



Easy and quick access to applications



More computing power available to perform analyses at night



A secure infrastructure



Analyse data in days instead of weeks and accelerate breakthroughs

The Netherlands Cancer Institute analyses data in days instead of weeks



The Netherlands Cancer Institute (NKI) is one of the top 10 cancer centers in the world and combines a cancer clinic with a research institute. The NKI is generating increasingly large amounts of data and had an outdated infrastructure. By using innovative VMware technology, hospital staff can access medical data and applications quickly, safely and easily, hereby accelerating treatment decisions and improving patient care. The NKI researchers can analyse data in days – instead of weeks – because they use the extra computing power at night for automatic analysis. This accelerates breakthroughs in cancer research.

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VMWARE FOOTPRINT
VMware Horizon®
VMware NSX® for Horizon
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Using emerging technologies to accelerate cancer research

The Netherlands Cancer Institute (NKI) combines a cancer clinic with a research institute and has set itself the goal of turning cancer into a chronic disease. About 650 scientists and support staff work at the NKI. Scientists are using emerging technologies to accelerate their research so doctors can put the findings into practice as soon as possible to treat and possibly cure cancer. The NKI plays an important role as a national and international center for scientific and clinical expertise, development and training.

Increasingly large amounts of data and outdated infrastructure

Bram van den Broek, Advanced Microscopy Expert and Bioimage Analyst at NKI: “We are generating more and more data and images of cancer cells. To handle this amount, we need more computing power that can process the data quickly. We also need that computing power to analyse cells and zoom in to the smallest details. The image



becomes blurry when you zoom in, but there are techniques to fix it and sharpen the image with less noise and more contrast. We had some powerful desktops that could handle some of the work, but there was a limit to the computing power. This meant that some of the data could not be recovered and people could not do their work properly. We needed more computing power for this.” The number of people with cancer is growing rapidly. By 2040 it is expected that there will be 27.5 million new cancer discoveries per year. This shows the importance of great capacity to aid research.

The NKI also had an outdated infrastructure and data was stored on local machines. Employees had to log in several times a day and regularly ask the IT department to install software. Roel Sijstermans, Head of IT at NKI: “Our IT-environment was inefficient and not safe enough. The challenge for the IT department was to offer much more self-service. Without IT, no research is possible. The IT department is crucial to facilitate researchers in analysing data and in their daily work. The IT department supports the process of linking data on the care and research side to facilitate the best research and cure patients.”

Quick access to applications and more processing power

A number of NKI technicians had attended the VMware Summer School in 2018. Therefore, VMware was invited to NKI and tell about its workplace vision. VMware then invited NKI for a session at their office. They talked about how to design a project and finding a matching solution from a supplier. There was a lot of contact, they worked closely together and a relationship based on trust developed. The relationship has been an important reason why NKI chose VMware.

Using innovative technology, NKI hospital staff now has quick and easy access to medical data and applications, accelerating treatment decisions and improving patient care. Sijstermans: “We want to offer our researchers and medical staff the best, state-of-the-art infrastructure and offer them a workplace that allows them to work anywhere and always have access to applications and data. VMware provides its Horizon VDI technology and the knowledge to create such a state-of-the-

art infrastructure and workplace. We now manage our data in one central place and offer a workplace that is accessible anytime and anywhere. Through self-service and automation processes, researchers have easy access to the computing power they need when they need it. The new infrastructure also allows them to securely share data with research partners elsewhere in the world.”

Much has also changed for the researchers. Researchers need the sharpest image to map the area in the brain where cancer may be present. They were able to process a batch of five photos in ten days. Thus, NKI was looking for a platform that could run machines that analyse data at night, so that they can offer more researchers computing power to improve their images – and the analysis. VMware Horizon provided the computing power. Van den Broek: “We needed more computing power so that employees could collect data during the day and send it to the server, which analyses it at night. The data was analysed in the morning. This is the ideal situation and we can create it thanks to the VMware Horizon solution.” NKI researchers can now analyse data in days – not weeks – hereby accelerating breakthroughs in cancer research.

“What we used to analyse in a week can now be done in one day, thanks to VMware Horizon.”

ROEL SIJSTERMAN
HEAD OF IT, NKI

‘VDI by day, Compute by Night’

The IT department is crucial when it comes to optimally facilitating researchers and enabling employees to do their work. First of all, with VMware Workspace ONE, employees have easy, fast, and secure access to patient records. This saves medical staff time that they can use for more time at the bedside with patients. They can log in faster, share files securely and collaborate more easily. Researchers can conduct research faster because they have more computing power. Secondly, security has been improved by using VMware NSX for Horizon, creating a microsegmented environment in which traffic is only allowed between validated servers (preventing East-West traffic). This was very important, because the NKI has a lot of personal and valuable research data. Finally, the improvements in IT ensure that business goals are better supported. Mark Platte, IT Architect: “We had the opportunity to rebuild our infrastructure with new technology and we were able to build something that will help both the clinical and the research side. We now have an entirely new environment and instead of lagging behind in the market, we are now at the forefront.”

The NKI has much more computing power, but it would be a shame to only use this extra computing power during working hours. That is why the NKI decided to make this computing power available for research, so that researchers have the necessary computing capacity 24/7 to make discoveries faster. By also using the VMware Horizon platform at night and by analysing and recognising cancer cells using deep-learning software, the institute uses its Digital Workspace as a force for good. NKI calls this approach: “VDI by day, Compute by Night”.



Van den Broek: “Curing cancer is a long chain of small discoveries. Researchers collect data during the day and make images with microscopes. At night, virtual machines start working to process and analyse the images. When you come back to work in the morning, the data has been analysed.” This allows the NKI to provide patients with a diagnosis more quickly. Sijstermans: “VMware offers the technology, but also the knowledge to create an ultra-modern and secure infrastructure and workplace for our healthcare providers and researchers.”

Sijstermans: “In the past, it took about a week to process large data sets. Thanks to the VMware platform, data analysis can be done much faster, enabling us to accelerate breakthroughs in research and cancer treatments. What we used to do in a week can now be done in one day. This means that we can diagnose our patients quicker, but we can also treat them faster, better and earlier on in their process.”

Solving the problem of cancer with state-of-the-art technology

NKI, together with VMware, has replaced its entire infrastructure and now runs a Software-Defined Datacenter-architecture and VMware Horizon to deliver virtual desktops. NKI also uses VMware NSX Data Center to create a safe and fast environment for both medical staff and researchers. This digital foundation is very important: you can offer a lot of computing capacity, but if you do not have a fast network, it makes no sense. NKI now trusts VMware Horizon to create a state-of-the-art future. Sijsterman: “I think that large data sets and computing power are very important for research and to accelerate breakthroughs. Maybe someday we will solve the problem of cancer and turn it into a chronic disease. That will be the focus of our institution in the coming decades.”



With [@VMware_nl](#) Horizon technology, [@NKI_nl](#) employees can do their jobs better and researchers can analyse data in days instead of weeks. This allows them to treat patients faster and better [#ForceforGood](#) [Learn more about this case here.](#)