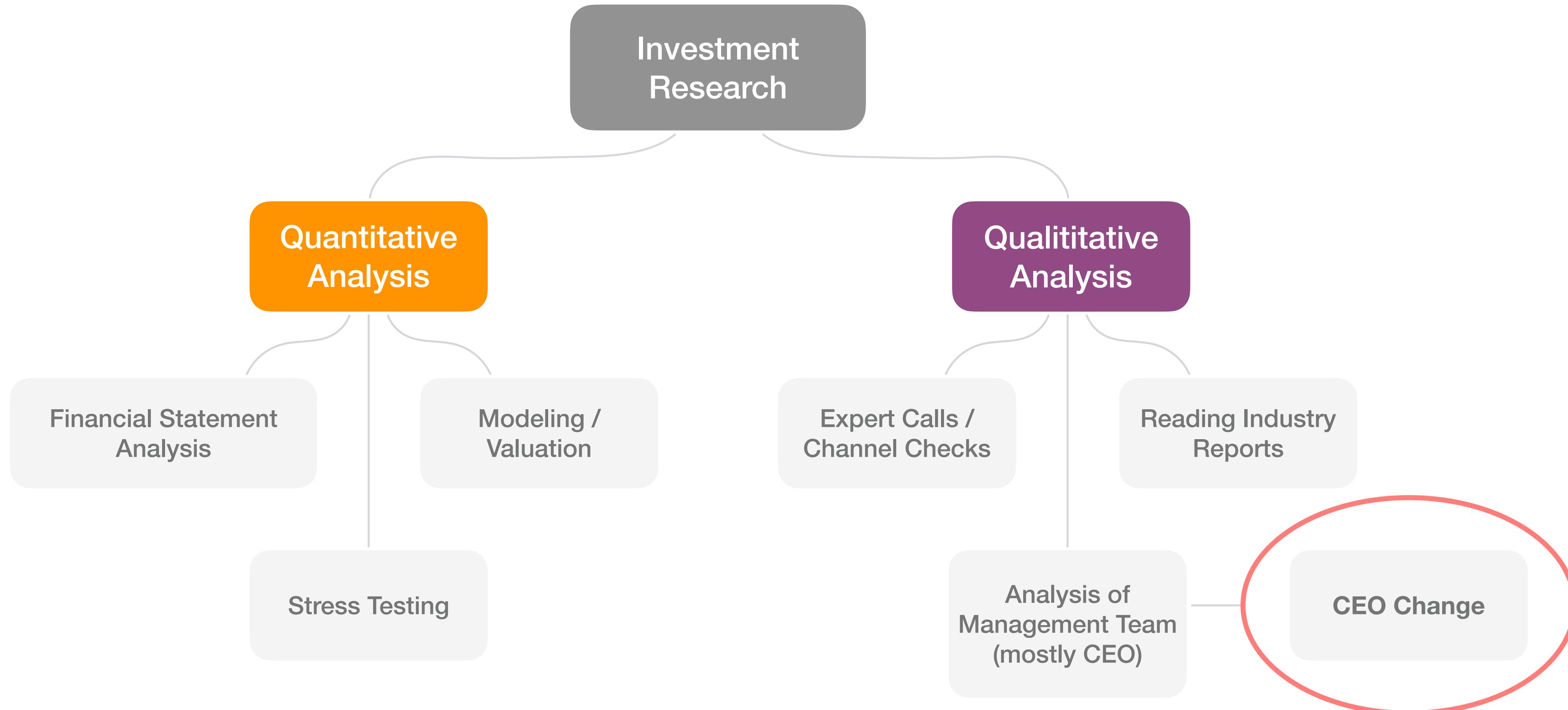


Investigating Microsoft's Transformation under Satya Nadella: *Decrypting Quarterly Earnings Calls with NLP*

Mike Choi

MOTIVATION - INCORPORATING NLP INTO QUALITATIVE INVESTMENT ANALYSIS



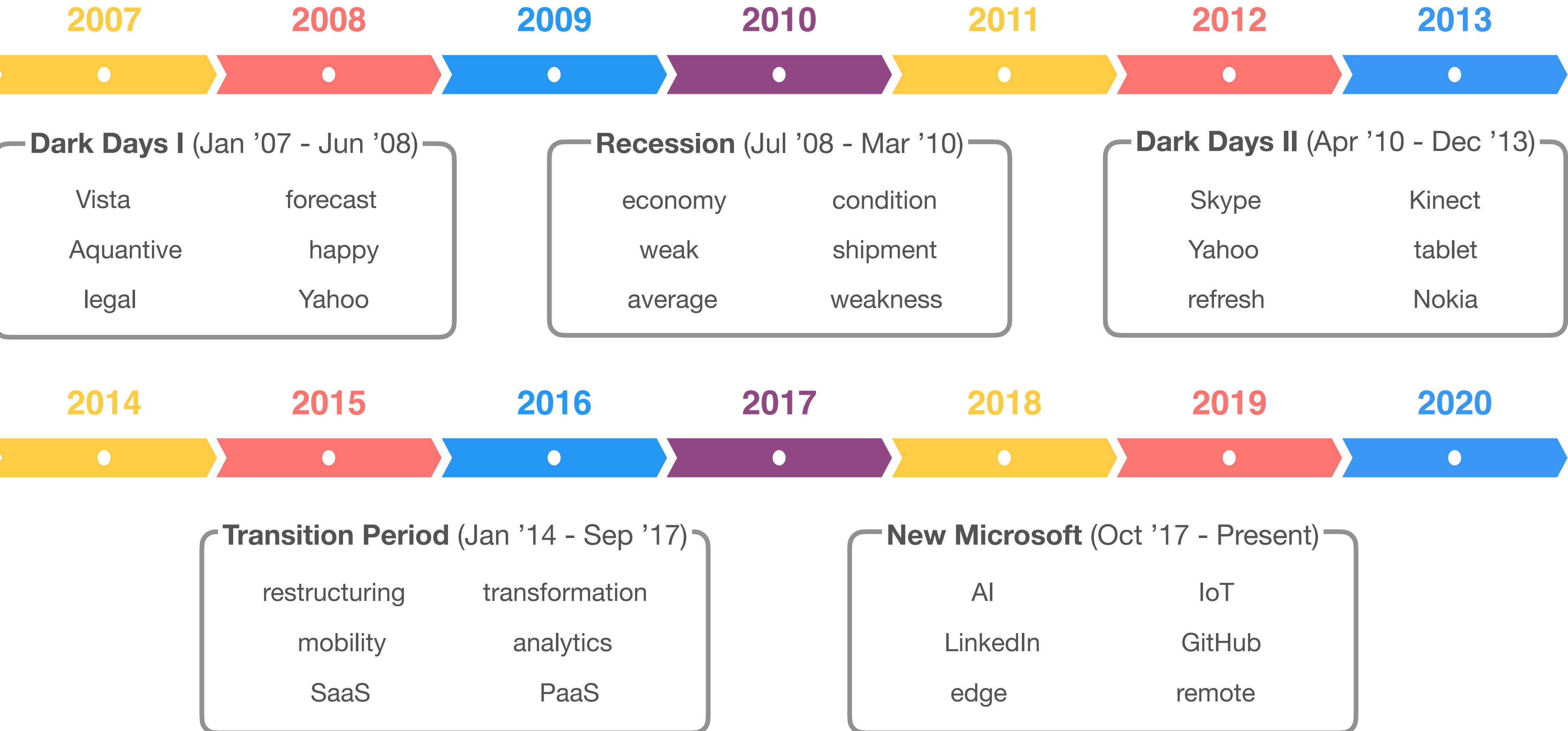
MICROSOFT'S TRANSFORMATION – HOW DID SATYA NADELLA'S PHILOSOPHY AND STRATEGY DIFFER?



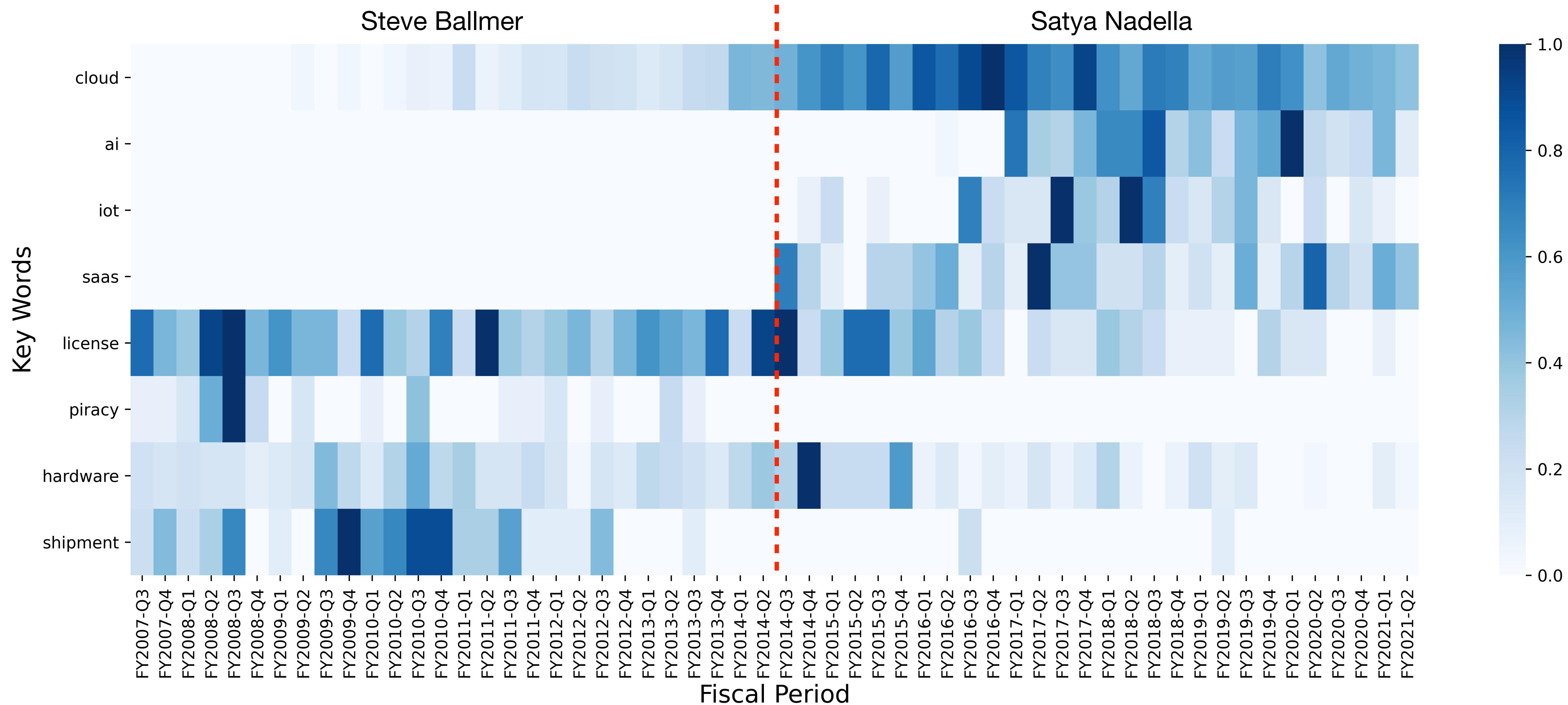
DATA – PARSING THROUGH EARNINGS CALL TRANSCRIPTS

- Retrieved Microsoft's earnings transcripts in PDFs from Capital IQ API
 - 3Q'07 - 2Q'14: **28 quarters** of transcripts in the Steve Ballmer era
 - 3Q'14 - 2Q'21: **28 quarters** of transcripts in the Satya Nadella era
- Text preprocessing using NLTK and SpaCy
 - Removed punctuations and numbers
 - Removed stopwords
 - Lemmatization
 - Corrected spelling errors
 - Removed people's names

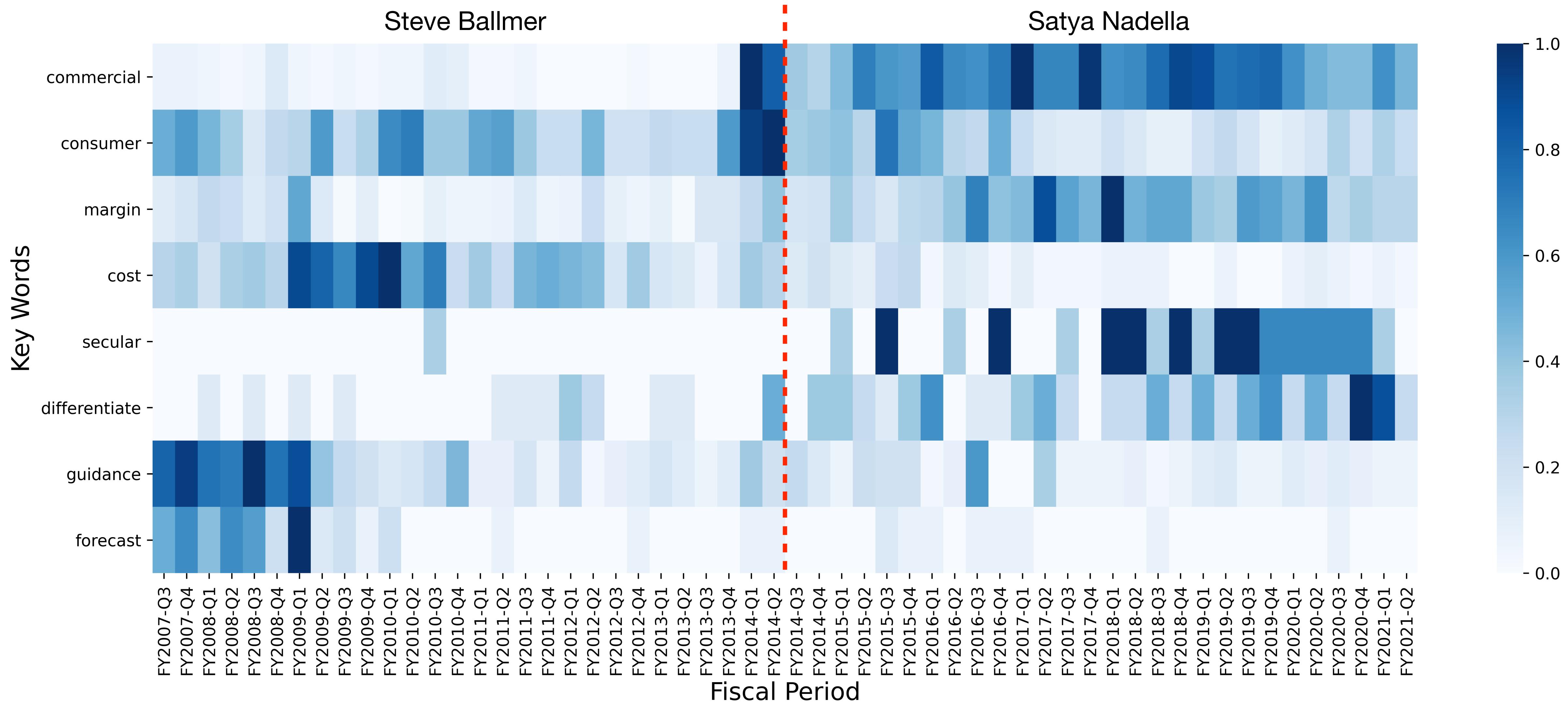
TOPIC MODELING - HISTORY OF STRUGGLES, TRANSITION, AND EMERGENCE



KEYWORD FREQUENCY - HOW HAS MICROSOFT'S STRATEGY EVOLVED OVER TIME?

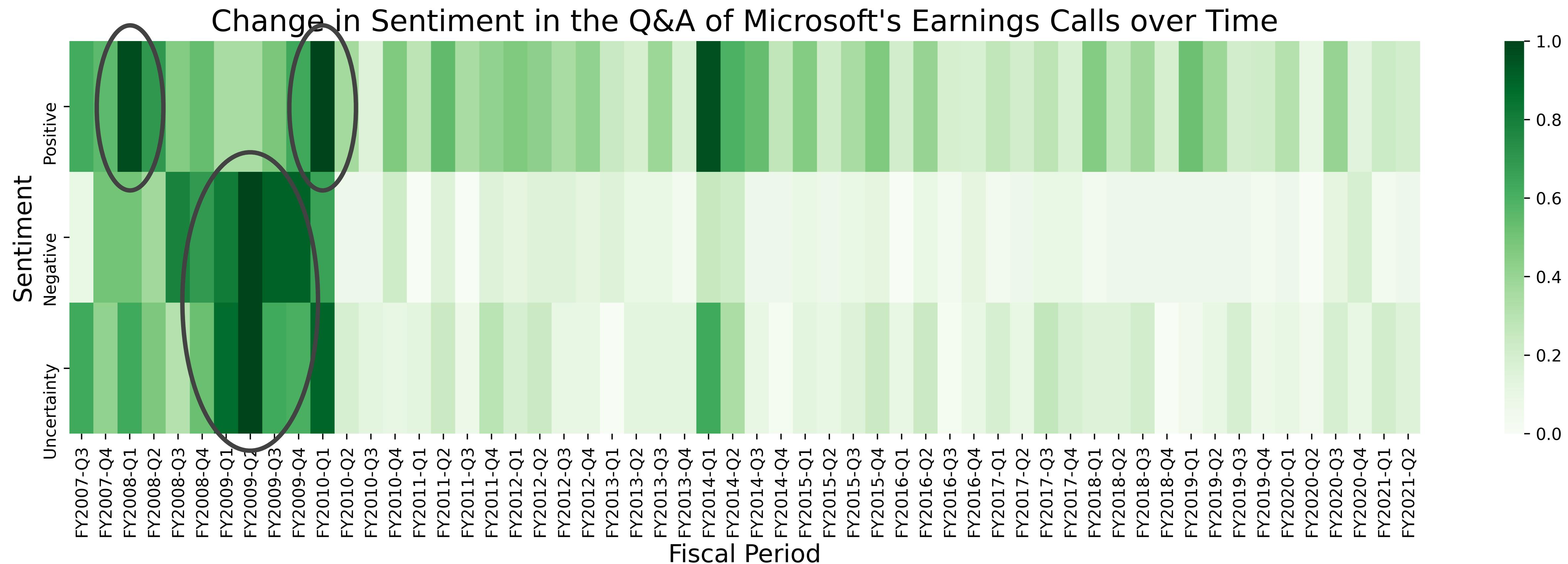


KEYWORD FREQUENCY - HOW HAS MICROSOFT'S STRATEGY EVOLVED OVER TIME?



SENTIMENT ANALYSIS - HAS THE TONE GOTTEN MORE POSITIVE OR NEGATIVE OVER TIME?

- Counted words in the earnings transcripts that match those classified as ‘positive’, ‘negative’, and ‘uncertainty’ in the Loughran-McDonald Financial Sentiment Dictionary



SENTIMENT ANALYSIS – WORDS PICKED UP BY THE SENTIMENT DICTIONARY

	Ballmer Era	Nadella Era
Positive	‘happy’ ‘improve’ ‘profitability’	‘opportunity’ ‘collaboration’ ‘innovation’
Negative	‘difficult’ ‘weak’ ‘slow’ ‘decline’	‘challenge’ ‘disruptive’ ‘critical’

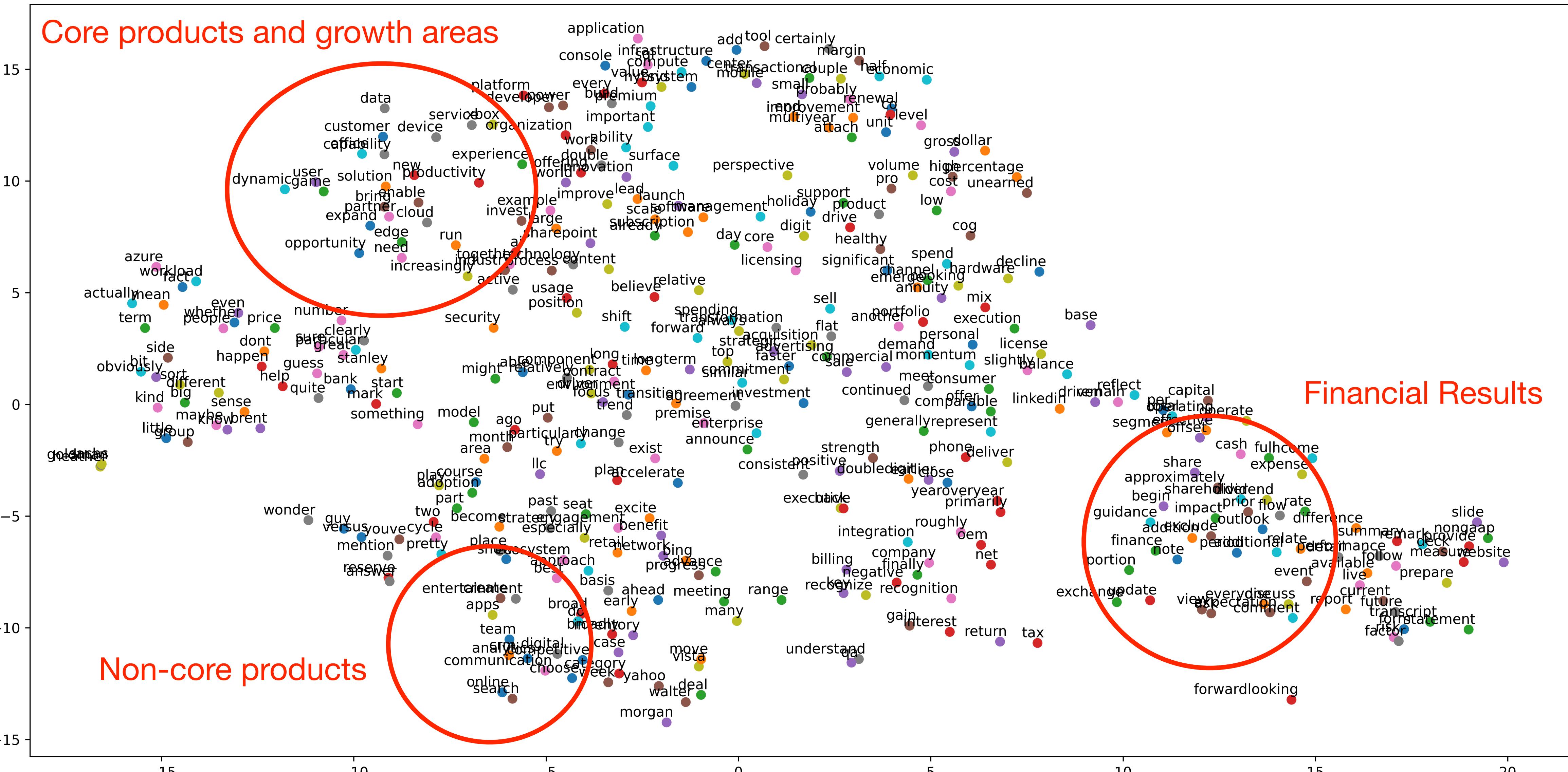
CONCLUSION AND NEXT STEPS

- The positive change in Microsoft's philosophy and strategy under Satya Nadella over time was clearly visible.
- Next steps:
 - Split each transcript into smaller parts such as by speaker or sentence
 - Perform NLP analysis on another case where the CEO change brought about a **failed** transformation in the company and compare.

A photograph of three men standing outdoors. From left to right: Satya Nadella, wearing glasses, a blue and white checkered shirt, and a dark blazer; Bill Gates, wearing glasses, a light-colored button-down shirt, and a grey sweater; and Steve Ballmer, wearing a light blue button-down shirt. They are all smiling. The background shows a modern building with large windows and stone walls.

Thank you!
Questions?

APPENDIX I - WORD2VEC PLOT USING T-SNE SHOWING WORDS THAT SHARE SIMILAR CONTEXTS



APPENDIX II – SCATTERTEXT SHOWING FOCUS WORDS DURING THE BALLMER AND NADELLA ERAS

