Social Media Trends and Sentiment analysis

Russia – Ukraine War (2022)

Team 5 – Camille Nigon, Vladimira Gabor, Hendrik Croce

Business Goals
&
Research Questions

Business Goals

- Provide an informative **social media monitor** as a non-profit open-source solution
- We provide quantitative and qualitative overview of trends and sentiments of social media reactions:
  - Quantitative – density of keywords, trending buzzwords
  - Qualitative – sentiment analysis
- With our solution, users can understand faster sentiments, compare trends on social media and take more informed actions based on our analysis
- Our main target customer segments include reporters, NGOs and interested users
- We analyse and represent human language computationally as a service and house a data lake with directly extracted information from Twitter & Reddit

Research Questions

Question #1

Which buzzwords are used across social media (Twitter & Reddit) related to Ukraine-Russia war?

Question #2

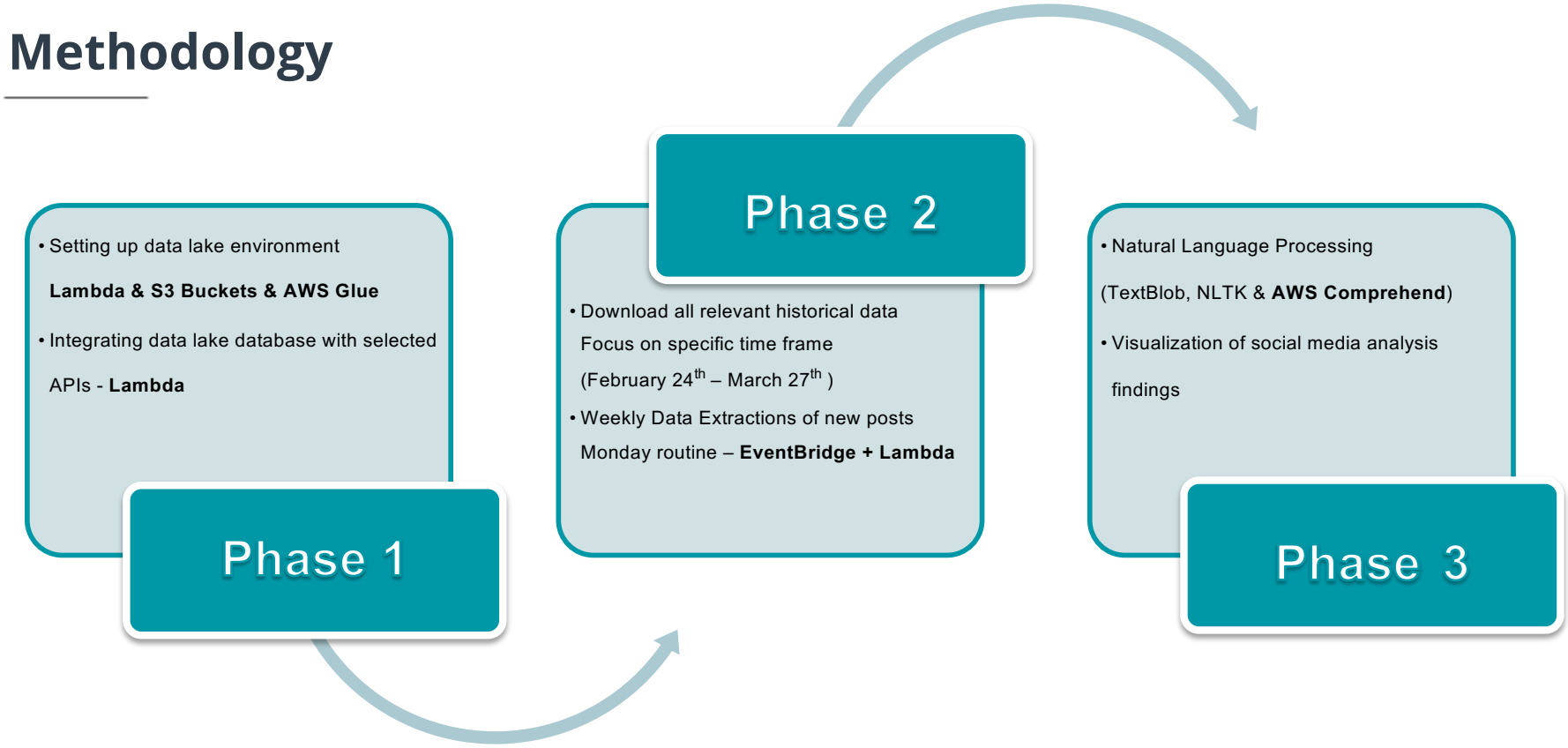
What is the daily development of word choice over time in the Ukraine-Russia war?

Question #3

What is the sentiment development on the topic of Russia-Ukraine war over time?

2. Methodology

Methodology



3. API Sources

Twitter API

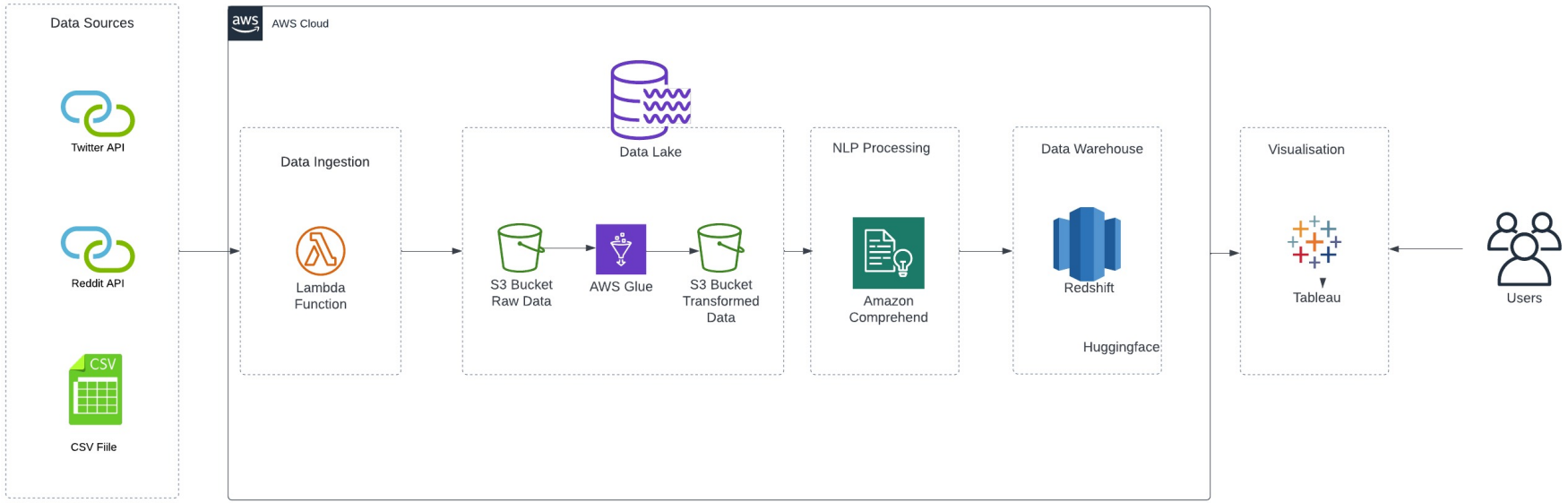
- Academic Research Access
- Hashtags:
  - #StandWithUkraine
  - #UkraineRussiaWar
  - #UkraineWar
- Tweepy Python Library
- 3200 most liked tweet per request

Reddit API

- Subreddit – “UkrainianConflict” 330K members
- Focusing on Headlines
- 20 top posts **this weeks** (EventBridge)
- PRAW & PushShift Python Library

4. Architecture

Architecture



5. Business Insights

Insufficient Accuracy of Sentiment Analysis - Multipolarity

Having only the “total result” of the analysis can be misleading

Challenge is that we assign polarity to sentence aspects, ignoring the broad contextual meanings

Common analytical challenge when assesing **political sentiment analysis**.

Inssuficient Accuracy of Sentiment Analysis - NLTK

"Ukrainian forces **destroy** an ammunition depot in the Belgorod region of Russia"

Compound ***-0.5423 (negative)***

"The **good news** from the Russia-Ukraine talks in Istanbul **is not that Putin** is suddenly acting in **good faith,** but that **heroic** Ukrainian resistance is making him look for off-ramps and diplomatic disguise"

Compound ***+0.8020 (highly positive)***

"Russian oligarch Deripaska **loses** U.S. court battle to lift sanctions"

Compound ***-0.5994 (negative)***

*Compound Assesed Value determines whether the analyzed headline is positive or negative.

Keyword Density – Redifinition of Desired Outcomes

6. Next Steps

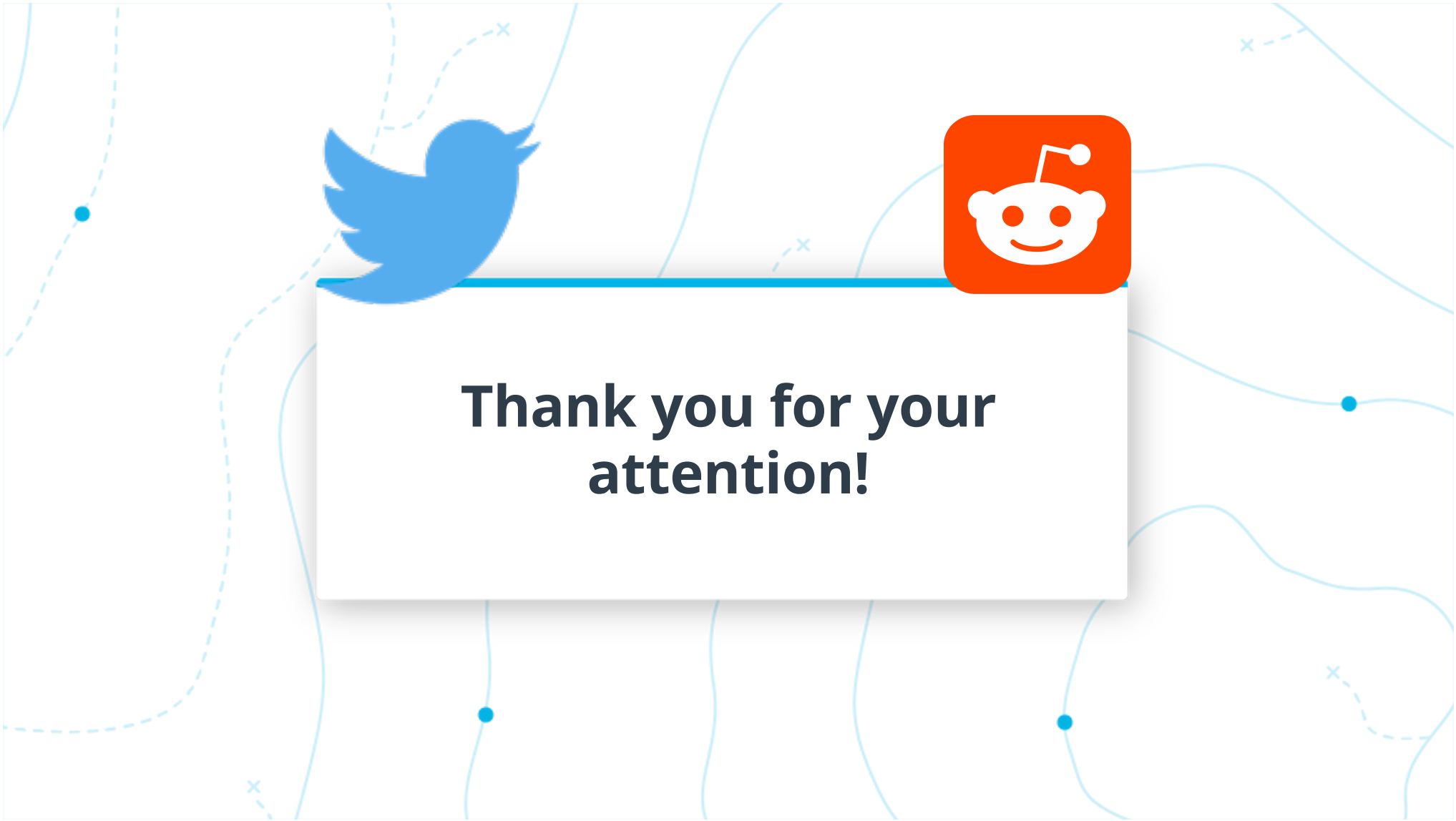
Next Steps

- Reframe Sentiment Analysis approach - research possible extensions such as Anger, Fear, and Happiness.
- Alternatively, try to label and categorize sentiments as “Pro Russia” vs “Pro Ukraine”
- Excluding hashtags and mentions such as “Ukraine, Russia, War” from the keyword density & buzzwords analysis
- Peer review of our sentiment analysis with third party
  https://twitter-sentiment-csv.herokuapp.com/

7. Lessons Learned

Lessons Learned

- Limited capacity of Cloud9 Lambda layer - unable to sustain large grouping of Python packages
- Adjusting Twitter data extraction to 3200 Tweets per request not to overreach the Lambda boundaries (15mins)
- Multi-layer challenges of Natural Language Processing


Thank you for your attention!