Backlog Issue Helper Forge App Development Experience

1.Introduction

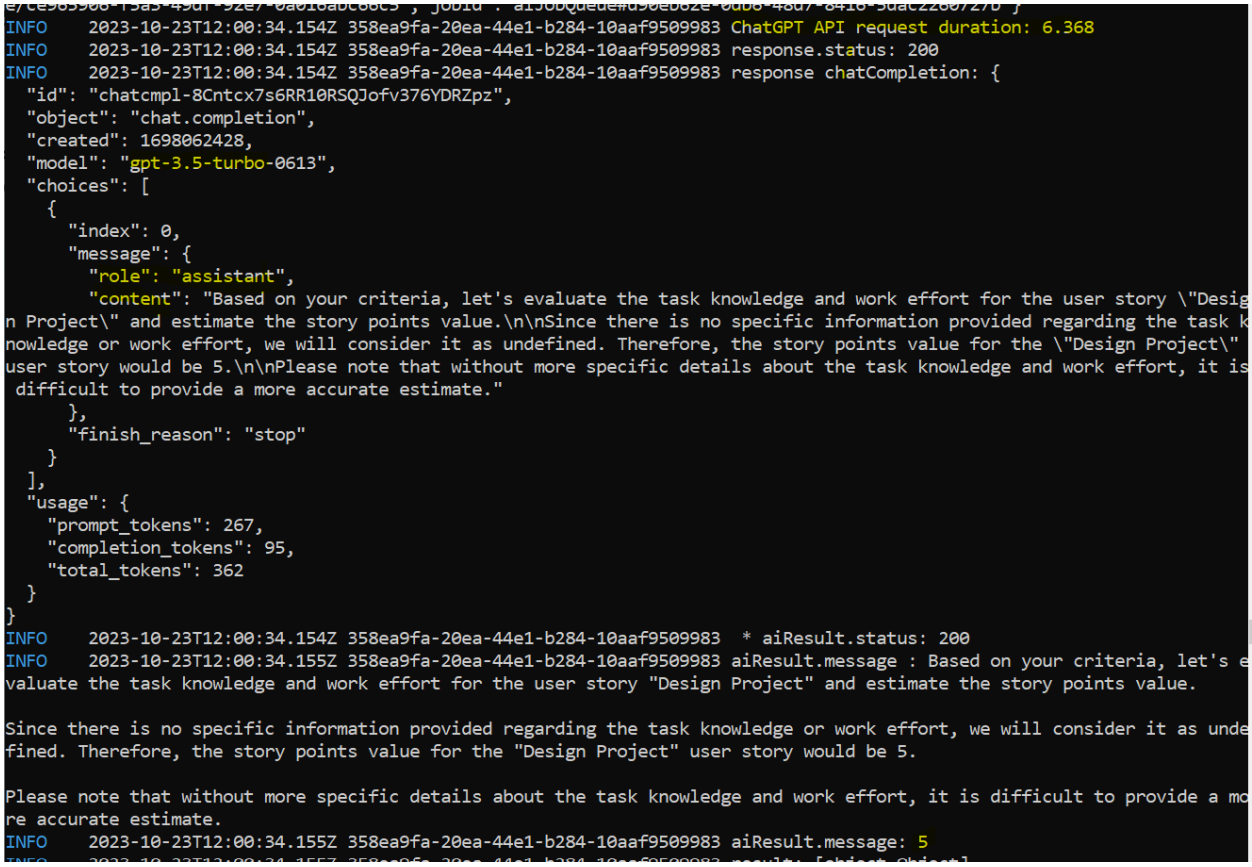
BacklogIssueHelper project, proposed for Codegeist Unleashed 2023 Challenge, helps Atlassian users to enhance, analyze Backlog issues and provides some translations.

The solution includes a Frontend component with @Atlaskit modules and also a Backend component interacting with OpenAI to manage story points estimation suggestion and issue translation prompts.

SInce the enhancement processing for each Backlog issue can be time consuming, particularly when calling external OpenAI API (see screenshot below) are involved, It has been necessary to use the asynchronous event feature permitted by Forge Event/Storage Modules.

This document focuses on experience of Forge App Development about Backlog Issue Helper Project and outlines how various encountered issues/challenges.have been solved.

At the end, there are some resources links to get more details about Forge App development and Documentation and my Combogeist94 (application name) Forge App public link


INFO 2023-10-23T12:00:34.154Z 358ea9fa-20ea-44e1-b284-10aaf9509983 ChatGPT API request duration: 6.368
INFO 2023-10-23T12:00:34.154Z 358ea9fa-20ea-44e1-b284-10aaf9509983 response.status: 200
INFO 2023-10-23T12:00:34.154Z 358ea9fa-20ea-44e1-b284-10aaf9509983 response chatCompletion: {
"id": "chatcmpl-8Cntcx7s6RR10RSQJofv376YDRZpz",
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"choices": [
{
"index": 0,
"message": {
"role": "assistant",
"content": "Based on your criteria, let's evaluate the task knowledge and work effort for the user story \"Design Project\" and estimate the story points value.\n\nSince there is no specific information provided regarding the task knowledge or work effort, we will consider it as undefined. Therefore, the story points value for the \"Design Project\" user story would be 5.\n\nPlease note that without more specific details about the task knowledge and work effort, it is difficult to provide a more accurate estimate."
},
"finish_reason": "stop"
}
],
"usage": {
"prompt_tokens": 267,
"completion_tokens": 95,
"total_tokens": 362
}
}
INFO 2023-10-23T12:00:34.154Z 358ea9fa-20ea-44e1-b284-10aaf9509983 * aiResult.status: 200
INFO 2023-10-23T12:00:34.155Z 358ea9fa-20ea-44e1-b284-10aaf9509983 aiResult.message : Based on your criteria, let's evaluate the task knowledge and work effort for the user story "Design Project" and estimate the story points value.
Since there is no specific information provided regarding the task knowledge or work effort, we will consider it as undefined. Therefore, the story points value for the "Design Project" user story would be 5.
Please note that without more specific details about the task knowledge and work effort, it is difficult to provide a more accurate estimate.
INFO 2023-10-23T12:00:34.155Z 358ea9fa-20ea-44e1-b284-10aaf9509983 aiResult.message: 5

2.Forge CLI App Development Challenges

2.1. Laptop Operating System and Libraries Installation

- Forge App development requires **docker** and installation of **forge cli** framework, deployed in particular with **npm install** command, but some dependency conflict failures have been fixed by using the following special argument : **legacy peer deps**

- The development laptop is based on Windows OS, configured with WSL (Windows Subsystem for Linux) + Debian Linux docker (not Docker Desktop on Windows). At the end, The Forge Application could be developed without any problems with these environment conditions.

2.2. Session Login

Forge CLI commands require authentication with ***long*** **Api Token** value to be able to interact with Atlassian Jira Cloud.

Since it was impossible to open the Forge session by using copy paste the APi token interactively on the opened session console, the problem has been fixed by using Environment variables to save the Forge Email account and encrypted Forge Api token value as illustrated in following screenshot

sumotori@SUMOTORI: ~/comboforge-ai-sprint-builder

```
sumotori@SUMOTORI:~$ read FORGE_EMAIL
adrien[illegible]@gmail.com
sumotori@SUMOTORI:~$ read -s FORGE_API_TOKEN
sumotori@SUMOTORI:~$ export FORGE_EMAIL FORGE_API_TOKEN
sumotori@SUMOTORI:~$ cd comboforge-ai-sprint-builder/
sumotori@SUMOTORI:~/comboforge-ai-sprint-builder$ forge deploy
Deploying your app to the development environment.
Press Ctrl+C to cancel.

Running forge lint...
No issues found.

? Deploying combogeist94 to development...

? Packaging app files
? Uploading app
? Validating manifest
? Snapshotting functions
? Deploying to environment

? Deployed

Deployed combogeist94 to the development environment.
sumotori@SUMOTORI:~/comboforge-ai-sprint-builder$ forge uninstall
To uninstall your app from a site or workspace, select it from the list.
Press Ctrl+C to cancel.
? Select where to uninstall the app:  (Use the Enter key to select)
```

Environment	Site	Product
? development	combogeist94.atlassian.net	Jira

```
sumotori@SUMOTORI:~/comboforge-ai-sprint-builder$ forge logs
```

3. Application Coding Challenges

3.1 Full Stack (Frontend and Backend) Typescript App :

Typescript enables to guarantee more readable code, type checking inside Typescript ts files.

The frontend has been developed also with Typescript by using tsx files, but compilation errors have appeared and have been fixed by defining a specific declaration in its **tsconfig** file.

3.2 Backlog Issues Processing as Forge Asynchronous Events

Initial planning was to use a single Forge Job Queue which manages (push, get) all backlog issues data with only one single jobId as key, but that approach has been abandoned since each backlog issue needs to be handled independently and asynchronously.

On receiving one single List of Items push request, Forge Storage Module produces separate event for each backlog issue at various different milliseconds (see following screenshot)

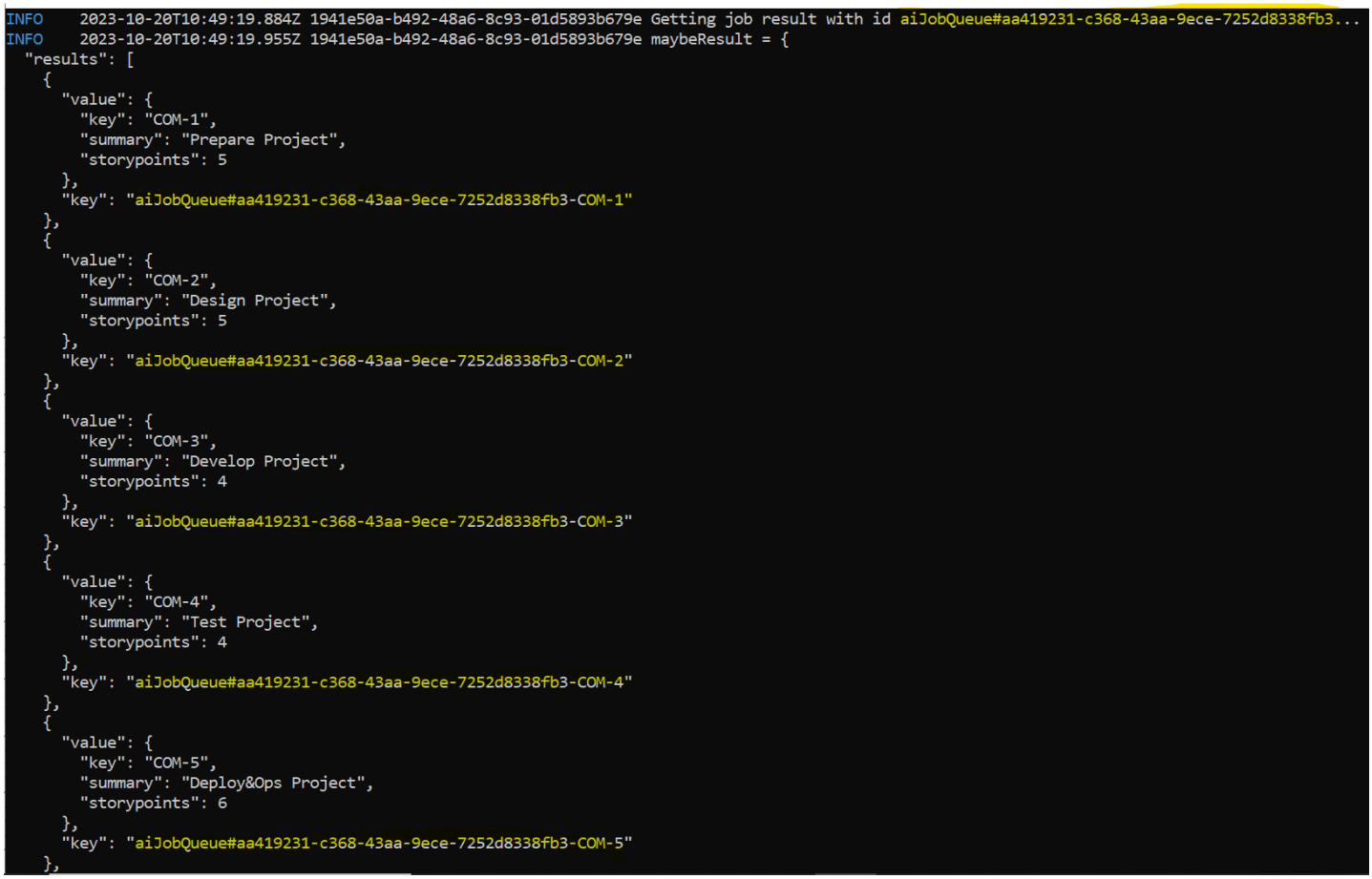
On consuming each Backlog issue event, each resulting generativeAI operation has been stored with key combing jobQueueId and IssueKey, in order to extract these results easily with appropriate selection filters.

Example : aiJobQueue#aa419231-c368-43aa-9ece-7252d8338fb3-COM-1

where aiJobQueue#aa419231-c368-43aa-9ece-7252d8338fb3 is the **jobQueueId** and COM-1 is the **issueKey**

Periodically, the Frontend UI calls the Backend to retrieve the enhanced backlog issues. This is made possible by calling the query method of @Forge/Storage component with following filtering criteria :

await storage.query().where('key', startsWith(jobId)).getMany()



4. List of **Forge CLI** Used **Commands** for ComboGeist94 Forge application Development

forge create : enable to initiate a Forge App by adding appropriate directories/files and automate the interaction with remote environments.

forge login : option to open session for the CLI client to interact with remote environment

forge deploy [-e environment] : enables to deploy the application on remote platform at appropriate environment (development, staging, production)

forge logs : displays Application logs on windows console

forge variables set | list [–e environment] : enables to set/list application environment variables used during running

forge settings : manages settings such as default-environment

forge tunnel : enables to test the application using local codeset

forge install [-e environment] : enables to install application on various environments : development (default), staging, production

5. List of **Modules (Atlaskit** and **Forge)** used for the Frontend Development

@atlaskit/button > Button element

@atlaskit/css-select > stylesheet

@atlaskit/icon/glyph/chevron-down > ChevronDownIcon element for the **Popup**

@atlaskit/form > Label element

@atlaskit/select > **PopupSelect** element

@atlaskit/spinner > Spinner element

@atlaskit/textfield > Textfield element

@forge/bridge > invoke method to exchange with the **backend endpoints**

6. List of **Forge Dependencies** used for the Backend Development

@forge/resolver > Resolver class/endpoint service management

@forge/events > **Queue** to manage events, **Payload** class item to exchange data

@forge/api > storage for data crud (set, get, delete) management**, api, route** to interact with external service

7.Conclusion and Takeaways

This document has presented Forge App Development Experience covering:

- Windows OS Laptop development if not using Docker Desktop (for license reason)

  => Takeaway 1 : Forge App can be developed withForge Cli + Docker on **WSL** (Windows for Linux Subsystem) Linux such as **Debian**

- Forge Cli Libraries Installation with npm

  => Takeaway 2 : Avoid dependencies conflict with command

  npm install –**legacy-peer_deps**

- Forge App Coding

  => Takeaway 3 : Full stack (Frontend and Backend) Forge App coding in **Typescript** enabling better readability, type checking,... is possible by allowing typescript extensions

  => Takeaway 4 : **@atlaskit** UI library and **@forge** dependencies provide interesting features which can be integrated respectively on frontend and backend side.

8.Resources

Forge App Development Getting Started

Atlassian Atlaskit Components Documentation

Public shared Combogeist94 Forge App to be activated on Atlassian JIRA cloud