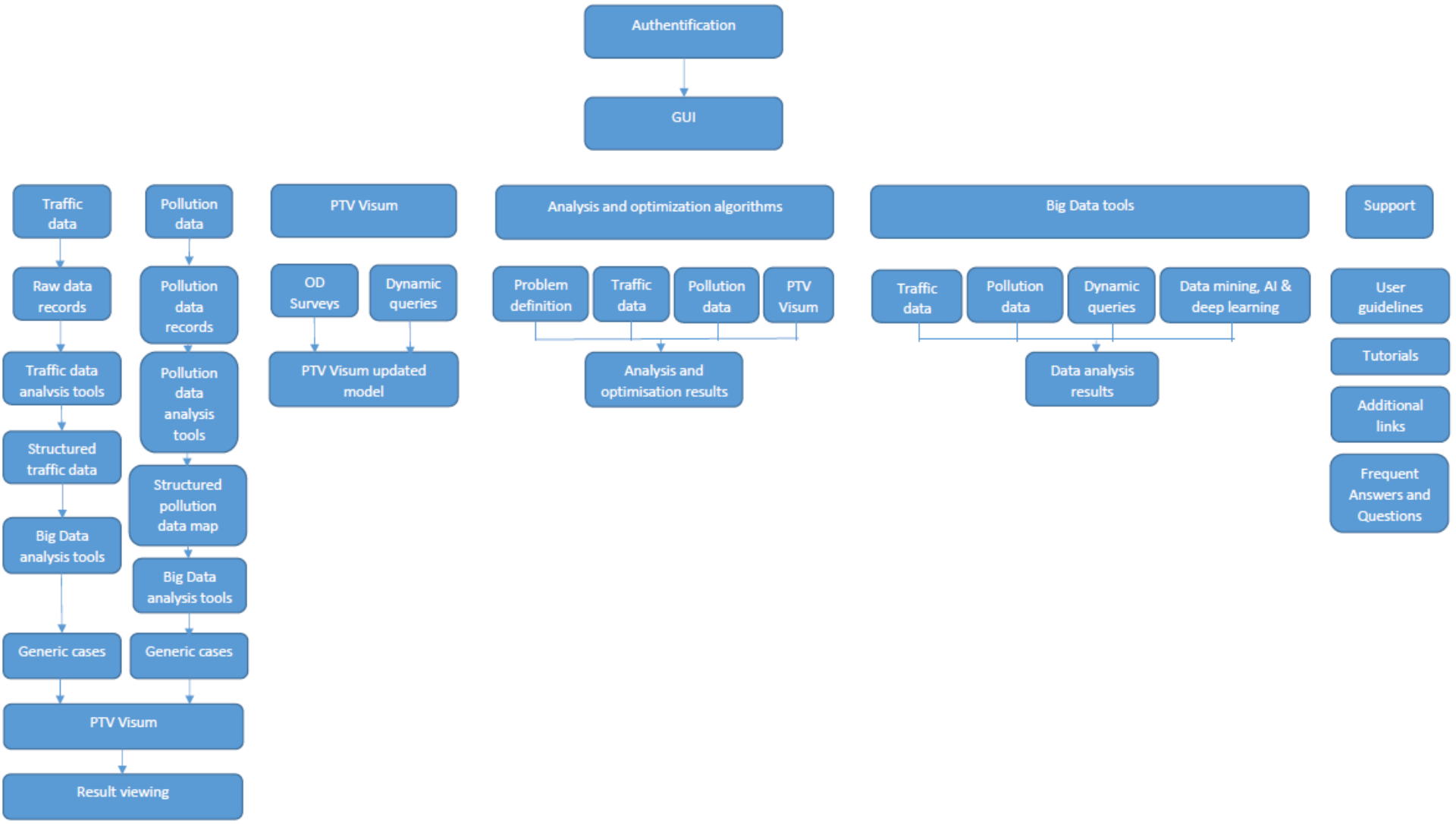
- **Import of geometry**
- **Interaction of pedestrians and vehicles**
- **Modelling of cyclists**
- **Human (unpredictable) behavior**
- **Rendering and video quality in 3D**
- **Shared space between pedestrians and cyclists**

TRAFFIC DATA CAPTURING



TRAFFIC DATA CAPTURING

TOMYbot


Authentification
GUI
Traffic data
Raw data records
Traffic data analysis tools
Structured traffic data
Big Data analysis tools
Generic cases
Pollution data
Pollution data records
Pollution data analysis tools
Structured pollution data map
Big Data analysis tools
Generic cases
PTV Visum
Result viewing
PTV Visum
OD Surveys
Dynamic queries
PTV Visum updated model
Analysis and optimization algorithms
Problem definition
Traffic data
Pollution data
PTV Visum
Analysis and optimisation results
Big Data tools
Traffic data
Pollution data
Dynamic queries
Data mining, AI & deep learning
Data analysis results
Support
User guidelines
Tutorials
Additional links
Frequent Answers and Questions

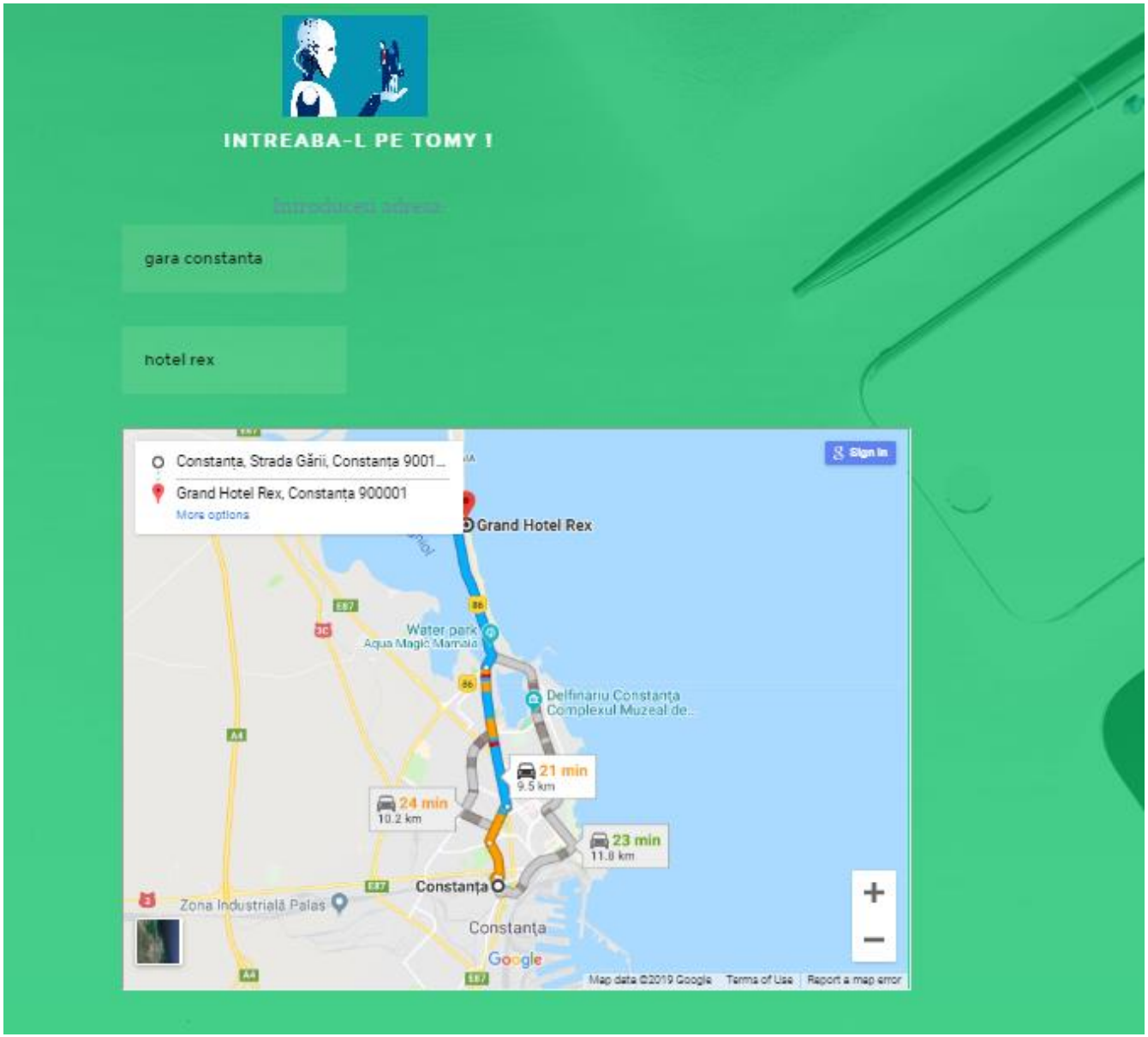
TOMYbot

TOMYbot – robot digital pentru asistență, evaluare și suport de decizie pentru implementarea măsurilor de mobilitate durabilă în orașe porturi

TOMYbot


MENIU
SISTEM SUPORT DE DECIZIE PENTRU SOLUTII DE MOBILITATE DURABILA
Bună, Eu sunt Tomy!
Asistentul tău de mobilitate în municipiul Constanța.
AFLATI MAI MULTE

TOMYbot


INTREABA-L PE TOMY !
gara constanta
hotel rex
Constanța, Strada Gării, Constanța 9001...
Grand Hotel Rex, Constanța 900001
More options
Sign in
Grand Hotel Rex
Water park
Aqua Magic Mamaia
Delfinariu Constanța
Complexul Muzeal de...
21 min
9.5 km
24 min
10.2 km
23 min
11.8 km
Constanța
Zona Industrială Palas
Constanța
Google
Map data ©2019 Google
Terms of Use
Report a map error

TOMYbot

Ningbo

Ningbo – Zhoushan Port

Ningbo Subway

Ningbo Supercapacitor Bus

Ningbo Bike sharing

Conclusions

In the case of the Constanta municipality and the metropolitan area, the present approach has been mostly a bottom – up approach

A bottom-up approach has many advantages because is generating cohesion in the community, is building trust and public involvement

In the case of Ningbo Municipality and Province, it has been followed a top-down approach

The major characteristics of such a top-down approach consisted on:

- concentration of resources,
- coherence of policies
- And scale

The top-down approach has been supported by many other initiatives from bottom-up (citizen involvement, multiple players, awareness programs)

Thank you for your attention!