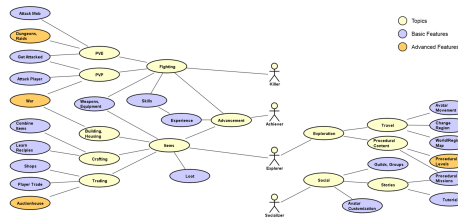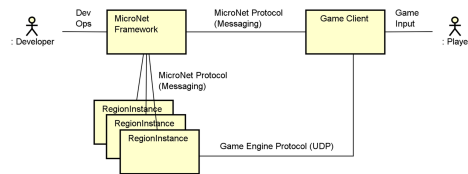| | |
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# Network Game Features and Microservices

## Implementation of Network Game Features with the MicroserviceNet Framework







This second thesis of the project MicroserviceNet examines the usability of Microservices to develop online game features. The project has a duration of three semesters. In the first semester the theoretical foundation for this examination was collated. Due to the theoretical nature of the first semester thesis only a small prototype was developed. This prototype was too immature to verify all findings of the first semester. The goal of this second semester is to use the design proposed in the first semester thesis to build a working online game server framework. This practical thesis aims to close the gap between theory and practice by implementing a full-fledged game framework using a Microservice architecture.

The usability of a Microservice architecture for online games has to be verified. The approach in this thesis is to implement the game features proposed in the last thesis incorporating seven Microservice Tenets established in the literature. The Tenets are mentioned throughout the thesis at places where they have an influence on the realization of the framework. The small prototype that was developed during the first semester serves as a basis for the practical work during this semester. This existing framework provides a core package and already contains a set of basic services. The core package is already stable and can mainly remain unchanged. The services of the prototype were improved and extended step by step during this semester. The services of the framework are either Java or Unity3D applications. Unity3D is used for real-time game simulation services. PostgreSQL is used as a database solution and messaging generally done using ActiveMQ. For the real-time synchronization of the game state the network protocol of Unity3D is used. These technical dependencies are hidden within the framework.

The major result of this thesis is the working prototype. It proves that the theoretical and technical foundation that was built last semester did hold. The second major result are findings from the implementation process that are documented in this second thesis. The conclusion of this thesis is that Microservices are indeed suited to build an online game server framework. Although there are also disadvantages like complexity and added initial development cost the investment needed to implement a Microservice architecture will pay off in the long term because the added flexibility makes future changes much less error prone to conduct.