Developing Platform Agnostic Games

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SHACS FutureTech Conference 2016

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The Layout for today.

A bit about myself and how I came to making games.

What is platform agnosticism?

How does platform agnosticism and how it related to games?

Development of Project Sacbé as a Semi-Platform Agnostic Game

Drawbacks of Platform Agnosticism

Comments, Questions, and Answers.

A bit about inspiring people

Ulf Wilhelmsson Ph.D. - School of Humanities and Informatics (Skövde, Sweden)

Tracy Fullerton M.F.A. - Director of USC Games Program

Universidad Nacional Autónoma de México

October, 2008

A bit about inspiring people

Sam Houston Association of Computer Scientists

An Introduction to Javascript for Java Programmers

Unity 5 for SIGGRAPH

Videogame Committee March Game Jam

October, 2014 - March, 2015

youtube.com/samhoustonjs

The Sam Houston Association of Computer Scientists presents

An Introduction to Javascript for Java Programmers

a webinar written and presented by Ed de Luna

October 30, 2014
7 pm

Broadcasted on youtube.com/SamHoustonJS

learn more at

samhouston.github.io

MAKE A GAME IN SEVEN DAYS

MARCH 4th - MARCH 11th 2015

SHACS/SIGGRAPH March Game Jam

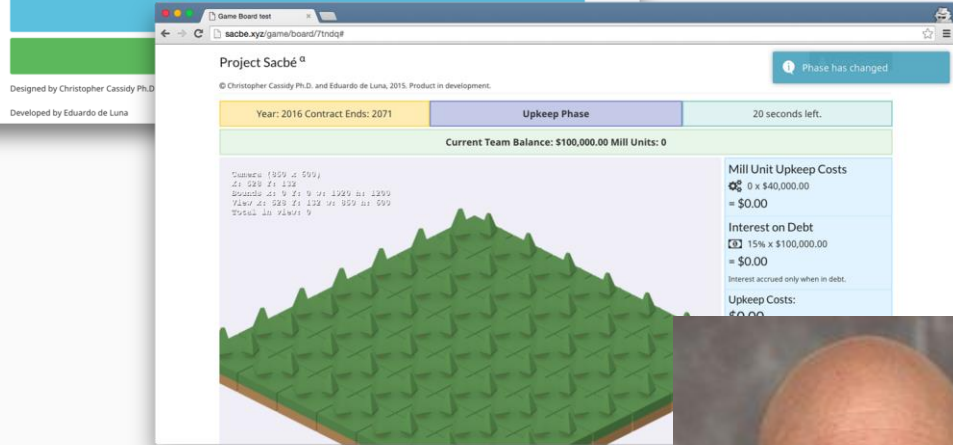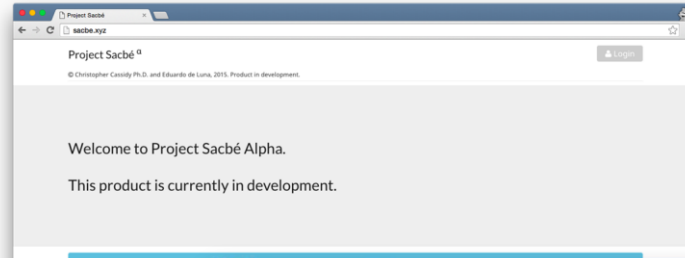We like to make videogames. Come join us.
samhouston.github.io

A bit about inspiring people

Christopher Cassidy Ph.D. - College of Business Administration Management Department

Project Sacbé presented at
Association of Business Simulation and Experiential Learning Conference

Center of Innovation and Technology

**August, 2015 - March, 2016**

What is "Platform Agnosticism"?

Platform Agnosticism is the notion that Software must engage Users

on all the Platforms users expect to be engaged on,

with a fully-featured experience on all the Platforms you engage your users,

using both the strengths and limitations of both software and hardware.

Example: The World Ends With You (left: original NDS Version, right: iOS Port Solo Remix)
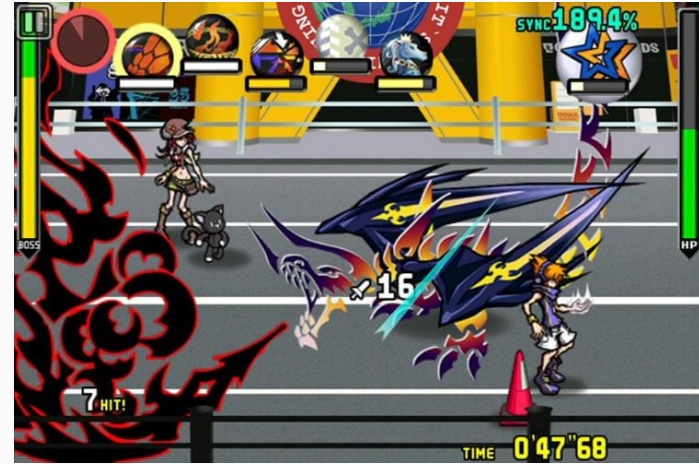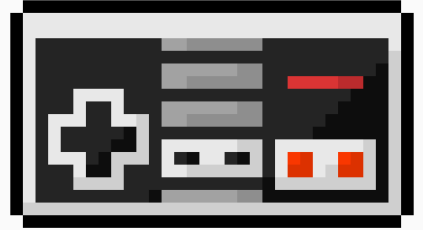
What Platform Agnosticism is not.

Ports of an older piece of software into a new Operating System

Input emulation of a platform in another platform

Software that forces the same experience without accounting for platform limitations

Webpages that only deliver datum.

Example: Megaman 2 (NES version and iOS/Android port)

User Expectation of Engagement

"Don't Make me Think" applies to the selection and breadth of platforms available to engage your users.

Users expect to be engaged in the platform they have at the time, not necessarily the one you designed for.

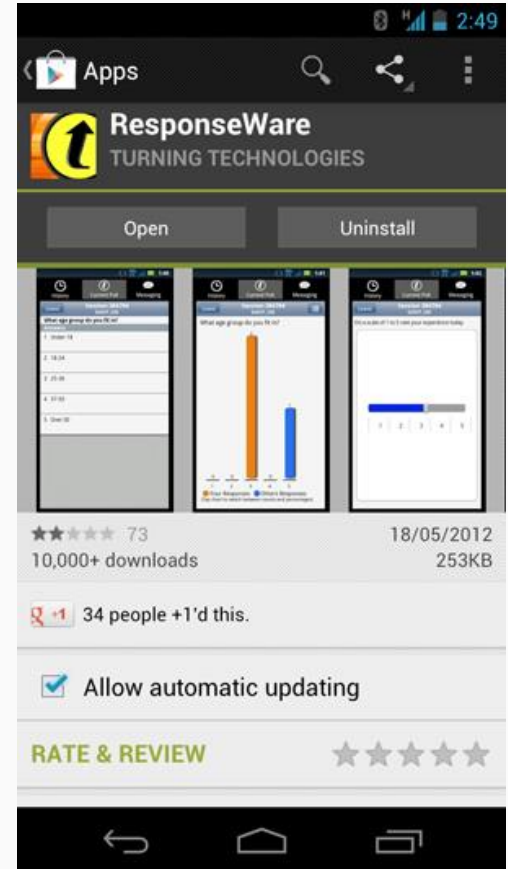This depends on the audience you are developing for.

Know your Users well!

Fully-Featured Experiences across platforms

Design Software that is capable of delivering an experience that you can translate across the platforms you target **in Full.**

DO NOT make a client that is not able to fully deliver what another platform delivers by itself.

Strengths and Limitations

Figure out what the platforms you're writing for are good at, and what are they not good at.

Both from a hardware specs aspect and a user experience aspect.

Regardless of what your software does, form factor is king.

Platform Agnosticism + Games

Do you want to make a profit of your game?

Do you want to break ground in a platform with a new genre?

Do you want to get more users interested in your game?

Would you like to provide an experience to each user that matches the platform they're playing with?

Do you want people to engage?

Platform Agnosticism + Games

Platform Agnosticism in games is Not:

Expecting the same manner of Inputs in different Platforms

UI that does not scale to platform

Design Philosophies that do not translate across platforms

Generally mediocre ports

Among a host of other things...

(top to bottom: Guacameelee, Dungeon Siege, Batman Arkham Knight)

Development of Project Sacbé

Project Sacbé (The Timber Game) is an
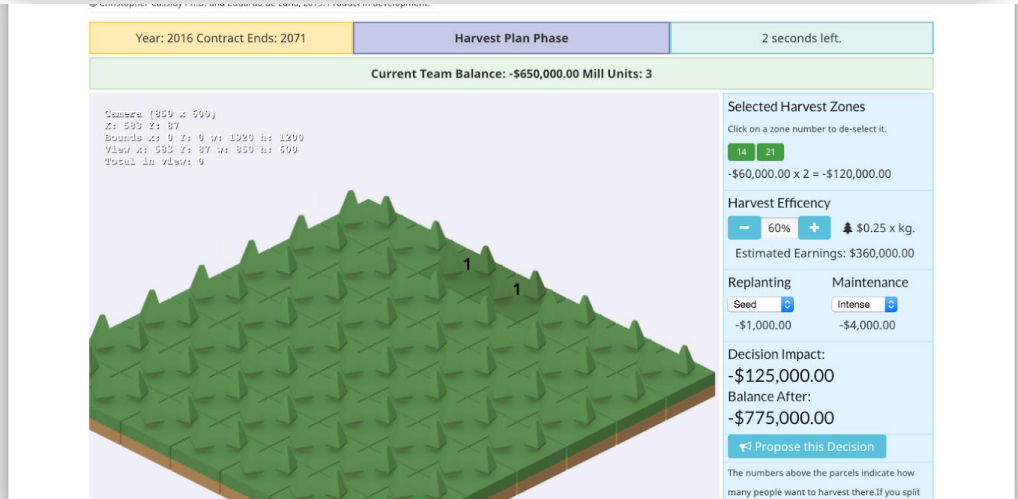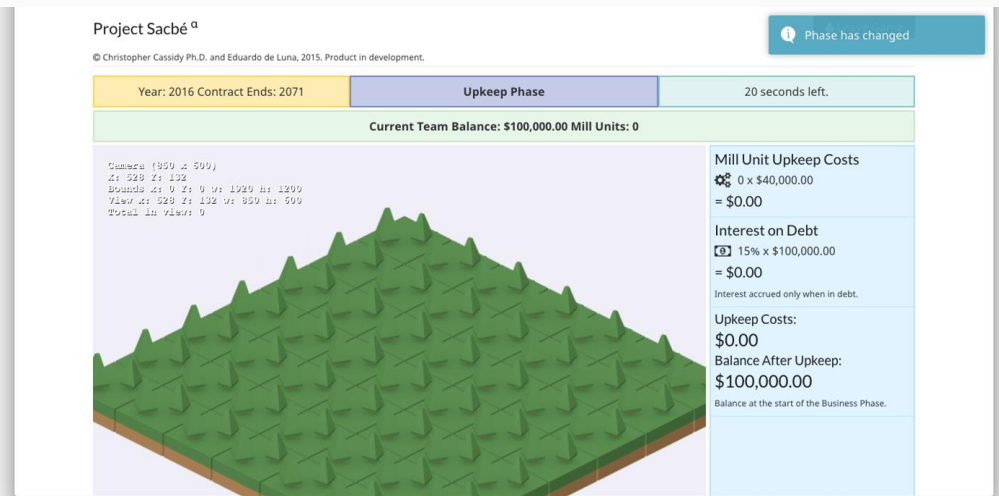
   Online

   Multiplayer

   Turn-Based

   Team-Based

   Resource Collection Game

Inspired by Settlers of Catan, Risk, Civilization, Age of Empires intended to teach The Tragedy of the Commons
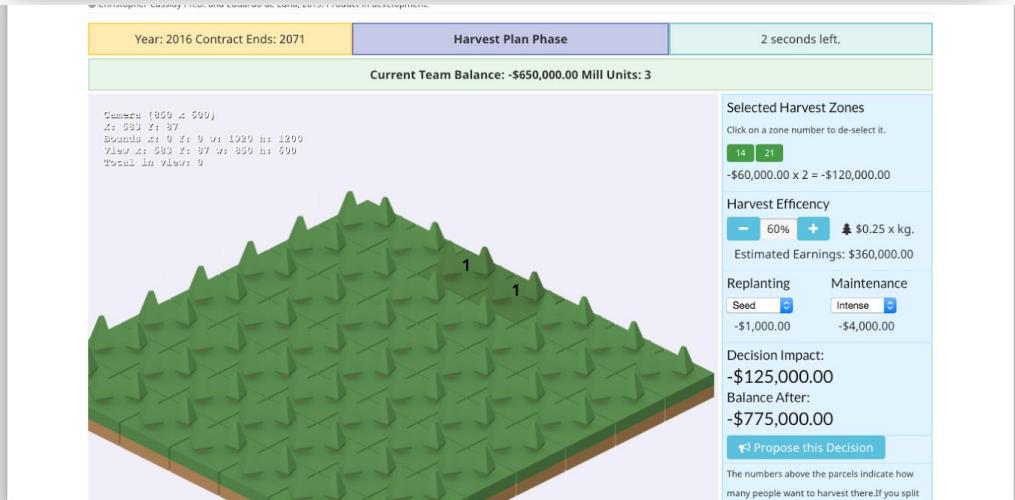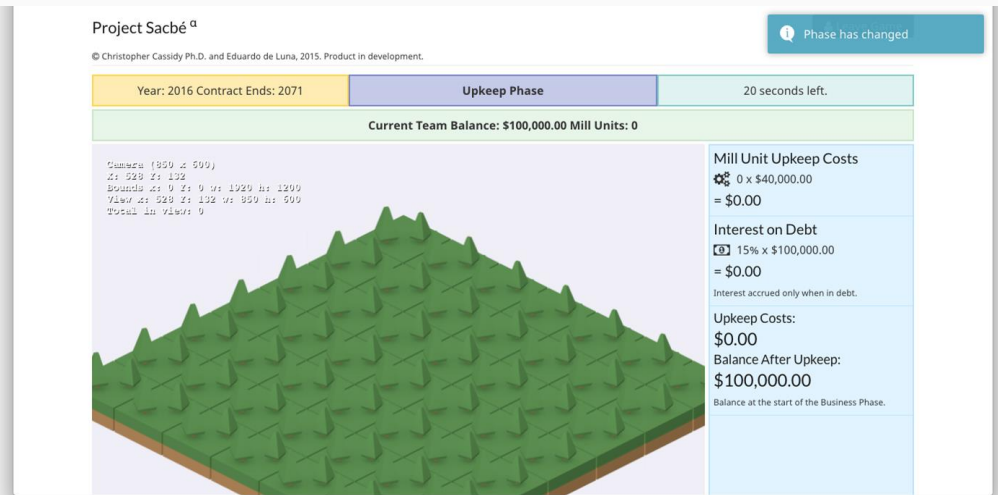
Development of Project Sacbé

Challenges:

Must deploy to both mobile and dedicated platforms

Must implement Multiplayer Play for Online Classes

Must support multiple games with only a limited amount of server space

Must provide an equal voice to all members of a team.

Must prevent people from

Project Sacbé ᵃ

© Christopher Cassidy Ph.D. and Eduardo de Luna, 2015. Product in development.

| Year: 2016 Contract Ends: 2071 | Upkeep Phase | 20 seconds left. |

Current Team Balance: $100,000.00 Mill Units: 0

Camera (850 x 600)
X: 528 Y: 132
Bounds x: 0 y: 0 w: 1920 h: 1200
View x: 528 y: 132 w: 850 h: 600
Total in view: 0

Mill Unit Upkeep Costs
0 x $40,000.00
= $0.00

Interest on Debt
15% x $100,000.00
= $0.00
Interest accrued only when in debt.

Upkeep Costs:
$0.00
Balance After Upkeep:
$100,000.00
Balance at the start of the Business Phase.

© Christopher Cassidy Ph.D. and Eduardo de Luna, 2015. Product in development.

| Year: 2016 Contract Ends: 2071 | Harvest Plan Phase | 2 seconds left. |

Current Team Balance: -$650,000.00 Mill Units: 3

Camera (850 x 600)
X: 583 Y: 87
Bounds x: 0 y: 0 w: 1920 h: 1200
View x: 583 y: 87 w: 850 h: 600
Total in view: 0

Selected Harvest Zones
Click on a zone number to de-select it.
14 21
-$60,000.00 x 2 = -$120,000.00

Harvest Efficency
− 60% + $0.25 x kg.
Estimated Earnings: $360,000.00

Replanting   Maintenance
Seed   Intense
-$1,000.00   -$4,000.00

Decision Impact:
-$125,000.00
Balance After:
-$775,000.00

Propose this Decision

The numbers above the parcels indicate how many people want to harvest there. If you split

Development of Project Sacbé

Browser-Based Game built with:

   Node.js Server Stack

   MongoDB disk cache layer

   Redis RAM cache layer

   MySQL database for metrics
      and results

   RESTful API for
      communication

   Phaser for WebGL context
      creation
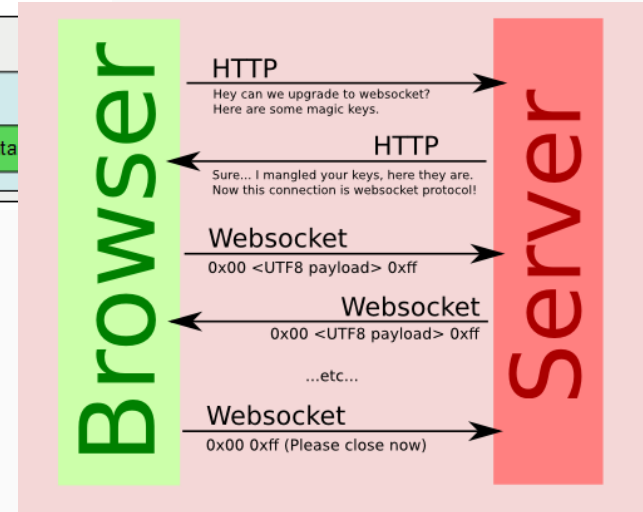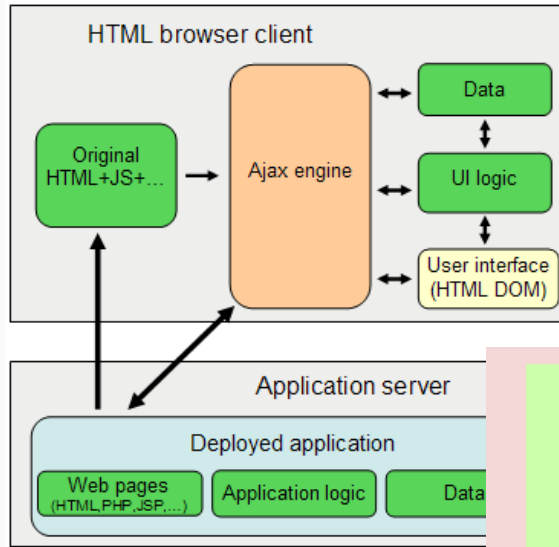
Development of Project Sacbé

Communications

AJAX requests

Must always be initiated
by client

Available in every
programming
language in
existence

Heavy Data Load

WebSocket Connections

Development of Project Sacbé

Pros of being Browser Based:

Memory Management and Low Level Graphics are already handled

Low Level Networking is already handled

Host of features guaranteed to work

Standardizes engagement platform

Uses expectations of Users' interactions with the Internet

Development of Project Sacbé

Cons of being browser based:

Limited memory space and
graphical capability

Judicious Memory allocation is
necessary

Javascript as a Programming
Language

Race conditions of server data
versus client data

Mobile browsers (an unending
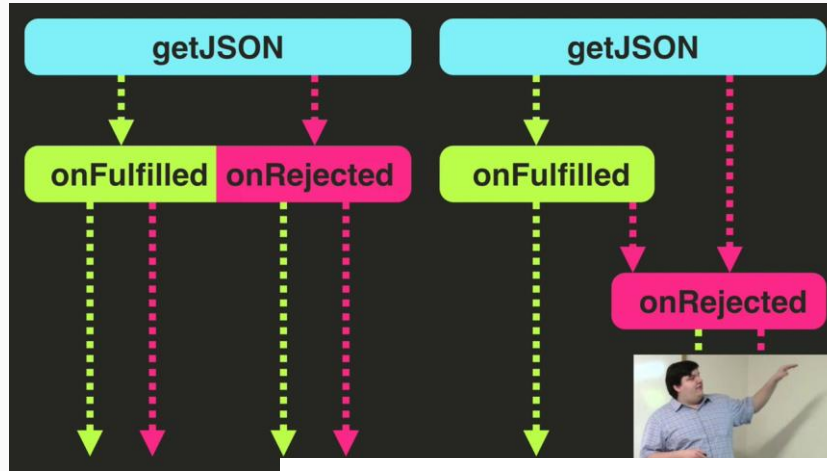pain)

Development of Project Sacbé

Solutions

- Promise/A+ used to leverage communications and solve race conditions

- Backbone Model serializes to JSON

- Use of pure CSS and HTML to handle non WebGL Elements

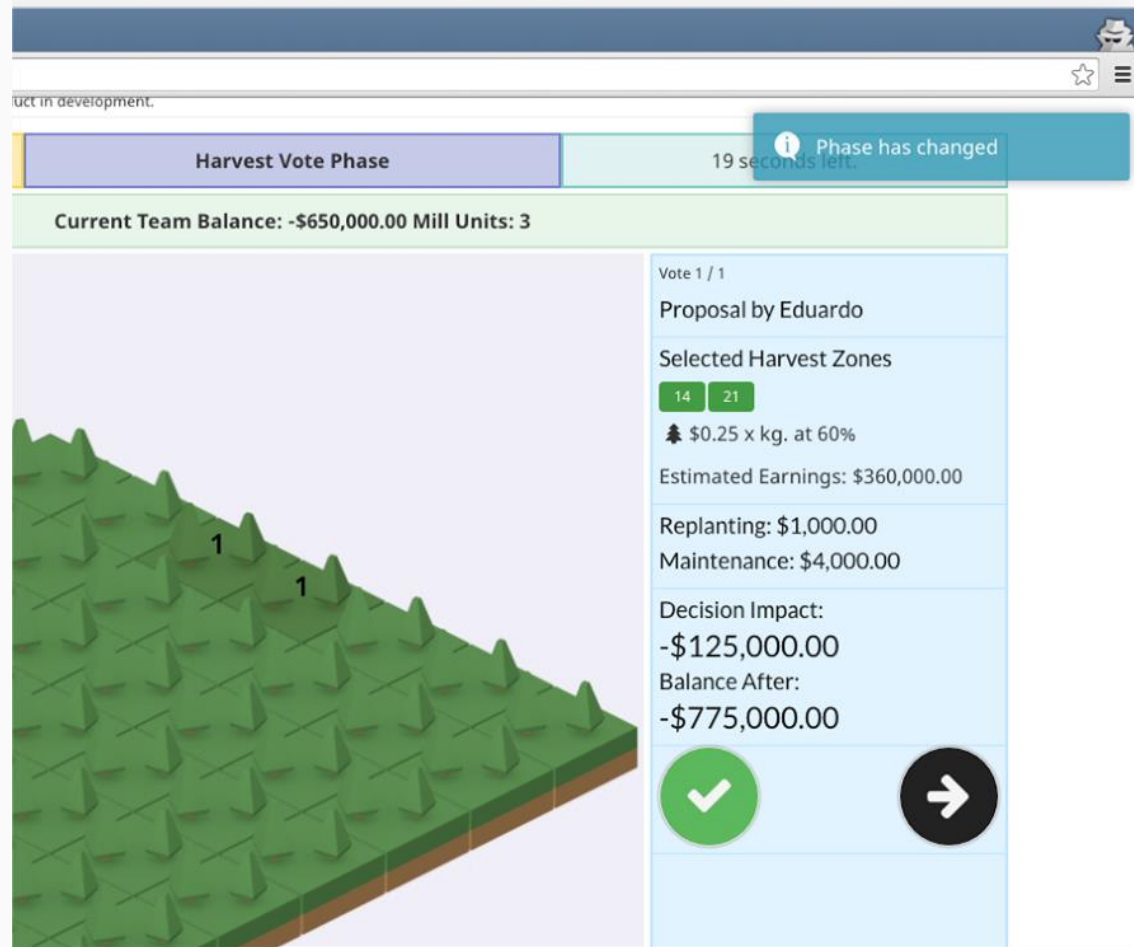- Interface resizes using media queries.
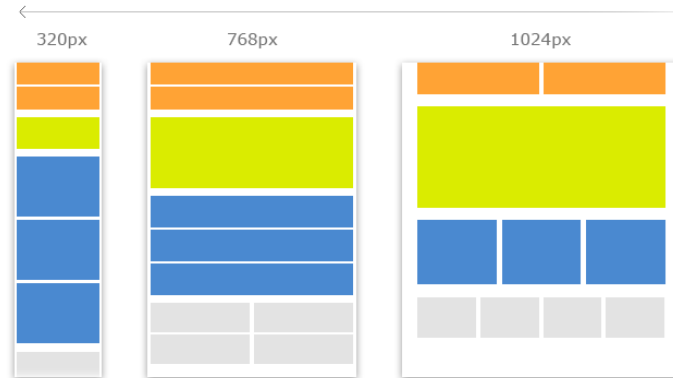
Development of Project Sacbé

Design Solutions

Phases within a turn are timed: Everyone works with the same timing.

Information Masking: Judiciously separate what the players are allowed to know.

Voting on team decisions: No grandstanding allowed. Mechanics enable players to have equal say.

The Result: A Platform Agnostic Game?

Answer: In practice, not quite.

Pitfalls of Project Sacbé

People still use Internet Explorer!

Students were expressly told to bring computers, they brought mobile devices instead.

Out of date browsers did not support features like native Promises or International Localization.

Expectation of Browser-Based technology extends to any and all devices capable of having a browser. Including small Handsets we had not tested for.

Pitfalls of Project Sacbé

Element of Frustration over missed Opportunities: When players run out of time in making a decision.

How do we solve all of these problems and still deliver a Platform Agnostic Game?

Drawbacks

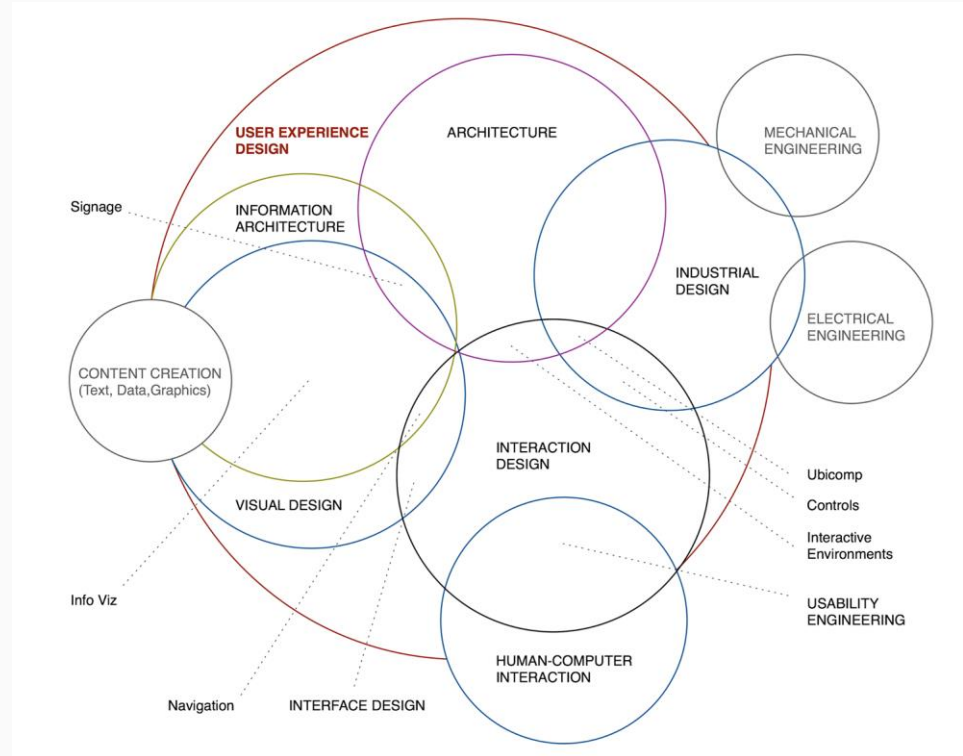Design and Development decisions ripple across multiple platforms creating problems for each

One Element of Design in one platform could not work another platform

Differences in Form Factors

Differences in Hardware

A Design that fits all platforms

In short: **USER EXPERIENCE DESIGN**

Platform Agnosticism is hard and complicated, but worth it's while when a wider audience gets to play your game.

Thank you!

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