The Charlatans
EOSP Summer 2003

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Agenda
- Who we are
- Project Overview
- Achievements
- Strategy
  - People
  - Process
  - Technology
- Lessons Learned
- Conclusions
Who we are

- Clients
  - Daniel Plakosh
  - Scott Hissam

- Mentors
  - Cliff Huff
  - Grace Lewis

- Team Members
  - Matt Bass
  - Dawei Gu
  - Lalit Jina
  - April Navarro
  - Wei Zhang

Project Overview

- Palm and PC Companion Applications for Casio Wrist Camera Watches
  - Client Objective
    - Provide insight into how teams make decisions and solve real-world problems
  - Team Objectives
    - Work effectively and harmoniously as a team
    - Effectively use software process and software engineering techniques to deliver a high-quality product on time
    - Expand technical knowledge base and skills
Project Scenario

Achievements – Met 100% of Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Priority</th>
<th>Difficulty</th>
<th>Module</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display at 4-bit on 3.1 w/ EZ discovery</td>
<td>High</td>
<td>High</td>
<td>DisplayWrapper</td>
<td>✓</td>
</tr>
<tr>
<td>Download/Upload Images from/to Watch</td>
<td>High</td>
<td>High</td>
<td>ComController</td>
<td>✓</td>
</tr>
<tr>
<td>Upload images to PC</td>
<td>High</td>
<td>High</td>
<td>PCCcontroller</td>
<td>✓</td>
</tr>
<tr>
<td>Beam images to Palm</td>
<td>High</td>
<td>High</td>
<td>PalmController</td>
<td>✓</td>
</tr>
<tr>
<td>Editing done in 24-bit on all devices</td>
<td>High</td>
<td>High</td>
<td>EditController</td>
<td>✓</td>
</tr>
<tr>
<td>Control Watch Remotely</td>
<td>High</td>
<td>Medium</td>
<td>WatchController</td>
<td>✓</td>
</tr>
<tr>
<td>Display image at OS depth</td>
<td>High</td>
<td>Medium</td>
<td>DisplayWrapper</td>
<td>✓</td>
</tr>
<tr>
<td>Edit the image graphically</td>
<td>High</td>
<td>Medium</td>
<td>EditController</td>
<td>✓</td>
</tr>
<tr>
<td>Store Images in Palm database</td>
<td>High</td>
<td>Medium</td>
<td>DataManager</td>
<td>✓</td>
</tr>
<tr>
<td>View images as List/Thumbnail</td>
<td>High</td>
<td>Medium</td>
<td>List/ThumbView</td>
<td>✓</td>
</tr>
<tr>
<td>Slide show with 8 effects</td>
<td>Medium</td>
<td>High</td>
<td>SlideView</td>
<td>✓</td>
</tr>
<tr>
<td>Sort image by name/date/manual</td>
<td>Medium</td>
<td>Medium</td>
<td>List/ThumbView</td>
<td>✓</td>
</tr>
<tr>
<td>Export image to PAMD Plug-In</td>
<td>Low</td>
<td>Medium</td>
<td>PAMDController</td>
<td>✓</td>
</tr>
</tbody>
</table>
Delivered Ahead of Schedule

- LOC
  - Palm Application – 18,841 LOC (in C)
  - PC Application – 3,414 LOC (in C++)
- No Over-time
  - 4200 man-hours in total
- No Additional Resources
  - Five full-time team members
- Four Days Earlier
  - Required to deliver on Aug 5, 2003
  - Actually delivered on Aug 1, 2003

Achieved High Quality

- Single application running on all devices supporting Palm OS v3.1 thru v4.1
- 117 known bugs/issues fixed
- Less than one known defect per KLOC
- Palm application running continuously for up to 30 minutes without an error on the Palm emulator running Gremlins
Met Team and Individual Goals

- Made continuous improvement
- Worked effectively and harmoniously as a team
- Applied software process and software engineering techniques learned in class
- Expanded technical knowledge base and skills

Strategy

- People, Process, Technology Triad

Major determinants of software cost, schedule, and quality performance
Strategy – People

Major determinants of software cost, schedule, and quality performance

People

- Defined and shared common team goals
- Had regular peer reviews

- Refined and shared common team goals
- Continued to have regular peer reviews
- Held team “secret meetings”

- Aligned individual goals with team goals
- Continued to have regular peer reviews
- Shared common working hours
- Had daily morning status meetings
- Did fun activities as a team
- Tried pair programming

Issues:

- Not enough team communication

Issues:

- Not enough team communication
- Different individual goals
- Inconsistent understanding of the overall system
Strategy – Process

- Documented cycle-based process
- Had well-defined roles
- Had regular structured process reviews
- Continued using fall process
- Reduced documentation
- Simplified planning
- Increased coordination between roles
- Used planning as a team in launch meetings
- Established common working hours
- Established requirement, quality assurance, configuration management

Issues:
- More overhead than needed
- Lack of team communication
- Lack of process implementation for further product development
Strategy – Technology

Technology

- Prioritized the risks
- Developed toy applications
- Developed high level architecture
- Continued working on toy applications
- Worked towards implementing vertical slice of architecture
- Refined design as team
- Continued using toys \(^1\) for discovery tasks
- Used a Sync-and-Stabilize development process
- Released the product incrementally
- Maintained quality with sufficient testing

Issues:
- * No systematic approach to manage technical risks
- * Had not gained enough domain knowledge for vertical prototype
- * No common understanding of the architecture

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Lessons Learned

- **Goals** – Defined and shared common team goals help to align and fulfill individual goals
- **People** – Communication plays an important role in every successful team
- **Process** – Following a structured process is key for meeting team objectives
- **Technology** – Design as a team, build incrementally, and use toys as discovery tools
- **Life** – Have fun!

Conclusions

“Software Engineers are charlatans. They set deadlines, but they are always late. They agree to a budget, but they always ask for more money. They promise quality, but they always ship with bugs...”

The Charlatans are **NOT charlatans**.

For more information, please visit our web site at [http://dogbert.mse.cs.cmu.edu/charlatans/](http://dogbert.mse.cs.cmu.edu/charlatans/)
Questions?