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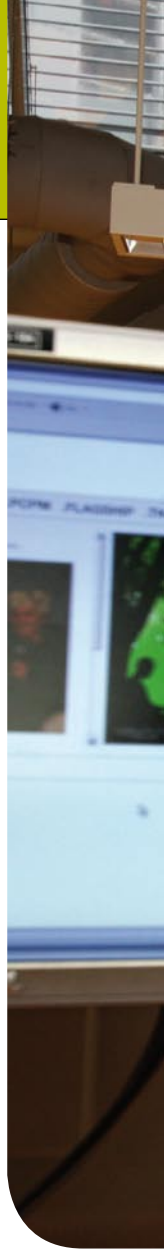
BERT SCHUTTE, DIRECTOR OF THE DHO FOUNDATION (SUSTAINABLE HIGHER EDUCATION):

ICT IS A SIGNIFICANT FORCE IN THE PROCESS TOWARDS SUSTAINABLE HIGHER EDUCATION

LARGEST READING ROOM AMSTERDAM UNIVERSITY CO_2-NEUTRAL



The energy consumption of the largest reading room of the University of Amsterdam (UvA) equalled that of twenty-six households. According to econometrics student Ewoud de Kok this is waste of energy and money. New lighting and smart computer settings allowed him to reduce the energy consumption by 55%. And the remaining power is generated with solar panels and windmills by the UvA itself on the roofs of its faculties.

For De Kok his project is not just about saving the UvA money. 'I want to create awareness of the fact that sustainability isn't vague or difficult, and I want especially to demonstrate that it makes commercial sense. Despite Al Gore's efforts many of my fellow students seem to think that it is about throwing tomatoes and going back to nature. I want to separate sustainability from its leftist associations. I do this by making the benefits transparent and showing students that these changes have not affected the user-friendliness of the reading room. We will place an energy mirror in the faculty entrance hall. It will show how much energy we have saved and how much money that amounts to.'

PC POWER MANAGEMENT

According to systems manager Mike de Ruijter it is not difficult to configure computers to be more efficient: 'A simple example is that computers are shut down centrally after closing time; students need to start them up in the morning. A PC will change to standby mode after ten minutes of non-use, or five minutes after a student has logged off. The machine then uses eight or nine Watts, instead of ninety. Such settings come under the heading of PC Power Management. In addition to the energy saving measures we also formulated requirements that the measures must meet. For instance, students must be allowed to "wake up" their PCs in a usual, safe and simple manner.'

KEEPING THE SYSTEM MANAGEABLE

'The challenge is to fit PC Power Management in well in the system administration environment', says De Ruijter. It is not always directly evident which effects are created by an economical setting. For instance, we have a maintenance programme running on the network at night. It checks the software, and repairs it if necessary. If the PC goes into standby mode the maintenance programme does not know what to do and shuts down. This is not always immediately

PHOTO: DIEDERIK VAN DER LAAN

Ewoud de Kok (l) and Mike de Ruijter

apparent. In order to prevent this problem from happening we have created a tool, but additional tools should be used with caution. We want to adhere to system administration standards as much as possible.'

INVOLVING STUDENTS

To allow large savings in energy, the UvA also invested in the lighting. 'Much could be improved in that area', De Kok recounts. 'We actively involved students in the selection of the new lighting, by installing different kinds of LED lighting in three rooms. In each room students could experience the lighting themselves and they could read about the costs, the advantages and disadvantages. In the end a choice was made based on their preferences as well as the technical and financial aspects.'

INTERDISCIPLINARY APPROACH

In all, it took De Kok a year and a half to achieve his aim, from conceiving the plan and convincing the Board to completing the execution. By now preparations are being made to make other reading rooms more energy efficient, and it is the UvA's ambition to apply PC Power Management to every PC. De Kok has hopes that this will set an example for other educational institutions. 'This gigantic waste of energy is a thorn in my side. Moreover, it is very easy to save money in this area. How can we ignore that?'

'The challenge is to fit PC Power Management in well in the system administration environment'

Christie Manintveld

PHOTOS: DIEDERIK VAN DER LAAN

ICT IS A SIGNIFICANT FORCE IN THE PROCESS TOWARDS SUSTAINABLE HIGHER EDUCATION

ICT plays a crucial role in the integration of sustainable development in higher education, according to Bert Schutte, director of the DHO Foundation (Sustainable Higher Education). Limiting the amount of energy that computers use (green ICT) is one aspect. Making optimum use of the possibilities of ICT for knowledge sharing and collaboration is another.

Since its foundation in 1998 DHO has been striving to strengthen sustainable development within higher education. Examples of the Foundation's activities are providing advice and training sessions, publishing best practices and initiating and stimulating sustainable development. Over the past ten years DHO set up an active network in which currently about 1,500 professionals in education, industry and government inspire each other and exchange knowledge and experiences. DHO also developed the "Bijzonder Keurmerk Duurzame Ontwikkeling" (special hallmark for sustainable development) for programmes in higher education, as well as the audit.

Is sustainability a hot issue in higher education?

'It may seem that the times are moving with us', says Schutte. 'It is becoming clear to ever more people that we need to make efficient use of energy and resources. More and more, higher education also recognises the urgency of sustainable development. Nobody professes to be against sustainability, but that does not mean that everyone is actively involved in it. I often hear people say: we can talk about this. Of course, this is a major step forward compared to ten years ago. We try to function as a booster and to accelerate the momentum within education.'
'The industry is asking for people who can help them achieve sustainable development and innovation', adds policy officer Roos Wemmenhove. 'They don't exist. It is up to higher education to change this rapidly.'

What is the current status of sustainable development in universities?

Wemmenhove: 'Many institutions pay attention to sustainable development, but they do not

Roos Wemmenhove and Bert Schutte

‘A number of institutions in higher education have sustainability in their blood and are very progressive’

integrate this theme into their education. They offer only a separate module or an elective course. That is simply not enough. Sustainable development should not be considered a separate subject, it is an integral part of all educational programmes. Whether the subject is economy, ICT or marketing, each teacher should include it. Then you create momentum and that is when you can achieve something. We want to ensure that every student who graduates in higher education has leadership qualities for sustainable development.’

Can you give some good examples in the Netherlands?

‘A number of institutions in higher education have sustainability in their blood and are very progressive’, says Schutte. ‘The HAN university of applied sciences is the only one to have explicitly included sustainable development in its policy. I am also thinking of the Delft University of Technology, a trailblazer with plans for a sustainable campus in 2030. There are not many educational programmes who think beyond the visible horizon. This is necessary, however. If we are to use fifty percent less energy in 2030, the solution is not going to be found in small improvements in our current working procedures. Configuring the computer to go into standby mode when it is not being used is a bonus, but it is not going to make the difference.’ ‘True’, says Wemmenhove. ‘First you need to take a step back, and separate yourself from the way everything is organised, and grasp the essence. When you do that, you can really turn things around without becoming stranded in solving problems. Solving problems

means concentrating on the here and now. But in order to achieve sustainable development you need to take the long term approach. And subsequently you think of what needs to be done to achieve your goal later on. At the moment this is regarded as an additional effort and a burden. Integrating sustainable development into programmes also requires a change in attitude, so that it becomes a matter of course to integrate sustainable development into one's plans.'

What role can ICT play in the process towards sustainable higher education?

Schutte: 'In many universities people are actively working on sustainable development. These are often small islands that are maintained by some enthusiastic trailblazers. To give sustainable development an integral place it is important that these people disseminate their knowledge and experience and make it available to others. ICT is a significant force in this context, but much more is involved. How does one get people to share their knowledge, and what does this mean for copyright, for instance. SURF is an expert both in the field of ICT and the surrounding organisation, so we are really pleased that SURF includes sustainable development in its new long term plan. SURF works with so many educational institutions that they can get sustainability across to a wide group of people.'

Wemmenhove mentions another issue where ICT can fulfil a role: 'Educational programmes can make use of ICT to strengthen their education in the field of sustainable development. Sustainable development is such a complex theme, involving so many parties, and competencies in this field can be stimulated very well through gaming and simulations. Finally, I would like to mention green ICT: setting up the ICT itself in a sustainable manner. This also makes a contribution, and moreover, it shows your students that you practice what you preach. One cannot urge students to find sustainable solutions when wasting energy oneself. In this area even details can be very influential, such as fair trade coffee in recyclable cups. These matters create awareness, and in this manner small adaptations can have great effects.'

Christie Manintveld

SPOTLIGHT

UNIVERSITIES OF APPLIED SCIENCES CHOOSE OPEN ACCESS

HIDDEN TREASURES

On 26 November the Netherlands Association of Universities of Applied Sciences (HBO-raad) joined the long list of signatories of the Berlin Declaration on Open Access. This choice for free access to research information is a major step for universities of applied sciences, says Huib de Jong, member of the Executive Board of Hogeschool Utrecht.

'The best kept secret of the universities of applied sciences', is how Huib de Jong sees the results of the research that is being undertaken at the universities of applied sciences. 'At least until recently.' When the HBO-raad signed the Berlin Declaration, it fired a double-charged salute. First of all the universities of applied sciences joined the world-wide Open Access movement for public, free access to research information through the internet. At the same time the universities of applied sciences made it known that it has something to offer in the field of research.

WIDE DISSEMINATION

'Research within the universities of applied sciences differs from the usual practice in research universities, for whom publication of findings in – preferably renowned – journals is basically the essence', says De Jong. 'Universities of applied sciences focus much more on the professional practice. That is why we opt for different media. Much of what we do is published in journals – usually in Dutch – but there is also a fairly large number of reports which at the moment are hardly made public.'

The reason is that much research takes place on the basis of projects in which the university of applied sciences collaborates with companies or public organisations who have a specific question. The results are laid down in a report for those organisations.

Little attention was given to dissemination of this type of information, says De Jong, 'but increasingly one comes across websites of lectors at universities of applied sciences that offer links to relevant texts. This is one reason why the universities of applied sciences are becoming aware of the importance of a wide dissemination of their research results. Open Access is the way to go.'

HUGE INCREASE

The means was already there. In recent years SURF developed the "HBO Kennisbank" (knowledge bank for universities of applied sciences): a repository where all sorts of publications from the universities of applied sciences can be found, accessed and reviewed. At first it contained many theses and intern's reports, but recently many of the websites of universities of applied sciences have been linked to this knowledge bank. De Jong: 'This has caused a huge increase in research reports and articles. It was a matter of awareness and of organisation.' The development continues. 'With a subsidy from SURF we set up the DIGIPUB project at our Legal Faculty: a digital publishing environment that aims to stimulate dialogues and knowledge sharing between staff, students and professionals in the field. It also involves web-based magazines, including peer review.'

BENEFIT FOR SOCIETY

In contrast to the situation at the research universities, the discussion about publishing within the community of universities of applied sciences is not dominated by copyright issues. 'Recently the HBO-raad has discussed Open Access quite a lot. I have not found that anyone had problems in principle with Open Access. Of course one would not want to deny one's staff the opportunity to publish in an academic journal, even if this means making concessions to publishers. But with all those reports there are no copyright or secrecy issues. We should be much more alert that this knowledge, paid for with public money, is not gathering dust, but can be accessed by people who can benefit from it.'

Aad van de Wijngaart

President of the HBO-raad Doekle Terpstra signs de Berlin Declaration on Open Access.

Berlin Declaration

The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities calls upon researchers to make their materials – both raw data and reports – readily available on the internet through repositories. Users should be able to access and distribute the materials, and even use it in their own publications. The only condition is a proper attribution of authorship.

Since the formulation of the Berlin Declaration in 2003 it has been signed by a long list of organisations and institutions across the globe. In the Netherlands these include all research universities, the Netherlands Organisation for Scientific Research (NWO), the Royal Netherlands Academy of Arts and Sciences (KNAW), and SURF.

PROJECT

FISHING ON THE NET

Every large institution deals with phishing: emails used by cyber criminals to fish for the recipient's passwords. Schools and universities are up against these attacks on a daily basis. How can they prevent network users from taking the bait, and what net is being cast to catch the phishers themselves?

'The email at this university is about to migrate to a new system. If you wish to retain the settings and emails in your current account, please reply to this mail immediately stating your user name and password.' Those who respond to such mails run the risk that their accounts will be abused, for sending spam for instance. Peter Peters, acting president of CERT (Computer Emergency Response Team) of the University of Twente, sees plenty of this type of email. 'Typically there are a few phishing attacks each week.'

PHOTO: CHRISTIAN VAN DER MEIJ

Peter Peters

'Typically there are a few phishing attacks each week'

SPITTING IMAGE

You would think that an attack like this is hardly effective. Practically everyone knows that an institution will never ask for log-on data by email. And yet, sometimes things go awry. 'Over the past six months five members of staff have taken the bait. They see an email like that and fill it out, without thinking. They receive a lot of mail each day', Peters says. Rens van der Vorst, operations manager at Fontys and responsible for the infrastructure, also sees this happening. According to him, however, the biggest threat is a second, more advanced form of phishing. This comes in the form of an email that provides a link to a website, asking you to enter your data there. The website is the spitting image of the institution's familiar log-on site, complete with logos and often even with a URL that looks trustworthy, such as www.uttwente.nl instead of www.utwente.nl.

As this is rather a lot of work for the swindlers, this type of phishing is relatively rare, but the chances of success are high. It is far more difficult to recognise. 'You can advise users to check the URL, but this does not happen in actual practice. I don't always check it either', Van der Vorst confesses. And he knows what consequences this may have. 'We once suffered an attack with a forged log-on page for Fontys. One thousand

PHOTO: DIEDERIK VAN DER LAAN

Rens van der Vorst

people had entered their data before we could block it. Fortunately that phisher did not do much with the data; most of all he wanted to prove that it could be done.'

Peters also knows of one successful attack where an account was abused for sending spam. All other times when someone provided their log-on data were without consequence. How is that possible? 'Users often realise immediately after sending such an email that they shouldn't have done that. Then they come to us', Peters says. Besides, many emails are intercepted in time, after which system administration blocks the sender. They then check in the log-files to see whether any people have responded. The majority of the attacks are never even seen by the users.

OWN RESPONSIBILITY

It is one thing to block emails. But is anything done to stop the phishers themselves? Van der Vorst: 'The offenders can be tracked down through the infrastructure. In ninety-five percent of the cases, however, the phisher is located abroad. Then you know: this site is in China - and that's it.' When the attack originates from a traceable account, the Legal Department is brought in. But even then the crime is not always reported. 'By the time we can start legal action the sender is usually long gone. In that case it just isn't useful', concludes Peters.

A much more important weapon is information. Both educational institutions host a site where users can learn how to recognise phishing, and what to do and what not to do. But visiting that site is voluntary. Why are users not alerted by email? Peters: 'Some universities did, but those emails weren't read. People receive so many

> 'Secure web use is the responsibility of the user'

emails.' Fontys does not send such emails either. 'We do not intend to become spammers ourselves', Van der Vorst states. 'If we were to actively warn people, the remedy would be worse than the disease.' The managers do what they can, but secure web use is ultimately the responsibility of the user.

Remco Mourits

MORE INFORMATION:

SURFNET'S CYBERSAVE YOURSELF CAMPAIGN WARNS OF PHISHING AND MANY OTHER INTERNET THREATS, SUCH AS IDENTITY THEFT AND VIRUSES. MORE INFORMATION AND TIPS ON SECURE INTERNET USE ARE AVAILABLE ON WWW.CYBERSAVEYOURSELF.NL.

SC'09 OFFERS A VIEW OF THE FUTURE

COMPUTING FOR A CHANGING WORLD

Each year a city in the United States hosts the most important event in the field of high performance computing and networking: SuperComputing, SC for short. This year Portland, OR offered a view of the future.

The Dutch exhibit is the largest non-American one at this mega-event. Over fifty representatives of all kinds of research organisations had travelled to Portland in a joint effort to show what the Netherlands has to offer in advanced computer and network applications. And that is a lot. Small wonder, then, that the Dutch stand also sported the logo used by the Ministry of Economic Affairs to promote the Netherlands. The presence of experts in this field, and of their students, attracts companies from other countries like a magnet.

SPLENDID VIEW

SC'09 offered its ten thousand participants a splendid view of the current and future developments in computing power, storage and networks. Among the Dutch highlights was a demonstration in which SURFnet and the University of Amsterdam created a dynamic lightpath between Amsterdam and Portland, a route that spanned multiple national domains. This is not an easy task because each domain uses its own management system. This is the reason why SURFnet collaborates with its American counterpart, Internet2, on an international standard in this area.
There were many more demonstrations and poster presentations, given by Dutch researchers, by the Amsterdam ICT service centre SARA and by NCF, the foundation within the Netherlands Organisation for Scientific Research (NWO) that safeguards the availability of advanced research facilities to Dutch research. Water management, the overall theme of the Dutch presence, was illustrated among other things by a large water basin.

THIRD PILLAR

At the exhibit the start-ups who are working on data-intensive computing were especially noteworthy. In the US the largest consumer of services in this area is Homeland Security, but internationally, as in the Netherlands, the largest buyers are sciences such as climate research and bioinformatics. Computational science is becoming important in an increasing number of disciplines, mainly due to the development of advanced digital measuring equipment that feed large amounts of data directly to a computer. An example is proteomics, the study of proteins, which generates huge amounts of data using mass spectrometers. These days we have the computational power to immediately process those data, partly because highspeed networks allow computers to be linked seamlessly into grids.

This computing power allows for ever more realistic simulations; so much so that they have matured into a third pillar in scientific research, next to logic and observation. It is now simple to test and refine a theory in a simulation, and subsequently see if a prediction comes true in reality.

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This productive development continues to proceed at full speed. The latest challenge is Exascale Computing. 'Exa' stands for 1018 calculations per second, i.e., one thousand times more powerful than the petascale computers that are now the fastest on the planet. The United States, Europe and Asia collaborate in the International Exascale Software Project to pave the way for efficient use of exascale computers, expected as from 2020. In this light it is hardly surprising that in his speech Al Gore referred to the title of SC'09, Computing for a Changing World. He saw a task for every professional in computational science to help point the way on how to successfully tackle the great global challenges.

Patrick J.C. Aerts
Aad van de Wijngaart