

## The NHS Breast Screening Programme's National Breast Screening Service (NBSS) System

Financial Objects is working with the NHS Breast Screening Programme to enhance the National Breast Screening Service computer system, helping to improve organisational efficiency and data quality and enabling the programme to deliver a high quality service to women.

### Background

The NHS Breast Screening Programme (NHSBSP) was set up in 1988 and was the first of its kind to be set up anywhere in the world. It has since provided free breast screening for all women in England aged 50 years and over. Around one and a half million women are screened in the UK each year, with women aged between 50 and 70 years now routinely invited for breast screening, and those over 70 now being able to request an appointment every three years. The programme is estimated to save 1,400 lives per year, and regular breast screening for women over the age of 50 years reduces mortality from breast cancer by about 35 per cent in those screened.

The NHSBSP relies on its computer system to record the outcomes of breast screening appointments and a woman's screening history. It provides standard statistical returns for monitoring and analysis of the programme. The system is known as the National Breast Screening System (NBSS).

An Options Appraisal was commissioned by the NHSBSP in 2000 to identify the current and anticipated future requirements for a state-of-the-art application as well as assessing the options available to deliver a modernised, fully supported cost effective system.

### The Challenge:

Although the previous system was effective, it was predominantly character-based and not intuitive. Its main limitations were that:

- Appointment rearranging was very time consuming, with users having to access up to seven separate sections within the programme instead of being able to rearrange in one simple screen;

- The reporting tool was difficult to navigate and restricted the complexity and diversity of the reports required by the service;
- The system was based on a UNIX platform which was expensive to maintain and replace;
- New members of NHSBSP staff had a high degree of familiarity with a Windows interface, and found the previous system difficult to learn.

One of the most time consuming tasks with the old system was the re-arrangement of appointments. With the previous system, appointment re-arrangement involved accessing different areas of the system. The look and feel of the system was also very basic.

### The Solution:

Following the Options Appraisal a series of recommendations were made:

- Redevelop the existing NBSS system using a modern InterSystems Caché development environment;
- Develop a simple Graphical User Interface (GUI) to the database;
- Provide a standard ad-hoc reporting tool;
- Rationalise the application support.

Financial Objects was contracted to migrate the existing unsupported database to a modern, industry standard and supported Caché database environment by March 2004, which was completed on target. The next stage is to migrate the remaining offices to NBSS; this phase is expected to finish by March 2007.

Commenting on the selection of Financial Objects to deliver the project, Sarah Cush, Assistant Director, NHS Breast Screening Programme, and Project Manager for the original NBSS implementations says: "The NHS Breast Screening Programme is continually looking to take advantage of developments in



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### Objectives

- Convert NBSS existing interface and legacy MSM database to a Windows® based GUI and InterSystems Caché Database platform
- Implement a user-friendly interface to support 1.5m screening invitations per year from 2004
- Improve analysis and performance monitoring
- Reduce overall cost of support
- Standardise breast screening computer systems across the UK
- Continual enhancement optimising industry technology advancements

### Solution

- Financial Objects redeveloped existing character-based system to a Windows® based GUI and Caché server-based system with integrated Crystal Reports

### Results

- New system implemented at 76 of the 90 Breast Screening offices by March 2004
- Over 1,000 system users across England
- Reduced administration time by redeveloping appointment amendment process
- GUI allows better visual analysis of data
- New enhancements such as direct entry of results, reducing risk of error or loss of data
- 3 of 4 legacy systems now replaced, with the fourth expected to be complete by the end of March 2007

new technology. The upgraded NBSS system enhances the quality and efficiency of the service we provide to women, by making data more accessible and improving the reporting facilities for staff.

"The new Caché database has improved the overall performance of the system. For example changing an appointment now takes a matter of a few mouse clicks. And running a routine statistical report (KC62) takes a matter of minutes whereas before it used to take, in some programmes, a number of hours.

"We have recently developed a direct entry facility which means results can be entered onto the system at the time of reporting therefore improving the workflow and increasing the accuracy of data entry."

The new Caché-based platform is capable of dealing with very high volumes of data, which are required for the increased number of women taking advantage of the screening service. The Caché database has greater robustness over the previous system and can deal with thousands of users throughout the NBSS network. Data can be retrieved quickly, greatly reducing the amount of time spent locating and retrieving patient data.

InterSystems provided the Caché database, an integral part of the Financial Objects solution, for the NBSS system enabling rapid transaction processing and fast, secure data retrieval. Phil Birchall, Healthcare Business Development Director at InterSystems said:

"InterSystems is delighted to be supporting Financial Objects and the NHSBSP in this successful modernisation project. This is an excellent example of how Caché can be used to modernise existing systems within the NHS, adding significant new functionality and facilitating successful deployment to a national user community."

**The modernised NBSS system allows appointments to be changed using a single screen. This reduces the amount of time spent on appointment administration and is much more user friendly with a familiar Windows look and feel.**

### **The Technology:**

The NBSS system Caché database runs on either UNIX or Windows Server platforms. It is accessed via a Windows GUI operated by a keyboard or a mouse. Each breast-screening centre has its own client-server installation.

Additionally, the NBSS system supports the use of barcode scanners and touch screens for rapid data entry by clinicians. Data can also be imported from the NHAIS system using MEDIFACT.

The new "Daybook" module allows data to be transferred from remote screening units to a central server using USB flash drives.

Crystal Reports is used as the report-writing technology to produce screening analysis and performance monitoring. This allows extracted data to be saved in various formats including Word, Excel and PDFs.

### **The Future:**

The redevelopment of the new NBSS system was completed by March 2004 and the system is now being used by 76 of the 90 breast screening centres of England, Wales and Northern Ireland. It is expected that the remaining sites will be replaced by the end of March 2007.

NBSS will continue to be developed, adapting to new working arrangements such as integration with digital technology and Connecting For Health requirements in the future.



**"The NHS Breast Screening Programme is continually looking to take advantage of developments in new technology. The upgraded NBSS system enhances the quality and efficiency of the service we provide to women, by making data more accessible and improving the reporting facilities for staff,"**

**Sarah Cush  
Project Manager,  
NBSS Implementation Project and  
Assistant Director, NHS Breast  
Screening Programme**

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