



**Seminar
final presentation**

27/07/2018

Harald Steinmüller
Julian Frommherz

The Idea

The Concept

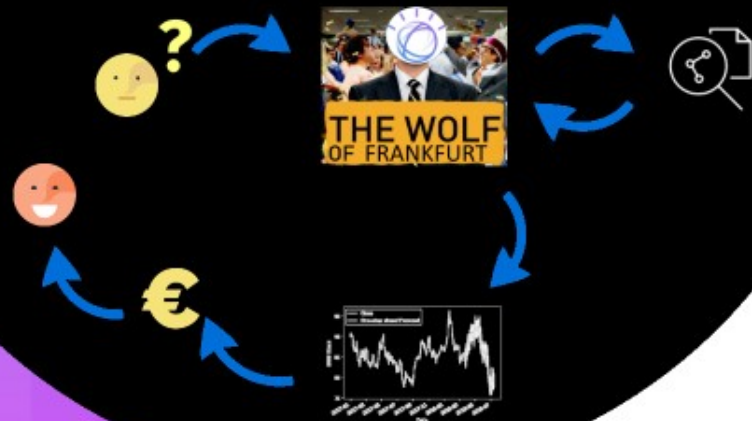
discover future developments
of stock markets using
Watson / Wolf of Frankfurt

The final
Solution

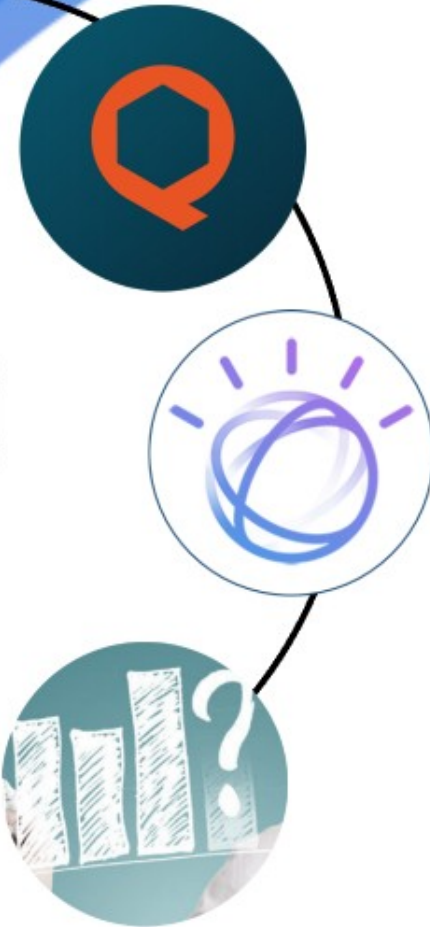
Further
Steps

The Idea

Ask the Wolf of Frankfurt about future developments of the stock market and get a prediction based on prediction algorithms as well as on the latest news



significant elements





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The Idea

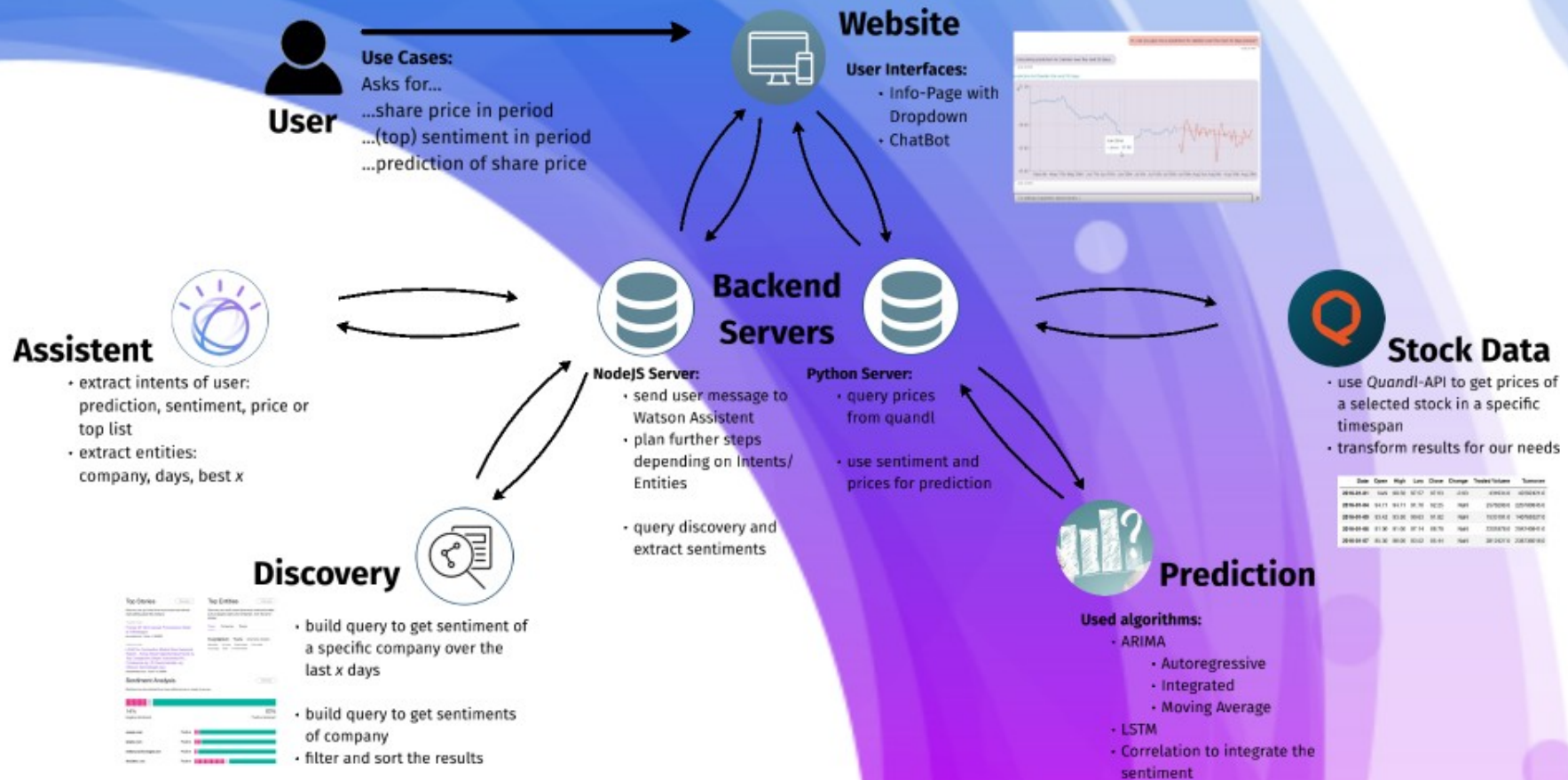
The Concept

discover future developments
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Further
Steps

The Concept / Architecture





User

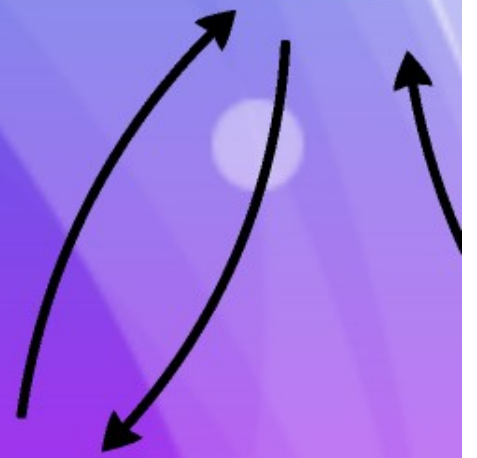
Use Cases:

Asks for...

...share price in period

...(top) sentiment in period

...prediction of share price



Backer



Website



User Interfaces:

- Info-Page with Dropdown
- ChatBot



Backend





Backend Servers



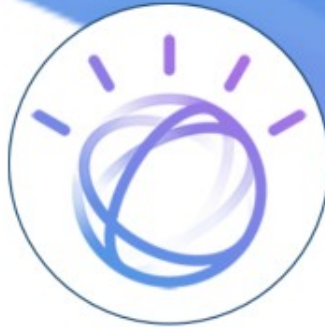
NodeJS Server:

- send user message to Watson Assistant
- plan further steps depending on Intents/Entities
- query discovery and extract sentiments

Python Server:

- query prices from Quandl
- use sentiment and prices for prediction

Assistant



- extract intents of user:
prediction, sentiment, price or
top list
- extract entities:
company, days, best x





Backend Servers



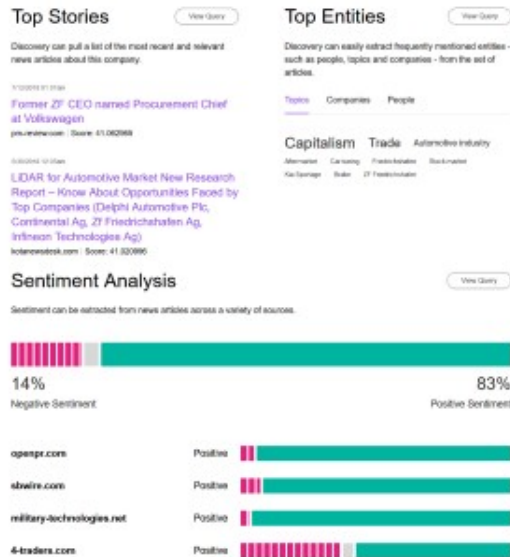
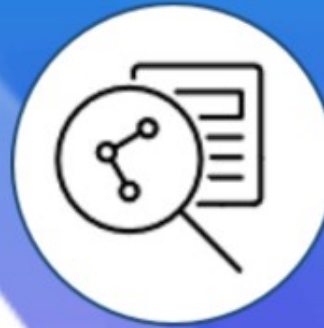
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Discovery



- build query to get sentiment of a specific company over the last x days
- build query to get sentiments of company
- filter and sort the results



Backend Servers



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Stock Data

- use *Quandl*-API to get prices of a selected stock in a specific timespan
- transform results for our needs

Date	Open	High	Low	Close	Change	Traded Volume	Turnover
2016-01-01	NaN	98.50	97.57	97.63	-0.93	431934.0	42282421.0
2016-01-04	94.71	94.71	91.76	92.25	NaN	2376296.0	220780845.0
2016-01-05	93.42	93.50	90.63	91.82	NaN	1533191.0	140769327.0
2016-01-06	91.00	91.00	87.14	88.78	NaN	2301978.0	204240841.0
2016-01-07	85.30	86.00	83.52	85.44	NaN	2812427.0	238736616.0



Backend Servers



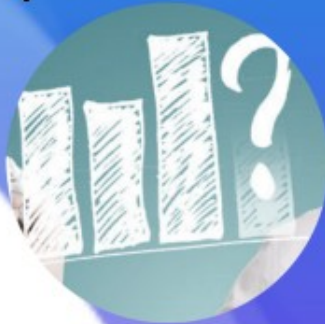
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on



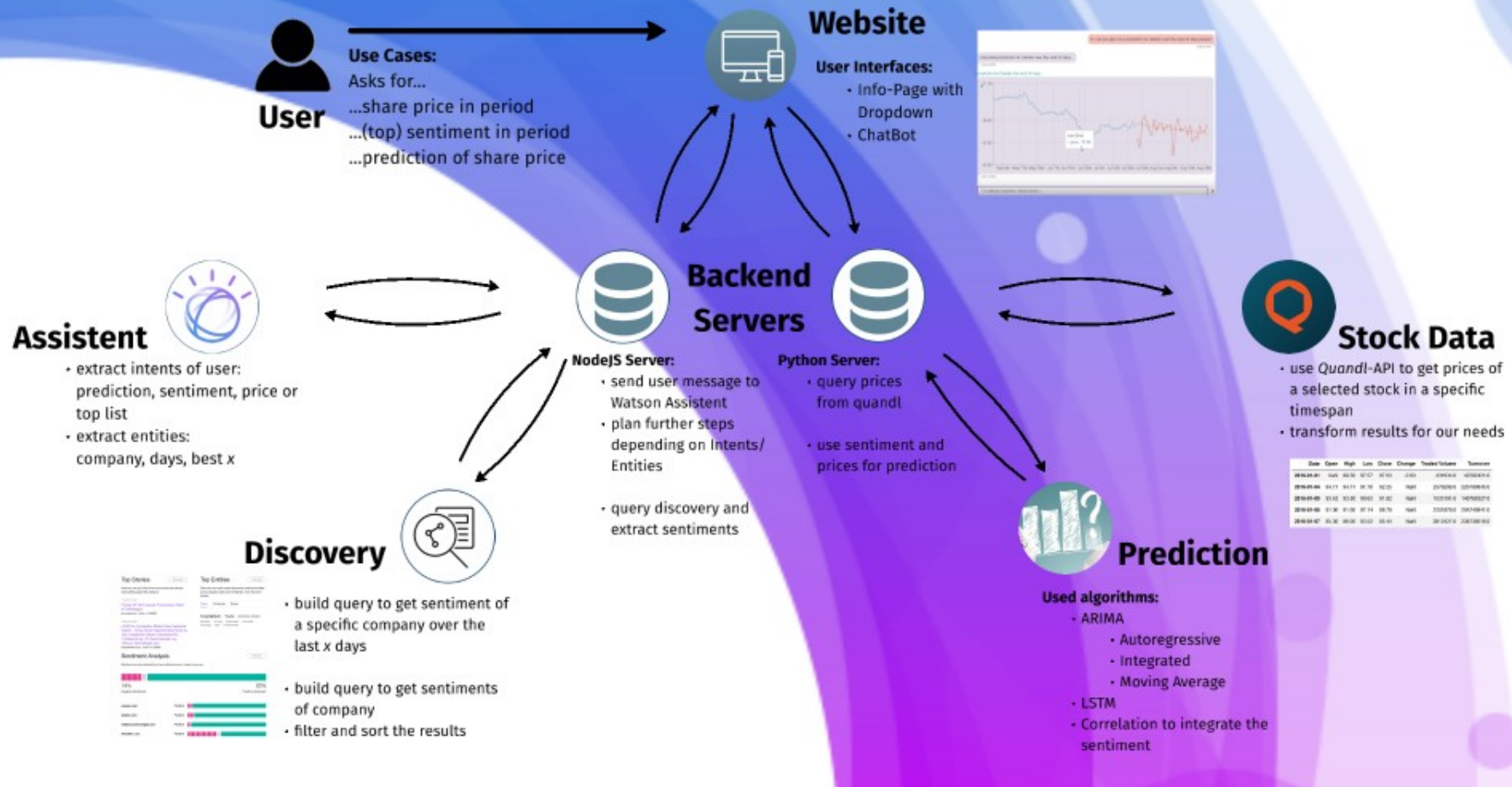
Prediction

Used algorithms:

- ARIMA
 - Autoregressive
 - Integrated
 - Moving Average
- LSTM
- Correlation to integrate the sentiment

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The Concept / Architecture

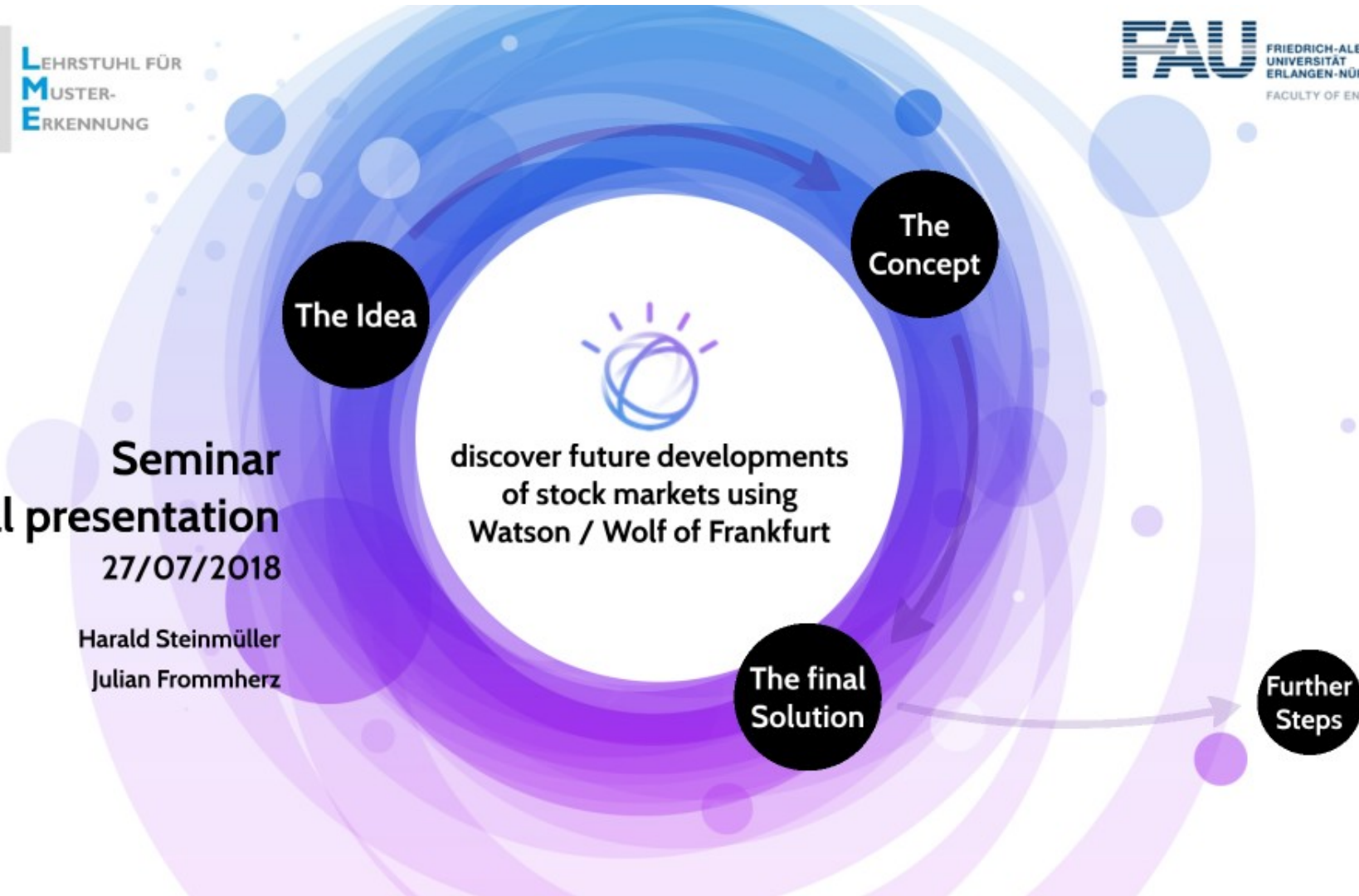




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The Solution



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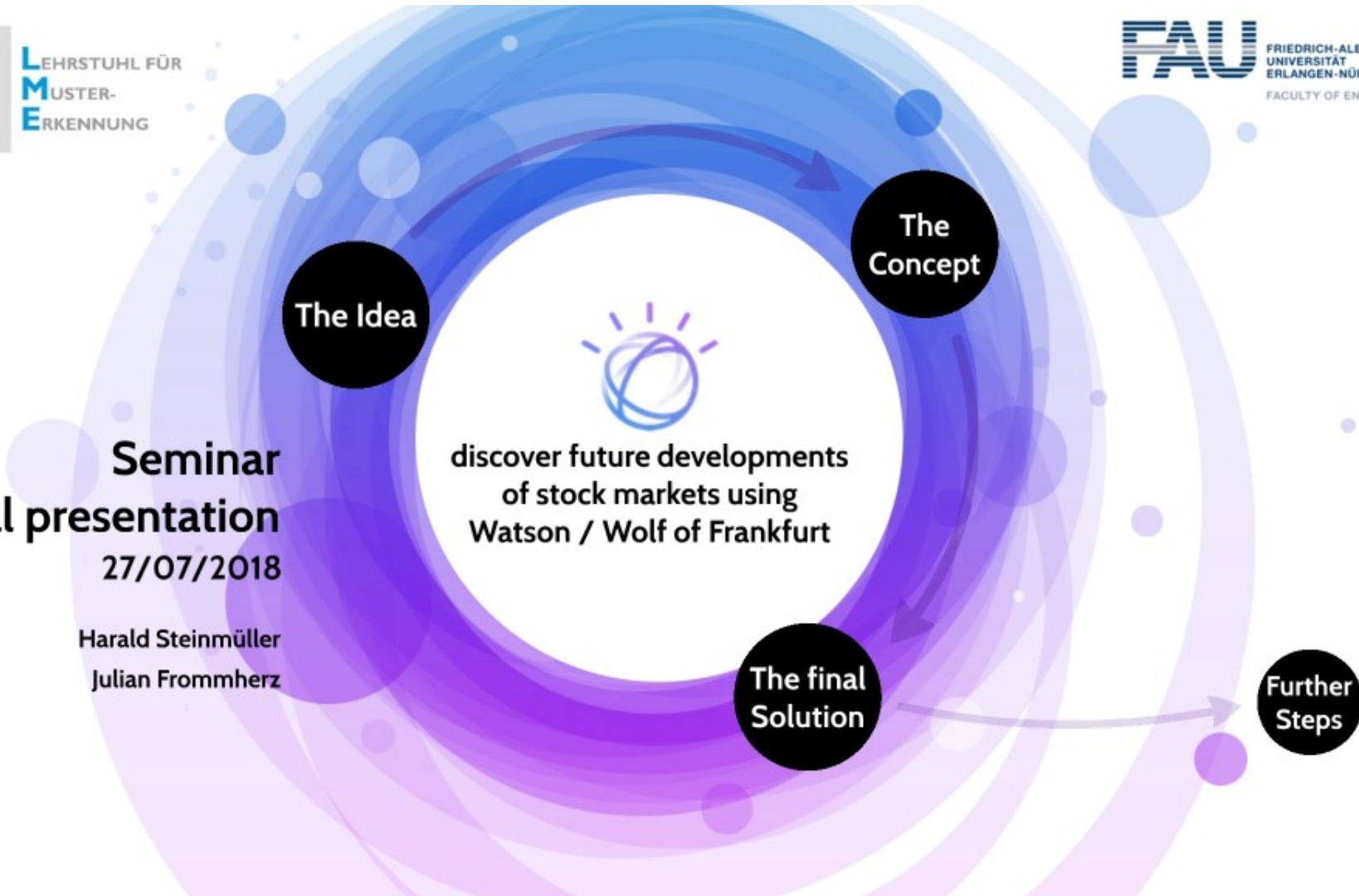




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Further Improvements

The Wolf of Frankfurt offers a first hint of how to implement sentiments of a company in a prediction / forecast

Things to consider:

- Better differentiation of news and sentiment
 - > correlation between long-, mid- and short-term sentiments
- improve dialog recognition (focus on anthropomorphism)
- include all relevant company stocks worldwide



Thank you for your attention!

any questions?

Wolf of Frankfurt



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