

Introduction

The aim of the thesis was to develop a **chatbot**, which integrates communication tool **Slack** with the software product to support agile project management **Jira**.

The thesis is focused on identifying and solving problems in **agile distributed teams**.

Identifying problem areas

Based on the outputs of the analysis I have identified **three** key problem areas to focus on in distributed teams.



Monitoring

Alica can bring Jira issues to the communication channel and provide basic features like a list of user's and current sprint issues, ability to assign, comment or change status of the particular issue and much more. This area is focused on **JIRA issue management** directly from Slack.

Maroš N. 11:48 AM
@alica assign to me issue fr-684 please.

Alica APP 11:48 AM
Done. Issue **FR-684** assigned to @maros.novak.

Daily Standup

Daily Standup is split in several phases. In first phase Alica gathers information from all users. Gathering is done in particular time of the date in private conversations. This conversation consists of four questions:

- What did you accomplish yesterday?
- What you were working on yesterday?
- What are your plans for today?
- What obstacles are impeding your progress?

Afterwards Alica composes a **report message** to the defined slack channel for Scrum master and other team members.

But chatbot logic goes beyond that. Every **user's answer is analyzed** and if it contains issue keys related to Jira, Alica compares progress, status, assignee and informs user about inconsistency.

Alica APP 11:48 AM
Voting for issue **FR-684** has been started. Please choose amount of story points.

Design guidelines

🔦 Story
As developer I want to have design guidelines for smoother development.

0 1 2 3 5
8 13 20 40 100
? 🍵

Estimation

In slack channel, Scrum master can ask Alica for starting an estimation vote for a specific user story. Every channel member will receive a message with story description and buttons representing cards. After receiving inputs from every team member, Alica **analyse estimation points** and provide the results to the channel. After team approval, Scrum master can set story points directly from channel to Jira issue.

Alica APP 11:48 AM
Hi, it's time for **daily standup**. Hope you're ready! Join #standup for report. What did you accomplish yesterday? Report **done** issues.

Maroš N. 11:48 AM
Yesterday I've fixed issue FR-675 and FR-773.

Alica APP 11:48 AM
⚠️ Please update issues in Jira, because **FR-773** is not Done. What you were working on yesterday? Report **in progress** issues.

Maroš N. 11:48 AM
I was working on issue FR-595.

Alica APP 11:48 AM
⚠️ Please update issues in Jira, because **FR-595** is not In Progress. What are your plans for today?

Maroš N. 11:48 AM
Continue on FR-595 and also finish FR-596.

Alica APP 11:48 AM
👍 Ok. Issues are assigned to you in Jira. What obstacles are impeding your progress?

Maroš N. 11:48 AM
Waiting for designs from @peter.reg

Alica APP 11:48 AM
Standup report from @maros.novak for 8. April 2017

Yesterday - Done
Yesterday I helped Peter with final desings and fixed broken coffee machine.

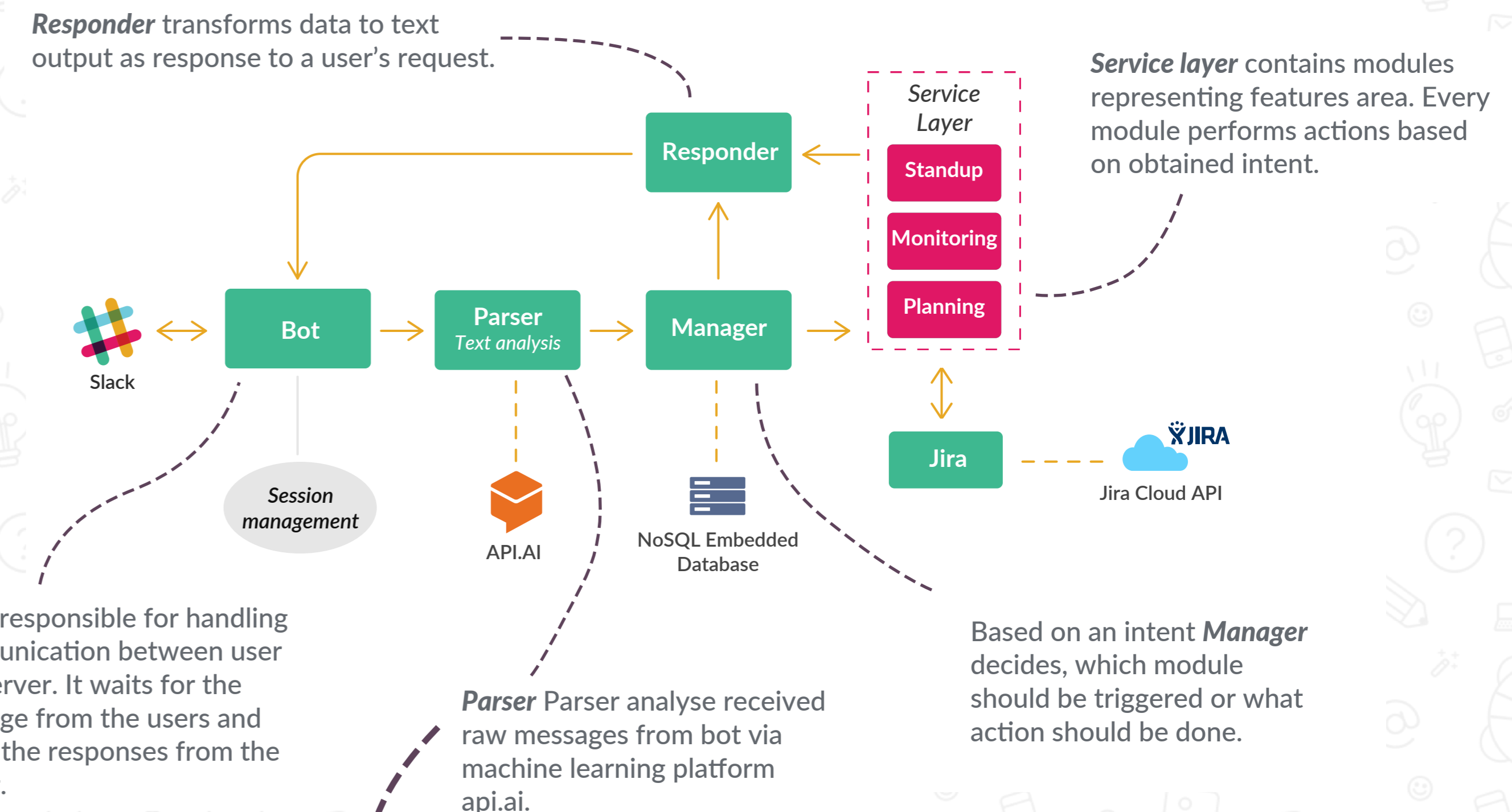
Yesterday - In Progress
I was working on issue **FR-595**.
⚠️ Jira Check: FR-595 is not in progress in Jira.

Today
Continue on **FR-595** and also finish **FR-596**.
👍 Ok. Issues are assigned in Jira.

Blockers
I'm waiting for final designs from @peter.reguli

Architecture

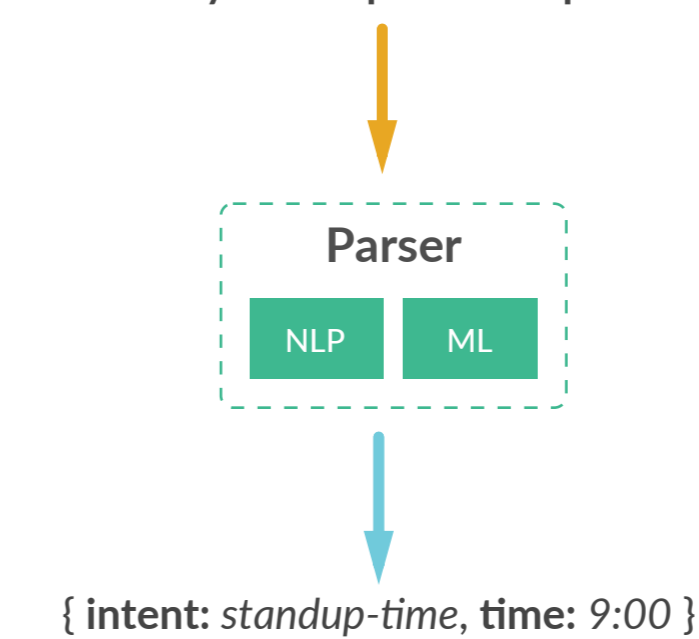
Important fragment of my thesis was to create a well-designed **modular architecture**. A new feature can be easily added as a module in a service layer. Communication with issue management application (Jira in our case) is done via usage of **adapter design pattern** so Jira can be replaced with any issue management application easily.



Machine Learning

Every user's input is analysed and parsed by api.ai platform. This platform uses **machine learning and natural language processing algorithms**. Data received from intent recognition is an essential input for an application logic.

Set daily standup for 9:00 please.



Results

- Modular architecture for easy integration of new features
- Slack + Jira integration
- Communication with bot is handled in natural language
- Asynchronous processing of requests from multiple users
- 20 feature commands
- High quality in recognising natural language user's expression
- Autonomous daily standups & issue tracking
- Implemented only with free tools, languages & libraries
- Deployed on cloud server