**BTP GROUP – DOMAIN SELECTION**

*Project for the course Graph Databases 2024-25*

**GROUP MEMBERS:**

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**TOPIC:**

This project focuses on the traffic flow using the datasets from [Bologna's Open Data](https://opendata.comune.bologna.it/pages/home/) platform.

These datasets have been chosen to represent a real-world scenario through a graph database.

This is particularly interesting since, while data analysis is already available and has already been done in the open data platform, bringing everything together in a simple-to-query database to extrapolate more data through connected graphs is something we retained interesting for us and useful due to the [*"Città 30"*](https://www.bolognacitta30.it/) project that will take place in Bologna in the next years.

**CHALLENGE AND CHARACTERISTICS:**

The main challenge is linking everything together. For that, we plan to use the *"Archi stradali"* datasets that include all the roads and street infrastructures, which are linked through nodes, creating a graph on itself.

Despite that, linking everything is particularly tough, since the data is not always directly correlated, but we believe that thanks to the nature of a graph database, we can easily connect different topics through other common elements.

For example, pollution sensors don't have a clear street location, due to the way they have been encoded, but by implementing a parser we can link them to existing roads to highlight their correlation with cars traffic.

We also had to consider that not all the datasets cover the same period (for example accidents data is from 2018 to 2022 but pollution data is from 2017 to 2023). So, for that reason, we’ve chosen datasets from 2019 to 2022, in which data are available in all datasets.

**DATASETS USED**

* Incidenti stradali: <https://opendata.comune.bologna.it/explore/dataset/incidenti_new/>
* Progetti città 30: <https://opendata.comune.bologna.it/explore/dataset/progetti-citta-30/>
* Quartieri di Bologna: <https://opendata.comune.bologna.it/explore/dataset/quartieri-di-bologna/>
* Velocita città 30: <https://opendata.comune.bologna.it/explore/dataset/velocita-citta-30/>
* Archi stradali: <https://opendata.comune.bologna.it/explore/dataset/rifter_arcstra_li/>
* Rilevazione flusso veicoli tramite spire - anno 2019: <https://opendata.comune.bologna.it/explore/dataset/rilevazione-autoveicoli-tramite-spire-anno-2019/>
* Rilevazione flusso veicoli tramite spire - anno 2020: <https://opendata.comune.bologna.it/explore/dataset/rilevazione-autoveicoli-tramite-spire-anno-2020/>
* Rilevazione flusso veicoli tramite spire - anno 2021: <https://opendata.comune.bologna.it/explore/dataset/rilevazione-autoveicoli-tramite-spire-anno-2021/>
* Rilevazione flusso veicoli tramite spire - anno 2022: <https://opendata.comune.bologna.it/explore/dataset/rilevazione-flusso-veicoli-tramite-spire-anno-2022/>
* Accuratezza flusso spire – 2019: <https://opendata.comune.bologna.it/explore/dataset/accuratezza-spire-anno-2019/>
* Accuratezza flusso spire – 2020: <https://opendata.comune.bologna.it/explore/dataset/accuratezza-spire-anno-2020/>
* Accuratezza flusso spire – 2021: <https://opendata.comune.bologna.it/explore/dataset/accuratezza-spire-anno-2021/>
* Accuratezza flusso spire – 2022: <https://opendata.comune.bologna.it/explore/dataset/accuratezza-spire-anno-2022/>
* Dati centraline qualità dell’aria 2017-2023: <https://opendata.comune.bologna.it/explore/dataset/dati-centraline-bologna-storico/>

**GITHUB REPOSITORY**

The repository can be found [here](https://github.com/marcomartini97/BTP).