



*Q3 technologies*

## Using the .NET Framework to Integrate with Enterprise level customers and Legacy Systems

Q3's global sourcing model gives the maximum benefit to customers in terms of cost savings, improved quality, access to highly talented professionals, flexibility of operations and reduced time to market.

# Case Study – Leading chemical informatics provider

## Company Profile

- » Client is the leading supplier of Internet browser and webserver based life science desktop software, enterprise solutions, chemical databases and consulting services to the biotechnology, pharmaceutical, and chemical industries.
- » Client's partnerships with recognized scientific information providers make a rich array of databases and sources available to customers. Information publishers include Merck, Wolters Kluwer, Organic Syntheses, Derwent and ISI (Thomson), and InfoChem (Springer Verlag/Candover & Cinven).

Through an internet based application, client provides access to huge scientific data information from owned as well as partnership driven sources to individual as well as to corporations, academic institutions and government organizations. The company wanted to leverage this valuable asset in terms of collaboration with related companies, vendors, resellers and consumers and also wanted to explore the additional monetary benefits that can be derived out of it. Major business factors which prompted our client to consider initiating a project that would help them achieve more out of existing structure are:

- » **Capability to sell independent access to databases** – Under the running framework and technology it was not possible for the client to provide independent and isolated access to the information repository to external collaborators like companies and resellers. These consumers of data would want to use it integrated with their existing user interface or distributed applications.
- » **Improvements to user friendliness of application** – Performing any information lookup in the application bound the user to choose a specific database for searches leading to multiple search cycles and wastage of time and effort. At the same time, search results were very slow to appear due to overload of a shared search engine which was also used by other applications owned by client.
- » **Non compatibility with any other database except legacy Oracle** – Increasing usage and demand for different databases from market could not be accommodated because the application could only support legacy Oracle database making the application redundant to certain extent as newer applications and database repositories were using latest versions of SQL Server and Oracle.
- » **No availability of marketing analysis data** – Client's marketing department required user information and search pattern data from the application usage code but there was no provision to capture and report this information. It was certain that a marketing analysis of this data could help the client make better inroads into markets by understanding user preferences and interest patterns.

## Business Situation

## Technical Situation

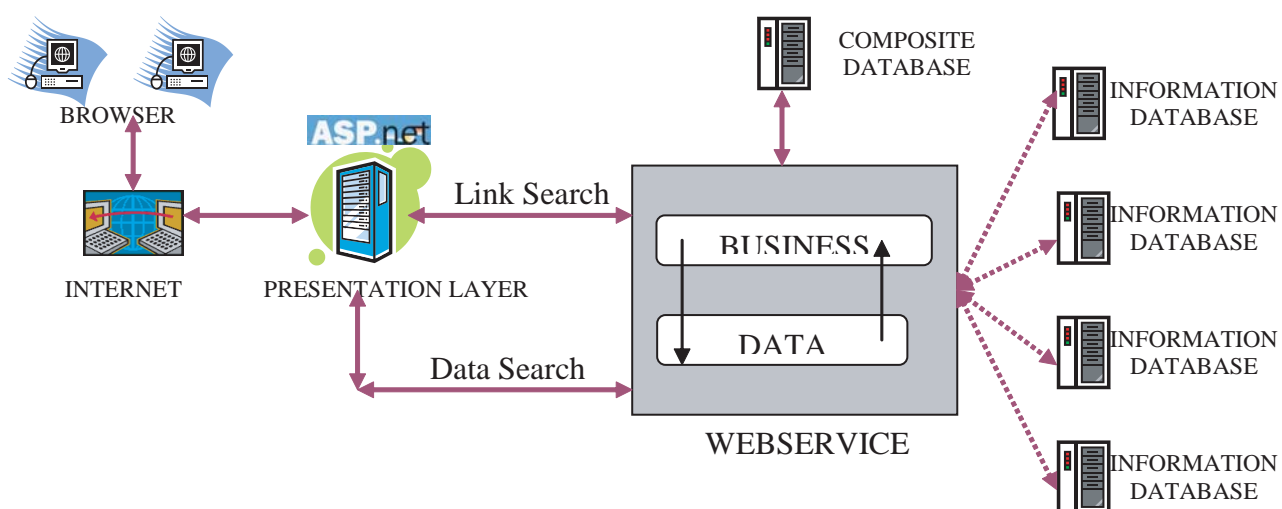
Existing application suffered a number of technical drawbacks making it difficult for the client to derive optimization of the information repository. Major ones being:

- » The search engine core was not a component instead ASP pages which were used to process requests from front end website and worked with active-x data objects for connection and retrieval of information. Moreover this engine was being shared by number of different applications and multithreading optimization was not handled.
- » Non generic and specific querying code tailor made specifically for legacy Oracle database coupled with difficulty in making changes to process oriented programming structure left no other choice than to move complete existing functionality along with additional functional enhancements to newer technology.
- » Front end application was ASP and Java script based which did not allow robust authentication and multilevel security structure. Being a complex search engine functionality client could not leverage multiple price – multiple access level revenue stream.
- » Errors in application level or database search level were handled in a very basic manner without any reporting or logging of such incidents, making it difficult for the technical troubleshooting or maintenance of the application.
- » Scalability of the functional features was out of question due to non object oriented programming and unstructured hierarchy of functions.
- » There was a need for a solution that could embrace legacy systems as well as new technologies and reporting tools providing faster and efficient user experience. Also required was a system which would allow secure and isolated access to various databases which was not possible in current situation as there was no provision for database level authenticated access.

## Solution

- » Q3 set up a dedicated team consisting of a team lead and software developers with internal program managers to monitor and guide the client-vendor partnership. The team decided using Microsoft® Visual Studio® .NET 2005 as the consolidated tool set, created a core set of components that supply the support for the whole architecture. Also, they developed an application that facilitates automated management of database connection and performance issues. This was achieved through WSE 3.0 compliant web service component that would provide distributed transaction control and multi threading handling of requests.
- » Q3 team designed a phased approach to enhancement and integration of the application wherein phase 1 uses .NET 2.0 frameworks, Oracle 2.0 and C# as the development language. The search criteria are supposed to be single level with multiple criteria searches to be integrated in later stages. This also called for designing a scalable web service component which would need none or minimal changes to embrace added functionality.

- » Semi-detailed specifications were provided by the client management and Q3's system architects worked extensively with peers both at Q3 and at client site for building a state of the art data base structure and detailed functional and design specifications which could improve user friendliness by providing list of database links which store information on user search criteria, eliminating the need to specify a particular database for search each time.
- » Complete operational transparency was maintained by keeping communication of status updates and progress as a regular process. People at PCi would hear from the team lead, the program manager and the developers on a regular basis, with more detailed weekly status reports indicating progress against milestones.
- » Automated testing tools like Test Advantage were used by experienced QA professionals to ensure bug free, application milestones delivery within deadlines.
- » A comprehensive linking database with information on all connected databases and web service called the Wiz Compliance platform was built which integrated the following functions:
  - Exact and extended structure search function which would return hyperlink results based on chemical structure as well as additional criteria.
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  - Request cancellation function that would kill and remove all traces of a cancelled request using garbage collection.
  - Load statistics function to provide all statistical data on the performance of the server.



## Benefits

- » Shorter time to market for the client products by exploiting the benefits of a fully functional Offshore Development Center (ODC) in India, particularly the development process being continuous due to different time zones.
- » Extension of client's development teams globally by taking advantage of Q3's highly flexible Software Development Life Cycle (SDLC) methodology.
- » Highly enhanced user friendliness through structured search results with links to only relevant databases, saving valuable effort and time.
- » Complete integration with legacy systems like oracle as well latest databases like Oracle 10G and SQL Server 2005.
- » The clients IT landscape is mixed and varied, so the company required a solution that could integrate with any disparate system and any vendor through any protocol. The XML Web services that Q3 built, functions as the gateway into legacy applications as well as new applications.
- » Business model and culture at Q3 entails ownership of the product development process. It is not only the team members who are dedicated to a client; it is the whole company management which works in complete tandem and efficiency to ensure that the relationship is seamless and successful.
- » Migration to newer technology was achieved in a very cost effective solution on account of being able to cut down resource costs from average \$90,000 to approximately \$30,000 per resource.