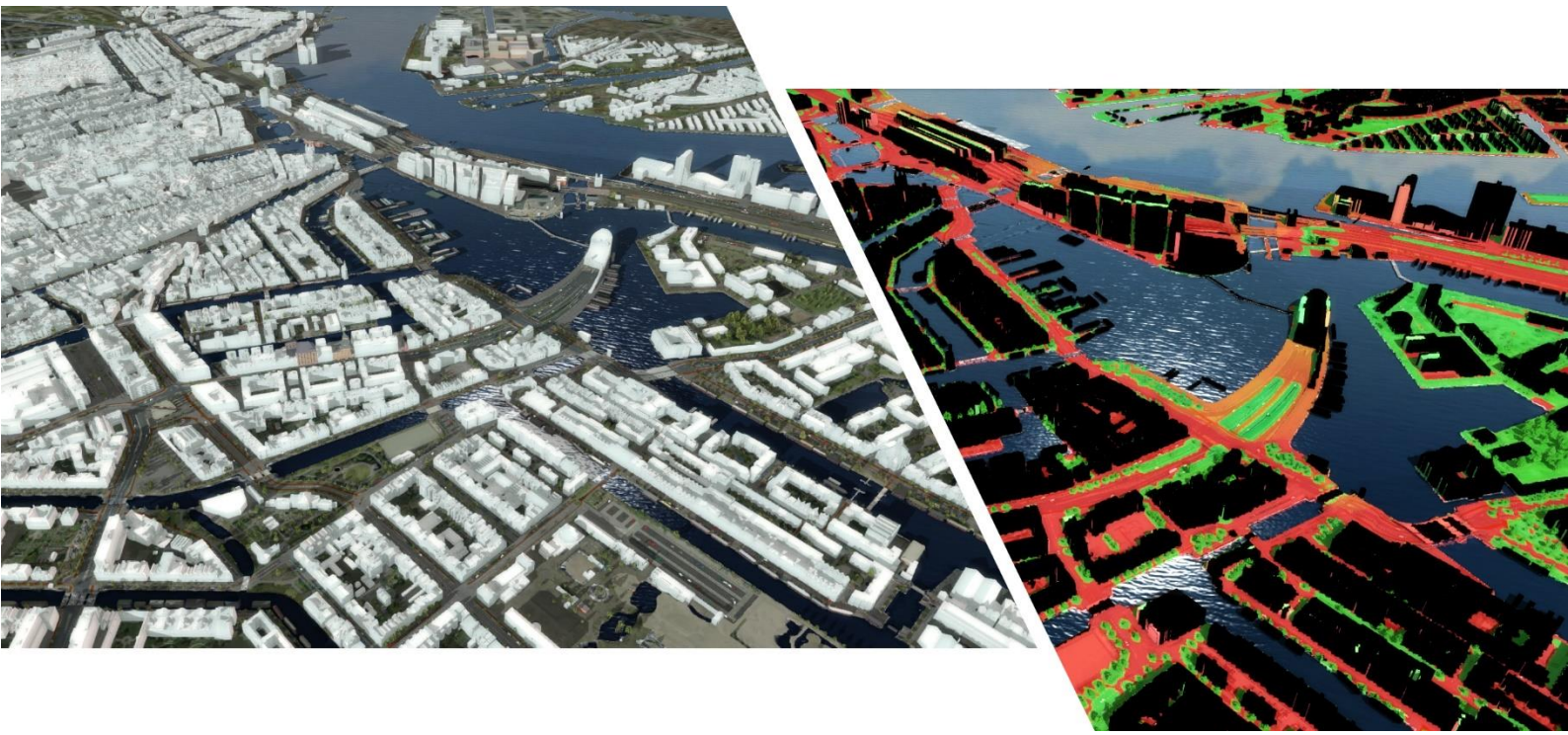
TYGRON PLATFORM

Accelerated Simulations for Engineers

DT-aCoGo Tygron WebApp Proxy API Description

Brief overview of structure, usage, and style

Version 2026.06.24



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General concept

The Digital Twin as a Common Good project (DT-aCoGo) aims to contribute to the solution of the increasingly complex and multidisciplinary urban challenges. The overall call for more holistic and integral approaches to assess policy and stakeholder value trade-offs are paramount in this solution. DT-aCoGo ‘s contribution is to be the deployment of the Open Urban Platform as a full Urban Data Space for the Digital Twin Pipeline and to make digital twinning replicable and scalable cross European cities by using ‘Recipe- templates

The Tygron Platform is a powerful software-as-a-service technology, which provides the ability to perform large-scale, high-detail geographical calculations for a variety of themes and use-cases, primarily in the built urban environment.

In this context, the Tygron Platform can be a contributing building-block in the more integral and holistic ecosystem, and can serve as a representative building block for how modern technology platforms can be brought into the fold of a broader network of platforms and dataspaces. Therefor, part of the work of this project has been directed at creating a connection between the Tygron Platform and the broader Open Urban Platform.

Approach

The Tygron Platform has a full-featured API, allowing access to all functionalities of the software. However, commensurate with the complexity of all potential use-cases, the API is specific to the software and requires substantive knowledge of the expert domain for optimal use.

To facilitate the use-case of a more simple request-response-based infrastructure, such as the one conceptually described for the Open Urban Platform Project, a Proxy-API has been developed based on the Open Source Tygron WebApp tool.

Open Source Tygron WebApp tool:

> Found here: https://github.com/Tygron/php-tygron-webapp

Custom DT-aCoGo Deployment files (excluding authentication secrets)

> Found here: https://github.com/Tygron/php-tygron-webapp/tree/main/sample/dtacogo-2026

The Tygron WebApp Proxy API application is deployed on a separate Web Server, and functions as an intermediary between the applications part of the Open Urban Platform ecosystem, and the Tygron Platform proper. External applications and users can send singular requests to the Tygron WebApp Proxy API, after which the WebApp will perform all required communication with the Tygron Platform. When the calculations on the Tygron Platform have been fully completed, the results can be obtained as a single output.

For the purposes of this Project, the calculation process made available is focused on Heat Stress in a built urban environment.

Audience

This document is intended for:

- Anyone interested in general documentation of the developed Tygron WebApp Proxy API Application at this time.
- The organizations working on the DT-aCoGo / Open Urban Platform integration project.

Disclaimer

The Tygron WebApp as a generic technology, as well as the Proxy API application thereof in the context of any specific Project, fall outside the scope of the Tygron Platform's overall support agreements, and are explicitly not provided with the same support guarantees. Deployment and ongoing maintenance of the Tygron WebApp Proxy API application are similarly beyond the scope of those agreements. The Tygron WebApp generically. and the specific Proxy API application thereof, are created and offered as-is and are not part of the officially support Tygron Platform infrastructure.

Usage of the WebApp directly

The WebApp can be found directly at the following URL:

https://webapp.tygron.com/dtacogo

On first visit, a login screen will appear where an AuthenticationToken must be provided. Organisations whom are allowed to access this WebApp have received individual AuthenticationTokens. On a successful login, the AuthenticationToken is stored plain-text in a cookie for subsequent requests.

The homepage of the application is a form where a simple calculation can be started.

Required inputs:

- Location (selected by clicking in the 2D map)
- Size of the project area (automatically set to 500m, which means 500 x 500 meters)

Optional inputs:

- Area of Interest (for specific calculations. Not relevant for DT-aCoGo)
- Buffer (only relevant with Area of Interest. Not relevant for DT-aCoGo)
- Tygron Platform credentials (a set of default credentials for DT-aCoGo have been embedded in the application)

Click on “Start” to start the process.

A “Task” file will now be created and stored in the WebApp. The WebApp communicates with the Tygron Platform to perform the requested calculation. While the calculation progresses, a waiting page will be open displaying the progress and/or current step of the process. Although the communication will be performed automatically, keeping the page open will make the process go faster.

When the calculation has been completed and results are available, the page will redirect to a dashboard page for displaying the results. The main content of this page is a 3D web viewer served directly from the Tygron Platform, with the Indicators and Overlays of the relevant results.

The dashboard page will remain available for a limited time.

Usage via the WebApp API

The WebApp's API can be found at the following URL:

https://webapp.tygron.com/dtacogo/api/ogc

For the API an AuthenticationToken is required as well. While navigating the API page's directly, a login screen will appear where an AuthenticationToken must be provided. On a successful login, the AuthenticationToken is stored plain-text in a cookie for subsequent requests.

When approaching the API programmatically, the AuthenticationToken van be provided as a query parameter in the URL. For example:

https://webapp.tpygron.com/dtacogo/api/ogc?authenticationToken=secrettokenhere

The API is based on the OGC API Processes standard, but does not fully conform to the specification yet. The general usage flow has been implemented sufficiently for live usage and experimentation.

The base of the OGC API can be found here:

https://webapp.tygron.com/dtacogo/api/ogc

The list of available processes can be found here:

https://webapp.tygron.com/dtacogo/api/ogc/processes

The process intended to be used for the DT-aCoGo and Open Urban Platform interactions can be found here:

https://webapp.tygron.com/dtacogo/api/ogc/processes/dtacogoheat

When a calculation is started, a JobID is returned.

A list of all currently known jobs can be found here:

https://webapp.tygron.com/dtacogo/api/ogc/jobs

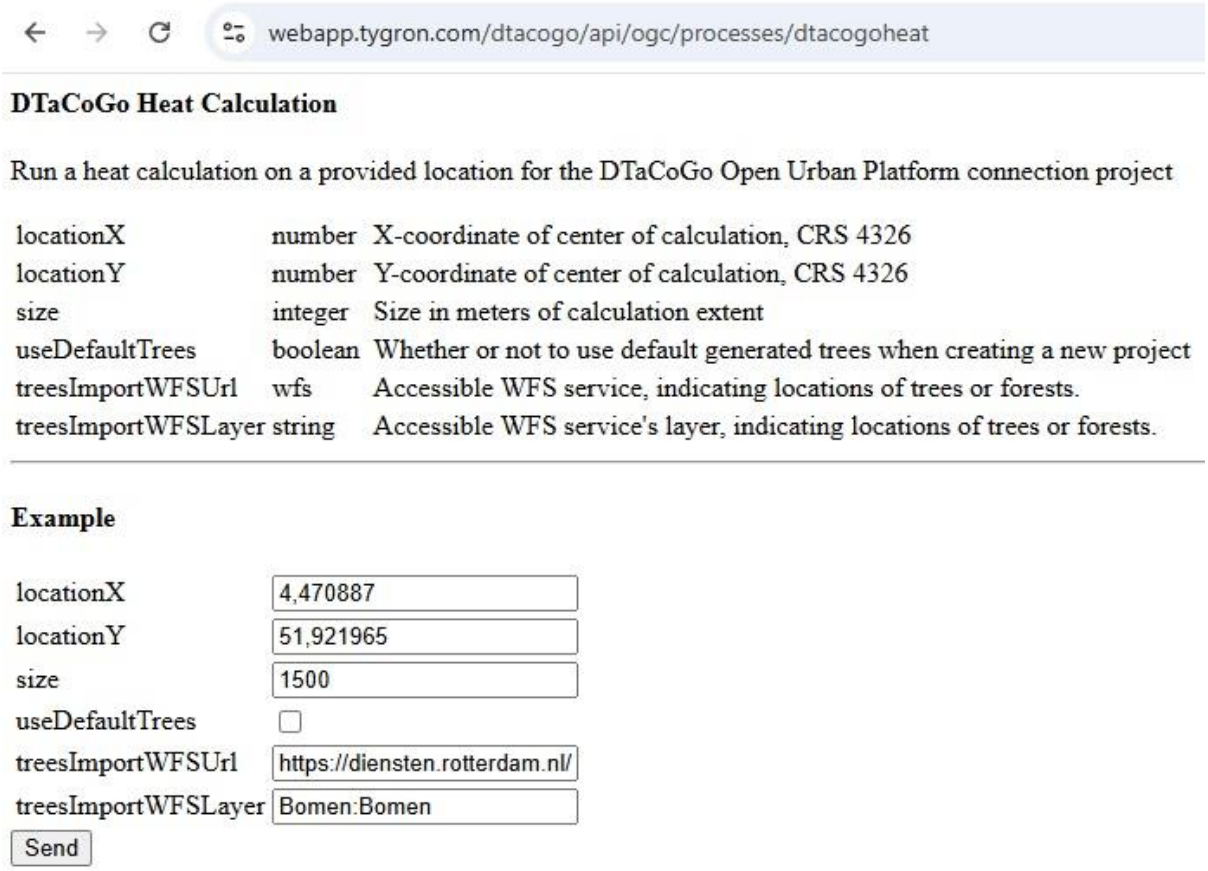
The status of a specific job with a JobID of "MyJobId" can be requested as follows:

https://webapp.tygron.com/dtacogo/api/ogc/jobs/MyJobId/

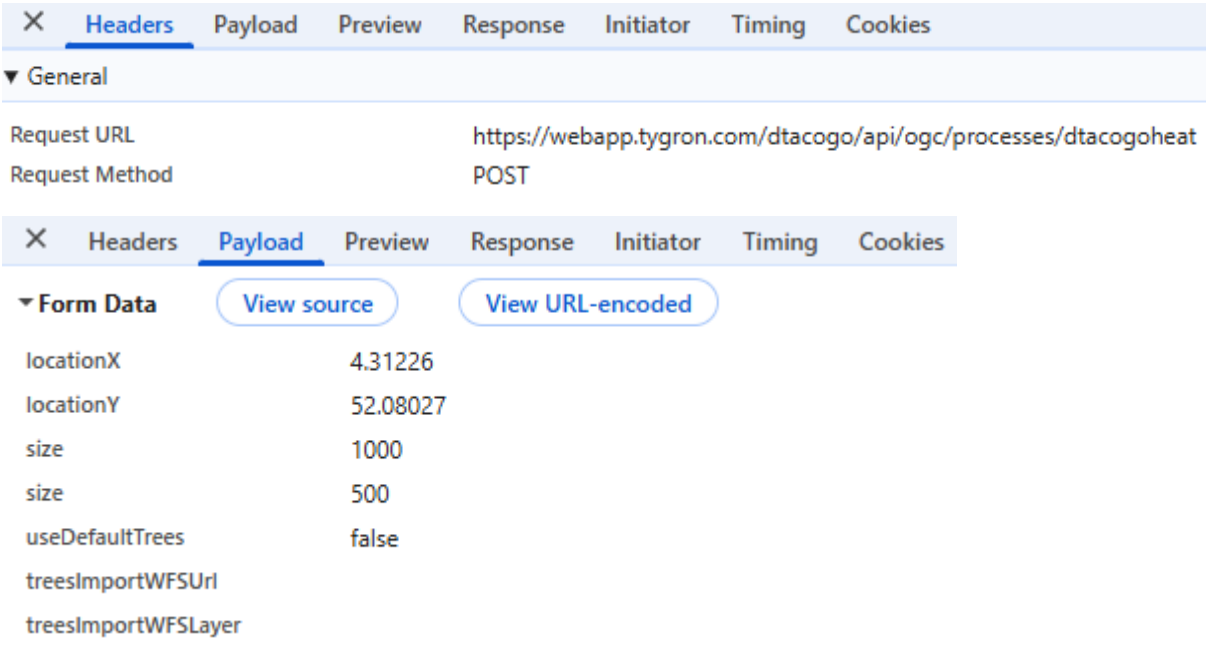
When results are available, either due to successful completion of the Job or an error having occurred, the results of that specific job with a JobID of "MyJobId" can be requested as follows:

https://webapp.tygron.com/dtacogo/api/ogc/jobs/MyJobId/outputs

The page of the specific calculation process shows a list of parameters which can be provided, as well as an example input page to test providing the parameters to the process.



A job can be created/started by submitting a POST request to the process endpoint, with the desired data as payload.

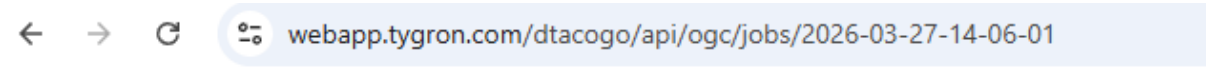


Alternatively, a GET request can be submitted to the /execute endpoint of the process, with the desired data provided as query parameters.

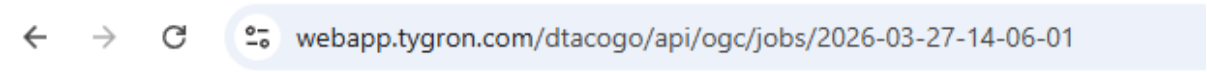
https://webapp.tygron.com/dtacogo/api/ogc/processes/dtacogoheat/execute/?locationX=4.470887&locationY=51.921965&size=500

Note that the “authenticationToken” parameter is not included in these examples as it was present in a cookie, but should be added to the payload or the query parameters when creating a new request.

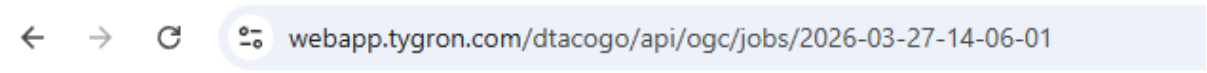
When the job is created successfully, a JobID is returned, which can be used to poll the status of the running Job.



{ "type": "process", "processID": "task", "jobID": "2026-03-27-14-06-01", "status": "accepted" }

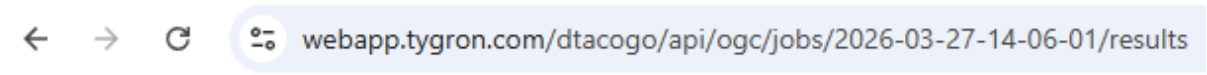


{ "type": "process", "processID": "task", "jobID": "2026-03-27-14-06-01", "status": "running" }



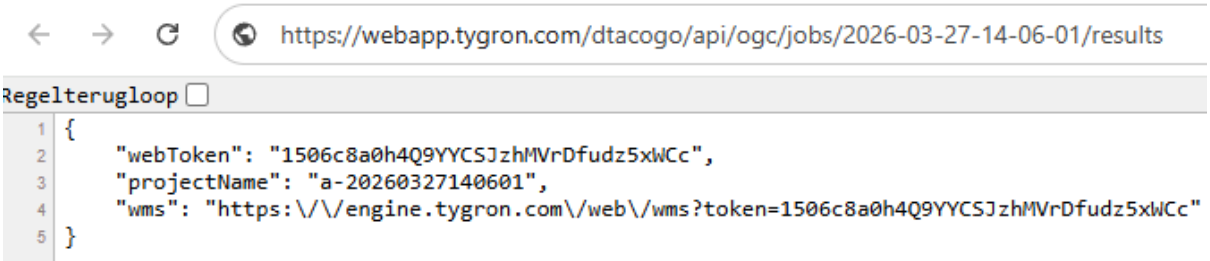
{ "type": "process", "processID": "task", "jobID": "2026-03-27-14-06-01", "status": "successful" }

While the job is running, no output is available.



[]

When the job has completed, the output is made available. Depending on the exact external application, different outputs may be appropriate. For DT-aCoGo, the WMS URL is most relevant, as it provides access to Overlays of the geographical results.



In addition, the projectName can be read out and displayed in the calling application, so that the end-user can also approach the underlying Digital Twin in the Tygron Platform directly.

The job and its results will remain available for a limited time. The WMS URL is a URL related directly to the Tygron Platform, and will remain valid for the lifecycle of the Project Session on the Tygron Platform proper. This will be approximately 2 weeks (without intervention).

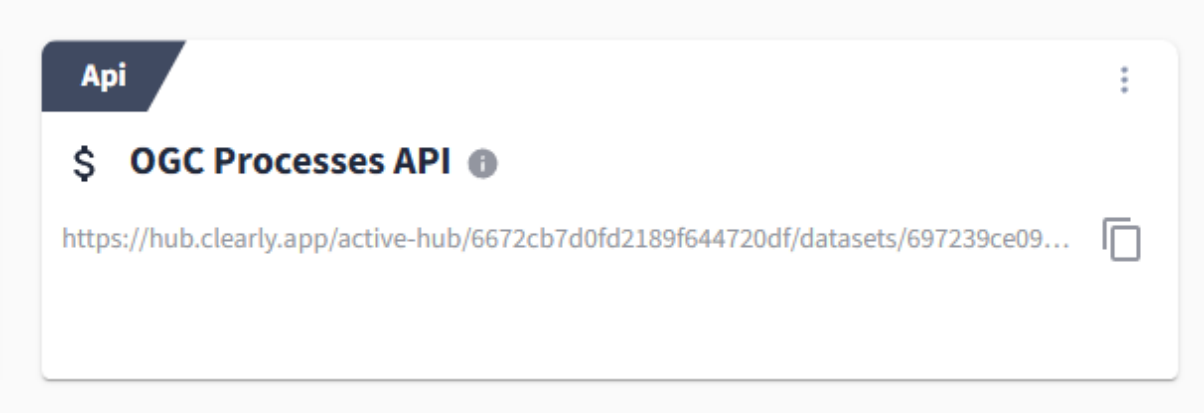
Usage via Open Urban Platform

The service is registered in the cleary.hub environment, as a “Dataset”.

There are multiple registrations, one per hub, so that individual authenticationTokens can be set per organization.

- Tygron Heat Calculation Rotterdam
  https://hub.clearly.app/datasets/ 6a0ef89c98b80fca0ff09565 /information
  - Owner Hub: Tygron
  - Shared with hub: DTaCoGo Rotterdam, The People Group
- Tygron Heat Calculation Den Bosch
  https://hub.clearly.app/datasets/6a0ef87298b80fca0ff09564/information
  - Owner Hub: Tygron
  - Shared with hub: DTaCoGo Den Bosch, The People Group
- Tygron Heat Calculation Tampere
  https://hub.clearly.app/datasets/ 6a0ef8b398b80fca0ff09566 /information
  - Owner Hub: Tygron
  - Shared with hub: DTaCoGo Tampere, The People Group
- Tygron Heat Calculation TPG
  https://hub.clearly.app/datasets/6a0f057298b80fca0ff0956f/information
  - Owner Hub: Tygron
  - Shared with hub: The People Group

In each Dataset, the API is registered as an “API” Resource, and can be accessed by calling the clearly.hub URL, with authentication for the relevant Hub/User in the Open Urban Platform. Clearly.Hub will then inject the required authenticationToken in the request, so that via this route it is considered a “secret”.



The same relevant relative endpoints are valid and applicable as with the direct API calls.

The same data parameters and workflow are valid and applicable as with the direct API calls.

Styling

Both the Tygron Platform and the Tygron WebApp set no requirements for the styling of external applications interfacing with them. Instead, external developments and application integrations are encouraged to fit any and all required inputs into their flow as they deem appropriate.

The homepage/task creation form of the WebApp may be used as an initial template or suggestion.

Applications may indicate that specific functionality or options are used with, or deferred to, the tygron Platform, either directly or via the Tygron WebApp or its Proxy API Application. Applications should avoid text, pictography, or other communications that the results provided as a result of this functionality or connection are guaranteed to be correct or endorsed.

Assorted notes

The Tygron WebApp is temporarily deployed for the purposes of this ongoing Project. Continued availability of the Tygron WebApp beyond the scope and timeframe of the Project is subject to discussion and currently not guaranteed.

The Tygron WebApp as deployed now contains a few credentials files for the Tygron Platform proper, which cannot be accessed by external users. Based on the authenticationToken injected via the Open Urban Platform into thee requests, the Tygron WebApp will select and utilize one of these credentials files. Based on that credentials file, the Tygron WebApp has some allowances in regards to how many projects can be created, how large they can be, and other common Tygron Platform licensing parameters. All usage of the Tygron WebApp, regardless of the actual User, Hub, Organisation, or Ultimate Beneficiary of the calculation, is attributed based on these credentials.

These credentials are, at time of writing, accounts managed in a separate domain for Project creation in the context of this project. For end-users to be able to access the created Digital Twins via the Tygron Platform proper, or to manage which generated Digital Twins are kept and for how long, these credentials should be aligned with a user account in the domain of the end-user instead.

The Tygron WebApp currently provides outputs as a result of a calculation, but does not persistently store these results. A number of considerations lead into this, including but not limited to an uncertaintly of the external caller, an intent of a generically usable tooling both via the OUP and outside of it, and the inherent transient nature of the results which are not stored infinitely.

Functionality developed but not fully connected or utilized in the context of this Project include:

- The ability to start a pre-existing Digital Twin rather than create one on-the-fly
- The ability to obtain a list of pre-existing Digital Twins to start
- The ability to load in tree-data from the Common Model specification of PurplePolarBear

Future developments, to increase the usability, flexibility, and performance of the Tygron Webapp Proxy API, could include:

- The ability to load in specific climate scenario’s for heat calculations.
- Improved conformity to the OGC API Processes standard, including schemas and link-references for better auto-discovery.
- The ability to export data from a Project via the same JobID-based interface, such that it can be persistently stored elsewhere.
- The ability to manage credentials files in the Tygron WebApp.