

# EE / CprE / SE 491 – sdmay19-07

## Real Estate Portfolio Optimization

### Weekly Report 14

Monday, February 25 – Sunday, March 10

Client: Principal

Faculty Advisor: Chinmay Hegde

#### Team Members

Blake Roberts - Project Manager / Backend  
Colton Goode - Meeting Scribe / Backend  
Kevin Johnson - Quality Control / Frontend  
Leelabari Fulbel - Meeting Facilitator / Frontend  
Nickolas Moeller - Report Manager / Backend

#### Past Week Accomplishments

- The team focused on creating a midpoint presentation for our client, similar to last semesters midpoint presentation. For this, we updated both the team we are working with at Principal along with multiple others who may be using the system. We discussed current progress, showed a demo, and received valuable feedback from the client.
- Work on a script to compile data from the database into a csv which can be uploaded to Power BI for use in the report - Blake
- We were able to embed Power BI, but we had a lot of trouble trying to authenticate and display our uploaded report. We decided to use Microsoft's separate authentication step to keep our project going.
- Leelabari got started on saving constraints for the market and property constraints.
- Created draft for comparison report

#### Individual Contributions

Team Member	Contribution	Week Hours	Total Hours
Blake Roberts	Script to pull data from database for use in Power BI report	12	94
Colton Goode	Worked on PBI user authentication and embedding powerbi in the application	12	98
Kevin Johnson	Edits to Comparison Power BI report	12	91
Leelabari Fulbel	Worked on Persisting constraints from input	12	92
Nickolas Moeller	Troubleshooting embedded Power BI	12	96

## Pending Issues

- Power BI is embedded but visuals won't load when attempting to automatically authenticate a user. It get stuck on authentication indefinitely. However, when manually authentication from the user is requested, it is functional
- Lee
  - Currently not able to get Region constraints added as there is no model for that.
- Kevin
  - Need to figure out how to set up measurements for market value\percentage
  - Data will need to be formatted once embedding is working

## Plans for Coming Week

- Create endpoints to create, update/modify, and delete datasets in Power BI via the REST API. We should be able to send new portfolios and NCREIF data and have the dashboards update based on the new data
- Leelabari plans on continuing his work with constraints persistence. The constraints should be saved in our database. He will work on saving constraints in a file as a csv and allow for the uploading on constraints.
- Kevin - Continue improving Comparison report
- Create a User Testing Plan to use in our upcoming coordinated user testing with Principal
- Add custom user defined constraints to the optimization engine
- Modify the Covariance matrix calculation to fit with different dimensionalities due to number of assets

## RASIC

### R: Responsible

- The team member primarily responsible for the task's completion.

### A: Approve

- The team member responsible for approving the task's completion.

### S: Supporting

- The team member(s) who support the task's completion.

### I: Informed

- The Principal team member(s) who are informed of decisions, progress, and completion associated with the task.

### C: Consulted

- The Principal team member(s) who serve as Subject Matter Experts or key stakeholders for the task or project as a whole.

Past Week RASIC:

2/25/2019										
Task	Team Members					Principal Team			Action	Notes
	Blake	Cole	Kevin	Lee	Nick	Ben	Jonathan Ling	Jonathan Frank		
Link constraints UI with backed constraints model and add a "run optimization" button which will use the constraints to run the optimization	S			R						
Embedding Power BI		R	S		S					Basic authentication and interfacing with the Power BI Rest API working, need to focus on embedding and dynamically changing it in the UI
Power BI Datasets					R					After embedding is finalized, use REST API to send data to a dataset within our PBI report
Database to Power BI data migration	R		S							A basic script which can output an optimization data in Power BI format exists. Need to extend this functionality to collect data for ncreif, unoptimized, and optimized portfolios. Also need to address sending data for multiple runs of optimizations (multiple risk values associated with ncreif or optimized portfolios). All This data is needed to visualize the efficient frontier, but not for other comparisons necessarily.
Dashboard templates in power bi			R							Creating dashboard to display unoptimized v.s. optimized v.s. ncreif data

### Next Week RASIC:

3/11/2019										
Task	Team Members					Principal Team			Action	Notes
	Blake	Cole	Kevin	Lee	Nick	Ben	Jonathan Ling	Jonathan Frank		
Review capabilities for constraints persistence	S			R						
Backend user constraints	R									Based on feed back from our mid-point, we should allow for user defined custom fields to be constrained on
Usability Testing Plan					R					A standard plan in which to gather data about the usability of our application
Dynamic Covariance Matrix Calculation	R									Right now, expected return calculation only works for the ncreif portfolio because of how the covariance matrix calculation works. Need to fix that.
Database to Power BI events interface		R								We need to work on an interface for sending optimization data from the database to a Power BI dataset
PBI Dashboard			R							