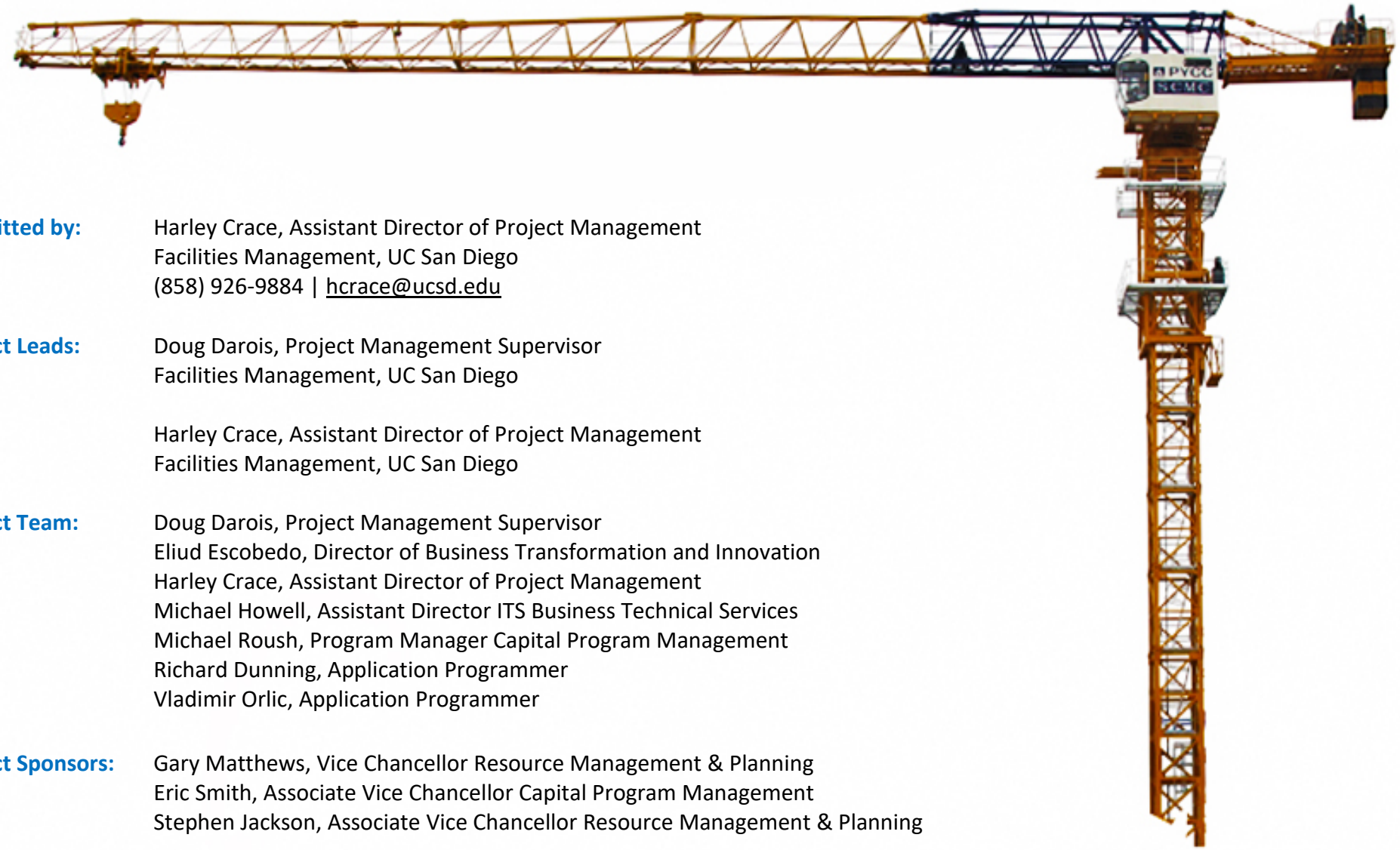
UC San Diego

Customer Dashboard for Construction Projects

Larry L. Sautter Award Submission - 2020



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Project Description

Timely communication is one of the most critical aspects of effective project management, this is especially true for construction management as there are many decisions made through the lifecycle of a project. Key drivers for stakeholder engagement and project success heavily rely on three fundamentals: 1) access to information, 2) regularly updated information, and 3) easily understandable information. UC San Diego's primary construction management teams, Capital Program Management (CPM) and Facilities Management (FM), created a user-friendly web interface which reports project information to 20,000+ faculty and staff members. The tool provides current updates related to project status, scope, budget, schedule, critical milestones, risks and project participants.

The Problem

UC San Diego is experiencing unpreceded growth with $10 billion of planned construction between 2019 and 2029. Such an aggressive program requires extraordinary communication tactics; standardizing broad scale project information and data reporting at all levels of the organization was something we had to figure out. In the past, we leveraged multiple project management and collaboration tools, like eBuilder, Trello and emails (direct and listservs) for project updates. These distribution channels made us dependent on project participants sharing information to key stakeholders within their organizations. Even on a relatively small scale this approach is inefficient, siloed, and cumbersome. How could we keep our customers informed and still survive during this explosion of activity?

The Idea

Find a way to standardize our reporting methods, regardless of project scope or budget, and do it in a way that our customers could easily access and understand the information. System must-haves included:

- User-friendly interface for customers and project management staff
- Provides easily accessible and understandable information for stakeholders at all levels (end users to leadership and everyone in between)
- Presents data in macro and micro scales for quick consumption based on user needs
- Refreshes information on a specified basis
- Provides a consistent format across projects and project managers so that users can find information quickly
- Allows scalability and flexibility
- Captures project history and changes for the entire project duration and beyond
- Has the ability to ingest standardized data from other systems
- Creates a database of project cost and schedule information for better budgeting and planning

The Sticking Point

Historically, the two primary construction delivery teams on campus, Capital Program Management and Facilities Management, had been reporting project information to clients in distinctly different ways. CPM posted information to the collaboration app Trello and was in the process of modifying their project management software platform (eBuilder) to export directly onto Trello cards. FM was using an Excel database, which contained more than eight years of important historical project information. How could the two systems merge and be effective?

The Solution

Initially, we hoped to find an existing software system that could accommodate most of our must-haves. While there are numerous enterprise-level solutions for project management our search revealed one commonality, they were all geared toward the IT and construction industries with no regard to the unique requirements of a higher-education environment. Without a viable solution, we looked internally and discussed options and timeline with our IT development group. With pressure from leadership to do something quickly, we adopted an aggressive development schedule and began mapping and harmonizing all of the required data from our systems. Although we encountered some obstacles, with a lot of hard work, long hours, and an endless supply of caffeine, we created exactly what we set out to achieve, a user-friendly project reporting system that was accessible for our customers and easy for our project managers to update. We addressed every must-have item and incorporated enhancements, like private notes sections for supervisors and project managers, advanced metric and reporting capabilities in addition to safeguards for project documentation and project closeout, warranty data, and document repositories.

Customer and User Response

Our customers love how easy the system is to use, the level of detail, consistency across projects and the ability to leverage built-in tools like the Excel export function for internal distribution and meetings. Other benefits realized through the system include better coordination between projects with different project managers and increased visibility across multiple departments, like the Campus Fire Marshal, Design Development and Permitting, the Budget Office and Campus Planning. We have also been able to expand some of the functionality for other department needs, including project reporting to UCOP by our Capital Planning group and spend forecasting for our Deferred Maintenance and Utilities programs.

Success and Cross Collaboration

Initially, we based our planned success metric on a grassroots feedback campaign and behind-the-scenes hit tracker to gauge usage rates. Through strategic rollouts (mass and targeted), user participation quickly grew and we knew our audience was engaged and that the system was functioning well. We based our new success model on how we can leverage the tool for other UC San Diego users and campuses. Currently, we have two groups that are implementing the same technology, UC San Diego's Capital Planning team and UCLA's Facilities Management Project Management unit. Other groups that have expressed interest in implementing the application include UC San Diego ITS, UC San Diego Environment Health & Safety, and UC Merced's Facilities Management Project Management team.

Timeline

Technology

The system is a Java Spring MVC webapp running on Tomcat against an Oracle database. It's accessed through UC San Diego's Single Sign-On portal.

Future Enhancements

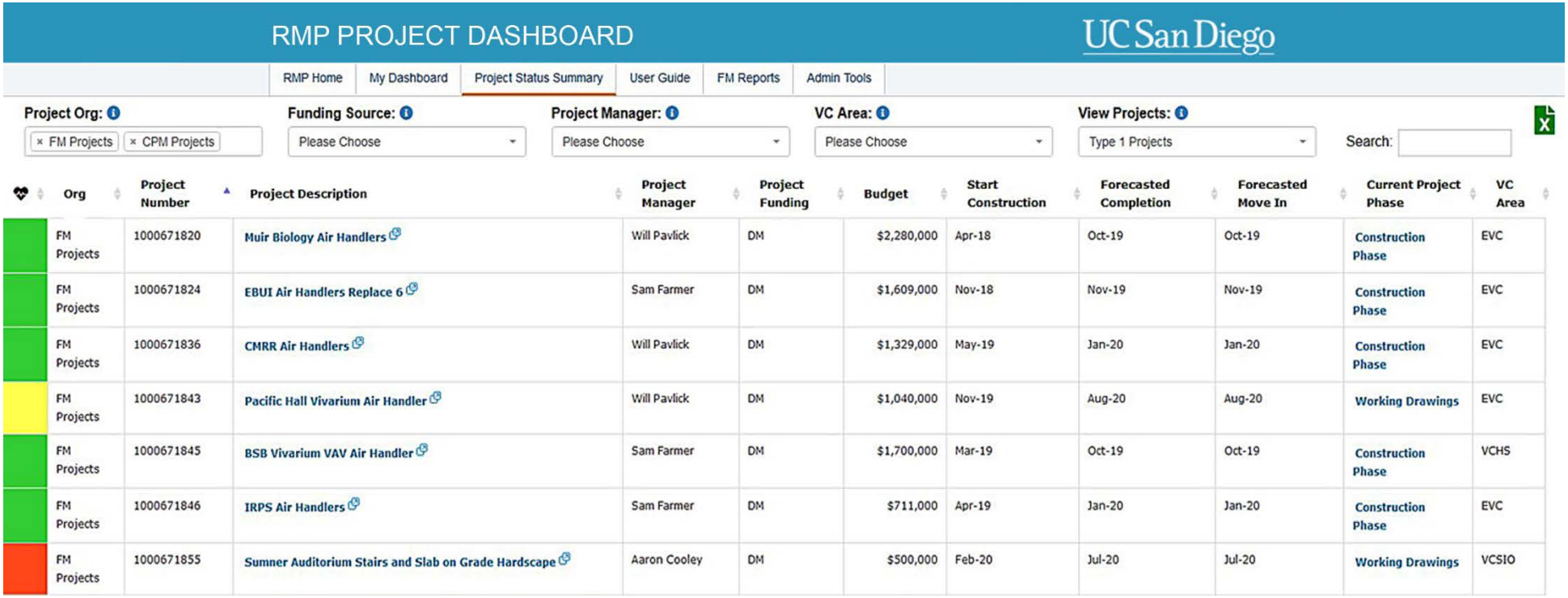
Anticipated application functionality within the next 1–2 years includes:

- Interactive campus/project map with quick links to micro project details
- Project/Program spend modeling
- Greater metrics capabilities and graphics
- Push/Pull capabilities with financial systems
- Customer portal for 2-way communication

Screen Shots / URL's

The site is accessible by UC San Diego's Single Sign-On only. Our development site can be viewed at https://tinyurl.com/yc3pe442.

Main / Macro View



Org	Project Number	Project Description	Project Manager	Project Funding	Budget	Start Construction	Forecasted Completion	Forecasted Move In	Current Project Phase	VC Area
FM Projects	1000671820	Muir Biology Air Handlers	Will Pavlick	DM	$2,280,000	Apr-18	Oct-19	Oct-19	Construction Phase	EVC
FM Projects	1000671824	EBUI Air Handlers Replace 6	Sam Farmer	DM	$1,609,000	Nov-18	Nov-19	Nov-19	Construction Phase	EVC
FM Projects	1000671836	CMRR Air Handlers	Will Pavlick	DM	$1,329,000	May-19	Jan-20	Jan-20	Construction Phase	EVC
FM Projects	1000671843	Pacific Hall Vivarium Air Handler	Will Pavlick	DM	$1,040,000	Nov-19	Aug-20	Aug-20	Working Drawings	EVC
FM Projects	1000671845	BSB Vivarium VAV Air Handler	Sam Farmer	DM	$1,700,000	Mar-19	Oct-19	Oct-19	Construction Phase	VCHS
FM Projects	1000671846	IRPS Air Handlers	Sam Farmer	DM	$711,000	Apr-19	Jan-20	Jan-20	Construction Phase	EVC
FM Projects	1000671855	Sumner Auditorium Stairs and Slab on Grade Hardscape	Aaron Cooley	DM	$500,000	Feb-20	Jul-20	Jul-20	Working Drawings	VCSIO

Detailed Project View

1000671824 EBUI Air Handlers Replace 6

Key Objectives / Drivers

Replace AHU's 1, 4, 5,6 & 7 at EBU-1 with new fan-wall systems. Scope also includes new ductwork at exterior locations, new T-stats throughout the building and new VFD's on the supply and exhaust fans.

Project Phase

Construction Phase

Project Health **Last Update:** 10/25/2019

The project remains on-schedule and on-budget.

Executive Summary

01-OCT-19 We directed UMEC to proceed with the replacement of three OSA dampers as part of CPFO #14, install is 4-6 weeks out based on lead-time. New AHU-4 is scheduled for startup on 10/12 with cutover from the temp unit scheduled for 10/13.

01-SEP-19 Work on AHU-4 continues and we're about 4 weeks out from startup, AHU-7 is now in use. OSA dampers for 3 ANU's are frozen and may need to be replaced, further evaluation of the mechanisms and motors will happen on 9/22/19.

01-AUG-19 AHU's 1, 5 & 6 are in and operational. AHU's 4 & 7 are being installed now with startup of AHU-7 expected at the end of August, AHU-4 will go into service the first week of October.

Project Contacts

Project Admin	Julieta Prieto (858) 534-7779
Project Manager	Sam Farmer 858-265-5474
Project Manager Supervisor	Jim Hennelly (858) 322-2126
Architecture Engineer	Paul Stuart (760) 487-1396
Contractor	University Mechanical (619) 956-2500
Client	Rene Real

Project Milestones

P Phase: JUL-17 | W Phase: NOV-18 | NTP: NOV-18 | C Phase: NOV-19

Substantial Completion is scheudled for 11/29/19.

Move in / Occupy

11/29/2019

Budget

$1,609,000

Budget Approval

JUL-18

Schedule Summary

Baseline Completion: OCT-19 **Forecasted Completion:** NOV-19 **Variance Days:** 30

Project Risks

Item#	Date	Type	Description	Delay Type	Mitigation Strategy	Budget Impact	Budget Impact ($)	In Current Budget	Schedule Impact	Schedule Impact (Days)	In Schedule Summary
1	17-Sep	Budget & Schedule	Existing VFD's on the supply and exhaust systems are failing and need to be replaced, this is beyond the original scope of the project.	Technical	The equipment needs to be replaced therefore we'll have to request an add to the budget.	YES	$175,000	YES	YES	30	YES