TopCoder™ SOFTWARE
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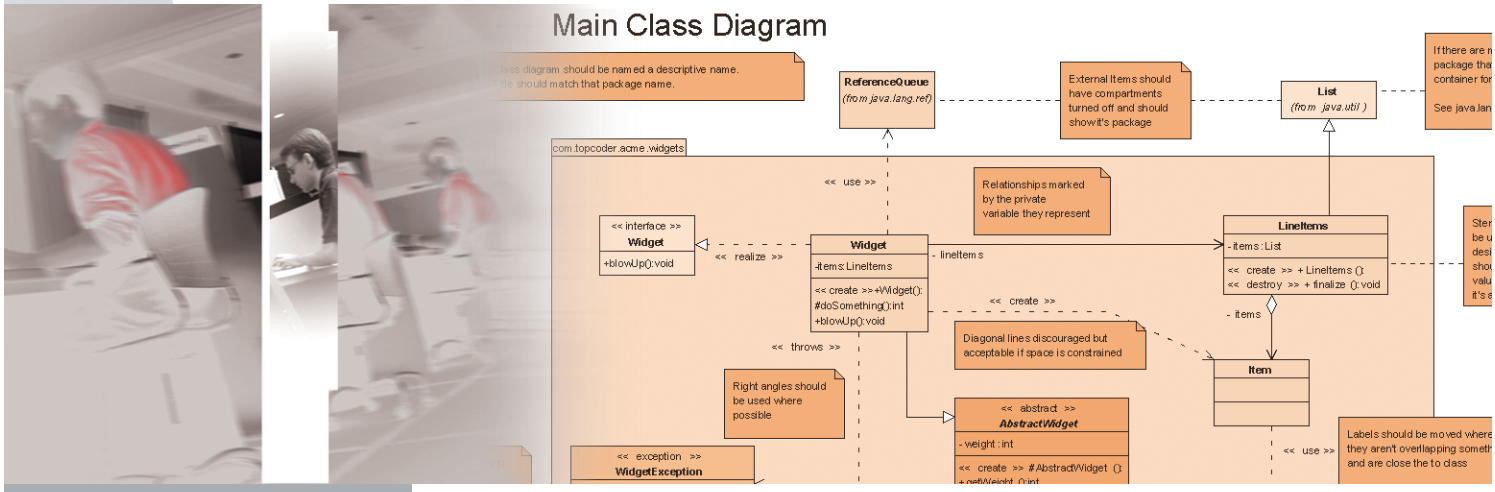
# casestudy

## Integrated Quality Management




### PROJECT METRICS

- *Percentage of application source code from client specific reusable components:* **87%**
- *Percentage of application source code non-reusable:* **13%**
- *Total lines of source code in reusable components:* **10,123**
- *Total lines of non-reusable source code:* **1,578**
- *Total lines of test case code:* **5,042**
- *Total lines of source code:* **16,743**

### The Customer

A national financial institution offering banking, insurance and asset management services to more than 14 million customers across the U.S., had developed tools to maintain its various databases as part of an ongoing Information Quality Management (IQM) initiative. The existing tools, which were developed to access error data, lacked key functionality and were developed as silo applications that were unable to communicate seamlessly with each other or with other systems.

The company approached TopCoder to devise an IQM solution that would enable users to use an HTML-based interface to access the error data, allowing them to intuitively and easily navigate through the data, as well as take advantage of the company's iA3 framework technology.

### The Solution

TopCoder assessed the scope of the work and proposed a solution designed to substantially ease the reporting process for users, allowing the client to retrieve the information they needed with a minimum amount of confusion and effort.

The potential return on investment gained by developing the IQM application included the following:

- Reduced costs for application maintenance and enhancements.
- Ability to take advantage of the company's applications framework for reuse wherever possible.
- Service modules that could seamlessly integrate other applications within the IQM suite.

## TopCoder/Integrated Quality Management Work Flow

| Project Management | Functional Specs | Architecture | Component Architecture | Component Development | Application Assembly and Certification |
|---|---|---|---|---|---|
| • Discussion with stakeholders<br>-Client Data Stewards<br>-Client Project Management Office<br>-Client Architecture Team | • Requirements spec<br>• Use cases<br>• Activity diagrams<br>• User interface<br>• Prototype<br>• Architecture diagram<br>• Test plan | • Deployment diagram<br>• Identify components<br>• TopCoder Component Catalog | • Component diagram<br>• Component interface diagram<br>• Component sequence diagram<br>• Component requirements spec | • Component specs<br>• Use cases<br>• Class diagrams<br>• Sequence diagrams<br>• Javadocs<br>• Review scorecards<br>• Unit test cases<br>• Stress test cases<br>• Accuracy test cases<br>• Boundary test cases | • Completed application<br>• System test cases |

## The Details

A TopCoder Project Manager held discussions with the following client stakeholders and documented all of the requirements for the application: Client Data Stewards, the primary users of the application; Client Project Management Office (PMO), the group responsible for making sure that the project was completed on-time and on-budget; and Client Architecture Team, who required that the application be implemented within the existing J2EE application framework.

TopCoder then documented a high-level list of functionality required for the application project to be successful, including an administrator, user and search interface, as well as a single sign-on client environment for authentication.

The functional specifications were further documented using high-level use cases and activity diagrams that were input into the design phase of the project so that technical architects could create the application design. Competing designers took each of these high level use cases and divided them into more detailed use cases during the design phase, identifying new use cases as the design was detailed.

Next, an architecture diagram was developed to describe the platforms on which the application would reside, followed by a deployment diagram.

The next phase of the methodology – design – occurred offsite through a centralized, secure online forum. For the IQM project, applications were broken into three new customer-specific modules for independent parallel design and application reuse.

Development, integration, and certification were also conducted offsite by TopCoder Project Management and the distributed TopCoder member base. Developers competed, and the TopCoder Review Board worked with the winning developers before certification.

The application was deployed to the client's QA environment for legacy integration and later migrated to production. Impact from changes were minimized since the project was decomposed into components.

## The TopCoder Advantage

The TopCoder methodology uses competition to ensure the highest quality solution for each phase. At least two designers and developers compete, and a Review Board made up of three of the highest rated TopCoder members evaluate each submission on a number of key metrics.

Each component is packaged separately to promote reuse within other areas. In addition, this lowers the impact of changes throughout the project. TopCoder Project Managers create developer forum threads and posts for rapid updates to required changes.

Compared to traditional IP consulting, the component-based methodology and reuse solution resulted in a substantial savings over the cost of the total application, higher quality in design and development, and consistent deliverables that will save significant time and resources in future phases.

## About TopCoder Software

Utilizing a member base of over 54,000 talented individuals as a distributed development resource, TopCoder Software drives down the cost of software development by introducing reusable components to the development life cycle. TopCoder Software components are developed using industry frameworks such as J2EE and .NET.



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