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SUMMIT STANDARD UNIFIED MODELING, MAPPING, & INTEGRATION TOOLKIT

SUMMIT User Event Logging and Reporting

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Objective

The purpose of this project is to add an Application Program Interface (API) to the SUMMIT architecture that collects data from events occurring on the SUMMIT server. The API stores the data into a search-based database called ElasticSearch. The data will be used to provide in-depth analysis on the usage of SUMMIT. The API will also provide tools to access and visualize the data on the web service.

Introduction

Standard Unified Modeling, Mapping & Integration Toolkit (SUMMIT) is the central technological component of Integrated Mapping, Modeling and Simulation (IMMS) program. SUMMIT is an easy-to-use toolkit for emergency planners and exercise developers to discover models, integrate them quickly and economically, and apply them in analyses to improve exercise planning. SUMMIT models are simulations created by planners to prepare exercises or occurrences in order to aid response preparations.

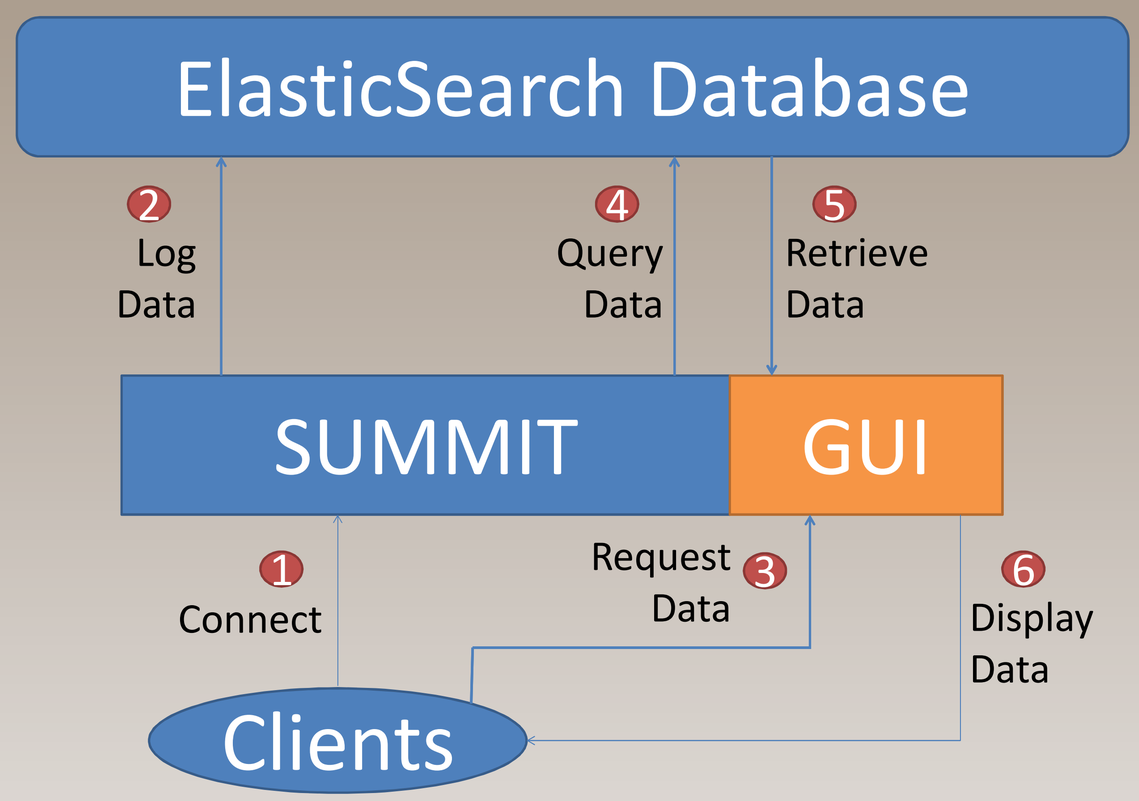
SUMMIT User Event Logging and Reporting is an essential tool for SUMMIT in that it would allow emergency planners and exercise developers to explore the details of the models, including how many times it was run, the average runtime, etc. SUMMIT Event logging and Reporting would assist the SUMMIT team and analysts in determining how, when, what, and by who the servers are being used for.

The following are sample questions answered through event logging:

- What time of the day has the highest user activity?
- What are the most popular actions (run, create, edit, search, etc.) performed by users?
- What are the most popular model runs this day/week/month?
- What are the most common searched terms by users?
- What are the statistics of each individual run?
  - How long do users take to configure runs?
  - How long do users look at results?

Approach

1) Research on a fast, search-based, and open-sourced database.
2) Create an intuitive API for logging onto database.
3) Match the API's approach with database's configuration.
4) Implement a dynamic singleton in the system.
5) Dig in the codebase and log all events.



Approach cont.

6) Create an API for querying the database.
7) Design a front-end graphical user interface (GUI) to allow users to interact with data.

Results

- Successfully set up and configured ElasticSearch database.
- Implemented a logging API and logged all events in a uniform format.
- Designed and partially implemented a query API to retrieve data.
- Integrated new code into the existing codebase.

Impact and Benefits

- This project allows SUMMIT team members to efficiently store and quickly search logs.
- The logs can be used by SUMMIT developers to improve SUMMIT's design.
- The query system enables the users and analysts to see the impact of SUMMIT.

Next Steps

- Create a graphical user interface for users to interact with data.
- Design an easy-to-use menu for selection of data.
- Implement chart and graph scripts to visualize the data.

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