

Right team, right time for Philips' pathology scanner

NEXT STOP: MARKET LAUNCH

The schedule was tight. Nonetheless, a fully functional demo of the Philips pathology scanner made it in time to the Washington USCAP conference. This is a highlight in the pathology world. The scanner works at least ten times faster than competitive equipment. Development partners Philips, CCM, Frencken and Prodrive saw their joint effort rewarded. The end product isn't the only deliverable, though.

The development and engineering process is an impressive example of what the Eindhoven corporate high-tech ecosystem can bring about, according to the development team.



From left to right: Pieter Janssen, Henk Tappel, Hans van Wijngaarden and Henny van Doorne. Photo: Bureau Lorient Communicatie

by Leendert van der Ent

The present pathology practice in hospitals involves large amounts of tissue coupes between thin glass sheets. The University Medical Center Utrecht (UMCU) has an archive of more than a million of those items that occupy a large amount of precious space. Therefore, research institutes like the UMCU are already involved in digital archiving of coupes. 'But in a mainstream clinical environment, this is no option. The present scanners are just too

slow', says Hans van Wijngaarden, senior director at Philips Digital Pathology. That is why he calls the prototype Philips pathology scanner a breakthrough: 'An integral solution like this is rare. The speed of reading and processing enormous images is really unequalled. Three in line camera's, one for each colour, scan the coupes. Thanks to a data transmission rate of 500 Megabytes per second, it takes a minute to create a picture of ten Gigabytes. This makes it at least ten times faster than any other equipment. The market years for such a solution.'

Several technical breakthroughs were necessary to create it. Van Wijngaarden: 'Apart from the enormous transmission rate, we created a 'new lossy' compression method. And thanks to new algorithms the image management system is not only fast, but also exceptionally rich in functionality.'

PEANUTS

The prototype scanner itself is fast, but its development process, rewarded a Point One development grant, has been equally quick. Van Wijngaarden: 'At the start in January

'The actual shape is only twenty per cent of our work'

2009, Philips Research had an optical architecture and a Functional Model. The USCAP end of March 2010 was a rock solid deadline for the demonstrator.' It cost a lot of effort from all partners to meet the deadline. Weekends and holidays were sacrificed. Pieter Janssen, director at Prodrive, and Henk Tappel, director at Frencken, remark: 'There was a huge commitment within the development team.' CCM director Henny van Doorne: 'We as development partners run a business risk. But commitment is incited by a deeper drive: the technology challenge. There is no deeper drive than that.'

Next to commitment comes trust. Tappel: 'Development started in January, contracts were signed during the summer of 2009.

This can only be done by authorised people trusting each other. We knew that contract details would eventually be sorted out.' This procedure saved a lot of development time, Van Doorne remarks.

To meet the deadline, even more was required: clever organisation. Van Wijngaarden: 'We reserved five months to define specifications. It requires restraint to not start building right away. It provided the opportunity to carefully search the project for blank areas. Lots of embedded software has to be carefully matched between partners.' Janssen: 'Especially given the existing image management system and the I-syntax format, which is the Philips standard for medical picture archiving. Extensive 'Spec'ing' gave us a solid basis. Everybody knew his part and how to fill it in.' Van Doorne: 'The choice for the ASD-tool by Verum

Van Berlo did the industrial design of the pathology scanner. Tappel: 'The company chose to apply revolutionary production technology. Rubber moulds enabled both a good looking and cost effective solution.' Van Wijngaarden: 'Furthermore, Van Berlo contributed the user friendly look and feel of the interface, a unique selling point of our scanner.' Both aspects suit to Van Berlo's approach of industrial design, CEO Thomas Paulen states: 'Close co-operation is in our view a must in industrial design. It is not about making a nice drawing from a distance. The actual shape is only twenty percent of industrial design. It is our task to involve all stakeholders and to connect all aspects: the

engineers and developers, buyers, end users and maintenance people. As a company, we emphasise the balance of all relevant aspects of a product.' To do so, Paulen also sees a task as a 'lubricant' in a project: 'We are able to visualise the consequences of certain choices, ranging from large technical building blocks to styling. This can make choices easier. The earlier during a project we are involved, the better we are able to play our supportive role. With the pathology scanner, we got the chance to do so.'

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variables. Sometimes there was nothing and the next moment large amounts of packages had to be integrated.'

A NICE MIX

Van Doorne agrees with Van Wijngaarden this is only a detail, far outweighed by factors like physical proximity: 'All partners work within a fifteen minute range. Teams from all partners were always welcome at the demonstrator in the CCM building. Teams co-operated and worked there parallel to each other, accelerating the speed of development.'

Van Wijngaarden, Janssen, Van Doorne and Tappel all value the concept of the 'scrum'. This is a short daily meeting in which all relevant information is shared between the deve-

lopment teams. Van Wijngaarden: 'Especially for the software people it was vital to communicate about connecting drivers, the image management system, motion control, embedded systems software, application software and the user interface.' Still, each organisation could apply its own development procedure, says Van Doorne, so we could learn a lot from each other. Tappel explains: 'While working in your own way, you can gradually weave best practices by others in your routines, for instance regarding project management and certification documents.'

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From the first moment on, production requirements were taken into account by all disciplines: optics, systems architecture, electronics, mechatronics, embedded software and industrial design by Van Berlo. The UMCU as a clinical partner was also important, Van Wijngaarden comments: 'The UMCU-knowledge of the application domain was indispensable. We had to know what the pathologist really wants and needs for his daily work flow. It led for instance to choosing the racks for coupes commonly used in pathology labs. And the amount of racks connected to the scanner matches the daily lab-production.'

Now the demonstrator is ready, the development phase has successfully ended. Product development has been started parallel to that. Van Wijngaarden: 'Our sales people are already warming up. We intend to be on the market by September with a scanner for research applications. Once you have shown a demonstrator, you have to deliver the real thing within six months. That is what we are working on.'

PRODUCTION PARTNERS

Frencken is already planning a dedicated assembly facility for the scanner. Development partners have now become production partners. There is no doubt this will work out as well. Van Wijngaarden: 'While setting up the project team, I especially paid attention to personal chemistry.' Tappel, Janssen and Van Doorne reply, laughing: 'We also did, Hans!' Tappel: 'Everything stands or falls with this chemistry. And the chemistry is great, both here at this table and within the teams.'

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www.frencken.nl

www.prodrive.nl

www.philips.com