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Software Quality Assurance Process

Process: Software Quality Assurance (SQA)		Phase:
Description: SQA provides visibility to management that the software products and processes in the project life cycle conform to the specified requirements and established plans for the organization.		
Entry Criteria/Inputs:		Exit Criteria/Outputs:
<ol style="list-style-type: none"> 1. Project requirements, standards, organizational standards/processes, specifications 2. Commitment to SQA Policy 3. Project software quality goals 4. Adequate resources committed to SQA 		<ol style="list-style-type: none"> 1. Documented SQA Plans and procedures 2. Trained SQA practitioners 3. Results of Engineering activity reviews, process area reviews and work product reviews 4. Reports of deviations on both products and processes 5. Metrics of project and process status
Roles:		
<p>Project Manager (PM) or other authority above software development organization: appoints and oversees SQA organization</p> <p>SQA Manager (SQAM), if appointed: leads SQA group</p> <p>SQA Engineer(s): team of individual SQA practitioners who implement this process</p> <p>Senior Management: periodically reviews SQA activities and resolves issues when necessary</p>		
Assets/References:		
<ol style="list-style-type: none"> 1. SQA Policy – FA-SUP-001 2. SQA Plan Template – FA-SUP-015 3. Create Project SQAP – FA-SUP-006 4. Review ENG Activities Proc – FA-SUP-002 5. Review SW Work Products Proc – FA-SUP-003 6. SQA Process Area Checklist Proc – FA-SUP-010 7. SQA Track Deviations Proc – FA-SUP-011 8. Review SQA Activities – FA-SUP-008 9. SQA Measure – FA-SUP-044 10. Software Project Management Plan Template – FA-MGT-005 11. SQA Review Closure Report Temp FA-SUP-013 12. SQA Review Findings Temp FA-SUP-014 13. SQA Status Report Template FA-SUP-016 14. SQA Orientation/Training Checklist FA-SUP-045 15. Software Quality Assurance Orientation FA-SUP-047 		
Tasks:		
<ol style="list-style-type: none"> 1. Read the SQA Policy document. 2. Establish SQA organization for the project. 3. Select SQA tasks. 4. Create SQA plan. 5. Maintain and implement SQA Plan. 6. Provide SQA training. 7. Participate in lessons learned session(s). 		
Measures:		
<ol style="list-style-type: none"> 1. Effort and funds expended for each activity 2. Number of SQA reviews and audits conducted (planned vs. actual) 3. Number of unresolved issues (elevated to PM) compared to all issues reported 		

TASKS:

1. Read the SQA Policy FA-SUP-001 document.

2. Establish SQA organization for the project.

- a. Senior Management appoints an individual or group responsible for SQA (SQA Manager). SQA must have organizational freedom, authority, and independence of software development activities to permit objective reporting. Guidance on reviews is contained in **SQA Policy FA-SUP-001**.

3. Select SQA tasks.

The SQA Group selects the tasks that will be performed, such as those listed below:

- a. Reviewing software processes and tools against requirements and guidelines for compliance with standards and KPAs of the SW-CMM. Process evaluation and KPA verification tasks are documented in **Review ENG Activities Proc FA-SUP-002**, **Review SW Work Products Proc FA-SUP-003**, and **SQA Track Deviations Proc FA-SUP-011**.
- b. Review software work products against requirements and guidelines using **SQA Review Software Work Products Procedure FA-SUP-003**.
- c. Participate in Peer Reviews and Project Reviews (technical and management reviews) by providing status on compliance, problem areas, and risks. Guidance on reviews is contained in **SQA Review Software Work Products Procedure FA-SUP-003**.
- d. Suggesting methods, standards, guidelines, and tools to be defined for the project and seeing that they are documented in the project's Software Project Management Plan, which is based on **Software Project Management Plan Template FA-MGT-005**.
- e. Reporting results of product evaluations and process audits to the Project Manager, senior management, affected development groups, and the Organizational Process Group (OPG), as appropriate. Guidance on SQA status reports is contained in **Review SQA Activities FA-SUP-008**.
- f. Collect and report metrics on the status of cost and schedule, product evaluations, project quality, and audits according to **Software Quality Assurance Measures FA-SUP-044**.
- g. Select and identify SQA tools required to perform SQA tasks, based on project requirements.

4. Create SQA plan.

The SQA Group follows **Create SQAP Procedure FA-SUP-006** and documents the SQA plan in the Software Project Management Plan or in a separate SQA Plan, following **SQA Plan Template FA-SUP-015**. An SQA Plan will include the following information:

- a. Quality objectives, in measurable terms
- b. Responsibilities of the SQA group
- c. Resource requirements for the SQA group
- d. Schedule and funding of SQA activities
- e. Documenting and tracking noncompliance issues, and the escalation procedure
- f. SQA participation in project plans, standards, and procedures
- g. Evaluations to be performed by SQA
- h. Reviews to be conducted by SQA
- i. Standards and procedures used for SQA

5. Maintain and implement SQA Plan.

The SQA Group performs the SQA function as defined in the SQA Plan, which is based on **SQA Plan Template FA-SUP-015**. Maintaining and implementing the SQA Plan involves the following activities:

- a. Detecting, managing, and escalating (if necessary) deviations. Refer to **SQA Track Deviations Proc FA-SUP-011** as necessary.

- b. Reporting progress of SQA activities and results of evaluations. Refer to **SQA Review Findings Temp FA-SUP-014, SQA Status Report Template FA-SUP-016, SQA Review Closure Report Temp FA-SUP-013, and Review SQA Activities FA-SUP-008** as necessary.
- c. Responsibilities of the SQA group
- d. Resource requirements for the SQA group

Problems or deviations with requirements are documented and reported to the PM and appropriate authority. Senior management addresses noncompliance issues that cannot be resolved within the project.

6. Provide SQA training.

The SQA Group identifies training required to perform SQA tasks, based on project requirements. Training includes training of the SQA Group and SQA orientation for the software project team members. Refer to **Software Quality Assurance Orientation FA-SUP-047 and SQA Orientation/Training Checklist FA-SUP-045** as necessary.

7. Participate in lessons learned session(s).

The SQA Group reviews SQA processes and identifies improvements and efficiencies for future use. SQA activities are reviewed with the PM and with senior management on a periodic and event-driven basis. Many improvements can be supported by quantitative analysis collected in the **Software Quality Assurance Measures FA-SUP-044** database.

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Version History

Version	Date	Reason for Change
V 0.1	2/22/05	Initial draft by mfox
V 0.2	9/26/05	Modification to format. Content modification task 8.
V 0.3	12/13/05	Restructured tasks. Incorporated task 7 into task 3; added task 1; removed process-specific tasks from document – document now focuses on project-specific tasks
V 0.4	12/20/05	Updated Assets/References to include training documents and templates. Made some typo corrections.

Approved By

Signature	Name	Role	Date
	Megan Fox	SQA PAT Lead	
	Bob Forlenza	OPG Lead SQA PAT Member	
	Brian Callahan	Steering Committee Lead	

*Denotes signature on file, signature on file at Fairmount Automation, Inc.