Build Custom Web Apps with CyVerse

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What to expect

Researcher?
What to expect

CyVerse Login with Keycloak

CyVerse Apps

CyVerse Terrain API
Mission
Study how chronic exposure to mine waste contributes to development of diabetes in the surrounding communities.
DMAC App Portal

https://dmac.pharmacy.arizona.edu
Why build a custom app?

Use Case: Demeter App

Next-Gen Sequencing Data (Genomic Data) → Data Processing using several Command Line tools → Higher level data that can be used for visualization
Why build a custom app?

Data Processing and Analysis

Discovery
Why build a custom app?

Your data

Data Processing and Analysis

Discovery
Why build a custom app?

https://dmac.pharmacy.arizona.edu
Demeter Demo

https://dmac.pharmacy.arizona.edu
Building the App
CyVerse Apps

Building a CyVerse app allows you to run your analysis directly on CyVerse using data in the Data Store.
CyVerse Apps

To build a CyVerse App

- Write a Dockerfile specifying software requirements and data analysis code.
- Example on DMAC Github
- CyVerse apps can be used stand-alone without a custom web app.

Build once, benefit forever!
BYO web stack

Database/API

[logo for Django]

User Interface

[logo for React]

Code for our app is publicly available on Github.
Terrain Web API

Collection of URLs you can use to communicate with CyVerse using web requests.

Some things you can do:

- List files you have in CyVerse Data Store
- Launch analyses
- Add metadata to files

Terrain API powers the Discovery Environment!
You can use Terrain API outside of the Discovery Environment too!

Many ways to make a web request:

- From command line with curl command
- Python using requests library
- From your custom web app

Terrain API Documentation
https://de.cyverse.org/terrain/docs/index.html

Intro to Terrain Webinar
https://cyverse.org/webinar_TerrainAPI
KeyCloak

Keycloak is the service CyVerse uses for user login and supports Single-Sign On.

Want to use CyVerse login in your application?

Contact CyVerse support to have your web application approved and added.

You will be given information that you can add to your app to connect to KeyCloak.
Why build with CyVerse

- Automate your research workflow
- Offload analysis logistics to CyVerse
- Free up your time
DMAC Team

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Principal Investigator

Nirav Merchant
Co-Investigator

Anthony Vicenti
Statistician & Computational Biologist

Michelle Yung
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Resources

Code

● Docker Image for CyVerse app: https://github.com/ua-srp-dmac/STAR-docker
● Demeter Django/React app: https://github.com/ua-srp-dmac/demeter

CyVerse Learning Resources

● Building a CyVerse App: https://learning.cyverse.org/de/create_apps/
● Terrain API Documentation: https://de.cyverse.org/terrain/docs/index.html
● Terrain Webinar: https://cyverse.org/webinar_TerrainAPI
What questions do you have?