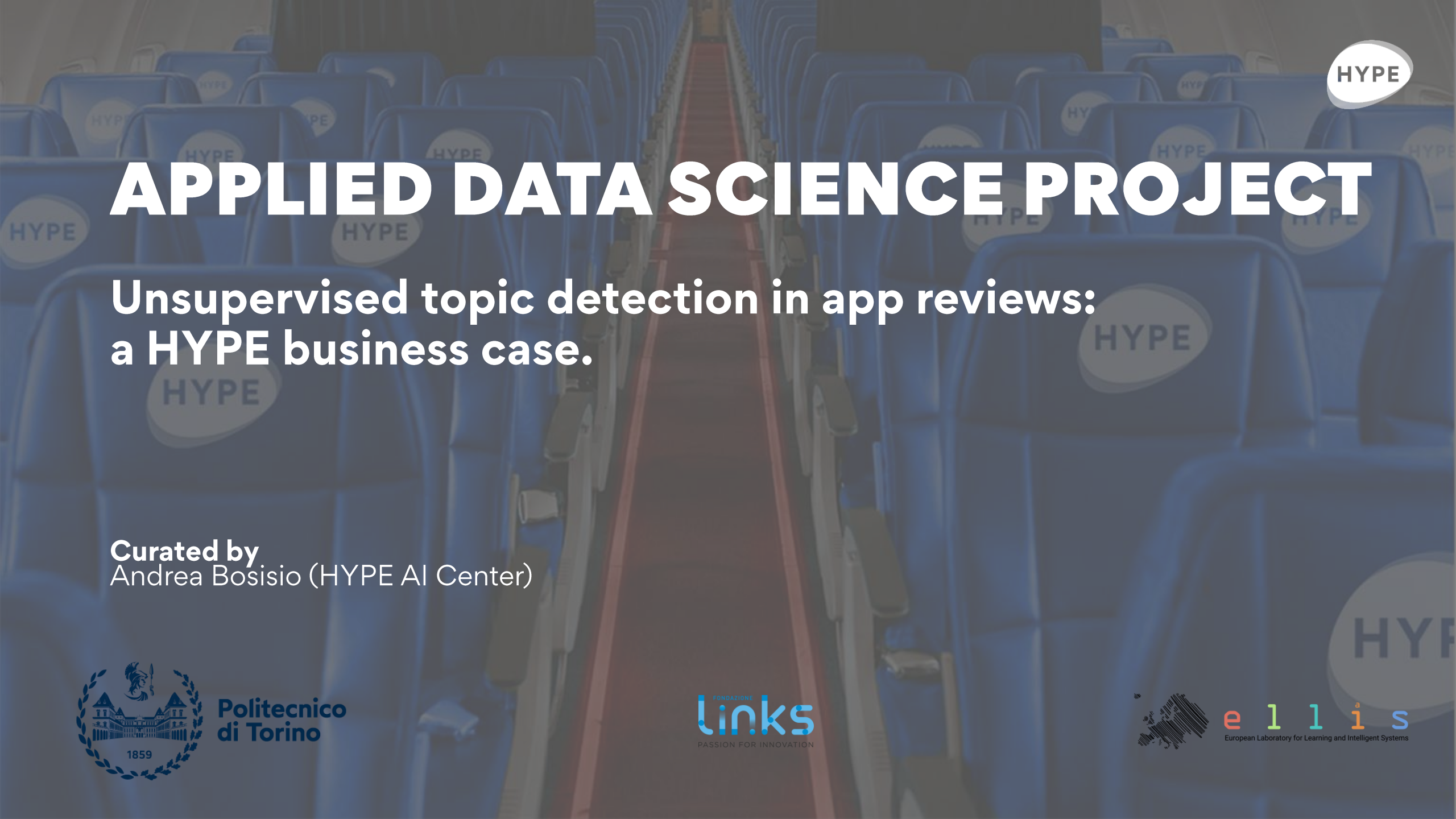

APPLIED DATA SCIENCE PROJECT

Unsupervised topic detection in app reviews: a HYPE business case.

Curated by
Andrea Bosisio (HYPE AI Center)

Politecnico di Torino

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PASSION FOR INNOVATION

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A VALUE-DRIVEN PROJECT BORN FROM A REAL HYPE CHALLENGE

How can we **monitor topics in HYPE reviews** to guide future features and improvements?

How to detect topics? How detailed should they be? How to manage evolving or new ones?

How to handle relationships among them?

The Research & Customer Insight team @HYPE is interested in this business case, and the AI Center @HYPE engineered a solution (and is curious to hear new ones 😉)

DATA

The dataset consists of ≈5500 HYPE app's **reviews** (mostly in Italian) collected from various app stores/websites.

Each review includes
- a **rating** (integer: 1...5 or 1...10)
- a **sentiment tag** (either "positive", "negative", or "neutral").

Some of the reviews (≈3800) also come with a **set of labels**.

The **taxonomy** is also provided, containing the description of each label and its possible relationships with other labels.

The dataset will be provided by HYPE as a **CSV/Excel** file.

If needed, other ≈22k raw reviews (no sentiment, no labels) can be provided

HYPE app's reviews and ratings are collected daily from the different sources. HYPE's internal model predicts **sentiment and labels**, which are later validated by the HYPE Research & Customer Insight team.

TASK

The main objective is to develop a method for tagging each review with negative topics (i.e., issues) that should be tracked over time.

The proposed solution should be presented by completing the following tasks:

1. Exploratory Data Analysis (EDA) & pre-processing
2. Topic detection
3. Extra tasks / future works:
   3a. Multi-label classification
   3b. Hierarchical topic detection

1. EDA & PRE-PROCESSING

HYPE

Analyse first the text of the reviews (length, language, ...): are there outliers? Or "junk" reviews?

1

Are all features (rating, sentiment, labels) relevant to the goal?

2

How should positive and neutral reviews be treated compared to negative ones?

3

Perform an initial analysis based on the assigned labels: cardinality, consistency with sentiment and taxonomy, ...

4

Which assumptions can be made to filter out or pre-process samples?

5

2. TOPIC DETECTION

HYPE

Ignore the provided labelling for now:

- Can another reasonable taxonomy (min.10 topics) be generated directly from the data?
- Which topics emerge?
- How well are these topics separated (qualitatively, visually, quantitatively)?
- How can the detection be improved?

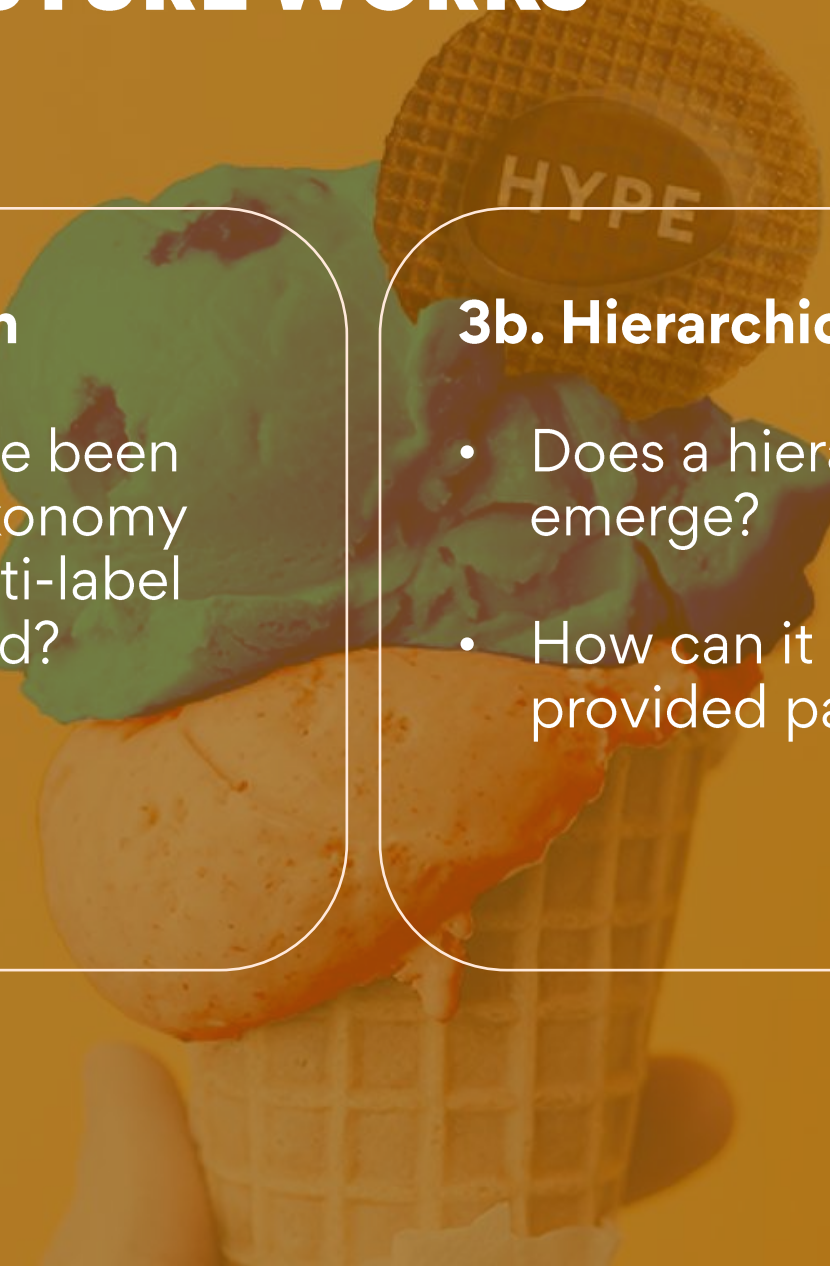
1

Compare discovered topics with the provided taxonomy:

- Is there any overlap? And how can it be measured?
- If overlap is low, how can the detection be guided to align with the provided taxonomy?
- Could the taxonomy be simplified by leveraging the provided parent-child relationships?

2

3. EXTRA TASKS / FUTURE WORKS

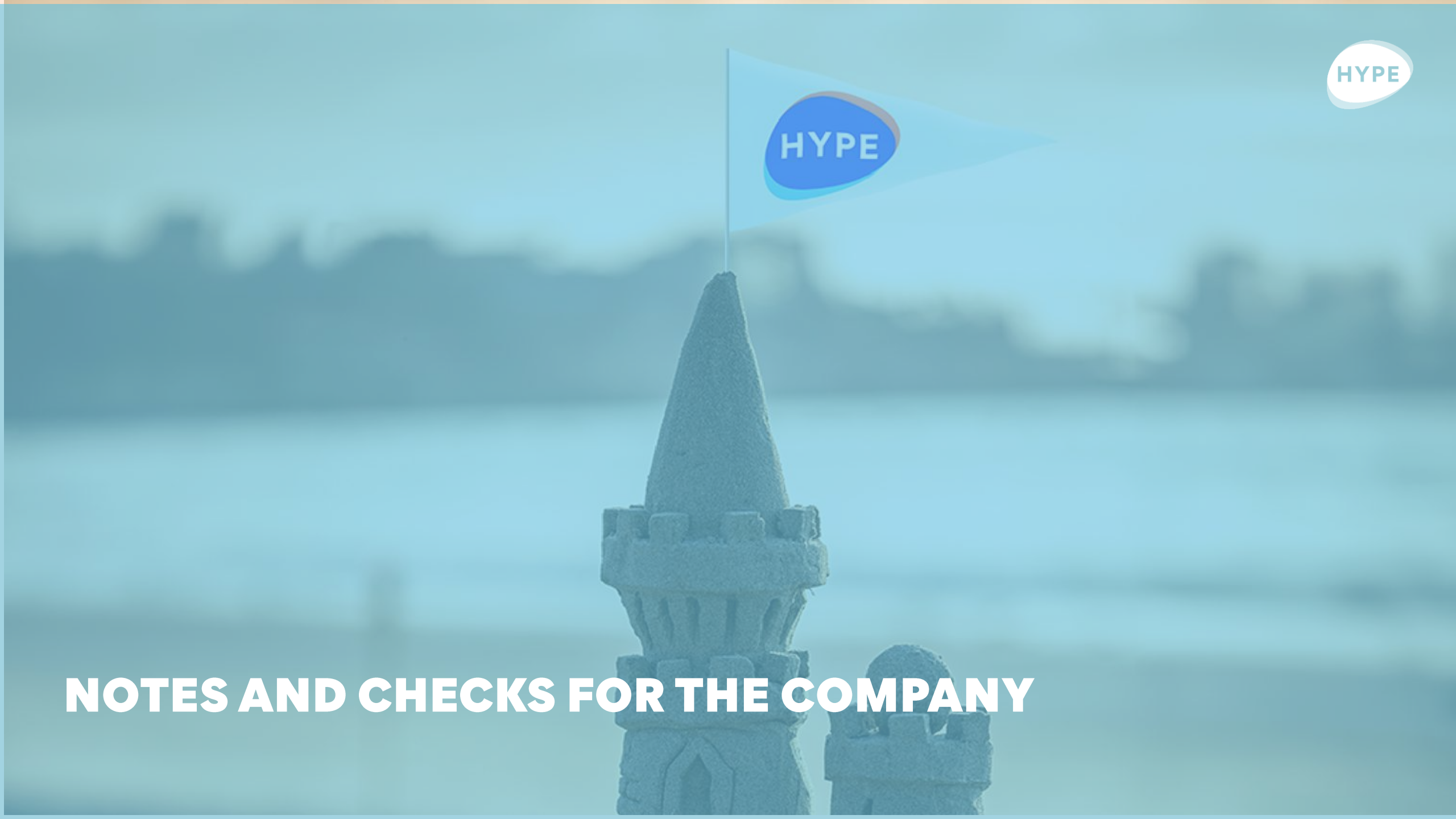


3a. Multi-label classification

- Once detected topics have been mapped to a subset of taxonomy topics (≥10), how can multi-label classification be performed?
- How would you measure performance?

3b. Hierarchical topic detection

- Does a hierarchical structure emerge?
- How can it be compared with the provided parent-child relationships?



NOTES AND CHECKS FOR THE COMPANY

LIGHT MENTORING

Contacts:

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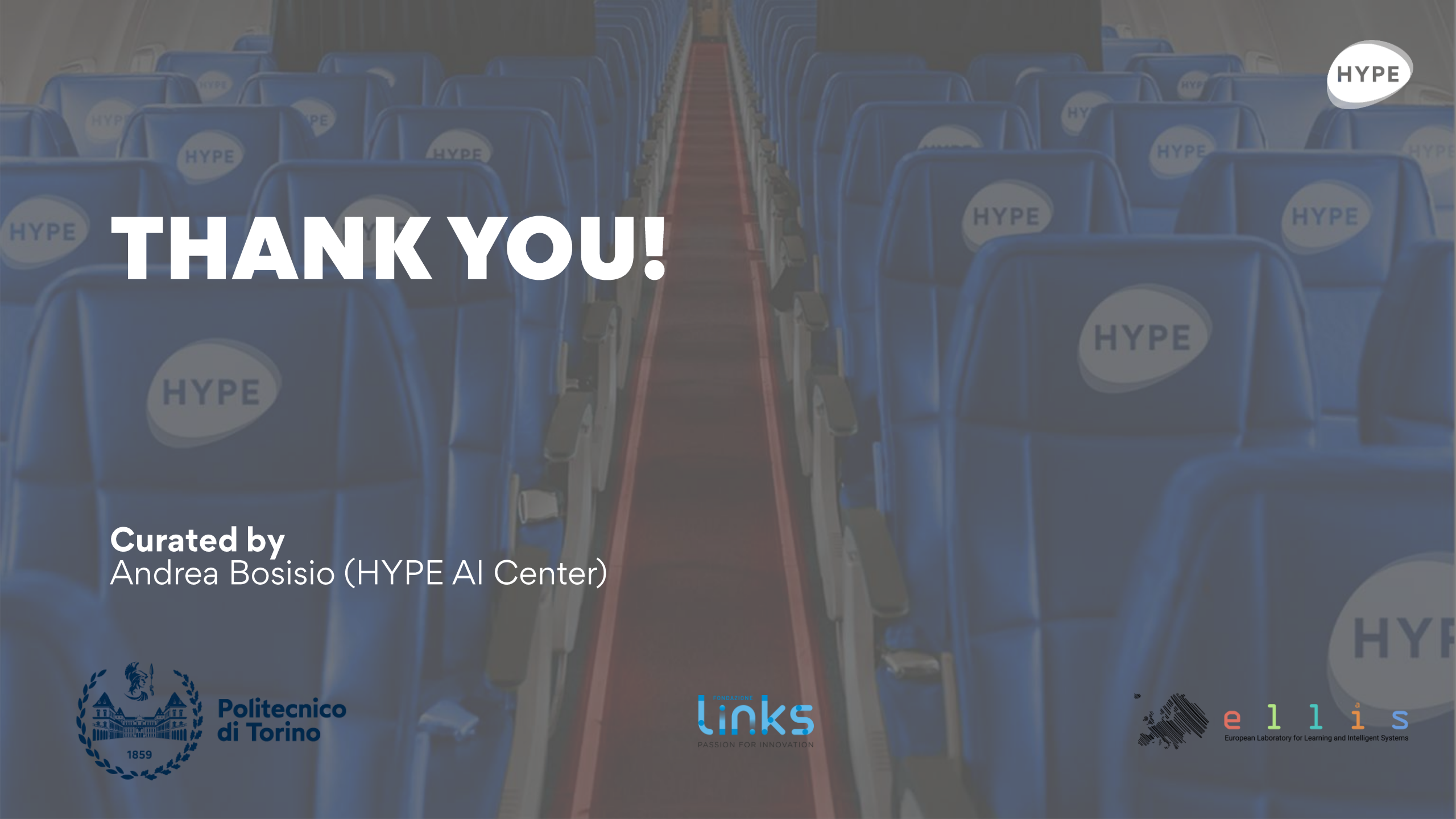
A suggested schema could be having 30 minutes biweekly of calls with students for the whole duration of the semester.

POLICY

Both project descriptions and implementations will be part of a repository group published on GitHub

The company (HYPE) confirms that the project repository can be made public.

Ideally, the projects should be conceived open from the design



THANK YOU!

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