

Q3 develops a customized, PDA-based application, which could provide multiple functionalities as the existing third party application and run on Windows Mobile 5.1 or higher OS platforms.

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 - Mobile based clinical data processing

Company Profile

Client is a leading provider of mobile technology based, ready-to-use electronic Case Report Forms (eCRF) and interactive data collection software for speeding up the clinical trial process. Client's profound experience in global clinical trials helps it meet the challenge to create and deploy new information technology to accommodate the design requirements of successful and secure data collection at the customer site.

Client had a proprietary mobile device that was compatible with various mobile operating systems, such as PALM and Windows Mobile. The device supported extensive assessments, visual scales, and pictures, and managed data transmission using acoustic technology.

The software used by the client's device to design eCRFs, record answers, and transmit data was a third party application whose source code was inaccessible to client. Therefore, for the client, updating the clinical trials frequently in order to keep pace with the contemporary medical arena was a pain.

Client needed a customized, PDA-based application, along with source code, that could provide similar functionalities as the existing third party application and run on Windows Mobile 5.1 or higher OS platforms.

The specific requirements of the requisite application were as follows:

- » The application will present disease related questionnaires to patients, record the answers given by patients, and sent the recorded data to centralized Web server in XML format using acoustic/GPRS transmission.
- » **The application will be in two parts: Desktop and Mobile Application.**
The Desktop part will be used to design studies, questionnaires, questions, messages, and alarms.
- » The Mobile part of the application will be deployed SD cards, which will be inserted in PDAs. It will run on PDA with Windows Mobile 5.1 or later, and will be used to view questionnaires and record data.
- » The studies will contain questionnaires for patients; the questionnaires will constitute questions and messages. The questions and messages will be linked with edit check scripts so that appropriate questions/messages are presented to patients based on previous answers.
- » The studies will be designed on Desktop based on patient requirements, and deployed on SD cards of PDAs. Once study/studies are deployed on a PDA, the doctor will set alarms on PDA so that appropriate questionnaires are presented to patients, and assign the PDA to patient/patients.
- » The patients will answer the questionnaires presented to them and record data. The recorded data will be sent to a centralized Web server through which the doctor can view patient data.

Business Situation

- » The studies will be redesigned, if required, and the updated study will be remotely synchronized with the corresponding study, which is already deployed on SD card of a PDA. Synchronization will take place through GPRS.

Solution

Q3 realized that mobile technology was becoming ubiquitous in medicine with people becoming more inclined to accept technology as an adjunct to care. So, it was important to build the requisite application in a technology through which client could maintain and enhance the application, in-house, as per the changing requirements in the health services sector.

The mobile-technology experts at Q3 thoroughly studied the client requirements and unearthed the hidden complications by using the existing third party application and investigating the various features provided by the application. For example, Q3 discovered that the application is supposed to be used by multiple patients.

Furthermore, Q3 suggested improvements and alternative ways to build the application. For example, Q3 proposed to integrate the requisite application with an emulator so that the design of studies can be viewed on Desktop itself.

Designing the questionnaires on Desktop leveraging the emulator was easier compared to the complexities involved in updating the questionnaires dynamically and remotely. Q3 used SMS technology for this purpose and ensured secure delivery of questionnaires by implementing industry standard cryptographic algorithms, such as 3 DES.

Data transmission from PDA to Web server was another big challenge because of the cost factors involved. To reduce the overheads, Q3 used WiFi technology for acoustic data transmission from PDA to Web servers.

- » Net Compact Framework
- » XML files (for sending/receiving and storing data)
- » C#
- » SQL Server 2005

Technologies

Benefits

- » Faster data collection
- » Cleaner data collection due to sophisticated automatic data validation
- » Dynamic creation of studies based on requirements
- » Dynamic linking of questions and messages using edit check scripts
- » Easier monitoring
- » Immediate evaluation of results