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Cursor

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Liar, Liar, pants on fire. If anyone has gone to hell and back these past two months, it's Diederik Stapel. A liar whose pants are on fire had it coming. You reap what you sow, and Stapel has a lot of reaping to do. In the media, there's a variety of scientific figureheads that keep stressing the self-cleaning capacity of science. Perhaps it's more fitting to speak of its self-punishing capacity these days. This Week, even KNAW's chairman Robbert Dijkgraaf was lectured by DWDD's executioner Matthijs van Nieuwkerk.

By the way, if my microwave was this slow cleaning itself – Stapel had been messing about for seven years – it would get chucked instantly. What strikes me most in the matter is this: why has no confrere of Stapel's ever repeated one of his studies to be able to validate it? Wasn't all this research and the remarkable results a reason to at least check? Falsify me if I'm wrong, but I think (and hope so with all my heart) that in actual science, remarkable results are checked and repeated in another lab. When in 1989, Fleischmann and Pons claimed to have unlocked the secret to cold fusion, everyone was right on the ball immediately. Then again, maybe that's the difference. It's enjoyable to read about meat eaters being jerks, but a possible solution to the energy issue seems to have a little more impact, after all.

Upon graduating, high-school seniors don't just look for the right study program. They also want a fun town where they feel at home. This social aspect can be just as important for young newcomers. In that respect, Eindhoven de gekste isn't doing bad at all. Yet Eindhoven's comfort and atmosphere is threatened by The Executive Board, since they want to halve all student-board grants. And no, these cutbacks won't lead to the instant demise of student association life, but still. Less student board members means less social cementing between departments. Eventually, it will lead to a smaller influx of freshmen, fear both student parties and the university council.

A minor consolation: the decapitation of



student association life can be seen in other student cities as well. Mr. Scrooge is running the show wherever you go, Cursor found out after checking with other study and student associations throughout the country. And oh well, if all girls are skinny, Eindhoven shouldn't worry they're the one to end up all alone.

◀ Rewwwind www.tue.nl/cursor

Our Rewwwind feature provides you with snippets of last week's news. What happened online after the previous Cursor magazine was published?

New light art to end darkness TU/e entrance

November 1, 2011 – On November 7, a new piece of light art will be revealed at TU/e campus: 'Transformation'. It consists of a circular steel column, from which the words 'TU/e Where Innovation Starts' are projected

dozens of times. The art work is a birthday gift from the Art Committee in light of the university's 55th anniversary, and will be placed on the lawn west of Impuls.

Bike repair TU/e campus reopens

October 26, 2011 - De Groene Fietser (the green biker) on TU/e campus has reopened. Initiator Richard van der Vleut was forced to shut down just

before summer, but he's found a successor that opened the doors to the bike repair shop once again.

Part Biomedical Engineering researchers moving to High Tech Campus

October 20, 2011 - In May of next year, 45 researchers of the Nuclear Magnetic Resonance group and their research equipment will be moving from the Department of Biomedical Engineering to the Philips Imaging

Facility at the High Tech Campus (HTCE). This way Philips and TU/e will intensify their research activities for the purpose of research into medical imaging.

University Council positive about OASE repairs

October 19, 2011 - The OASE repairs are appreciated by the University Council. Performance has improved considerably in several respects, although its speed is still an issue.

LaQuSo, the company that researches the software quality at Mathematics & Computer Science, will soon focus on the software's design, as well as carry out several stress tests.



Archive IEC



Photo | Bart van Overbeeke

◀ Flashback

Construction competition 2011 versus 1983

For the past ten years or so, the Simon Stevin Construction Competition has been held in its current form. Today's setup came about when two permanent posts were driven into the Dommel banks for the see saw construction. Before that, any mechanical engineering knowledge was assessed differently. The bridge picture, probably taken in 1983, shows just that. "It's an assignment meant for the same thing", says Pieter Nuij, lecturer at Mechanical Engineering. "Students are given a number of materials, iron profiles, nuts and screws and are asked to create a construction. The strongest construction wins, although it's also important to correctly estimate its capacity." For the audience it's all about that moment the construction caves in, a point at which its load – a load that has always consisted of students – takes a dip. We haven't been able to find out who won back in 1983. On October 26, 2011 it was group 11 that won. Their construction could carry 5100 Newton. (NS)

≡ Clmn TU/e is 146th: room to improve?



A few days ago I looked at the recently-published QS world university rankings. I found out that TU/e was ranked 146th this year. I had expected a better position and did a quick scan of the top 100. I noticed that the best universities are in English-speaking countries. The list consists of universities from the US, UK, Canada and Australia, interspersed with a few German, Japanese, Chinese and Dutch universities. Does that mean education in English-speaking countries is better than in Asia or continental Europe? I'd say 'no', based on my experience with Dutch education and talks with a lot of Asian

colleagues. In my opinion, QS ranking doesn't reveal a university's quality, but another important property which I'd like to call 'international study comfort'. With 'comfort' I refer to the ease of combining living and studying in a country. Since English is the 'lingua franca' of the modern world, most, say, Chinese or Argentinean students prefer going to English-speaking countries. After all, even when leaving campus you can still be involved in regular non-academic life in these countries. It makes sense for the best international students to prefer going to the US and UK and since they can choose from many more candidates, these universities generate more inventions, publications and recognition. In that sense TU/e has huge growth potential. In fact, all Dutch universities are comfortable for international students because local (non-academic) people easily communicate in English. The only thing missing is aggressive marketing and global promotion. We must convince doubting potential students that studying in Eindhoven knowing only English is actually quite comfortable. That way, more talented candidates will apply, resulting in a greater contribution to the university's international reputation, which will be reflected by a higher ranking. *Sultan Imangaliyev, from Kazakhstan, is a student of Systems & Control, Department of Mechanical Engineering*



Prof.dr.ir. Jan Friso Groote, professor of Model Driven Software Engineering, Department of Mathematics & Computer Science

What's the problem with the government's ICT projects?

Government ICT projects tend to fail miserably ever more often these days. Take the emergency services' C2000 communications system, or the electronic patient file (EPD). Last Saturday, newspaper de Volkskrant covered the latest automated blunder: the implementation of a new administration system for benefits agency UWV. They spent ten times more than had been initially budgeted and still the system isn't even close to perfection. What's the cause for these recurring failures and what should change in order for a project to be successful for once? And what about our own OASE system, that wasn't off to a great start either?

"The advantages of an automated system are huge, and we've come to realize that. Projects are bigger and more complex now. In the past years, we've seen ICT projects fail all the time, and these weren't just government projects", says Jan Friso Groote, professor at the chair of Model Driven

Software Engineering. He continues, flushed: "The main problem is naivety. People sometimes have no clue what they're dealing with. Most think computer science is a picnic. Enter data, do a search, hey presto. And then someone who knows how to work with Excel worksheets is put in charge of a major ICT project. Suddenly it turns out it takes more than some mere fiddling about, that it's actually quite a challenge to make everything run smoothly... It can often be attributed to lack of education."

"We may say we're pioneers when it comes to technology, but the real experts are often at the sidelines. Many programmers come from the field of physics and chemistry, and they haven't enjoyed a proper computer science curriculum. They're the reason we're in a mess now. When building a house, would you ever ask the bricklayer to take care of electricity as well?"

"There should be an institute to OK the plans for every new automation project

before it starts. It's often a solid plan that's missing. There's not enough adequate knowledge within the government, due to which important aspects are ignored. Either that or they consult a moonlighter that wants to make as much money as possible without going the extra mile. It often results in disorder. Already years ago I pleaded for an institute that forces people to come up with a proper plan: how is the system set up, have all aspects been covered, how will it be tested. And, very important: describe to a tee what you want the system to do. Of course, such an institute would be led by experts with a background in computer science. We really need to get rid of that naivety."

"According to calculations we did a few years ago, we can save six billion euro if automation projects were to be handled successfully. The calculations led to an investigation by the General Accounting Office. Initially, they thought we were a bunch of 'idiot professors', but even the



Jan Friso Groote. Photo | Bart van Overbeeke

Accounting Office found it's impossible to gauge the actual damage of failed projects. In a way, that's worse than knowing the damage."

"We're facing a structural problem. It's evident with small-scale projects like OASE, TU/e's digital education system. I'm not sure what its status is, since I decided not to use it by way of precaution. It was a mess upon implementation. You'd think we'd learned from our problems with studyWeb. Is TU/e taking steps to prevent this from ever happening again?"

I don't think so. The same thing will happen with the next system. And the bigger the projects, the greater the damage. No one would dare build a house without a floor plan; architects continue to draw until their plan is just right. Should a balcony crash down, which is a minor issue really, the world of construction is in an uproar. I wish it was like that in ICT. It would save us so much money." (NT)

Indian festival of light



Photo | Rien Meulman

60 participants wearing traditional attire assembled to celebrate Diwali, the Indian festival of light, on Saturday October 29.

35 of them had signed up for a feast at TU/e's Common Room. Favorite dish was the dessert: Gulab Jamun. It's extremely sweet and was served with season's greetings.

0 lights were released on the Dommel River. The organization wasn't sure whether a permit was needed and worried the grass might catch on fire. (NS)

No place for modesty of TU/e during GLOW

A “quick round through Vertigo and then zoom off campus again”, were the initial ideas about the TU/e’s participation in GLOW. No way, was professor Gerrit Kroesen’s immediate response. “If we are going to get four hundred thousand visitors, we’re really going to make a lasting impression - there’s no place for modesty then.”

There is no place for modesty during GLOW, was the statement made by Kroesen, chairman of the Art Committee and coordinator of TU/e’s participation in the sixth edition of the Eindhoven light art festival. “During GLOW we are going to show that we are a university and that we stand for something. Not through the umpteenth projection

or such-and-such a clever arrangement of lamps, but by showing where the heart of the university lies.” On campus twelve light art projects can be seen during GLOW, eight of which originate from the university itself. They are ranged under the so-called ‘side events’ during the festival. Most of these installations are being constructed

already; indeed, the Dommel (bicycle) tunnel on the south side of the campus, which will accommodate a work of light art by students, has already been sealed off for this purpose for a couple of days now.

The participation in GLOW does entail a great deal of organization, in the area of security among other things. For one, the Tesla Coil on the roof of De Zwarte Doos, which emits bolts of lightning, has to be protected against weather influences by “a kind of super tent, the installation must not get wet. At the same time, that tent is required by security to be able to withstand

winds with force 8”.

Kroesen himself is looking forward in particular to this Tesla Coil and to ‘BRAINpulse’ at the Hoofdgebouw. Industrial Design professor Kees Overbeeke, who suddenly passed away early last month, was among the people closely involved in this light installation and was active with great enthusiasm two days before his death when the installation was tested. “He was proud as a peacock”, Kroesen knows. What does the GLOW coordinator hope that visitors will take on board after their journey across the TU/e campus by night? “I hope that they will realize that

the research we are conducting here is not only very useful, but also beautiful, aesthetically speaking. And I hope that if we happen not to be in GLOW next year, people will wonder aloud why not indeed.” (MvdV)

GLOW will be on show from November 5 thru 12. For more information about the whole program, the route and all the works of light art: www.gloweindhoven.nl.

Crossing into the unknown

Where: the Dommel (bicycle) tunnel
What: students from various TU/e Departments will convert the bicycle tunnel into a magical cave. A big rabbit tempts visitors, just like Alice in Wonderland, to enter the cave, so as to end up on the other side in the land of innovation and technology.



Prometheus

Where: roof of De Zwarte Doos
What: the Tesla Coil made by TU/e, an installation that produces bolts of lightning, which of old were only cast by the gods. On the windows of the grand café the Institute for Complex Molecular Systems (ICMS) will project an image of chemical reactions in primeval matter, based on the experiments conducted by Urey and Miller in the 1950s



Glow your mind

Where: concrete art object K.O.E., lawn in front of the Auditorium
What: six Fontys students of ICT, arts, journalism and communication shed some light on the impact of social media on society. Visitors can react, via Twitter and in person, to theses; public opinion is made visible in a work of art that changes color.



Laser

Where: roof of Vertigo
What: a powerful laser emits a beam from the roof of Vertigo to the Van Abbemuseum, from where another laser beam comes back. The distances of the two buildings to the railway line are connected with the ages of the two institutes, both of which celebrate anniversaries (TU/e 55, Van Abbe 75).



BRAINpulse

Where: façade Hoofdgebouw
What: Master students of Industrial Design take visitors into the brain of a researcher through an interactive light installation. Visitors can stimulate the ‘brain’, which is visualized by an array of lights set up in various rooms inside the Hoofdgebouw, by flashing cameras towards the building.



Dynamically arranging molecules

Where: pillars Hoofdgebouw
What: the animation studio of the Institute for Complex Molecular Systems uses projections to show the behavior of molecules in a playful manner. This institute researches the interaction between molecules and the continuous construction and deconstruction of large molecular systems.



Flits /Flash

Where: hall of Hoofdgebouw
What: ‘master handymen Bram Wiersma and Moniek Smeets make dozens of small arrangements flash alternately. In addition, they use various light sources, such as halogen lamps and laser beams, to radiate light onto all

sorts of objects that deform light, thereby creating an ever-changing spectacle of light and shadow.



S.J. van Embden Monument

Where: stairwell north of the Hoofdgebouw
What: artist Peter Vink deploys a hexagonal column, composed of three hundred fluorescent tubes, to pay tribute to architect S.J. van Embden,

designer of the Hoofdgebouw. The latter did not adopt the measure of man for the size of the building, but instead used the dimensions of a standard Philips fluorescent tube as his point of departure.



Transformation and the Whispering Wood

Where: lawn west of the Impuls building (formerly E-laag)
What: personal formation and development occupy center stage in this three-meter-high work of light art by Michel Suk, in co-creation with the Joint Technical Department of TU/e. Via structures in the metal, a pointed source of light above the steel tube

yields a concentric projection resulting in a hundredfold visual repetition of the text ‘Where innovation starts’. This work of art will be unveiled on November 7 and will stay in place after GLOW. During the festival and from the surrounding shrubs one may hear whispers of mysterious scientific formulas.



Wind graph

Where: Dommel bridge North
What: helium balloons fitted with LED lighting are allowed to flow into the sky on a 100-meter-long cord. The upward force of the helium combined with the wind will shape the cord like a graph

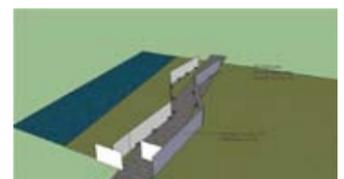
showing different patterns. This cord of light by Ralph Brodruck, lecturer of Architecture, Building and Planning, was also visible on campus in January, at the start of the university’s jubilee year.



Feel the tone of light - S(w)inging Biorhythms

Where: Dommel bridge North
What: an artistic rendering of the natural light-dark cycle and its strong influence on the human sleep-wake cycle. Variations in luminous intensity and the tone of light are accompanied by a musical composition. S(w)inging

Biorhythms is a project of Light and Health Research Foundation (SOLG) in collaboration with the Intelligent Lighting Institute and the Strijp Chamber Choir.



Beauty of stagnation

Where: TU/e and Kennispoort
What: light designer Michel Suk will illuminate several TU/e buildings and landscape elements during GLOW. The installations, whose light programs have been linked, slowly change color or display different patterns. The eye-catcher is Kennispoort, the backdrop for a coproduction by Suk and composer Bart van Dongen, inspired by the Fibonacci sequence with which growth processes in nature are described. Accompanied by an

ensemble of wind instruments and electronics, a choir numbering one hundred and fifty to two hundred singers will perform a new composition; Suk will provide a visual counterweight. The piece may be heard and seen live twice, on Saturday November 5 at 19.00 and 19.45 hours; during the remaining duration of GLOW, recordings of the open-air concert can be watched and listened to.



The connecting thread is about to be disconnected

Today, more than one hundred megabit arrives at our doorstep through glass fiber cables every second, and that number will see a strong increase in the near future. Last month, prof.ir. Ton Koonen received a European grant worth 2.5-million euro to research whether in the home, that information can go airborne as well, using rays of light rather than radio signals.

Current wireless communication through radio waves -WiFi- will eventually reach its maximum capacity, says Ton Koonen. "People want to send and receive ever more wireless information via their laptops and tablets. On top of that, it is expected that more and more devices will come to have a wireless interconnection through the Internet, resulting in an Internet of Things."

By means of all sorts of measuring equipment warning us if our temperature, heart rate, blood pressure or blood sugar fluctuates, the human body will become part of the Internet of Things, too. "Predictions say that due to that development already around 2017 the capacity of wireless radio communications will no longer suffice. The radio spectrum will be exhausted and radio signals will interfere with each other, which can be quite inconvenient where vital functions are concerned." A new technology is needed for the transfer of all these signals, then.

The radio spectrum will soon be exhausted

Koonen is head of the Electro-Optical Communications (ECO) capacity group, and an expert in the field of optical communications systems. He works with glass and plastic fiber mostly, but also believes optical wireless communications can be realized by carefully directing laser beams from transmitter to receiver, being the laptop or tablet. Earlier this month, he received a prestigious individual grant from the European Research Council (ERC) - an Advanced Investigators Grant - worth 2.5-million euro to try and make this work technically within the next five years.

Optical wireless communications do already exist - think remote control - but it's not yet being used to specifically transfer large amounts of data. However, working with light has several interesting advantages over radio waves, says Koonen: "First of all, light has a much higher frequency than radio waves: hundreds of terahertz compared to dozens of gigahertz. One of the simple laws of telecommunications says that a high carrier wave frequency increases capacity. Moreover, light can be directed much more carefully, and in pencil-thick waves at that, as I've described in my proposal. That way, you'll need less capacity and you'll be able to direct information at specific devices, so the waves won't interfere."

Of course the downside of narrow beams of light is that you have to make sure there are no obstacles between transmitter and receiver. With laptops especially, the user's hand or head will often be in the way. Since the laser beams Koonen has in mind have such low capacity, that wouldn't be dangerous at all, by the way. "Especially when using infrared light with a substantial wavelength, since that won't penetrate the retina or eyeball so the eyes are safe." Still, you'd have to work with several light sources, so there will always be a direct connection between transmitter (preferably somewhere high up in space) and receiver. Koonen: "You could also fix reflecting surfaces on the walls that can be used as mirrors". The challenge, then, is mostly in the directing of the light beams. You don't want to lose your Internet connection every time you move your laptop. For now, the idea is to only have an optical incoming signal, and have mobile devices transmit their data through radio signals. Downloading usually requires more capacity than uploading, and by means of more diffused radio waves a laptop can easily establish a connection with a transmitter to disclose its location, after which the download of the latest season of your favorite TV series can commence.

With the ERC Advanced Grant Koonen has five years to try and set up an operational system. He can hire four PhD students and one postdoc. One PhD student will busy themselves with optical beam direction, another will be working on the underlying fiber network, a third will be responsible for establishing the radio connection, and the fourth PhD student will try and arrange the network so it can intelligently anticipate user needs (and their moving behavior). Finally, it's the postdoc's task to integrate all these contributions.

The ERC Advanced Grant is an individual grant for which the applicant's reputation is very important. For Koonen, the grant is a "fine acknowledgement" of his scientific work. "Only senior researchers can apply, and they are the best in their area of expertise. Only one in ten will receive the grant. It's most wonderful to be part of that."

It's not the first European grant Koonen has received. Considering his area of expertise, Europe has more to offer than any Dutch financiers. He knows the exact numbers, since he was required to state these in his application. "Excluding the ERC grant, I've received over fifteen

million in European grants and over six million nationally."

Koonen is at the center of it all: in 2008 and 2010, he was the chairman of the panel assessing the applications in his field, and he's been appointed

"Reviewing provides an insight into how to touch a chord"

that position once again for 2012. "In odd-numbered years, the panel is made up of different people entirely, so panel members like me get the

chance to submit proposals, too. The reviewing provides an insight into how to touch a chord."

One of the criteria for an ERC-grant research proposal is that it has to be trailblazing. Koonen is not exactly turning over a new leaf by embarking on his wireless adventure; he's rather taking a (logical) step forward: "Optical

communications through glass fiber was introduced for long distances, to travel the oceans. After that, glass fiber brought the Internet to the home, subsequently in the home, and now we're going wireless." Optical communications remains the connecting thread in his work, says Koonen. "Yet that connecting thread might as well be a disconnected beam..." (TJ)

This year, only three TU/e researchers are known to have applied for an Advanced Grant, all from Electrical Engineering. Two were awarded the grant. That's a good score, since only one in ten applications is actually accepted. Koonen's colleague, prof.dr.ir. Meint Smit (head of Opto-Electronic Devices, EE's other capacity group within the COBRA Institute) is the other lucky one. He was awarded the grant to unite both optical and electrical circuits into a single chip.



Ton Koonen. Photo | Bart van Overbeeke