



WESTFÄLISCHE  
WILHELMS-UNIVERSITÄT  
MÜNSTER



# Customer Service in Social Media

## An Empirical Study of the Airline Industry

# Outline



1. Introduction
2. Customer Service Performance
3. Data Collection
4. Evaluation
5. Conclusion

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## 1. Introduction

## 2. Customer Service Performance

## 3. Data Collection

## 4. Evaluation

## 5. Conclusion

# Introduction



- Customer Service handles questions or problems regarding products or services
- Traditionally offered by email or phone (e.g., call center)
- Recently, more companies explore social media as an additional channel
  - popularity of mobile devices
  - easy and widespread usage
  - public pressure



Need to measure and monitor performance  
of customer service in social media

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# Performance Measures



- Traditional service level measures are
  - *Average Handling Time (AHT)*
  - *Average Queue Time (AQT)*
- Social media measures are much harder to define
  - no queue of waiting customers
  - unstructured nature of conversations

# Average Response Time



- How fast does an inquiry  $i$  receive a response  $r$ ?

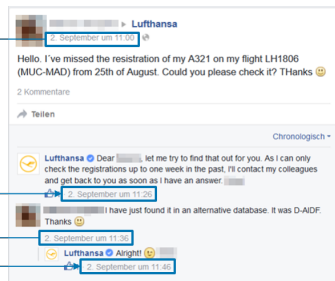
$$\Delta(i) = t_r - t_i$$

- Average response time over all inquiries for company  $C$ :

$$\text{ar}(C) = \frac{\sum_{i \in I_C} \Delta(i)}{|I_C|}$$

26 min

10 min



$t_r$  : time of response  
 $t_i$  : time of inquiry  
 $I_C$  : all inquiries to company  $C$

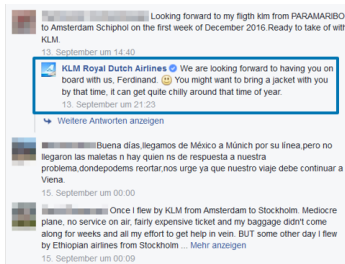
# Reponse Rate



- How many inquiries receive a company response?

$$rr(C) = \frac{\sum_{i \in I_C} r(i)}{|I_C|}$$

$$\text{with } r(i) = \begin{cases} 1, & \text{if } \Delta(i) \text{ exists} \\ 0, & \text{otherwise} \end{cases}$$





# Outline



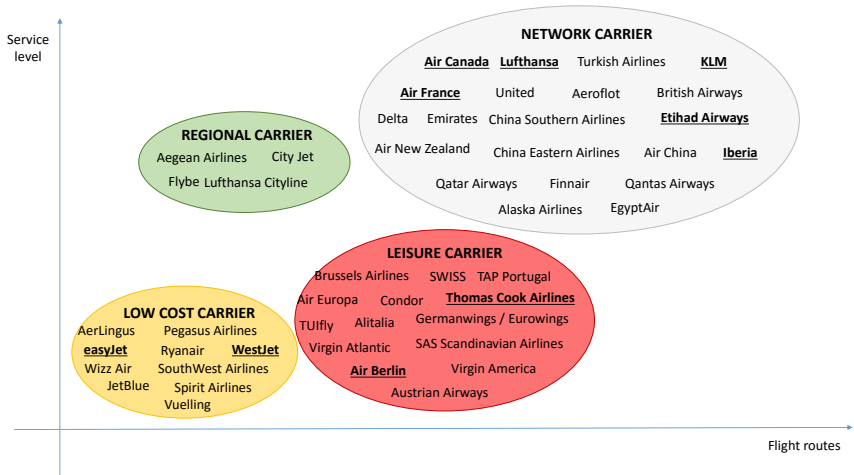
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# Data Sources



- Focused on Twitter and Facebook due to popularity
- Selected **48 Airlines** based on largest passenger volume, fleet size and revenue
- Identified **66 Twitter** and **58 Facebook** accounts targeting the English and German markets
- Classified airlines into **4 segments** based on service level and number of flight routes

# Airline Segments

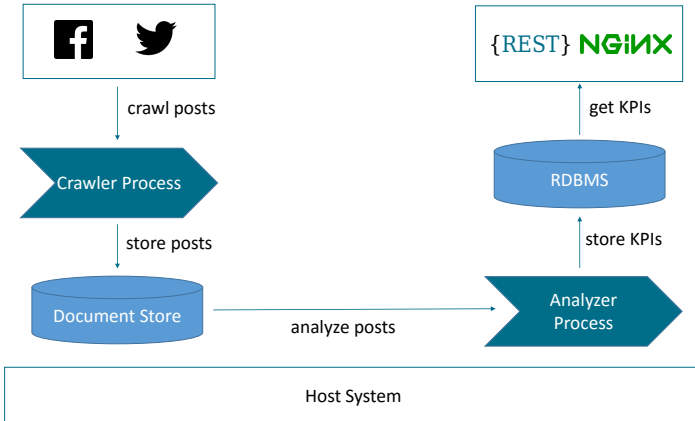


# Data Collection



- Accessed public Facebook and Twitter APIs throughout the **year 2016**
- Collected all posts directed at the airlines' Twitter and Facebook pages
- Stored **6,187,835 inquiries** and **1,777,234 responses** in Document Store

# Set up



# Visualization



## Customer Service Monitor

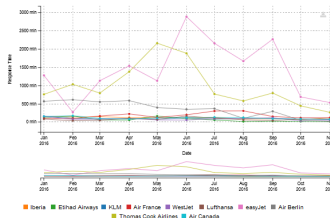
We continuously monitor the performance of customer service in social media across a wide range of verticals and companies.  
The monitor was developed by the ERCIS omni-channel lab - powered by Arvato.

632,638,999 Posts  
605,936,927 Conversations  
608,606,793 Social Media Accounts  
608,606,249 Companies  
608,606,615 Verticals



Response Time
Conversation Time
Response Rate
Number of Responses
Number of Posts
Number of Conversations
Time of Post
Time of Response

### Average Response Time



<http://servicemonitor.uni-muenster.de/>

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## Selection by Number of Posts



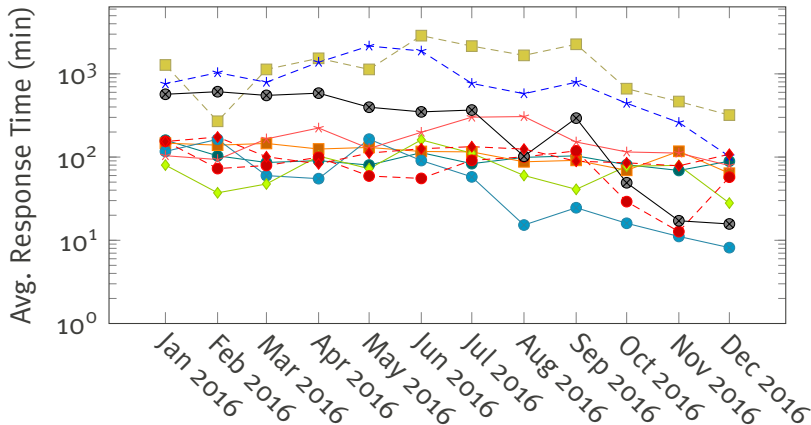
Airline	Number of posts	Passengers per year
KLM	404,964	27,740,000
Iberia	229,677	14,000,000
Etihad Airways	175,609	17,400,000
Air France	166,225	79,016,000
WestJet	139,560	18,500,000
Lufthansa	155,643	107,000,000
easyjet	117,301	70,000,000
Air Berlin	83,696	27,274,777
Thomas Cook Airlines	75,288	6,700,000
Air Canada	73,731	41,000,000



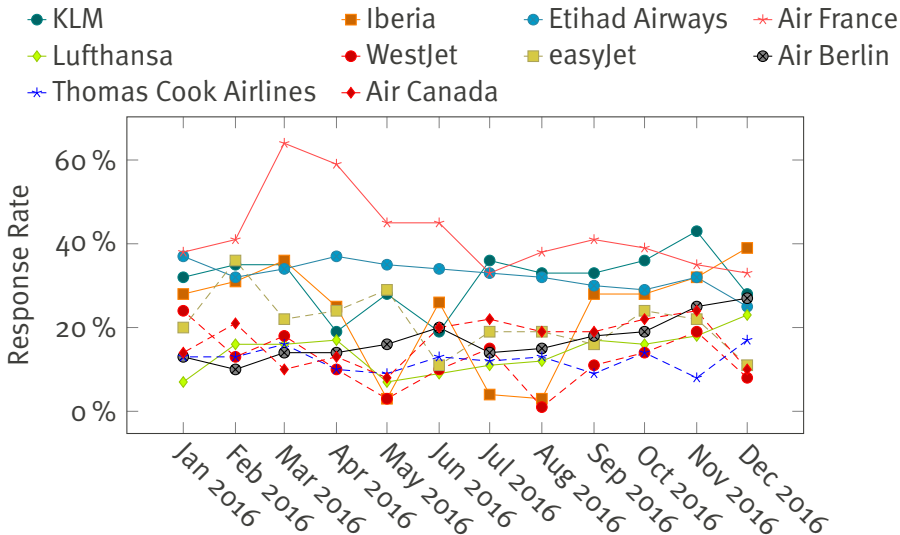
# Response Time



- KLM
- Iberia
- Etihad Airways
- Air France
- Lufthansa
- Westjet
- easyJet
- Air Berlin
- Thomas Cook Airlines
- Air Canada



# Response Rate



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## Summary / Outlook



- Analyzed millions of customer service requests in social media
- Defined several performance measures to automatically evaluate customer service performance
- Customer service in social media is dominated by full-service network carriers which have the capacity and financial means
- Future work should apply text classification and topic modelling to analyze the content of a message and also focus on other industries

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Questions?

