Software Quality Assurance Plan

For GMoDS Visualizer and Test Driver

Version 1.0

Submitted in partial fulfillment of the requirements of the degree of MSE

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CIS 895 – MSE Project
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1 Purpose
This is the initial software quality assurance plan for the GMoDS Visualizer and Test Driver Masters of Software Engineering final project.

2 Reference documents
1. Fraka, Mike, GMoDS Visualizer and Test Driver Project Plan, [online], available http://people.cis.ksu.edu/~mfraka/Phase1/PlanDocument1.0.pdf.

3 Management
3.1 Organization
The GMoDS Visualizer and Test Driver project is organized as follows.

- Developer
  - Mike Fraka
- Major Professor
  - Dr. Scott A. DeLoach
- Supervisory Committee
  - Dr. David Gustafson
  - Dr. Robby
- Technical Inspectors
  - Shylaja Chippa
  - Kyle Hill

3.2 Tasks
See [1] for a discussion of all project tasks.

3.3 Responsibilities
3.3.1 Developer
The developer must produce all artifacts mentioned in 4.2 Minimum Documentation Requirements as well as any additional documentation that may be required by the major professor or supervisory committee. The developer must notify the major professor of any technical risks found during conduct of the project.

3.3.2 Major Professor
The major professor must monitor the developer’s progress and provide guidance as needed. The major professor is considered the primary user for the product.
3.3.3 Supervisory Committee
The supervisory committee must review and approve or provide necessary actions to remediate all artifacts presented at the end of each phase of the project.

3.3.4 Technical Inspectors
The technical inspectors must inspect the architectural design document using the provided checklist and provide the completed checklist and letter of inspection to the major professor and a copy to the developer.

4 Documentation
All project documentation will be available at http://people.cis.ksu.edu/~mfraka/FrakaMSE.html.

4.1 Purpose
The purpose of the documentation is to provide a reference to the state of the project and the engineering activities performed by the developer to date.

4.2 Minimum Documentation Requirements
Table 1 below shows the minimum documentation required for the GMoDS Visualizer and Test Driver project.

Table 1 GMoDS Visualizer and Test Driver Minimum Documentation

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Log</td>
<td>Time Log</td>
<td>Time Log</td>
</tr>
<tr>
<td>Vision Document 1.0</td>
<td>Vision Document 2.0</td>
<td>Component Design 1.0</td>
</tr>
<tr>
<td>Project Plan 1.0</td>
<td>Project Plan 2.0</td>
<td>Technical Inspection Letters</td>
</tr>
<tr>
<td>SQA Plan 1.0</td>
<td>Architectural Design 1.0</td>
<td>Project Evaluation</td>
</tr>
<tr>
<td>Initial Executable Prototype</td>
<td>Formal Requirements Specification</td>
<td>Project Source Code</td>
</tr>
<tr>
<td>Presentation 1</td>
<td>Technical Inspection Checklist</td>
<td>Executable Project</td>
</tr>
<tr>
<td></td>
<td>Test Plan</td>
<td>User Manual</td>
</tr>
<tr>
<td></td>
<td>Executable Architecture Prototype</td>
<td>Presentation 3</td>
</tr>
<tr>
<td></td>
<td>Presentation 2</td>
<td></td>
</tr>
</tbody>
</table>

5 Standards, practices, conventions, and metrics
The project will follow applicable IEEE standards ([2] [3]) for documents. The source code will use Java naming conventions. The source code will be documented using javadoc. COCOMO 2.0 will be used as the cost estimation metric. Quality will be measured using the rework ratio metric defined as:

\[ RW = \frac{E_{Defects}}{E_{Development}} \]
Where $E_{\text{Defects}}$ is the effort spent fixing defects and $E_{\text{Development}}$ is the effort spent developing code. Quality also will be measured using the mean time between defects. Both of these metrics can be estimated using the engineering notebook time logs.

6 Reviews and audits

The developer will present all artifacts produced in each phase for review and approval by the major professor and supervisory committee.

7 Test

The Test Plan will address all testing issues. Please refer to this document when it is produced.

8 Problem reporting and corrective action

The major professor may report problems to the developer at any time during the project. The supervisory committee will report problems during each presentation. Any action items will be documented and addressed in the next phase. Action items found at presentation 3 will be addressed before project conclusion.

9 Tools, techniques, and methodologies

Table 2 below shows the tools, techniques, and methodologies employed in the GMoDS Visualizer and Test Driver project.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Word 2007</td>
<td>Prepare all written documents.</td>
</tr>
<tr>
<td>Microsoft Excel 2007</td>
<td>Prepare cost estimates.</td>
</tr>
<tr>
<td>Microsoft Power Point 2007</td>
<td>Prepare custom figures.</td>
</tr>
<tr>
<td>Microsoft Project 2002</td>
<td>Prepare Gantt charts.</td>
</tr>
<tr>
<td>XML Spy 2005</td>
<td>Design XML schemas.</td>
</tr>
<tr>
<td>Gimp 2.2</td>
<td>Customize images for insertion in documents.</td>
</tr>
<tr>
<td>Visual Paradigm for UML 7.0</td>
<td>Prepare UML diagrams and generate source code.</td>
</tr>
<tr>
<td>Eclipse IDE for Java Developers 1.2.1.20090918-0703</td>
<td>Develop source code.</td>
</tr>
<tr>
<td>JUnit 3.8</td>
<td>Develop and execute unit tests.</td>
</tr>
<tr>
<td>USE/OCL</td>
<td>Formally specify UI element behaviors.</td>
</tr>
<tr>
<td>Freemind 0.8.1</td>
<td>Record notes and ideas.</td>
</tr>
</tbody>
</table>

10 Code control, media control, and supplier control

Project artifacts produced using the Eclipse IDE (mainly source code, configuration files, and tests) will be kept under version control using a Multiagent and Cooperative Robotics (MACR) Laboratory CVS repository and accessed remotely.

Project artifacts produced using other tools (see Table 2 above) will be kept under version control in a local CVS repository on the development machine and backed up at least weekly.
Supplier control is not applicable to this project.

11 Records, collection, maintenance, and retention

All project documentation (see 4.2 Minimum Documentation Requirements above) will be available at http://people.cis.ksu.edu/~mfraka/FrakaMSE.html when completed. For access to the most current version of GMoDS Visualizer and Test Driver artifacts, contact Dr. Scott DeLoach.

12 Risk management

The developer and major professor share responsibility for identifying project risks and communicating them to each other via email or phone.