01/19: Project Schedule and Risk

The Capstone Experience

Dr. Wayne Dyksen
Department of Computer Science and Engineering
Michigan State University
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Identifying Risks

- What You Don’t Know
- Understand
- Know How to Do
- Normally
- Major Project Features
- “Showstoppers”
- Varies From
- Not Familiar With But (Probably) Can Learn to
- Absolutely No Idea How to Do It

What are you worried about?
What should you be worried about?

Example Risks

Including but not limited to...
- Key Application Features
- Hardware Systems
- Software Systems
- Development / Programming Environments
- Programming Languages
- Etc...

Prioritizing Risks

- Classify Difficulty
  - High: Very Hard, No Idea How to Do
  - Medium: Not Hard, Probably Doable
  - Low: Not Vital, Nice to Have

- Classify Importance
  - High: Showstopper, Must Have
  - Medium
  - Low: Not Vital, Nice to Have

Prioritizing Risks (Diagram)

High

Low

Work On Now

Work On Later

High

Low
Case Study: Basketball App

- For Each Player, Track
  - Minutes Played
    - Game Clock Time
    - Consecutive & Total
  - Minutes Rested
    - Wall Clock Time
    - Consecutive
- Must Be Usable
  - On the Bench
  - In Real Time

Basketball App Architecture

Basketball Playing/Resting Time

- Play/Rest Time Application
- Visual Basic
- MS Access
- Windows Vista Tablet PC

Basketball App Risks?

- How do I program in VB?
- How do I make a GUI in VB?
- What SDK should I use?
- How do I interface VB with Access?
  - Create/Open/Save a Database?
  - Read/Write Records?
  - Traverse Records?
- How do I do clocks in Windows?
  - Game Clock?
  - Wall Clock?

Mitigating Risks

- Use Existing Resources
  - Including But Not Limited To
    - Product Demos
    - Book Sample Code
    - downloadable Examples
    - Etc...
  - Test Drive
    - Install
    - Compile
    - Extend
    - Etc...
- Build Prototypes
  - Single Purpose
  - Quick-and-Dirty

Nota Bene:
1. Check license if including in project.
3. Inform client.

Basketball App Risk Mitigation

- Game Clock
  - Start /Stop
  - Counts Down
  - By Minutes/Seconds
- Handling Access Records
  - Write Number
  - Read Number
  - Add Up Numbers

Capstone Examples

- Team Auto-Owners
- Team Boeing
- Team Chrysler
- Team Dow
- Team GE Aviation
- Team Medtronic
- Team Meijer
- Team Motorola Mobility
- Team Raytheon
- Team Sparrow
- Team TechSmith
- Team Urban Science

What are your risks?
The Capstone Experience

Project Schedule and Risk

Risk

➢ Project Schedule
  • Teamwork

Where do you start?

• Project Plan
• Prioritized Risks
• Feature Set(s)

Fixed Milestones
  • Course
  • Client

Tradeoffs... Features vs. Time

Are there fixed milestones in the "real" world?

Major Milestones

• 01/10: Course Overview
• 01/12: Project Plan
• 01/17: (Martin Luther King Day, No Meeting)
• 01/19: Project Schedule and Risk
• 01/24: Team Status Reports
• 01/26: Prototyping
• 01/30: Team Project Plan Presentations
• 02/02: Team Project Plan Presentations
• 02/05: Team Project Plan Presentations
• 02/14: Resume Writing and Interviewing
• 02/16: Creating and Using Presentations
• 02/20: Team Alpha Presentations
• 02/23: Team Alpha Presentations
• 02/28: Team Alpha Presentations
• 03/03: Team Alpha Presentations
• 03/07: (Spring Break, No Meeting)
• 03/09: (Spring Break, No Meeting)

• 03/14: Design Day and the Project Videos
• 03/16: Carma Demo
• 03/18: Team Status Reports
• 03/21: Team Status Reports
• 03/23: Team Status Reports
• 03/28: Team Status Reports
• 03/30: Team Status Reports
• 04/01: Team Beta Presentations
• 04/05: Team Beta Presentations
• 04/08: Team Beta Presentations
• 04/11: Team Beta Presentations
• 04/13: Team Beta Presentations
• 04/18: Ethics and Professionalism
• 04/20: Intellectual Property and Copyright
• 04/25: Team Project Videos
• 04/27: Team Project Videos and All Deliverables
• 04/28: Design Day Setup
• 04/29: Design Day
• 05/03: Team Alpha Presentations

Building A Project Schedule

• Start With Fixed Course Milestones
• Estimate Times for Tasks for Parts
  • Building
  • Integrating
  • Testing
• Assign Tasks to Team Members
• Must Keep Everyone Busy All the Time
• Use “Short” Deadlines (E.g., 2-3 Days) Why?
• Document and Track
  • Microsoft Project?
  • Collaboration Tool?

Estimating Time for Tasks

• Rough Estimate
  • Intuition
  • Experience
• Refined Estimate
  • Prototype or Partial Build
  • Extrapolation
  • E.g., 2 Days to Build 1 → 6 Days to Build 3
• Keys
  • Be Realistic
  • Include Buffer Time if Unsure
  • Adjust Schedule Accordingly

Dr. Wayne Dyksen
Professor of Computer Science and Engineering
Michigan State University
East Lansing, Michigan 48824
Typical Build Cycle

Until Project Done Do
1. Divide Next Big Task Into Little Tasks
2. Assign Little Tasks to Team Members
3. Complete Little Tasks
   a. Implement
   b. Test
4. Integrate Little Tasks Into Big Task
5. Test Big Task

Very Important
High Priority Risks Get High Priority Scheduling

Revision Control

- Versioning
  - Discrete “Internal” Versions (States)
  - May Correspond to Builds
- Revision Control Systems
  - Check Code In and Out
  - Mark Specific States as Versions
- Motivation
  - Build Breaks System
  - Revert to Earlier Build
  - Avoid Bridge Burning
- Examples
  - Visual SourceSafe
  - GNU RCS (Revision Control System)

Can Be Serious Problem

Living Schedule

- Schedule Is Dynamic
  - Unforeseen Problems
  - Added Features (Avoid Feature Creep)
  - Etc...
- Track Your Progress
  - Microsoft Project?
  - Collaboration Tool?
- Revisit Schedule Often
  - Weekly Team Meetings
  - Weekly Triage Meetings with Stephen
  - Identify Slippage
  - Hold Each Other Accountable (or Contact Stephen or Me)
  - Set Corrective Action
  - Adjust Schedule

Project Schedule and Risk

- Risk
- Project Schedule
  - Teamwork

Team Organization

- Up to Each Team
- Organize into Roles
  - Client Contact
  - Program Manager
  - Developer
  - Tester
  - Systems Administrator
  - Web Master
  - Etc...
- Everyone Must Make Technical Contributions

Team Dynamics

- Key to Success
- Significant Component of Course Grade
- Address Problems Immediately
  - Within Team
  - With Dr. D. and/or Stephen
- Be Ready to Discuss During Interviews
Grading (1 of 3)

- Team (70%)
  - Project Plan Document & Presentation 10
  - Alpha Presentation 10
  - Beta Presentation 10
  - Project Video 10
  - Project Software & Documentation 25
  - Design Day 5
  - Total 70
- Individual (30%)
  - Technical Contribution 10
  - Team Contribution 10
  - Team Evaluation 5
  - Meeting Attendance 5
  - Total 30

Grading (2 of 3)

- Final Grade Sum Of...
  - Individual Total
  - % of Team Total Based on Team Contribution
  - Grand Total = (Individual Total) + [(Team Total) * (Team Contribution) / 10.0]
- Nota Bene: Your Team Contribution will have a very significant effect on your final grade.

Team of Peers

Effective Team Members
- Relate as Equals
- Have Specific Roles and Responsibilities
- Respect Specific Roles and Responsibilities
- Empowers Individuals in Their Roles
- Have Specific Skills
- Hold Each Other Accountable
- Drive Consensus-Based Decision-Making
- Give All Members a Stake in the Project

Potential Problems

Over and/or Under
- Bearing
- Qualified
- Achiever
- Etc...

Mutual Responsibility

- You are your “brother’s/sister’s keeper”.
- Responsible For
  - Your Contribution
  - Your Teammates’ Contributions
- What Won’t Work
  - “They never asked me to do anything.”
  - “They never let me do anything.”
  - “He/she never asked to do anything.”
  - “He/she never wanted to do anything.”
  - Etc...

Team Evaluation Form

- 5% of Final Grade
- Rate Each Team Member
  - Technical Contributions
  - Overall
    - Effort
    - Performance
- Other Questions
  - 5. Devise the contributions of each team member, starting with you. Be specific. Include comments about your/thier individual technical contributions as well as your/their contributions to the team as a whole.
  - 6. Whom do you feel did the best (either in effort or overall contribution to the team)? Why? Be specific.
  - 10. Whom do you feel did the worst (either in effort or overall contribution to the team)? Why? Be specific.
Team Problems

- Can Be
  - Really Hard
  - Awkward
  - Frustrating
  - Etc...
- Addressing Problems
  - ASAP
  - Directly
  - Respectfully
  - Maturely
- Resolving Problems
  - Internally First
  - See Dr. D. and/or Stephen Next but ASAP (Don't Wait)
  - "Bad" Team Not an Acceptable Excuse

Potential For Bad Effect on 70% of Your Grade

Project Schedule and Risk

- Risk
- Project Schedule
- Teamwork

What’s next?

- Team Status Report
  - PowerPoint Template
  - Due Midnight, Sunday, January 23
  - Email to Dr. D.
    - Subject: Team <Company Name>: Status Report
    - Attach: team<company-name>-status-report.ppt
  - Dr. D. Will Combine Into Single PowerPoint
    - To Speed Things Up During Meeting
    - Do NOT Modify Master Slide Page
  - Each Team Presents
    - Using Dr. D’s Laptop
    - At Most 4 Minutes (Rehearse Timing)
    - Single or Multiple Presenters (Your Choice)

01/26: Prototyping