The purpose of this project is to develop a more efficient system for managing the resources required for projects based on capacity and demand. The goal of this project was to provide a simplified application to update projects for departments and update the capacity available.

Technical Objectives

The objectives of this project were to create a projects page that handled demand, a capacity page that handled capacity, and a dashboard page to serve as a visualization tool that depicts the relationship between capacity and demand.

The Capacity page represents the capacity aspect of the application. It depicts information related to employees as a measure of full-time equivalence (FTE) for a specific department and office by month. This value is also converted to hours to include a measure of capacity in hours as follows:

\[ \text{Capacity Hours} = \text{FTE} \times \text{Working Hours in Day (8)} \times \text{Working Days in Month} \times \text{Utilization Percentage (0.85)} \]

The application also includes a dashboard page, and an API to make changes to the database. The API allows for creating, removing, updating, and deleting values in the database. This requires a distinguished admin access to limit the users who can access the database directly. The tables accessed by the API also have pages on the application that can only be viewed by admins. The communication architecture diagram to depict this process is shown in Figure 6.

Next Steps for Development and Test

The next milestone for this project is to incorporate a machine learning algorithm to better distribute employees to projects. This algorithm would allow resources to be automatically distributed based on a past relationship between capacity and demand attributed to a location. The machine would be able to store years of information and data allowing for an increase in company efficiency.

Commercialization Plan and Partners

The team worked with Development Managers, Senior Project Managers, and Global System Managers at Urban Science. The end goal is to make this application useable within the Urban Science environment for all their offices across the globe.