



FAKULTÄT FÜR INFORMATIK

TECHNISCHE UNIVERSITÄT MÜNCHEN

Master's Thesis in Informatics

Designing a business platform using microservices.

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Designing a business platform using microservices.

Entwerfen einer Business-Plattform mit microservices.

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I confirm that this master's thesis in informatics is my own work and I have documented all sources and material used.

Munich,

Rajendra Kharbuja

Acknowledgments

Abstract

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1 Future Directions

The current thesis research is conducted on the basis of various academic as well as industrial researches. It would be interesting if the current research could create opportunities for new researches.

The table listed some basic metrics which can be used to evaluate the quality of microservices. The very first thing ahead which can be done is to find the threshold range which can classify good and bad microservices. A certain number of sample microservices can be taken as sample from which microservices with high scalability, reusability or other external quality attributes can be filtered out from non performing microservices with low scalability and reusability. Then basic metrics tables can be filled with their corresponding values for each microservices. Thus obtained values can provide some hints towards their threshold range. These threshold values can be verified by using them while creating new microservice and check if their external quality attributes meet the expectations.

Another direction of the research can be towards the priority of quality attributes for microservices. From literature, the quality attributes to focus are coupling, cohesion and autonomy. During the interview conducted with SAP Hybris, the quality attributes such as scalability and reusability were given priority when mapping functionalities to microservices. It can be valuable to research further in literature as well as in other industries regarding the priority of quality attributes they choose to identify microservices.

Furthermore, the basic metrics table can be leveraged to create a graphical tool which represents various microservices as nodes and connections between them as lines between nodes. It would be beneficial if various basic metrics can be evaluated only with API definitions internally. Then, the graphical tool can be used to show the various quality attributes using the basic metrics. Depending upon the expected quality, API definition can be changed.

Finally, the report can always be used as a base to conduct research on other similar industries as SAP Hybris. It can be interesting to view the result obtained from the study at various different industries.

Acronyms

API Application Programming Interface.

AWS Amazon Web Services.

CQRS Command Query Responsibility Segregation.

CRUD create, read, update, delete.

DEP Dependency.

HCP Hana Cloud Platform.

IDE Integrated Development Environment.

IFBS International Financial and Brokerage Services.

ISCI Inter Service Coupling Index.

ODC Operation Data Granularity.

ODG Operation Data Granularity.

OFG Operation Functionality Granularity.

PAAS Platform as a Service.

RCS Relative Coupling of Services.

REST Representational State Transfer.

RIS Relative Importance of Services.

RPC Remote Procedure Call.

SCG Service Capability Granularity.

SDG Service Data Granularity.

SDLC Software Development Life Cycle.

SFCI Service Functional Cohesion Index.

SIDC Service Interface Data Cohesion.

SIUC Service Interface Usage Cohesion.

SIUC Service Sequential Usage Cohesion.

SLC Self Containment.

SMCI Service Message Coupling Index.

SOA Service Oriented Architecture.

SOAD Service Oriented Analysis and Design.

SOAF Service Oriented Architecture Framework.

SOCI Service Operational Coupling Index.

SOG Service Operations Granularity.

SOMA Service Oriented Modeling and Architecture.

SRI Service Reuse Index.

SRP Single Responsibility Principle.

SWIFT Society for Worldwide Interbank Financial Telecommunication.

UML Unified Modeling Language.

YaaS Hybris as a Service.

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