Gleeb-Glob

Video Game Edutainment

Presented By

The Moose

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Sponsored By

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Agenda

- Project/Requirements Description
- Game Design
- Student Management System
- Risks
- Process
- The Future
- Challenges
Initial Project Description

- Make a game to help students visualize simple molecule structure.
- Focus on emphasizing static molecular structure.
Connecting Hieroglyphs To Reality

$\text{CH}_4$
Requirements

Students

● Connect hieroglyphs to reality
● Access game easily

Professor

● Track user progress
Molecular Geometries

- Geometries:
  - linear
  - bent linear
  - trigonal planar
  - tetrahedral
  - pyramidal

- Modeled using blender
Game Technologies

- Unity supports many platforms
- MonoDevelop for script editing
- Blender for modeling 3D
Game Design

● Story
  ○ 3-Dimensional space adventure on the molecular level where users race against the clock to collect molecules.

● Prototyping
  ○ Still moving forward
Gameplay

● Flow
● Level Design
● Controls
● Winning and Losing
Student Management System

- Track students gameplay.

**Requirements**

- Produce a game play metric that will accurately depict a student’s game progress.
- Provide the professor with a system to manage and review student information securely.
- Easy to deploy and manage.
Technologies

- handlebars
- mongoDB
- GRUNT (JS Task Runner)
- PhantomJS
- node.js
- Bootstrap
- BACKBONE.JS
- VAGRANT
- Jasmine
- Bower

A package manager for the web
By Twitter
**High Level Architecture**

- **Student API**
  - RESTful
  - Access Control Lists govern actions
  - Passport used for Auth
- **Student Management**
  - One Page JS application
  - Isomorphic JS Rendering
  - Async Polling
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<th>levels completed</th>
<th>time played</th>
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Risks

- Minimal chemistry knowledge
- Minimal prior experience with 3D modeling
- No prior experience with Unity
- Lack of designers, artists and producers
- Typical software project risks
Process Selection

- Scrum
  - Process as a form of risk management
    - (lack of domain knowledge + vague requirements) == requirements churn
    - Iterative Sprint Cycle conducive to making mistakes and learning from them.
  - Many of the requirements would be generated from our Game Design
  - Game Design was dependent on assessing feasibility
Process In Action

- 2 Week Sprints
- Planning Poker
- Code reviews for QA and domain experience sharing.
- Kanban board in Trello
- Fibonacci Story Points
- Hour estimations for tasks
- Daily Standup over Slack
Process In Action

Awkwardly applying Scrum to Game Design
Metrics

- Hours per Week
- Story points closed per Sprint
- Defects found per Sprint
- (future) Game Performance Metrics
  - Several performance risks
  - Easily identify introduce performance issues
Testing

● Usability Evaluation
  ○ Evaluate students enrolled in the chemistry sequence
  ○ Elicit qualitative feedback
    ■ Game controls
    ■ Understanding
  ○ Elicit quantitative feedback
    ■ Time to first molecule collected
    ■ Tries to complete first level
Demo

Goal: Demo 1
complete level.
Future Release Plan

Milestones

● Skeleton Level (completed)
● Complete Level (next milestone)
● Zone 1, Level Selection, Upgrade Store
● Zone 2, Zone 3, End Screen
Challenges

- Weekly sponsor meetings with two week sprints
- Undefined roles
- Outside the software engineering comfort zone
- Team Morale
  - Reached stage 5 “Acceptance”
What Went Well

- Team Chemistry
  - Get it?
  - No personnel issues
- New technical skills
- Communication
  - Daily standup using Slack
- None of us dropped out.
Questions?