Pre-project SQ Components

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Pre-project Software Quality Components

Contract review

- A bad contract is always an undesirable event.

- From the viewpoint of SQA, a bad contract – usually characterized by loosely defined requirements, and unrealistic budgets and schedules – is expected to yield low-quality software.

- So, an SQA program begins its preventive quality assurance efforts with a review of the proposal draft and, later, the contract draft ("contract review" covers both activities).

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The contract review process and its stages

- Several situations can lead a software company to sign a contract with a customer.

- The most common are:

    1. Participation in a tender.

    2. Submission of a proposal according to the customer's RFP.

    3. Receipt of an order from a company's customer.

    4. Receipt of an internal request or order from another department in the organization.

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Contract review is the SQA component devised to guide review drafts of proposal and contract documents.

The review process itself is conducted in two stages:

1. Stage One – Review of the proposal draft prior to submission to the customer.
2. Stage Two – Review of contract draft prior to signing

Stage One – Review of the proposal draft prior to submission to the customer.

This stage reviews the

- final proposal draft and
- the proposal's foundations (customer's requirement documents, customer's additional details and explanations of the requirements, cost and resources estimates, existing contracts or contract drafts of the supplier with partners and subcontractors).

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Stage Two – Review of contract draft prior to signing

This stage reviews the

- the contract draft on the basis of the proposal and
- the understandings (including changes) reached during the contract negotiations sessions.

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Contract review objectives

1. Proposal draft review objectives

The nine proposal draft review objectives that make sure the following activities have been satisfactorily carried out

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1. Customer requirements have been clarified and documented.

2. Alternative approaches for carrying out the project have been examined.

3. Formal aspects of the relationship between the customer and the software firm have been specified.

- Customer communication and interface channels
- Project deliverables and acceptance criteria
- Formal phase approval process
- Customer design and test follow-up method
- Customer change request procedure.

4. Identification of development risks.

5. Adequate estimation of project resources and timetable have been prepared.

6. Examination of the firm's capacity with respect to the project.

7. Examination of the customer's capacity to fulfill his commitments.

8. Definition of partner and subcontractor participation conditions.

9. Definition and protection of proprietary rights.

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Contract review objectives

2. Contract draft review objectives

The objectives of the contract draft review are to make sure that the following activities have been performed satisfactorily

1. No unclarified issues remain in the contract draft.

2. All understandings reached subsequent to the proposal are correctly documented.

3. No "new" changes, additions, or omissions have entered the contract draft.

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Implementation of a contract review

Contract reviews vary in their magnitude, depending on the characteristics of the proposed project

Factors affecting the extent of a contract review

- Project magnitude. - usually measured in man-month resources.
- Project technical complexity.
- Degree of staff acquaintance with and experience in the project area.- where a high proportion of software reuse is possible, the extent of the review is reduced.
- Project organizational complexity. - The greater the number of organizations(i.e., partners, subcontractors, and customers) taking part in the project, the greater the contract review efforts required.

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Implementation of a contract review

Who performs a contract review?

- The leader or another member of the proposal team.

- The members of the proposal team.

- An outside professional or a company staff member who is not a member of the proposal team.

- A team of outside experts.

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Implementation of a contract review

The difficulties of carrying out contract reviews for major proposals

- Time pressures.

- Proper contract review requires substantial professional work.

- The potential contract review team members are very busy.

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Implementation of a contract review

Recommended avenues for implementing major contract reviews

- The contract review should be scheduled.

- A team should carry out the contract review.

- A contract review team leader should be appointed. The activities of the team leader include:

  - Recruitment of the team members

  - Distribution of review tasks among the team's members

  - Coordination between the members of the review team

  - Coordination between the review team and the proposal team

  - Follow-up of activities, especially compliance with the schedule

  - Summarization of the findings and their delivery to the proposal team.

Development and Quality Plans

Development plan and quality plan objectives

Planning, as a process, has several objectives, each of which is meant to prepare adequate foundations for the following:

1. Scheduling development activities that will lead to the successful and timely completion of the project, and estimating the required manpower resources and budget.

2. Recruiting team members and allocating development resources

3. Resolving development risks.

4. Implementing required SQA activities.

5. Providing management with data needed for project control.

Development and Quality Plans

Elements of the development plan

Based on the proposal materials, the project's development plan is prepared to fulfill the above objectives.

The following elements, each applicable to different project components, comprise a project development plan.

1. Project products

The development plan includes the following products:

- Design documents specifying dates of completion, indicating those items to be delivered to the customer ("deliverables")
- Software products (specifying completion date and installation site)
- Training tasks (specifying dates, participants and sites).

Development and Quality Plans

Elements of the development plan

2. Project interfaces

Project interfaces include:

- Interfaces with existing software packages (software interface)
- Interfaces with other software and/or hardware development teams that are working on the same system or project
- Interfaces with existing hardware (hardware interface).

3. Project methodology and development tools to be applied at each phase of the project

4. Software development standards and procedures

Development and Quality Plans

Elements of the development plan

5. The mapping of the development process

Providing detailed definitions of each of the project's phases. These descriptions include definitions of inputs and outputs, and the specific activities planned.

- An estimate of the activity's duration.
- The logical sequence in which each activity is to be performed,
- The type of professional resources required and estimates of how much of these resources are necessary for each activity.

6. Project milestones

For each milestone, its completion time and project products (documents and code) are to be defined.

Development and Quality Plans

Elements of the development plan

7. Project staff organization

The organization plan comprises:

- Organizational structure: definition of project teams and their tasks
- Professional requirements: professional certification, experience in a specific programming language or development tool, experience with a specific software product etc.
- Number of team members required for each period of time, according to the activities scheduled.
- Names of team leaders and team members.

8. Development facilities

Required development facilities include hardware, software and hardware development tools, office space, and other items.

Development and Quality Plans

Elements of the development plan

9. Development risks

Typical development risks are:

- Technological gaps – Lack of adequate and sufficient professional knowledge and experience to carry out the demands of the development contract.

- Staff shortages – Unanticipated shortfalls of professional staff.

- Interdependence of organizational elements – suppliers of specialized hardware or software subcontractors, will not fulfill their obligations on schedule.

10. Control methods

In order to control project implementation, the project manager and the department management apply a series of monitoring practices when preparing progress reports and coordinating meetings.

Development and Quality Plans

Elements of the development plan

11. Project cost estimation

Project cost estimates are based on proposal costs estimates, followed by a thorough review of their continued relevance based on updated human resource estimates, contracts negotiated with subcontractors and suppliers etc.

Development and Quality Plans

Development plan approval

Development plan review and approval is to be completed according to the procedures applied within the organization.

Development and Quality Plans

Elements of the quality plan

1. Quality goals

2. Planned review activities

- The scope of the review activity
- The type of the review activity
- The schedule of review activities
- The specific procedures to be applied
- Who is responsible for carrying out the review activity?

3. Planned software tests

- The unit, integration or the complete system to be tested
- The type of testing activities to be carried out, including specification of computerized software tests to be applied
- The planned test schedule
- The specific procedures to be applied
- Who is responsible for carrying out the test.

Development and Quality Plans

Elements of the quality plan

4. Planned acceptance tests for externally developed software

5. Configuration management

Development and Quality Plans

Recommended elements of development and quality plans for small projects

The development plan:

- Project products, indicating "deliverables"
- Project benchmarks
- Development risks
- Estimates of project costs

The quality plan:

- Quality goals

Summary

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Development and Quality Plans

Elements of DQP