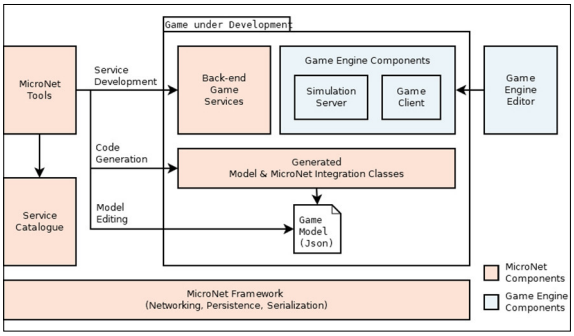
Jonas
Biedermann

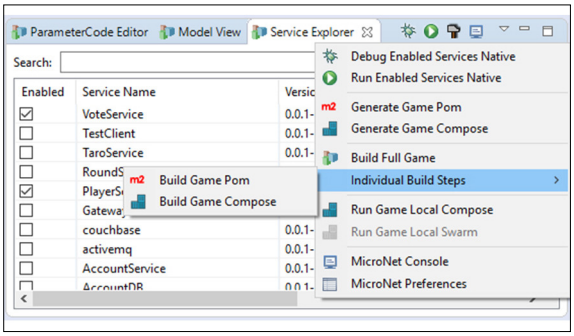
Graduate Candidate	Jonas Biedermann
Examiner	Prof. Dr. Olaf Zimmermann
Co-Examiner	Dr. Gerald Reif, Innovation Process Technology, Zug
Subject Area	Software and Systems

Microservices and Online Games

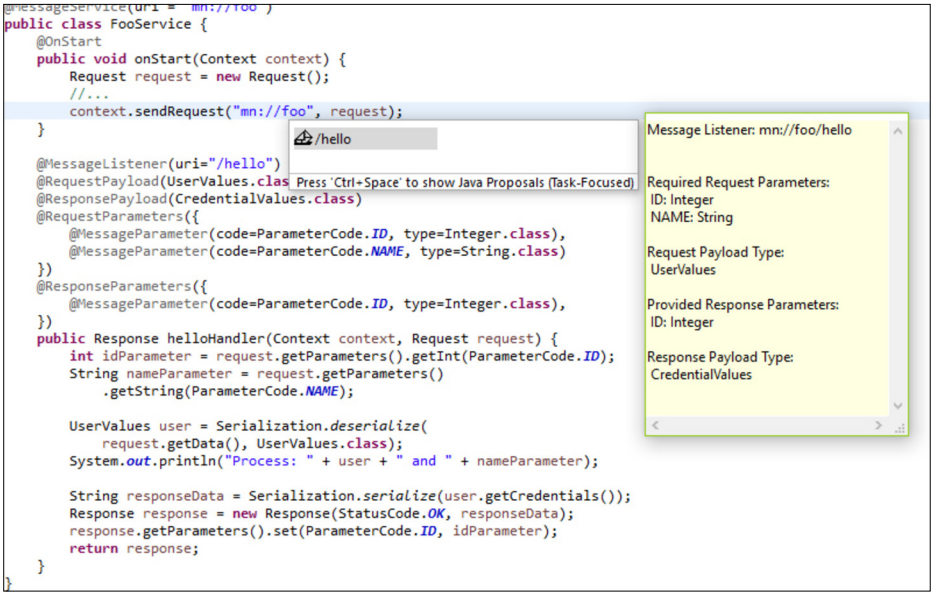
Composition, Deployment and Development Concepts



The MicroNet setup for online game development



Game application containerization with MicroNet Launch Utility



Shared API distribution with MicroNet Code Assist

Introduction: Rich online games allow thousands of players to interact in persistent game worlds simultaneously. Realizing such rich online games is challenging because their developers are forced to design distributed application architectures. Microservices are a modern approach to designing business applications in a distributed and cloud-friendly way; little research exists on how to apply microservice principles to the game domain.

Objective: This thesis introduces an overall approach how to develop a rich online game using a microservice application design; essential distribution topics such as microservice composition, application deployment, and data consistency are investigated in depth. These research subjects are investigated with the help of Design Science Methodology (DSM) techniques that lead to theoretical findings backed by a fully functional open source prototype called MicroNet.

Result: MicroNet serves as a reference implementation demonstrating how to develop online games with microservices. Concepts, examples of online game architectures and tools that help realizing them are provided. The thesis concepts and their reference implementation aim at simplifying online game development and making this field more accessible to inexperienced game developers.