

Speeding up cancer screening with mobile technology

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Radiology scan being examined. Credit: European Space Agency

Delivering breast cancer screening results in a day instead of today's standard two weeks is being proposed by an ESA incubator start-up company using paperless technology and online image transfers.

Screening vans are already on the streets.

"By applying online connectivity to mobile scanning units we have the potential to radically overhaul mobile breast [screening](#) in the UK," notes Viv Barrett of DEOS Consultancy, a start-up from ESA's business incubator in Harwell, UK.

With one in eight British women developing [breast cancer](#) at least once in their lifetime, mobile screening vans are used in the UK to bring the service closer to people, such as offering scanning near supermarkets.

When set up 28 years ago, X-ray film cassettes were physically carried to hospitals for developing. Today, hard drives with digital images are taken by courier, taxi or mammography staff themselves to a hospital for interpretation. In addition to pushing up the cost and adding delay, it is not an efficient use of the medical staff's time.

Viv, a qualified mammographer herself with extensive experience of mobile screening, found this unacceptable. Having seen the benefits of working in a connected environment, she founded DEOS Consultancy in 2015 to develop a more efficient scheme.

"When we started four years ago, we used satellite communication [technology](#) to develop our system. It enabled us to develop an automatic system and modernise the breast screening units.

"Now we mostly transport images via 3G/4G networks, still fully automatically without involving [medical staff](#). We use satellites if the local mobile networks are too slow.



DEOS Consultancy has built a demonstration van to present their paperless breast cancer screening system. Credit: DEOS Consultancy

"We have halved today's 42 steps, and cut out paper documentation. Our solution is all online. In addition to cutting costs and saving time, it has improved the accuracy and made the work a lot simpler. And it is quicker and much more customer-friendly."

Currently, bookings are closed several days in advance and the screenings then follow paper diaries printed and delivered to the vans daily, making last-minute changes difficult to handle.

"Our appointment system is now live so we can handle the breast scanning on the vans better. If a woman turns up on the wrong day, her record can quickly be accessed and if she is eligible she can be screened anyway."

"Having direct access to the patient data, we can add clinical notes directly into the system at the time of screening. It is much safer than today's practice of adding sticky notes to the paper documents, and occasionally losing them on the way to the hospital.

"Our focus has been on developing a prototype for our technology that could be used in all screening vans."

Several have already been fitted with the DEOS online system and are being used, and a demonstration vehicle has been built.

"From these, we can see that images are typically transferred back to the hospital in just 4–10 minutes. That's impressive because it normally takes at least 24 hours, and sometimes even up to 2 days.



DEOS Consultancy demonstration van holds a screening room and a separate waiting area. Credit: DEOS Consultancy

"With our approach, the women could get their results within a day."

"Being hosted at the ESA Business Incubation Centre Harwell puts us in the perfect position to access the specialist technology and expertise we needed to complete our prototype and network with the right audiences and markets," notes Viv.

"This has been a critical phase in the development of our business, completed well and quickly thanks to the support we have received."

DEOS became the 50th start-up company to 'graduate' from the Harwell centre since it opened in 2011. To date, 61 companies have joined the centre for typically two years, all exploiting space and [satellite technology](#) to develop new products and services for terrestrial applications.

The centre is part of the European-wide network of business incubators run by the ESA's Technology Transfer Programme.

"Turning a brilliant idea into a viable commercial offering is a huge challenge. We help the start-ups to complete this process and become viable businesses," said Sue O'Hare, Manager of the Harwell incubator.

"DEOS is a good example of how satellite technology can improve a service that could be life-changing for many."

Provided by European Space Agency

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