Time Series Data Capture

This project will aim to provide a way for research groups to store and visualise time series data. The project will include:

- Single Page Web App (SPA) to search and visualise each data run
- System to pull and store data from an external file storage
- Server to store the imported data and method to communicate with the SPA

The system will be built so any file storage can be implemented as well as any type of time series data.

Single Page Web App

The SPA allow any user to search for runs, view and compare. Furthermore It will also allow administrator level users to import new runs as well as edit them.

Components of SPA :

- Search runs
- View and Compare runs
- Login
- Import new runs
- Export data to local machine
- Delete data from database
- Edit runs
- Responsive UI
- URL State

Search Runs

On the SPA the user can search for runs either by time & date, tags or data IDs. If user is not logged in only public runs will be available but if the user is logged in (admin) all runs will be available.

View and Compare Runs

Line graph will display each run viewed, the graph can be zoomed in and panned about. For each run annotations will be displayed as well as tags.

Login

Throughout the SPA if user is not logged in, all admin controls e.g. add new annotation will be hidden. Once a user is logged in admin controls will be shown.

Import New Runs

To import new runs into the database, admin user can select new runs which are stored in the file storage but not into the database. A different algorithm can be chosen to calculate Rth, once selection is confirmed runs will be imported into database

Export Data to local machine

One or multiple run(s) csv data can be exported to local machine as a zip folders.

Delete Data from Database

The file storage can never be edited but the database can. Admin user can delete runs from database.

Edit Runs

Tags or annotations can be deleted or edited as well as new ones added.

Responsive UI

The SPA will scale to any size screen either on desktop or mobile

URL State

The SPA will maintain its exact state within the URL, for example, what runs are being viewed, graph offset and zoom level, thus the URL can be copied and pasted to the share page being currently viewed.

Import API

Import API allows communication between file storage and server.

Components of Import API:

- Get run folder from file storage
- Compare runs between file storage

Get Run

Downloads a specific run folder from file storage to be stored into the database.

Compare Runs

Returns the runs stored in the file storage but not in the database

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Browse API

The Browse API allows communication between all components of the system

Components of Browse API:

- Communicates with database
- Communicates with SPA
- Communicates with Import API
- Rth Calculation

Communicates with Database

Queries the database to either get, update, add or delete a run or authentication data.

Communicates with SPA

Provides communication channels to the Database and the Import API from SPA

Communicates with Import API

Communicates to the Import API to download a specific run or to compare runs

Rth Calculation

When new runs are imported Rth calculation is performed using chosen algorithm and is appended to run data.

Database

NoSQL database hosted on the server, holds run and authentication data

Components of Database:

- Run Data
- Authentication Data

Run Data

Holds a collection of documents, each documents is a run which contains: ID, data and timestamp, tags, annotations and the time series data.

Authentication Data

Holds the file storage Client ID for file storage authentication

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Proposal

The following tasks will comprise the program of work

Search Page Tasks	Estimate (Hours)
Design Results List	2
Design Search Page UI	2
Implement Export	3
Implement Buttons	2.5
Implement Results List	2
Implement Pagination	1.5
Implement Search Page URL State	3

View Page Tasks	Estimate (Hours)
Design Annotations	3
Design Column/Tab Panel	2
Design Columns/Tab List	2
Build Graph Axis	3
Build Graph Lines	3
Build Graph Responsive	3
Implement Graph Zoom	5
Implement Graph Pan	5

Graph Trend Line Visibility	3
Implement Annotation Popup	3
Implement Annotation Drag	3
Implement Run Update	2
Implement Column/Tab Panel	2.5
Implement Edit Tag	2
Implement View Page URL State	5

Import Page Tasks	Estimate (Hours)
Import Panel	3
Folder Path	1
Folder Elements	2.5
Page Buttons	2.5
Algorithm Panel	1
Implement Import Panel	5
Implement Folder Path	1
Implement Folder List	2.5
Implement Graph	1.5
Implement Algorithms Panel	1.5
Implement Import Request	1

Server Tasks	Estimate (Hours)
Implement Browse API	2
Implement Database	6
Implement Search Query	1.5
Implement Query Component	1.5
Implement Update Component	1.5
Implement Add Component	1.5
Implement Rth Calculation	2
Implement Get Component	3
Implement Import API	2
Implement Get Import IDs	3
Implement Get Import Component	2

Authentication Tasks	Estimate (Hours)
Implement Get Client ID	1.5
Implement Auth0 Authentication	3
Implement OneDrive Authentication	5

Miscellaneous	Estimate (Hours)
Initial Start Up	3
Diary	8

Total (Hours)	131.5