Improving Software Requirements for a Small Business
Hello!

I am Chantelle Gellert

My presentation is about how to improve requirements engineering for a small business in Waterloo, ON. (Company X)
CMMI and ISO / IEC

- Model processes
- General architecture
- Define and measure
- Process to create software

Unique

- Company size
- Organizational culture
- Objective specific projects
- Resources available
- Development technologies
- Team knowledge and experience

Aligned with Organization

- Business context
- Objective
- Strategy
Requirements Engineering

Discovery

Documentation

Maintenance
Phase in which fault is detected and fixed

Relative cost to fix fault

1 2 3 4 10 30 200
Reqs Specs Plan Design Code Integ Maint
Better Products

Some of the biggest challenges in improving software processes are directly related to requirements.

How to improve software development?

1. Assess and identify issues
2. Suggest improvements to RE
3. Implement solutions
Guideline
The aim for improving the requirements engineering for company X will be based on the CMMI process.
CMMI
Capability Maturity Model Integration
CMMI highlights

- CMMI is a process-improvement model that provides a set of best practices that address productivity, performance, costs, and stakeholder satisfaction.
- CMMI provides a consistent, enduring framework that accommodates new initiatives.
- CMMI focuses on the total-system problem.
- CMMI facilitates enterprise-wide process improvement.
CMMI - Maturity Level

1. Initial
   - Process unpredictable, poorly controlled, and reactive

2. Managed
   - Process characterized for projects and is often reactive

3. Defined
   - Process characterized for the organization and is proactive

4. Quantitatively Managed
   - Process measured and controlled

5. Optimizing
   - Focus on continuous process improvement
CMMI - SCAMPI

Characteristics of Appraisal Classes

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Class A</th>
<th>Class B</th>
<th>Class C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of objective evidence</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Ratings generated</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Resource needs</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Team size</td>
<td>Large</td>
<td>Medium</td>
<td>Small</td>
</tr>
</tbody>
</table>
Bad requirement specifications:

- Should appear differently when severe faults occur or are imminent.
- Update H UI to be more user friendly.
- Create offline editor component.
- Currently X will fail to connect to Y if there are Unicode IDs such as Japanese characters: バグ
Hopes to achieve
• Enhance and improve QMS
• Improve ability to organize and communicate status of projects to stakeholders
• Address customer projects with processes
• Reduce training time for new employees
• Ensure on-time and below budget project
• Provide path for company to the next level
Lessons learned

• Small businesses need to realize pay off

• Customer driven requirements are significant (de) motivators

• Customer requirements take priority and cause delays

• Not a lot of functional organization to leverage
Lessons learned

• “The customer is in charge”

• Quality of resources has impact on implementation effort

• Less formal organization makes leadership involvement easier

• Not enough staff for CMMI dedication and Just-in-Time training
Thanks!

Any questions?
You can email me at ccgeller@uwaterloo.ca