Drivers and Barriers for Microservice Adoption

Holger Knoche, Wilhelm Hasselbring
Software Engineering Group
Kiel University

11th EMISA Workshop, May 21st, 2021
Motivation: Success Stories

Example: otto.de

Microservices: [Hasselbring 2016, 2018, Hasselbring & Steinacker 2017]
Both Agile and Reliable

Scalability, Agility and Reliability [Hasselbring & Steinacker 2017]
Does this also work in other Domains?

Some experience with research software

OceanTEA [Johanson et al. 2016]

ExporViz [Fittkau et al. 2017]
[Zirkelbach et al. 2019] [Hasselbring et al. 2020]

GeRDI [Tavares de Sousa et al. 2018]

Titan [Henning & Hasselbring 2021]
Drivers and Barriers for Microservice Adoption – A Survey among Professionals in Germany

Holger Knoche
University of Kiel
http://orcid.org/0000-0002-0282-8632

Wilhelm Hasselbring
University of Kiel

DOI: https://doi.org/10.18417/emisa.14.1

Keywords: Microservice architecture, Survey, Software modernization, Microservice adoption
Demographics

RESPONDENTS AND INDUSTRIES

- Development / Consulting: 16
- Energy / Manufacturing: 11
- Financial Services: 20
- Retailing / E-Commerce: 6
- Other / No Answer: 18

Driver and Barriers for Microservice Adoption
Usage of Microservices

Microservices are already used to a considerable extent in practice.
Usage of Microservices

- 27% of the respondents reported to use Microservices to a large extent
- Highest percentage (83%) in Retail / E-Commerce
- Lowest percentage (10%) in Financial Services
The main drivers for Microservice adoption are Scalability, Maintainability and Time to Market.
Drivers for Microservice Adoption

• Scalability was crucial for 34% of the respondents and relevant for 46% of the respondents
• Maintainability was crucial for 29% and relevant for 57%
• Short Time to Market was crucial for 31% and relevant for 51%

• Runners-up were:
  • Enabler for Continuous Delivery and DevOps (14% / 45%)
  • Suitability for Cloud and Containers (15% / 35%)
The main barriers for Microservice adoption are insufficient skills as well as resistances.
Barriers to Microservice Adoption

- Insufficient ops skills were rated critical by 16% and relevant by 46% of the respondents.
- Ops resistances were rated critical by 14% and relevant by 47%.
- Insufficient developer skills were rated critical by 20% and relevant by 34%.
- Compliance and regulations were also important for specific industries (17% / 23%).
- Technical challenges were considered manageable.
67% of the respondents stated that there are plans to introduce microservices to existing software assets.
Improved Maintainability is the key driver for modernizing existing assets with Microservices.
Microservices for Modernization

• Improved Maintainability was stated as the primary modernization goal by 82% of the respondents

• Runners-up were Time to Market (61%) and Scalability (51%)

• 85% of the respondents would also replace parts of the existing application by microservices

• **But:** 79% considered incorporating transactional boundaries into service design important (52%) or very important (27%)

See also [Knoche & Hasselbring 2018, Krause et al. 2020]
Future Work: Migration Matrix

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