

EPS Project: Digital Twins II

Theoretical study of algorithms and practical application to the city of Vilanova i la Geltrú.

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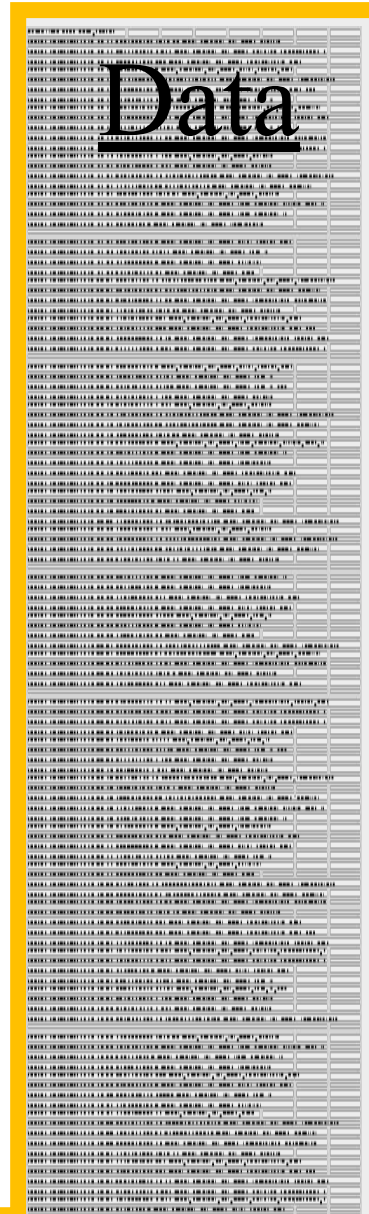


Software / Algorithms

CITIES	INDICATORS										
	Impact of weather conditions on city functioning	Very high impact of weather conditions on city functioning	High population density	High pollution	Accessibility problems	Noise problems	Criminality	Garbage problems	Parking problems	Class extremes	Diverse languages, races, cultures, religions
Singapore	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Amavavati (India)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Barcelona	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sant Cugat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vilanova i la Geltrú	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

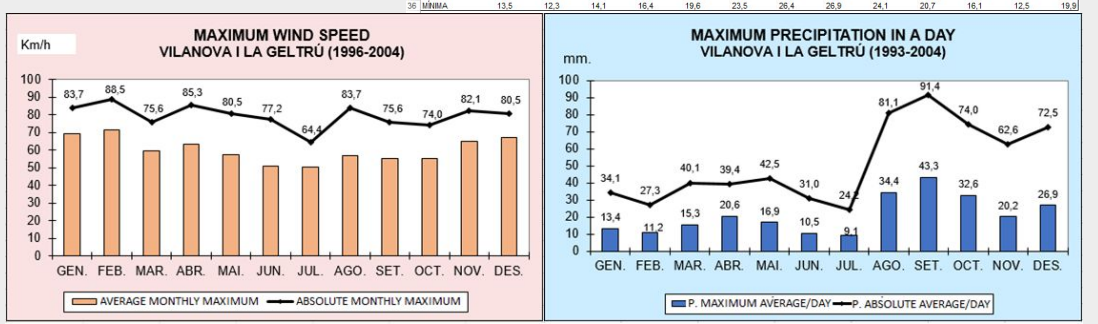
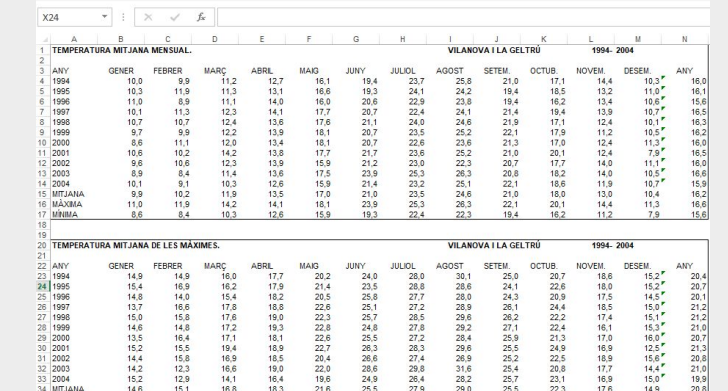


Data



Data management

This year, more than 59 zettabytes (ZB) of data will be created according to IDC. Bad usage of the data can resolve in the reduce of efficiency, security and more.



- Quick detection of anomalies like errors or frauds
- Defense mechanism against proprietary information
- Cost reducing, by predicting and experimenting with datasets

Microsoft Azure

- IoT Platform that enables digital representations of real-world things.
- Works in hand in hand with other software's, such as Bentley systems or Cityzenith to created digital twins.
- Free usages for students

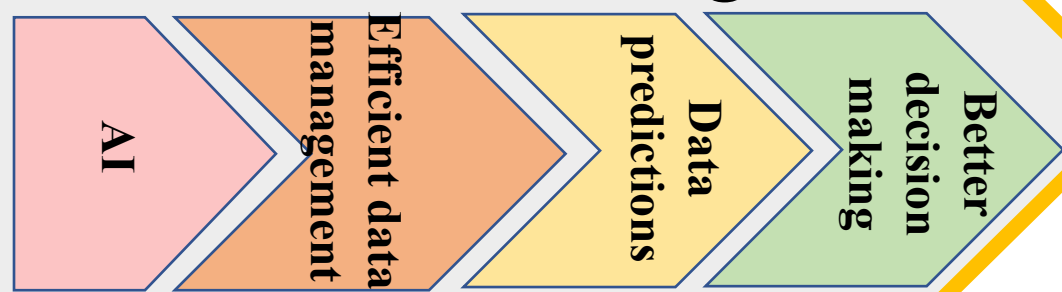
Data regulations



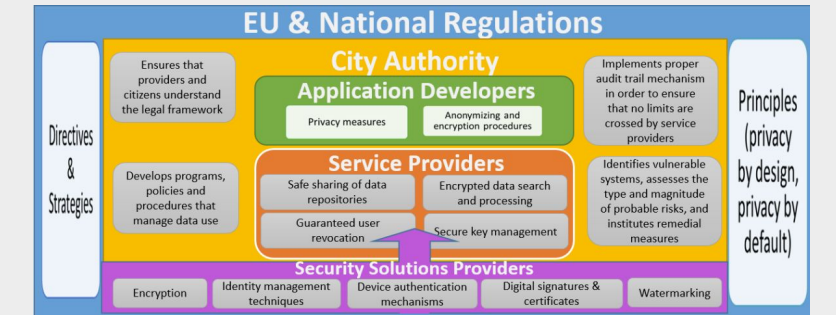
- Private vs public data**
- Open data for Public generated data.
 - Legislation and data protection for private data

Digital Twins
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Smart City

Machine learning



Cyber security



Objectives

- Study the characteristics of the previous EPS project about Digital Twins.
- Study existing models to manage the Big Data (including algorithms, 2D representations, decision making, etc.).
- Propose a model to manage the Big Data for Vilanova i la Geltrú.
- Propose an example of Big Data of Vilanova i la Geltrú, including different parameters (traffic, humidity, etc.). Some of the data can be simulated, if it is not possible to get real data.
- Apply the proposed model (data management, machine learning startup) in point 3 to the proposed Big Data of Vilanova i la Geltrú.
- Get 2D representations of the proposed Big Data of Vilanova i la Geltrú.
- Decision-making based on the application and costs of the proposed methodology to Big Data.
- Pros & Cons analysis of the methodology used and of the obtained results.
- Propose the model to apply in other countries, study the benefits and difficulties and propose further steps for implementation.

Conclusion



Many thanks to: Universitat Politècnica De Catalunya in collaboration with the European Project Semester and Neàpolis, for their continuing support and expertise.

