

Digitalization of breast cancer screening: DigiBOB

Organization

The Dutch National Institute for Public Health and the Environment is managing the digitalization of the breast cancer screening program. The screening is carried out by nine independent screening organizations. Approximately 650 employees work for these organizations.

Project

With the DigiBOB project, the National Institute for Public Health and the Environment aims to digitalize the preventative breast cancer screening program. Approximately one million women are screened annually. This takes place in 65 specially equipped mobile units. In these mobile units, the technicians take dozens of X-rays each day during digital mammograms and save them on a central Image Management System (IMS). This storing of images takes place at two data centers in Eindhoven using the Philips iSite PACS.

The results are immediately available to the radiologists who, working in pairs but independently, assess the mammograms. All of the fifteen locations where the radiologists assess the X-rays are equipped with special mammogram workstations that are connected via a gigabit optical SURFnet6 private fiber-optic network. The radiologists assess whether the patients need to undergo further investigations in the diagnostic process. Each breast is X-rayed twice. A mammogram is approximately 30MB.

Project duration

The project started in 2002. The European tender took place in 2007 and the first roll-out on July 1st 2008. The entire screening process was digital at the start of 2010.

Contact

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Situation

Four screening pilots have already been carried out in which various vendors tested the digitalization process working practice, with a particular focus on images.



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Proposed approach

Because the mammography process imposes special demands in terms of the linking of systems, the National Expert and Training Centre for Breast Cancer Screening was involved in the creation of the IHE mammography profile. This profile sets out the requirements that the mammography units, the image archive and the workstations must meet to ensure that they function properly. In the project both the 65 mammography units and the central IMS system were put out to tender in separate European-wide requests for tender. The details of the mammography profile were included in both schedules of requirements. In the tenders the vendors were awarded points for each IHE requirement. Many of the requirements counted as (KO) knock-outs. After being awarded the contract, the vendor for the IMS had the opportunity to show in a Proof of Concept that the IMS could in principle support the entire work flow (December 2007). Conformance with the IHE mammography profile was examined in detail. Improvements were made in a number of areas prior to the acceptance tests in May 2008.

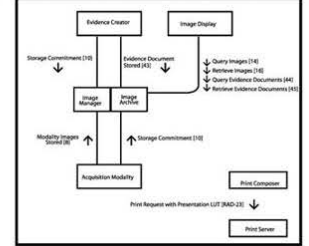
Contribution of the IHE

The IHE MAMMO (mammography) profile forms the basis for the screening solution. In this, the main IHE radiology profiles are combined and supplemented with specific requirements for mammography. Phase one involves the digitalization of the screening process. Phase two will involve the exchange of images and reports with the hospitals. The surgeon has access to the screening images for each referred patient. The pilot started with the MammoXL project in 2008/2009. The exchange takes place in accordance with the XDS-I profile.

Integration profile	Vendor/product name	IHE actor	IHE transaction
SWF	Philips	All actors	Many
PIR	Radventure en Philips	Order placer/filler Report manager	Many
PEI	Philips	Import en export	Many
MAMMO	Philips/Hologic	Acquisition mod (Scanner) Image manager/ archive Image display	Many
MAMMO	Hologic/GE/IMS	Acquisition modality	Modality images stored, Storage commitment

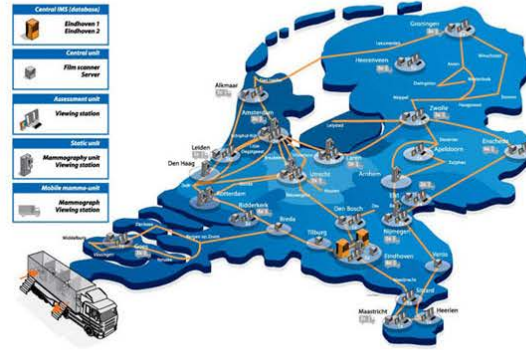
For us, IHE formed the basis of the schedule of requirements and the pool of concepts

IHE Technical Framework Supplement - MAMMO Profile Draft for Trial Implementations



Breast Cancer Screening in the Netherlands

- Central RIS (database)
- Eindhoven 1
- Eindhoven 2
- Control unit
- Fileserver Server
- Acquisition unit
- Viewing station
- Service unit
- Mammography unit
- Viewing station
- Mobile mammography unit
- Mammography
- Viewing station



Results

A national infrastructure in which work is carried out within the units according to SWF, the mammographs and scanners are specially set up to fully support the entire diagnostic work flow process and in which there will be a uniform national process that does not involve paper or film. Through this better image quality will be achieved resulting in a higher cancer detection rate.

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