LUT University

ImpactAgile: Sustainability Integration Web Tool Documentation

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1. Introduction

Purpose

The **Sustainability Integration Web Tool** is designed to help **Agile teams** integrate **sustainability** into their **Scrum workflows**. By leveraging the **Sustainability Awareness Framework (SusAF)** and **AI-powered insights** (via ChatGPT API), the tool enables teams to:

- **Prioritize sustainability** in their backlogs and sprints.
- **Track and measure** sustainability impact over time.
- **Raise awareness** of sustainability within their teams.

Key Features

1. **SusAF Integration**: Upload SusAF reports and visualize sustainability impacts.
2. **AI-Powered Backlog Generation**: Use ChatGPT API to generate user stories and acceptance criteria focusing on sustainability.
3. **Sustainability Metrics Dashboard**: Track completed tasks, story points, and sustainability points.
4. **Sprint Planning**: Generate sustainability-focused sprint goals and nudges.
5. **Sprint Execution**: Track progress and send reminders for sustainability criteria.
6. **Sprint Retrospective**: Self-assessment checklist for sustainability.
7. **Knowledge Hub**: Educational resources for sustainability in Agile.

System Requirements

- **Frontend**: Next.js, TypeScript
- **Backend**: Firebase (Firestore, Authentication)
- **AI Integration**: ChatGPT API, SusAF API

2. Getting Started

Installation Guide

1. Clone the repository:
   git clone https://github.com/ntd432/susaf-scrum.git
2. Access the repository:
   cd susaf-scrum
3. Install dependencies:

   npm install −legacy-peer-deps
4. Set up environment variables:
   - Create a `.env` file in the root directory.
   - Add your Firebase and ChatGPT API credentials:
     NEXT_PUBLIC_FIREBASE_API_KEY=your-api-key
     NEXT_PUBLIC_FIREBASE_AUTH_DOMAIN=your-auth-domain
     NEXT_PUBLIC_FIREBASE_PROJECT_ID=your-project-id
     NEXT_PUBLIC_FIREBASE_STORAGE_BUCKET=your-storage-bucket
     NEXT_PUBLIC_FIREBASE_MESSAGING_SENDER_ID=your-sender-id
     NEXT_PUBLIC_FIREBASE_APP_ID=your-app-id
     NEXT_PUBLIC_CHATGPT_API_KEY=your-chatgpt-api-key

Setting Up Firebase

1. Go to the Firebase Console.
2. Create a new project and enable **Firestore** and **Authentication**.
3. Add your Firebase configuration to the `.env` file.

Configuring ChatGPT API

1. Sign up for an API key from OpenAI.
2. Add your ChatGPT API key to the `.env` file.

3. User Guide

Dashboard Overview

- The **Dashboard** is the main interface for the tool.
- It displays:
    - **Total Work Items**: Number of tasks in the backlog.
    - **Tasks Completed**: Percentage of completed tasks.
    - **Story Points Completed**: Progress on story points.
    - **Sustainability Points Completed**: Progress on sustainability points.

Integrating SusAF Reports

1. Go to the **Dashboard**.
2. Enter your SusAF Project API key.
3. The tool will process the key and generate **backlog items**.

Generating Backlog Items

- The tool uses **ChatGPT API** to:
    - Generate **user stories** from SusAF reports.
    - Suggest **acceptance criteria**.
    - Suggest **sustainability criteria**.
- Backlog items are added to the **Product Backlog** with:
    - **Story Points**: Estimated effort.
    - **Sustainability Points**: Impact on sustainability.

Sprint Planning

- During sprint planning, the tool:
    - Suggests **sustainability-focused sprint goals**.
    - Provides **nudges** to remind teams to consider sustainability.
- Teams can:
    - Select backlog items for the sprint.
    - Define **sustainability criteria** for each task.

Sprint Execution

- The **Sprint Execution Tracker**:
    - Tracks progress on tasks.

- ○ Sends **reminders** if sustainability criteria are not met by the end of the day.
- Teams can:
  - ○ Move tasks between **To Do**, **In Progress**, **In Review**, and **Completed**.
  - ○ View real-time updates on the **Dashboard**.

Sprint Retrospective

- The **Retrospective** includes a **self-assessment checklist**:
  - ○ Did we accomplish all sprint goals?
  - ○ Were user stories well-defined and estimated correctly?
  - ○ Did we follow best practices for clean and maintainable code?
- Teams can:
  - ○ Evaluate their sustainability progress.
  - ○ Generate an **action plan** for improvement.

Knowledge Hub

- The **Knowledge Hub** provides:
  - ○ **User Manual**: Instructions for using the tool.
  - ○ **FAQs**: Common questions and answers.
  - ○ **Resources**: Educational materials on sustainability in Agile.

4. Technical Details

Architecture Overview

- **Frontend**: Next.js with TypeScript.
- **Backend**: Firebase (Firestore for data storage).
- **AI Integration**:
    - ChatGPT API for generating backlog items and insights.
    - SusAF Project API Token to get SusAF report output.

Backend Integration

- **Firebase** is used for:
    - Storing backlog items, sprint data, and user information.
    - Keep track of task item status, timestamps, dates, etc.

Frontend Components

- **Dashboard**: Displays metrics and backlog items.
- **Sprint Planning**: Interface for defining sprint goals.
- **Sprint Execution**: Kanban board for tracking tasks.
- **Retrospective**: Self-assessment checklist.
- **Knowledge Hub**: Repository of educational resources.

AI Integration (ChatGPT API)

- The tool uses **ChatGPT API** to:
    - Generate **user stories**, **sustainability and acceptance criteria, story points _____** from SusAF reports.
    - Suggest **sustainability-focused sprint goals**.
- To minimize API calls, results are **cached** in Firestore.

5. Sustainability Metrics

Story Points vs. Sustainability Points

- **Story Points**: Estimate the effort required to complete a task.
- **Sustainability Points**: Measure the impact of a task on sustainability (environmental, social, economic).

Tracking Sustainability Progress

- The **Dashboard** displays:
  - **Total Sustainability Points**: Cumulative impact of completed tasks.
  - **Sustainability Progress**: Percentage of sustainability points completed.

6. Troubleshooting

Common Issues

- **ChatGPT API Errors**: Check your API key and usage limits.
- **UI Rendering Issues**: Clear your browser cache or try a different browser.

FAQs

7. Contributing

How to Contribute

1. Fork the repository.
2. Create a new branch for your feature or bug fix.
3. Submit a pull request with a detailed description of your changes.

Code of Conduct

- Be respectful and inclusive.
- Follow best practices for coding and documentation.

8. License

Open Source License

- This project is licensed under the MIT License.

Attribution

- If you use this tool in your project, please credit the original authors.

Conclusion

The **Sustainability Integration Web Tool** is a powerful solution for Agile teams looking to prioritize sustainability in their workflows. By integrating **SusAF** and **AI-powered insights**, the tool helps teams build software that is not only functional but also sustainable, inclusive, and future-proof.