

Software Architecture

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Overview

BeuthBot consists of many interwoven _Microservices_. Every Microservice uses our basic API to communicate with other Microservices. This approach enables us to change parts of the system easily at any time or to introduce new Microservices, all they need to do is to implement our API.

Basic Structure

Our application is basically composed of the following four components.

Bot ↔ Gateway ↔ Registry ↔ Service

Following diagram shows that in more detail.

![structure](../assets/structure-without-notes.png)

A user can write the _Bot_ to request informations, the meaning of the message is extracted and a fitting _Microservice_ is chosen to retrieve the necessary data. A response is built from that data and distributed back up to the bot which answers the users request.

following sequence diagram further illustrates that.

![flow](../assets/flow.png)

Bot

This is an abstraction for the available chatbots, e.g. a _Bot_ for _Telegram_ and another _Bot_ for

WhatsApp

The user interacts with this Microservice, here she can request information and gets answers from BeuthBot.

Gateway

The Gateway is the centerpiece of BeuthBot one could say.

The Bot notifies the Gateway with the message it got from the user.

The Gateway then uses NLP (Natural Language Processing) Microservices to get the meaning and intention of the user. Here we try to extract what the user wants from BeuthBot, to notify the right service and present a fitting answer to our user.

Registry

After obtaining the intention of our user, the Gateway notifies the Registry, to get the information the user requested.

The Registry distributes the request to the correct Service, that takes care of retrieving the right informations.

Service

Service is an abstraction for the implemented Microservices that retrieve the necessary data we need to answer users requests. E.g. the MensaService is a Microservice that can give informations about the current menu, filtered by a number of parameters, e.g. a vegan user.

API

Because of the complexity of the single Microservices, every single Microservice implements its own, distinct, API.

But to answer a users request we use a unified, comprehensive API. Its basic idea is to pass a Response-Object trough the individual Microservices, which consists of the initial request, an answer as a response to the users request and informations about the user.

Following class diagram further illustrates that:

![flow](..../assets/response-request-api.png)

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