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Digitization of the Nationwide Breast Cancer Screening Programme in the Netherlands

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The Dutch government has ordered the digitisation of the national mammography screening programme for breast cancer. The RIVM assigned Philips and a consortium of specialised suppliers to handle all the IT aspects of this mega-project referred to as DigiBOB. The Philips iSite PACS forms the heart of this nationwide service, allowing radiologists to access new and historical patient data, including multiple mammograms, in seconds.

In the Netherlands, the National Institute for Public Health and the Environment (RIVM) provides a free nationwide breast cancer screening service for all women between 50 and 75 years of age. The programme started in 1989 and by 1999 national coverage was reached. All women in the target age group are invited every 2 years. This makes that close to one million women are examined per year, representing more than 83% of the target group, the highest compliance percentage worldwide. A controlled and optimal balance is obtained between referral rate (1.5 – 2%) and detection rate (4.5 – 5.5 %).

The incidence of breast cancer is among the highest in the world: 126.7 cases per 100,000 women. A woman in the Netherlands has a 1 in 8 lifetime risk of developing breast cancer. In 2006, 12.462 new cases were detected, and 3.350 women died of the disease. The high incidence is expected to be related to western life style in general, and to the reproductive life style more specifically.

Given the aging population, and the increasing healthcare expenditure, the Dutch government decided to innovate to reduce the healthcare cost increases, to increase the productivity of healthcare professionals and to improve the quality of healthcare. One of these innovation projects is the digitisation of the national mammography screening programme for breast cancer.

The RIVM assigned Philips and a consortium of specialised suppliers to handle all the IT aspects of this megaproject referred to as DigiBOB. This includes all the hardware, software, network infrastructure and data centres, but also all project management and training required to bring the service to life. Next to the information system iBOB, the Philips iSite PACS forms the heart of this nationwide service, allowing radiologists to access new and historical patient data, including multiple mammograms, in seconds.

Separate public tenders were issued to procure the digital mammography systems and the specially designed mobile units (busses) that tour the country with all the necessary equipment on board. The IT infrastructure is deployed in the mobile units, the static units, the reading centres and the regional and national archiving centres. And it connects all of these locations into a seamless and efficient operation.

The digitisation had to be deployed with minimal impact to the running programme: The show must go on. But also a principal decision was made to go with the flow without escape, since analogue film techniques will become obsolete rather sooner than later. The project was set up within a public-private-private partnership: the public health authority

hosts the national DigiBOB project team, using systems and services from private providers, and deploying them to the private regional screening organisations.

Screening mammography examinations are performed in 67 screening units, from which 57 are mobile units (busses) (refer to the graph). All nine regions and reading centres have been equipped with the new IT equipment and all clinical users have been trained and use the system

effectively. Today two thirds of the 1000 expected users are active on the system and more than 2 million mammography examinations are available in the image archive. The implementation of

this project has started early 2008 and by July 2010 all mobile screening units are expected to be integrated in the new system.

The scale of the undertaking is huge, with more than one million mammography examinations added each year, while guaranteeing performance for viewing new and prior images, and under stringent quality, security and privacy protection requirements.

The ambition of the digitisation project is high: To ban the use of paper and the use of film in a single coordinated transition. This involved a lot of business process redesign, where people are forced to change the way they work. The change was well deployed thanks to extremely intensive communication with all stakeholders, as well as by militant and dedicated project management on the national level.

For the patient the system will enable a faster response time after the mammography examination and a faster scheduling of follow-up examinations, if required. The minimal requirement for the system was to guarantee at least the same high quality standards of the current screening programme. But the expectations are that digital imaging will further improve the clinical quality of the programme, with improved cancer detection rates, and more lives saved in the end.

The system shall not have a negative impact on the productivity of personnel. Initially, the prior films are still looked up from the film archive and digitised. But over time the removal of all film handling will incur an important logistical saving. The digital image archive will allow future applications in the area of e-learning for radiologists in training, real time

e-evaluation of image quality and reading performance, computer aided detection (CAD), and more. In a pilot project experiments are ongoing with electronic image transfer from the screening programme towards the hospitals to which patients are referred.

DigiBOB is the first nationwide digital mammography screening installation in the world. It is one of the few successful government driven healthcare IT projects of this scale. High expectations are set regarding a positive quality impact on the screening programme, and in ultimo on the reduction of cancer deaths.

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