JPL Download Manager

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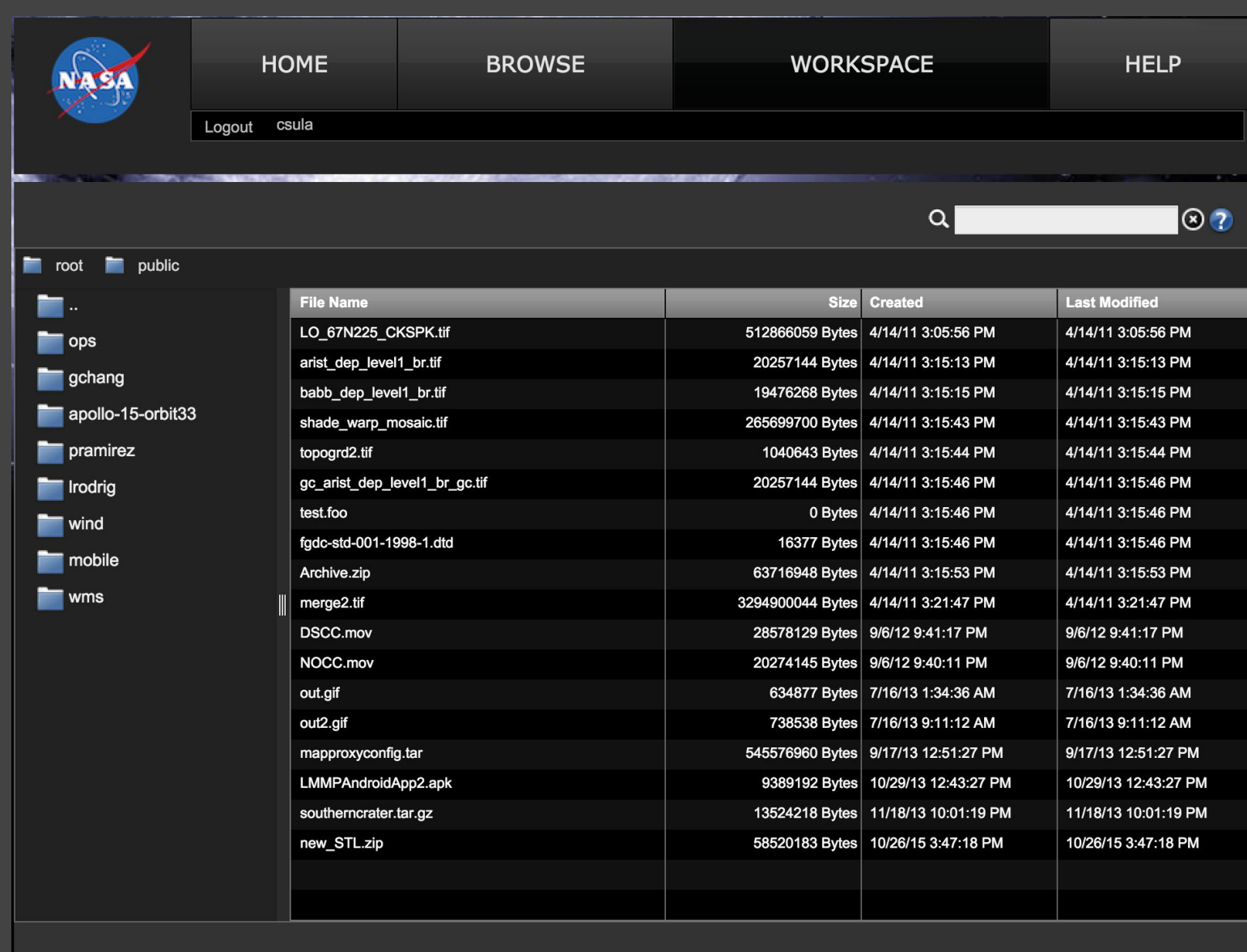California State University, Los Angeles

Background

JPL provides lunar images through the Lunar Mapping and Modeling Portal (LMMP). The process of searching for and downloading these images is inefficient. In addition, when new images are released, JPL's servers have a difficult time handling with the traffic.

Objectives

- Provide a user friendly interface for browsing, searching, and downloading data from JPL's database
- Support authenticated and encrypted downloads.
- Account for costs / traffic

Architecture

- Storage
  - JPL data currently in S3 bucket on Amazon Web Services
  - Compressing and encrypting those files using EC2 (amazon instance) will save space.
  - To bring down costs, we will use Amazon's Glacier to archive the least frequently used images.
- Accessing Images
  - The client will use Amazon's Lambda as a REST API to download and upload images.
  - Cloudfront will be used as a content distribution network that will serve download requests.
- Users
  - Use a Relational Database and Amazon's Integrity Access Management (IAM) to control who has access to download encrypted files or has access to change user roles.

Current LMMP Website
- Unable to see image thumbnail of data.
- Images are buried in a tree hierarchy.
- No download status information
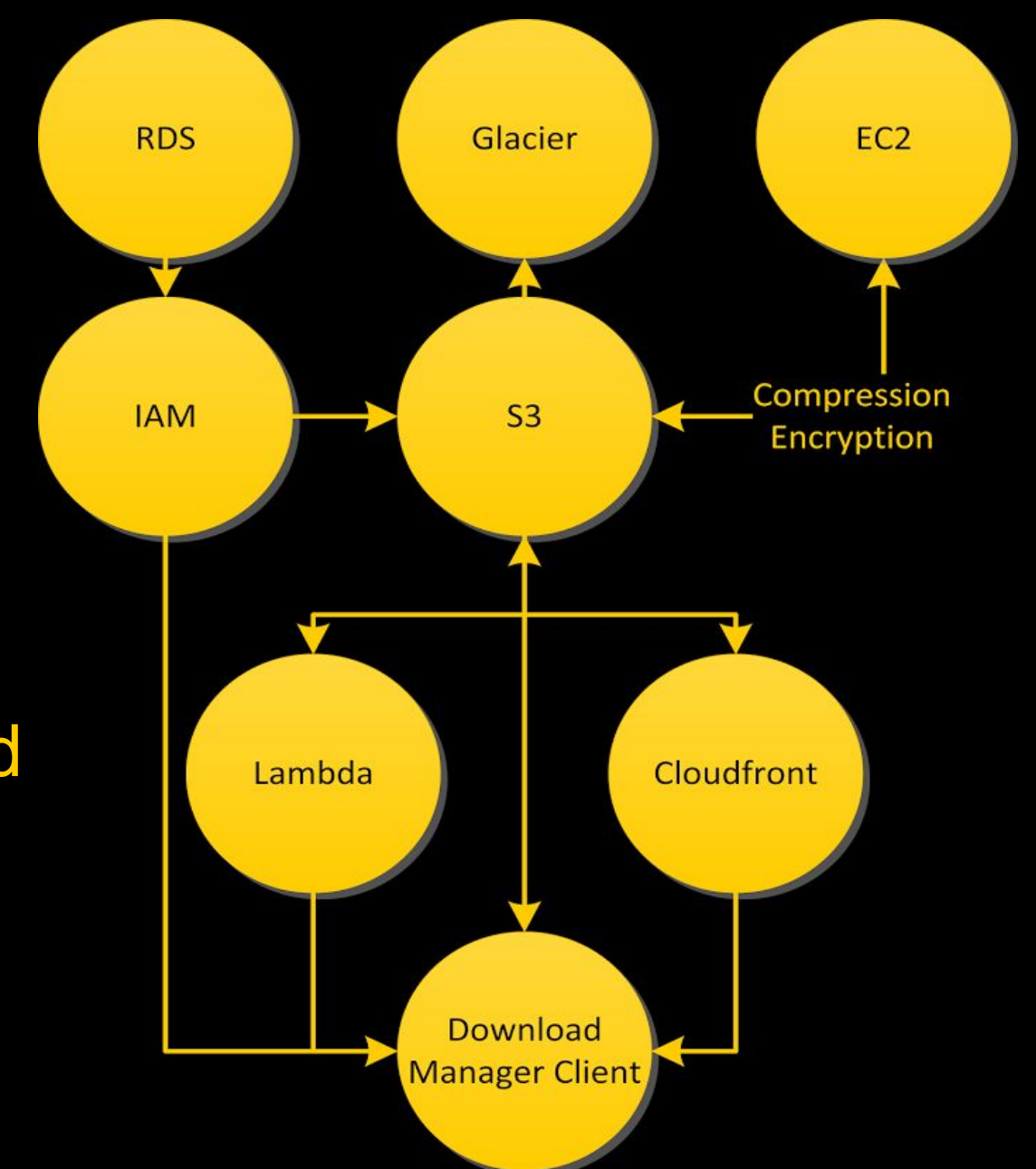- No multipart downloading / bogs down server
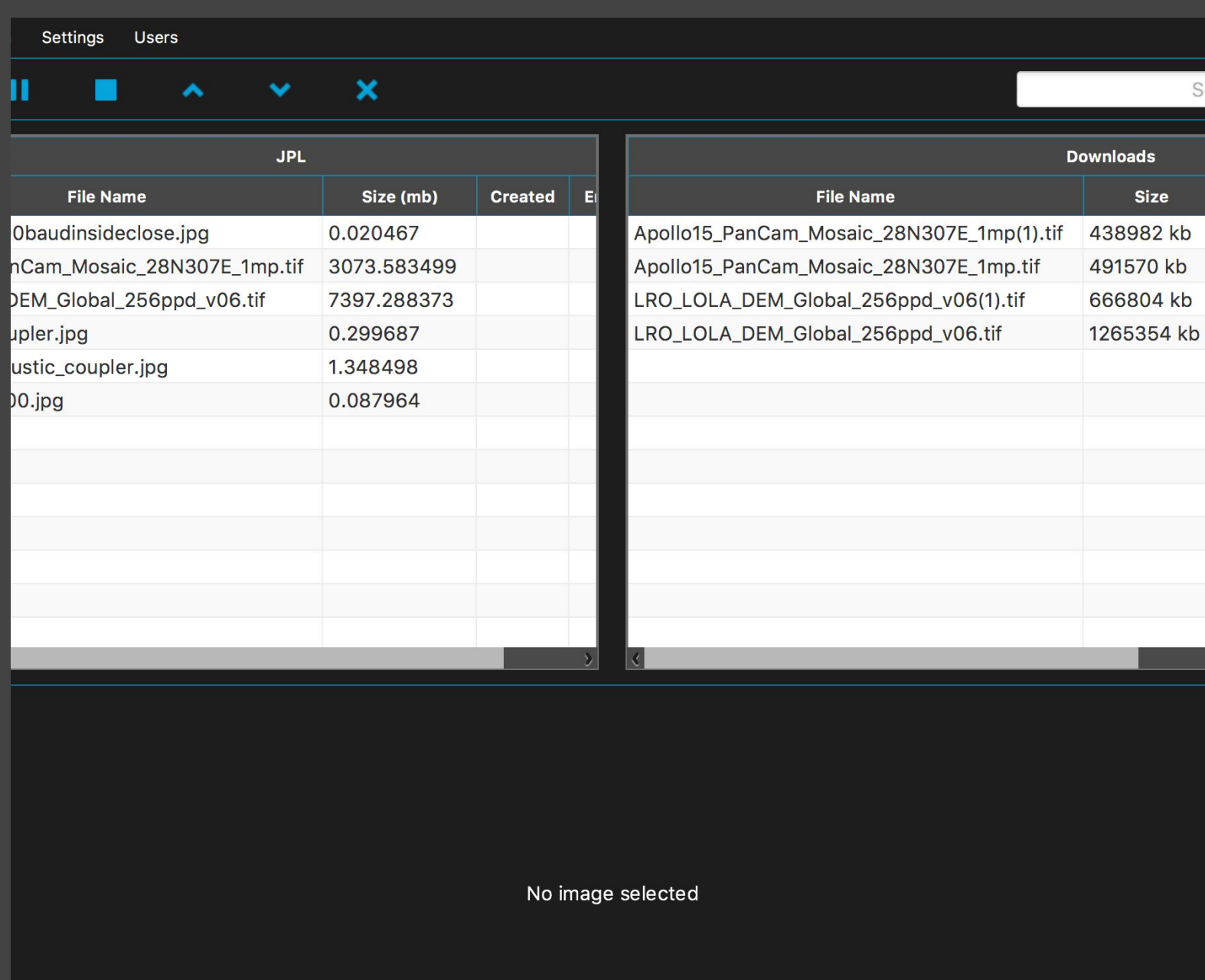
Download Manager Client
- Allows the user to search for images on JPL database (table on left) and show a listing of already downloaded images (table on right).
- Future features include login, searching, filtering and changing user credentials, stopping resuming downloads and thumbnail preview.

Conclusion

1. Became more familiar with the agile development process.
2. Leveraged cloud capabilities to build a scalable low cost downloader.
3. Learned to overcome delays.
4. Successfully implemented download manager with basic functionality (download, filter table with search bar).

Tools