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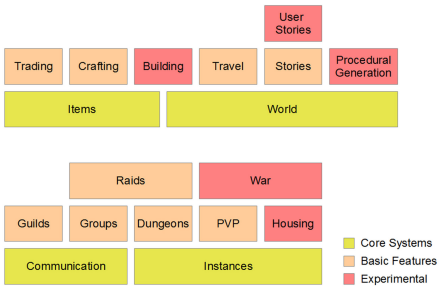
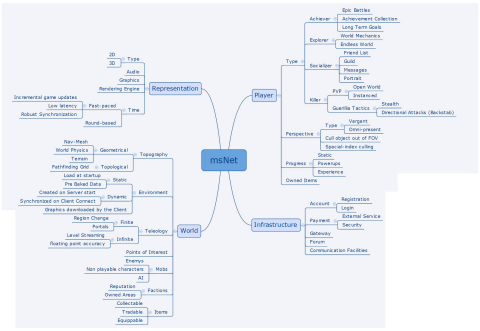
Subject Area	Software and Systems

MicroserviceNet - Microservices and Network Games

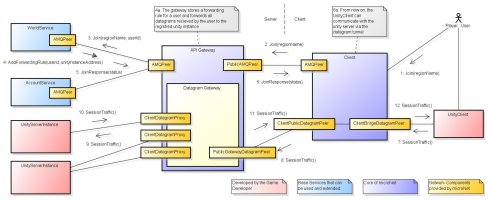
Evaluation of the Microservice Architectural Style Regarding Online Server Environments



Features of Online Games



Topics of MicroserviceNet



Game Session Communication Flow

Introduction: Making an online game is a difficult task. Although there are many online games around, the development process of online games still is challenging. Online games today are usually server-based. This introduces the topic of server-side applications to game development which adds another difficult domain. In game development a choice between many available tools (game engines) must be made. Most of these tools also aid the developer in creating online game features by providing an Application Programming Interface (API) for networking functionality. The problem however is that the offered functionality is very general, and for each game a lot of features have to be created over and over again. For the core features which need to be highly optimized and customized for each game, there is no way around this. But online games always share a common set of features that appear in all of them. The game developer obviously does not want to implement all of these features over and over again. Since these common online game features require different technologies to work, they cannot be provided by a game engine alone.

This is the area where MicroserviceNet operates. MicroserviceNet is a middleware to make online game development less complicated. This is accomplished by providing standard implementations for common online game features that the developer can extend, customize or replace. MicroserviceNet is realized with a Microservice architectural style. This allows the developer to independently develop, extend, change or replace individual features of the online game, without affecting the rest of the game.

Result: The thesis examines how online game servers work in conjunction with Microservices. The thesis first introduces the game domain and the Microservice architectural style. With regard to documentation a lot of research in the area of games, networking and Microservices has been done. As a second thesis result, a prototype was developed to showcase the most important features of MicroseviceNet: a basic networking facility, an API gateway, an accounting service and a basic world service. This prototype will serve as a foundation for further implementations in future theses. Although the features of the prototype are still rather simple and preliminary, they are able to demonstrate the general idea of how game networking can be approached.