



Online Review Requirements Specification

This document outlines the Application Scope and Requirements for Online Review.

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Application Requirements Specification	4
1. Scope	4
1.1 Overview	4
1.2 Objectives	4
• Design a flexible service oriented online review system that will allow all project participants to easily and quickly perform reviews.	4
• Provide a consistent interface for all project participants to use while participating in project development.	4
1.3 Limitations	5
2. Logic Requirements	5
2.1 Create Scorecard	5
2.2 Edit Scorecard	7
2.3 View Scorecards	9
2.4 Create Project	Error! Bookmark not defined.
2.5 Edit Project Details	Error! Bookmark not defined.
2.6 Set Timeline Notifications	Error! Bookmark not defined.
2.7 View Projects	Error! Bookmark not defined.
2.8 View My Project	Error! Bookmark not defined.
2.9 View Project Detail	Error! Bookmark not defined.
2.10 View Project Resources	Error! Bookmark not defined.
2.11 View SVN Link	Error! Bookmark not defined.
2.12 View All Payment Information	Error! Bookmark not defined.
2.13 View My Payment Information	Error! Bookmark not defined.
2.14 Contact Project Managers	Error! Bookmark not defined.
2.15 View Registrations	Error! Bookmark not defined.
2.16 Perform Submission	Error! Bookmark not defined.
2.17 View All Submissions	Error! Bookmark not defined.
2.18 View My Submissions	Error! Bookmark not defined.
2.19 View Screener Submissions	Error! Bookmark not defined.
2.20 View Most Recent Submissions	Error! Bookmark not defined.
2.21 View Winning Submission	Error! Bookmark not defined.
2.22 View Most Recent Submissions after Appeals Response	Error! Bookmark not defined.
2.23 Remove Submission	Error! Bookmark not defined.
2.24 Perform Screening	Error! Bookmark not defined.
2.25 View Screenings	Error! Bookmark not defined.
2.26 Perform Review	Error! Bookmark not defined.
2.27 Upload Test Cases	Error! Bookmark not defined.
2.28 View Reviews	Error! Bookmark not defined.
2.29 View Reviewer Reviews	Error! Bookmark not defined.
2.30 Edit My Review during Review	Error! Bookmark not defined.
2.31 Perform Appeals	Error! Bookmark not defined.
2.32 View Appeals	Error! Bookmark not defined.
2.33 Perform Appeal Response	Error! Bookmark not defined.
2.34 View Appeals Response	Error! Bookmark not defined.
2.35 Edit My Appeal Response during Appeals Response	Error! Bookmark not defined.
2.36 Perform Aggregation	Error! Bookmark not defined.
2.37 View Aggregation	Error! Bookmark not defined.

2.38	Perform Aggregation Review	Error! Bookmark not defined.
2.39	View Aggregation Review	Error! Bookmark not defined.
2.40	Perform Final Fix	Error! Bookmark not defined.
2.41	Download Final Fix	Error! Bookmark not defined.
2.42	Perform Final Review	Error! Bookmark not defined.
2.43	View Final Review	Error! Bookmark not defined.
2.44	Submit Scorecard Comment	Error! Bookmark not defined.
2.45	Perform Approval	Error! Bookmark not defined.
2.46	View Approval	Error! Bookmark not defined.
2.47	Edit Any Scorecard	Error! Bookmark not defined.
2.48	End Phase	Error! Bookmark not defined.
2.49	Advance Submission	Error! Bookmark not defined.
2.50	Post Deliverables	Error! Bookmark not defined.
2.51	Download Test Cases	Error! Bookmark not defined.
2.52	View Composite Review	Error! Bookmark not defined.
3.	Technical Requirements	9
3.1	Graphical User Interface Requirements	9
3.2	Communication Interfaces	10
3.3	Environment Requirements	10
3.4	Are there particular frameworks or standards that are required?	11
3.5	Third Party Component, Library, or Product Dependencies	11
3.6	Design Constraints	11
3.7	Performance Constraints	12
3.8	Security	12
4.	Required Documentation	14
4.1	Specification Documentation	14
5.	Help / User Documentation	14
6.	Notes	14
7.	Future Enhancements	14
7.1	Offline Scorecards	14
7.2	Dynamic Question Types	14
8.	Glossary	15
8.1	Definitions	15
8.2	Acronyms	15

Application Requirements Specification

1. Scope

1.1 Overview

The Online Review and Scorecard Project will make modifications to TopCoder's current online review and scorecard systems to reduce the amount of time spent performing reviews.

The entire infrastructure of Online Review and Scorecards will be redesigned to be more flexible and provide better insight into TopCoder's application process. The current Online Review system automates the TopCoder Software peer review process only for Component Designs and Component Developments. The new infrastructure will allow more project types (i.e. Application Specification, Application Architecture), multiple scorecards per project (i.e. FDA, SOX, SEC), optional review phases (i.e. submission) and custom review phases (i.e. client review). The creation of "on demand" review will allow projects to advance to the next phase as soon as the review is complete rather than wait for a deadline to pass or manually advancing the project to the next phase.

TopCoder wishes to enable the front page of online review to provide proper breakouts of each project phase and also the ability for users to view only projects for which they are associated. This will allow PMs, clients and architects to view project status and timelines for all project types.

The Online Review Application automates the TopCoder Software peer review process for both Component Design and Component Development projects. Reviewers are able to login, check the status of their assignments, download submissions for review, complete online review forms and perform aggregation of reviews. The administration section allows users to set up reviews, assign members, monitor the process and intervene at any stage of development.

TopCoder will modify their current Scorecard Admin tool to enhance the Online Review process. Administrators will have the ability to set multiple default scorecards per project phase and create client specific scorecards. Scorecards will be created for various project types including: Applications, Assembly Competitions, Testing Competitions as well as Components.

Although the application will be initially used by TopCoder, the intention is to build the application in a generic fashion such that it could be used by any organization.

1.2 Objectives

- Design a flexible service oriented online review system that will allow all project participants to easily and quickly perform reviews.
- Provide a consistent interface for all project participants to use while participating in project development.

General Project Metrics:

- PM and Architects spend on average 54 hours a year doing review for one project, for a total of 2690 hours for an estimated 50 projects for this year. The online review tool will reduce this number by an average of 40% for an estimated savings of \$53,800 a year.
- Flexibility to add in customer specific, industry specific (FDA, SOX, SEC) and security scorecards, resulting in more sales because clients will be assured of security.

- PMs, clients and Architects will have the ability to view project status and timelines for all applications. This will internally save the PMs \$468,000 dollars per year in revenue they could bill on other projects. This number comes from time spent filling out status reports: 30 PMs, \$150 per hour, 2 hours and 52 weeks. Additionally, the operations staff will save \$11,000 dollars a year spent tracking down and reviewing timelines.
- Currently no tool exists to allow assembly and testing competition deliverables to be reviewed. The online review tool will facilitate assembly and testing competitions and result in a reduction in overall timelines and an increase in quality.
- Assembly and Testing competitions will increase participation outside the current list of 17 assemblers, resulting in a larger member base.
- Assembly competitions will reduce amount of code written. Assemblers will focus on conversion of prototypes and configuration. This will also reduce cost of the assembly phase and increase quality.
- Assembly Competitions will reduce cost of assembly (99% currently overrun).
- Assuming an average of 4.5 weeks of assembly (including overruns), reducing this timeline to 2 weeks and paying set prices for assembly competitions will result in a savings of \$21,200 per project.
- Improve quality of the entire process by forcing assemblers to request more components and/or improved deliverables.
- Net ROI \$680,750, estimated internal cost \$74,000.

1.3 Limitations

- This project will focus on facilitating Applications, Assembly Competitions and Testing Competitions. Components will be integrated during the Dependency Migration project. However consideration of this future direction must be given.
- Versioning will not be handled in this application.

2. Logic Requirements

2.1 Create Scorecard

This activity describes the steps a manager must take to create a new scorecard.

2.1.1 Create Scorecard Activity

2.1.1.1 Enter Scorecard Details

The following details will be captured for each scorecard

Field	Description	Type	Validation	Required
Name	Name of scorecard	Text	No duplicates	Yes
Version Number	Version of scorecard	Number	Valid number	Yes
Project Type	Scorecard project type	Drop-Down	N/A	Yes
Category	Scorecard category	Drop-Down	N/A	Yes
Scorecard Type	Type of scorecard	Drop-Down	N/A	Yes
Minimum Acceptable Score	Lowest acceptable score for scorecard	Number	Number greater than or equal to 0 less than or equal to 100	Yes

Maximum Acceptable Score	Maximum acceptable score for scorecard.	Number	Number greater than or equal to 0 less than or equal to 100	Yes
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2.1.1.1.1 Project Types and Categories

Project types and sub-types will be configurable, the initial list will be:

- Component
 - Design
 - Development
 - Security
 - Process
 - Testing Competition
- Application
 - Specification
 - Architecture
 - Component Production
 - Quality Assurance
 - Deployment
 - Security
 - Process
 - Testing Competition
 - Assembly Competition

2.1.1.1.2 Scorecard Type

Scorecard types will be configurable, the initial list will be:

- Screening
- Review
- Client Review

2.1.1.2 Enter Group Details

- Managers may create one or more question groups.
- The following fields are required for each group:

Field	Description	Type	Required	Validation
Name	Name of group	Text	Yes	Less than 255 characters.
Weight	Weight given to group	Text	Yes	Greater than zero less than 100.

2.1.1.3 Enter Section Details

- Managers may create one or more sections per question group.
- The following fields are required for each section:

Field	Description	Type	Required	Validation
Name	Name of section.	Text	Yes	Less than 255 characters
Weight	Weight given to section.	Number	Yes	Greater than zero less than 100.

2.1.1.4 Enter Question Details

- Managers may create one or more questions per section.
- The following fields are required for each question:

Field	Description	Type	Required	Validation
Question Text	Text for question	Text	Yes	Less than 255 characters.
Question Guideline	Guidelines for answering question text	Text	No	Less than 255 characters
Weight	Weight given to section.	Number Text	Yes	Greater than zero less than 100.
Question Type	Type of question.	Drop-Down	Yes	N/A
Upload Document	Used to determine if document upload is required.	Check-box	Yes	N/A
Document Required	Used to determine if document is required or not	Check-box	Only if document upload is Yes	N/a

2.1.1.4.1 Question Types

Question types will be configurable, the initial list will be:

- Scale (1-4)
- Scale (1-10)
- Test Case
- Yes/No
- ~~Dynamic~~

2.1.1.5 Reorder Questions

Users may change the order of questions for display.

2.1.1.6 Calculate Totals

Running totals for questions and sections will be displayed during scorecard creation

2.1.1.7 Validate Scorecard

- Questions within a section must add up to 100.
- Sections within a group must add up to 100.

2.1.1.8 Display Error Message

If the scorecard is not validated an error message must display.

2.1.1.9 Save New Scorecard

When the scorecard is saved a new scorecard will be created in the system.

2.2 Edit Scorecard

2.2.1 Edit Scorecard Activity

In this activity managers are allowed to edit scorecards, scorecards that are linked to a project can not be edited.

2.2.1.1 Choose Scorecard

A user must choose a scorecard to edit.

2.2.1.2 Edit Scorecard Details

- The user may not edit the name or version.
- All other details will be editable.

2.2.1.3 Validate Scorecard

- Questions within a section must add up to 100.
- Sections within a group must add up to 100.

2.2.1.4 Prompt Validation Error

When validation errors occur the user must be prompted with an error message stating the errors.

2.2.1.5 Save Scorecard

- After a scorecard is saved the scorecard admin home page will display.
- Each time a scorecard is saved the minor version number will be incremented.

2.2.2 Edit Scorecard Activity – Set Status

In this activity, managers must be allowed to mark scorecards as inactive or active.

2.2.2.1 Choose Scorecard

A user must choose a scorecard to activate.

2.2.2.2 Activate Scorecard

Users may choose one or many scorecards to activate.

2.2.2.3 Inactive Scorecard

Users may choose one or more scorecards to inactivate.

2.2.3 Edit Scorecard Activity - Copy Scorecard

Users may copy existing scorecards and may edit the name and/or major version number before saving. If the user is copying a scorecard that has not been linked to a project they are not required to edit the name or major version.

2.2.3.1 Select Scorecard

The user must select the scorecard to copy.

2.2.3.2 Update Major Version

The system must increment the major version number, but also allow the user to change.

2.2.3.3 Edit Scorecard Details

Users may edit any of the scorecard details and add new groups, sections and/or questions.

2.2.3.4 Validate Scorecard

- Questions within a section must add up to 100.
- Sections within a group must add up to 100.
- Scorecard names + version must be a unique combination
- Users can not change the minor version number

2.2.3.5 Prompt Validation Error

When validation errors occur the user must be prompted with an error message stating the errors.

2.2.3.6 Save Scorecard

- After a scorecard is saved the scorecard admin home page will display.
- Each time a scorecard is saved the minor version number will be incremented

2.3 View Scorecards

Managers are allowed to view the list of scorecards.

2.3.1 View Scorecards Activity

2.3.1.1 Display Scorecard List

Scorecards will be displayed according to project type, project category and scorecard type.

2.3.1.2 Filter Scorecard

Scorecards may be filtered by status.

2.3.1.3 Choose Scorecard

The user must select the scorecard they wish to view.

2.3.1.4 Display Scorecard

- Scorecards must be displayed in a read-only view, exactly as they will appear to the user.
- Numbering must be displayed for the scorecard in the format X.Y.Z where X is the group number, Y is the section number and Z is the question number.

3. Technical Requirements

3.1 Graphical User Interface Requirements

Graphical User Interface will be built as a series of JSP pages.

3.1.1 General Display

Information must be able to be stored without refreshing the entire screen.

3.1.2 Member Handles

All member handles must display in the TopCoder member handle color scheme with a link to member profile.

3.1.3 Timeline Phase Dependencies

When project timelines are displayed the GUI must provide indication of phase dependencies in the timeline display itself.

3.1.4 Project Deadlines

The GUI for the project list must indicate when projects are nearing their due date or behind schedule. For example projects that are near their due date could be displayed in yellow and projects that are past their due date could be displayed in red.

3.1.5 Phase Deadlines

The GUI for timeline phases must indicate when phases are behind schedule. For example phases that are near their due date could be displayed in yellow and phases that are past their due date could be displayed in red.

3.1.6 Tool Tips

Tool Tips should be displayed for items requiring additional information.

3.1.7 Browser Support

The application must work in both IE 6.0.+ and Firefox 1.5.+ on Windows (XP, 2000) and Firefox 1.5.+ on Mac O/S.

3.1.8 HTML will follow XHTML standards

3.1.9 CSS

The look and feel, as well as the branding of the UI, should be easily changed by modifying or replacing style sheets.

3.1.10 GUI Must Conform to Prototype

The prototype developed by the TopCoder Software Information Architect provides a detailed example of the look and feel of the final application. Any changes made during later phases must be noted.

3.2 Communication Interfaces

3.2.1 HTTP

This will be used by users to access the non-secure areas of the website over the internet. Port 80 (standard) will be used.

3.2.2 HTTPS

This will be used by customers to access the secure parts of the site over the internet. Port 443 (standard) will be used.

3.2.3 JDBC

The application will connect to the database via JDBC.

3.2.4 SMTP

SMTP will be used between JBoss and the SMTP server to send mail from the application.

3.2.5 Web Services

In order to facilitate offline reviews in future phases; Web Services must be used to perform communication between the client app and the application servers.

3.3 Environment Requirements

3.3.1 Operating System[s]

Web Servers – RedHat Linux 9
Application Servers – RedHat Enterprise Linux 4
Database Servers – RedHat Linux 7.1

3.3.2 Software Development Versions

Java 1.4.2

3.3.3 Database

Informix 10.00.UC3R1

3.3.4 Application Server

JBoss 4.0.2

3.3.5 Servlet Engine

Tomcat 5.5

3.3.6 *mod_jk*

3.3.7 *Web Server*

Apache 1.2

3.3.8 *Hardware*

Web Servers – Dual Intel 860Mhz

Application Servers – Dual Intel 3.6Ghz

Database Servers – Quad Intel 700Mhz

Firewall – Cisco Pix

Local Director – Cisco port based load balancer

3.3.9 *Replicated Environment*

The Online Review application will run in a replicated environment.

3.4 Are there particular frameworks or standards that are required?

- JSPs will follow Struts framework
- JDBC will be used for database access

3.5 Third Party Component, Library, or Product Dependencies

3.5.1 *AJAX*

AJAX is required for general display GUI requirements.

3.5.2 *JavaMail*

JavaMail will be used to facilitate the SMTP communication.

3.6 Design Constraints

3.6.1 *J2EE*

3.6.2 *Auditing*

Auditing must be performed during all project editing, creation and deletions. Each audit will contain information about who performed the modification, when the modification was performed and the information that was modified.

3.6.3 *Deletes*

The system must not delete information from the database.

3.6.4 *Web Services*

All information should be stored in the back end in a way to support various front end clients.

3.6.5 *Session Maintenance*

The system must allow users to perform simultaneous edits and/or viewing among multiple browser sessions

3.6.6 *Validation*

The system must perform validation with both front end and back end logic.

3.7 Performance Constraints

3.7.1 Page Load Performance

An average page load time of 2 seconds will exist.

3.8 Security

3.8.1 Security Roles

3.8.1.1 Permissions

All security checks will occur against permissions. Each function in the system will validate a user's permission against the required permission for the task.

3.8.1.2 Roles

One or more permissions will be assigned to roles. A user may have more than one role.

Below is a list of roles and permissions:

	Manager	Observer	Submitter	Screeener	Reviewer	Aggregator	Final Reviewer	Approver	Public	Designer	System
Create Scorecard	X										
Edit Scorecard	X										
View Scorecards	X										
Create Project	X										
Edit Project Details	X										
Set Timeline											
Notifications	X	X	X	X	X	X	X	X		X	
View Projects	X								X		
View My Projects	X	X	X	X	X	X	X	X		X	
View Projects Inactive	X										
View Project Detail	X	X	X	X	X	X	X	X	X	X	
View Project Resources	X	X									
View SVN Link	X	X			X	X	X				
View All Payment Information	X	X									
View My Payment Information			X	X	X	X	X	X			
Contact Project Managers	X	X	X	X	X	X	X	X	X	X	
View Registrations	X	X									
Perform Submission			X								

View All Submissions	X							X			
View My Submissions			X								
View Screener Submission				X							
View Most Recent Submissions		X			X						
View Winning Submission						X	X		X	X	
View Most Recent after Appeals Response									X	X	
Remove Submission	X										
Perform Screening				X							
View Screening	X	X	X	X		X	X	X	X	X	
Perform Review					X						
Upload Test Cases					X						
Download Test Cases	X	X	X		X			X			
View All Reviews	X	X	X		X	X	X	X	X	X	
View Reviewer Reviews					X						
View Composite Scorecard	X	X	X			X			X		
Edit My Review during Review				X							
Perform Appeal			X								
View Appeals	X	X	X		X			X	X	X	
Perform Appeals Response					X						
View Appeal Responses	X	X	X		X			X	X	X	
Edit My Appeal Response during Appeals Response					X						
Perform Aggregation					X						
View Aggregation	X	X	X		X			X	X	X	
Perform Aggregation Review						X					
View Aggregation Review	X	X	X		X			X	X	X	

Perform Final Fix			X								
Download Final Fix	X	X	X				X	X			
Perform Final Review							X				
View Final Review	X	X	X				X	X	X	X	
Submit Scorecard Comment			X								
Perform Approval	X							X			
View Approval	X	X	X					X			
Edit Any Scorecard	X										
End Phase											X
Advance Submission											X
Post Deliverables											X

3.8.2 Password Logic

Password logic will be handled outside of this application.

4. Required Documentation

4.1 Specification Documentation

- Requirements Specification (this document)
- High Level Use Case Diagrams
- Activity Diagrams
- Architecture Diagram
- Logical data model (as needed)
- Site Map
- Site Definition
- User Interface Prototype
- Quality Assurance Plan
- High Level Test Scenarios

5. Help / User Documentation

6. Notes

7. Future Enhancements

7.1 Offline Scorecards

The application must allow users to perform all reviews while offline. Users may download review scorecards and complete them offline, when a user returns online they may upload the completed scorecard.

7.2 Dynamic Question Types

Scorecard questions will have the ability to be generated dynamically based on an XML document.

8. Glossary

8.1 Definitions

8.1.1 *Project*

A set of phases, submissions and deliverables used to perform a review of various software application process components.

8.1.2 *Submission*

The items being reviewed in the Online Review process.

8.1.3 *Deliverable*

A document or process requirement set forth by the phase. Each phase has 1 or more deliverables. Deliverables must exist before the project phase advances.

8.1.4 *Phase*

A state an active project exists in at any given time. The project can only exist in one phase at a time. Each phase has a specified set of deliverables.

8.2 Acronyms