



University of California
San Francisco

Student Registration System Redesign

Project Overview

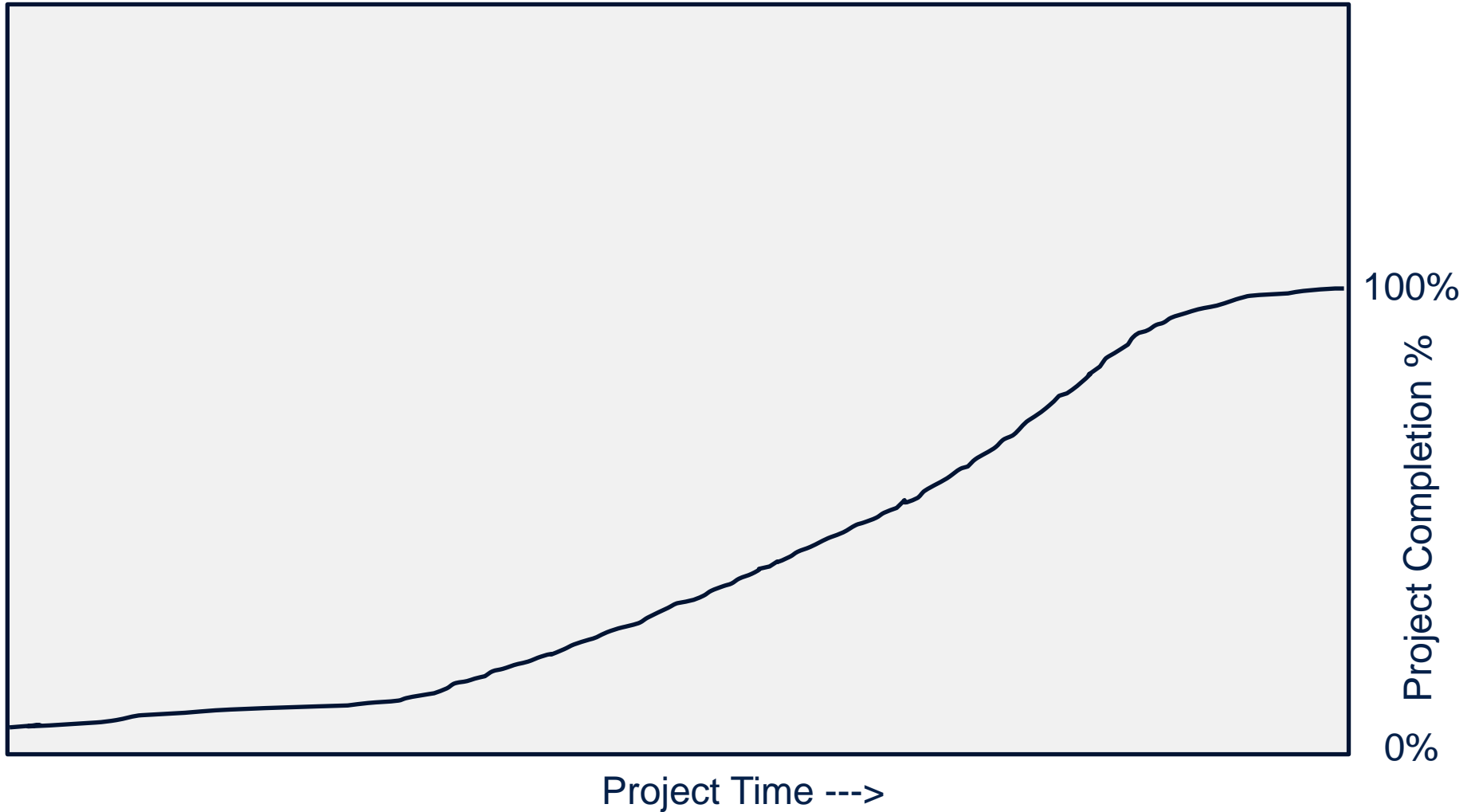
Kevin Yeung
Student Information Systems

8/1/2016

Project Overview

- Goals of project
- Evaluating different technologies
- Design/ Prototyping/Proof of concept
- Putting in new development/Continuous integration environment
- Implementation
- Timeline

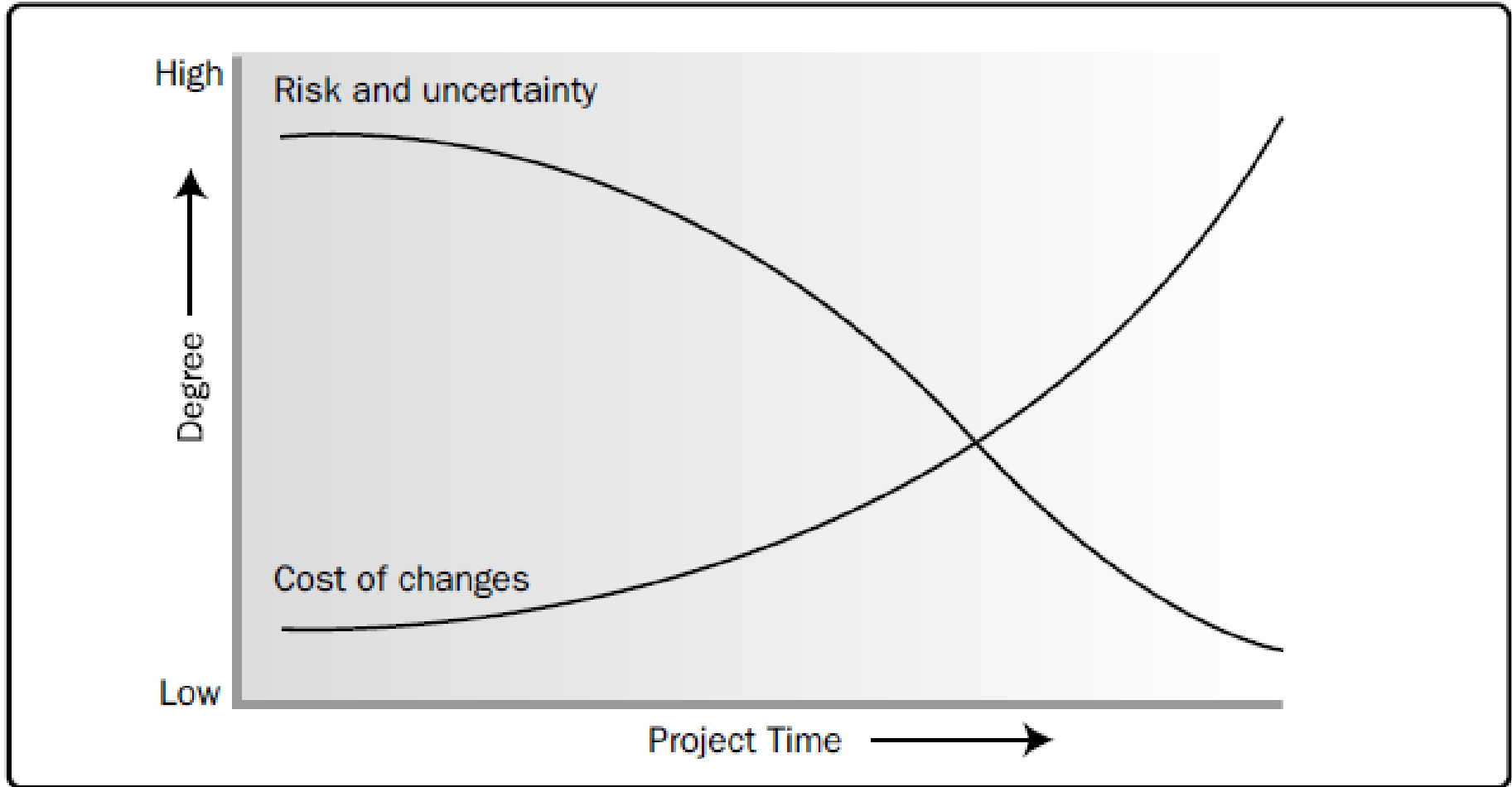
Project Completion % vs Project Time



Balancing the competing project constraints:

- Scope
- Quality
- Schedule
- Budget
- Resource
- Risks

Cost and Risk/Uncertainty over time



User interface changes have led to positive student behavioral outcomes including:

- 348% increase in students adding an emergency contact address!
- 15% to 20% decrease in the number of paper study list change petitions filed due to the new user interface preventing students from making mistakes during registration
- 38% increase in students updating address information; ensuring mailings are sent to the correct address
- 75% increase in students entering their expected graduation term
- 42% increase in students entering or updating a secondary e-mail address



How the customer explained it



How the Project Leader understood it



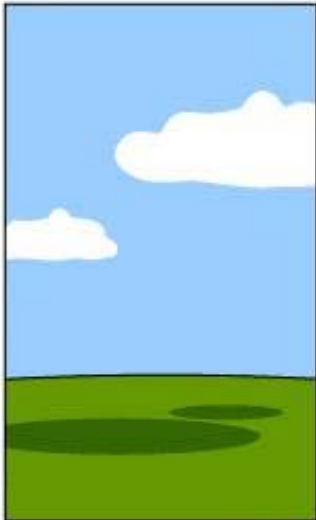
How the Analyst designed it



How the Programmer wrote it



How the Business Consultant described it



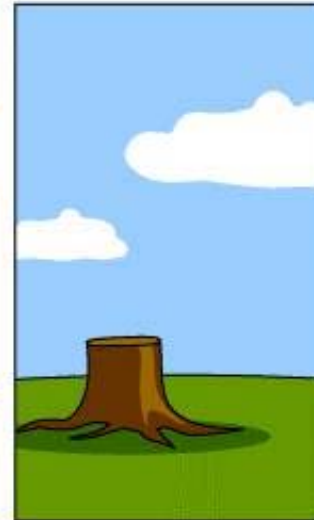
How the project was documented



What operations installed



How the customer was billed



How it was supported



What the customer really needed



University of California
San Francisco

Student Registration System Redesign

User Interface Design

Lisa Dong
Student Information Systems

8/1/2016

User Interface Design Process

- Review current system
- Main purpose of site
- Consolidate and reorganize
- Investigate design approaches
- Discussion with other departments
- Focus Groups
- Feedback
- Redesign and Release
- Continuous Improvement

Review Current System - Summary tab

Alerts Summary Addresses Fees Holds Privacy Settings Grades Study List My Health Transcript CA R

Jane Smith [Financial Aid Portal](#)

Term	Curriculum	Holds	Study List	Balance Due	Cal Resident
Winter 14	Dent Postgrad*	1 Holds	8.0 Unit(s) Filed	N/A	Yes
			Changes by petition only after Jan 24	Payment Deadline: January 22, 2014 Late fee after January 14, 2014	
Winter 14	Or CranFacSci	1 Holds	2 Courses(s) Filed	-	Yes
			Changes by petition only after Jan 24	Payment Deadline: January 22, 2014 Late fee after January 14, 2014	
Enrolled in 'Articulated Dentistry Program ' in Winter 14.					
Spring 14	Dent Postgrad*	1 Holds	Not Completed	\$0.00	Yes
			Enroll in at least 4.0 units by 02/28/2014	Payment Deadline: April 8, 2014	
Spring 14	Or CranFacSci	1 Holds	Not Completed	-	Yes
			Enroll in at least 1 course by 04/18/2014	Payment Deadline: April 8, 2014	
Enrolled in 'Articulated Dentistry Program ' in Spring 14.					

* Primary curriculum is displayed in boldface.
[Spring 2014 Registration Deadlines & Information](#) [Register to Vote](#)

Address & Phone:	500 Parnassus San Francisco, CA 94143 (415) 555-5555 Please provide emergency contact information .	[update]																				
Degree / Level Information:	<table border="1"> <thead> <tr> <th>Curriculum</th> <th>Current Level</th> <th>Degree Objective</th> <th>Expected Graduation Term</th> <th>Graduation Term</th> </tr> </thead> <tbody> <tr> <td>Dentistry</td> <td>Masters</td> <td>DDS</td> <td>-</td> <td>Spring 12</td> </tr> <tr> <td>Dent Postgrad</td> <td>Masters</td> <td>cert</td> <td>Spring 15</td> <td>-</td> </tr> <tr> <td>Or CranFacSci</td> <td>Certificate</td> <td>MS</td> <td>Spring 15</td> <td>-</td> </tr> </tbody> </table>	Curriculum	Current Level	Degree Objective	Expected Graduation Term	Graduation Term	Dentistry	Masters	DDS	-	Spring 12	Dent Postgrad	Masters	cert	Spring 15	-	Or CranFacSci	Certificate	MS	Spring 15	-	[update]
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Key information

- Curriculum
- Holds
- Units filed
- Deadlines
- Balance due
- Address
- Degree Information
- Email
- Privacy Settings

Secondary information

- Link to Financial Aid
- Residency Information
- Registration Information
- Registration to vote

Main Purpose of Site

- Asked what do students primarily come to our site for?
 - Enrolling in classes
 - Paying fees

Consolidate and Reorganize – 3 tabs into 1

Alerts **Summary** **Addresses** Fees Holds **Privacy Settings** Grades Study List My Health Transcript CA R

Jane Smith [Financial Aid Portal](#)

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Summary tab

- Address
- Email
- Privacy Settings

Address tab

- Mailing Address
- Permanent Address
- Past address
- Emergency contact

Privacy Settings

- Privacy information

Investigate Design Approaches

- Searched other websites
 - Asked how to other sites handle functions and displays?
 - Looked for common practices
- Mobile first approach
 - Simplify and minimize
 - Intuitive design
- Consult with SAA Communications
 - UCSF Branding

Discussion with Others Departments

- Asked what are their pain points?
 - Getting updated information: address, emails,...
 - Clearing holds
 - Knowing when students were graduating
 - Getting information to students
- Asked what might future look like?
- Lead us to think...
 - This system could be viewed as a portal or gateway for all information related to students
 - A one stop shop despite operating independently

Initial Design – Landing Page

Registration

Financial Aid

Student Health

Required Task

- 📌 Holds : 2
- 📌 Immunization Requirements
- 📌 Financial Aid Form 1
- 📌 Pay Deposit
- 📌 No Ship Waiver Application

Other Task

- 📌 Upload WeID
- 📌 Item 1 (Register to Vote)?
- 📌 Item 2

Initial Design – Registration page

Dentistry Resident - Spring 13

Enrollment	Fees
Current : 0 units	Balance \$0.00
Petition after: NA	Due by: 04/09/2013
	Late fee after 04/09/2013

Dentistry

DOCTOR OF DENTAL SURGERY - Spring 07

Required Task

- 📌 Holds : 2
- 📌 Immunization Requirements
- 📌 Financial Aid Form 1
- 📌 Pay Deposit
- Uo Ship Wavier Application

Other Task

- Upload WeID
- Item 1 (Register to Vote)?
- Item 2

Focus Groups

- Built enough to be interactive
 - Landing page, Summary, Study List, Profile
 - Provide actual copy of data to investigate
- Team observe and discuss with users
 - Able to see how students were looking at system
 - Able to see bugs encountered, missed by our QA
 - Able to see issues with various browsers and devices
- Request for further feedback
 - Willing to participate
 - Individual willing to devote extra time

Feedback

- Students ...
 - Liked landing on old registration summary page
 - Could not find their personal information
 - Used system to view UCID number
 - Links to other sites commonly needed for life at UCSF
 - Course catalog, Moodle, Illios...

Release – Redesigned Registration System

University of California San Francisco About UCSF Search UCSF UCSF Medical Center

UCSF Office of the Registrar
Student Academic Affairs Log Out

[Financial Aid](#) [Student Health](#)

Summary Study List & Grades - Fees My Profile

Jane Smith

Holds	
	None

Fees	
	Balance: \$0.00 View

Nursing MEPN	
Fall 15	CA Resident - No
	Enrolled in 18 units Changes by petition only after 10-16-2015 View
Expected Graduation Term: SP18	

Other Tasks
Important Information For Fall 2015 Registration
Apply for Financial Aid (priority deadline 6-15-2015)
Update Warn Me
Register to Vote
Upload WeID

Continuous Improvement

- Review and Streamline workflows
 - Separate unrelated process
 - Remove irrelevant steps and reordering the workflow to make sense

Example: Transcript ordering

<http://saa-10.ucsf.edu/sautter/>



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Student Registration System Redesign

Back-end Technology

Alex Siu
Student Information Systems

8/1/2016

Issues with Legacy Code

■ JSP

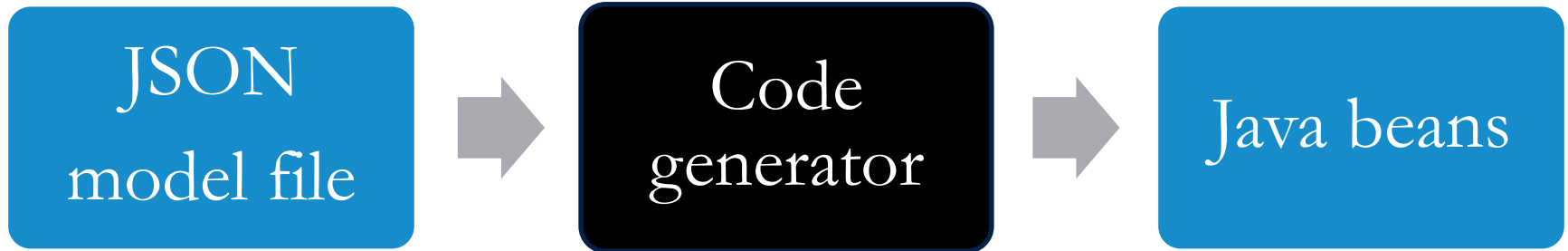
- Business logic was mixed with presentation
- Unable to reuse the code
- Duplicate code
- Difficult to maintain
- Unable to test

■ Data

- Model relationships were unclear
- Redundant queries for CRUD operations for different tables

New Design

- JSON service based backend
- Single page application
- Clear relationships between objects
- ORM
- Separation between front-end and back-end
- Replaced Ant with Maven
- Generated code



Pros and Cons of Code Generation

■ Pros

- Eases maintenance burden of data model
- Database mappings and annotations are standardized
- Centralized location for technology changes

■ Cons

- Regenerate code when there are changes to the model

Continuous Integration

- Atlassian Bamboo
 - Deploys generated code to repository for developer's to use
 - Runs over 500 unit and integration tests
 - Handles QA and production deployments to Tomcat



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Student Registration System Redesign

Front-end Technology

Garland Woo
Student Information Systems

8/1/2016

Front-end Technology

- JavaScript
- Bootstrap
- jQuery
- HTML
- CSS

Pros and Cons of JavaScript

Why JavaScript?

■ Pros

- Use client side processing
- JSON Transformation
- AJAX
- Event handling

■ Cons

- Code transparency
- JavaScript compatibility between browsers

Pros and Cons of Bootstrap

Why Bootstrap?

■ Pros

- Widely used and supported
- Responsive grid layout
- Already defined templates/design
- Consistent across browsers

■ Cons

- Looks similar to other websites
- Customizing workarounds

Pros and Cons of jQuery

Why jQuery?

■ Pros

- Well documented / Good documentation
- Cross browser compatibility
- Easy manipulation of elements
- Simplified Code
 - Ajax, Events

■ Cons

- Not as fast as native code
- Spaghetti code / lack of structure

Challenges

- Browser compatibility
 - JavaScript functionality and conformance may differ between browsers
 - Customizing CSS
- Third party libraries
 - New version, deprecation and updates



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Student Registration System Redesign *Questions?*

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8/1/2016