


REVAMPED A1 CORRIDOR OFFICIALLY OPENED

Pioneers on the frontier between science and practice



Igor Mayer and Alexander Verbraeck

Hypermodern, flexible, multidisciplinary and above all educational: the renovated A1 corridor on the first floor of the TPM building. The corridor was officially opened by Prof.dr. Theo Toonen, Dean of the Faculty of Technology, Policy and Management, on 28 May 2009. Prof. Alexander Verbraeck (Systems Engineering) and Dr Igor Mayer (Policy, Organisation, Law & Gaming - POLG) are delighted: "All the simulation and gaming technology of the past 15 years is now starting to interconnect."

The 25 participants in the Game Design workshop have just finished a plenary session in the boardroom. Now they are heading to the 'train compartments' to set to work in small groups. Ideas for game simulations are coming thick and fast; the lecturer walks along the 'train' and occasionally stops to offer advice. Presentations are then given on the videowall, allowing everyone to learn with and from each other.

The new A1 corridor contains several areas, such as the boardroom, the simulation gaming lab, Gaming Street and the seminar and teaching room. These provide facilities for innovative teaching, meetings, interactive sessions, simulations, electronic meetings, modelling, smartboards and game production. Yet also: gaming sessions and all kinds of events, such as conferences and seminars. Verbraeck was involved in his capacity as Professor of Systems & Simulation, Mayer as director of TPM's Center for Serious Gaming and as Associate Professor of Policy Analysis and Management.

War room

"We started out with the Group Decision Room," they recall. "The system enabled electronic meetings and brainstorming for complex decision-making problems; at that time a unique service which attracted administrators and managers from around the Netherlands. The huge bulging monitors and computers integrated into the tables made it look very much like a war room. Later we updated the room and made it wireless so that participants could use the same e-facilities from elsewhere."

The Group Decision Room (GDR) was a playground for Systems Engineering and POLG. The concept was constantly elaborated on with a view to interactive forms which support policy. "We received an increasing number of requests from organisations and industry for interactive decision-making processes. Graphics were no longer enough; there was a growing need to be actively involved. The past 10 to 15 years have seen a shift from classic to interactive simulations and then to gaming. Incidentally, the GDR is still in use. A few of Alexander's colleagues are working on the next generation."

Gaming

Gaming has been a growth research and application area for TPM for years. "Games are becoming hugely popular. That's logical, because you can use beautifully designed educational games to imitate practical situations relatively cheaply, such as evacuations, complex construction projects and complex policy and management problems. Flexibility, repeatability and measurability are also major benefits." Gaming has also strongly influenced the design and structure

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Appointments Professors TPM

Lóri Tavasszy

TU Delft plans to invest heavily in transportation and logistics research fields over the next few years. It is to appoint three new professors, of which Prof. Lóri Tavasszy is the first. Tavasszy will play a major role in the initiative by the three universities of technology to work more closely in transportation, logistics and mainport development. Prof. Lóri Tavasszy will take up the post of part-time Professor of Transportation and Logistics at TPM as of 1 June 2009. He will also remain attached to TNO. Tavasszy is also one of the prominent players TU Delft is to make available for the leading Logistics Institute and Supply Chain Campus in Breda.

Martin de Jong

Martin de Jong has been appointed Professor of Public Management at the School of Management at Harbin Institute of Technology. His duties there will include teaching Advanced Cross-Cultural Management for the EPA double degree programme and research into (transport) infrastructure development in China. These duties will chiefly be carried out during the summer months.

Dr M.J.G. van Eeten

Michel van Eeten has been appointed Professor of Public Administration, Governance of Infrastructures at POLG section as of 1 May 2009. The chair has been created in conjunction with NSOB (Netherlands School of Public Administration) and the Ministry of Economic Affairs.

Yao-Hua Tan

Yao-Hua Tan, Professor of Electronic Business at the Vrije Universiteit Amsterdam, has been appointed Professor of Information and Communication Technology at the Information and Communication section as of 1 September 2009.

Frances Brazier

Frances Brazier, Full professor Intelligent Interactive Distributed Systems at the Vrije Universiteit Amsterdam, has been appointed Professor of Engineering Systems Foundations at the Systems Engineering section as of 1 September 2009.

'TU Delft Delta direction'

Management is full of paradoxes. Sometimes things happen that no-one wants. And if there is something everyone wants, everyone waits for someone else to do it and no-one does anything. If many TU Delft engineers are working in the field of water, but no-one has overall control, then another institute can suddenly claim to be the Dutch expert on water. It should be impossible, but it has happened. Looking in from the outside, say from abroad at the Netherlands, it is obvious that TU Delft is saturated with the subject of water. World-renowned expertise thrives here in many areas. And yet: why is 'water' not the governing principle in the Dutch climate debate, or better still, in international discussions in UN Water? Why is TU Delft not in the driving seat?

The 'Room for the River' programme chiefly aids the preservation of nature, and not the water safety aspect which was the original aim. TU Delft engineers have noted this sobering fact, but in order to finance this insight they had to eat from a feeding trough filled, served and managed by other institutes. At the moment TU Delft projects can still be paid for by appealing to 'Room for the River', but the buzzwords will soon be 'Climate Adaptation' and 'Earth Governance', which have little to do with water technology. This is frustrating for TU Delft, but whose fault is it?

In multi-actor systems, and that's what we are talking about here, it is advisable to take control, to appoint a facilitator or network manager. Someone who is confident and independent enough to stand aside for the greater good. Someone such as a reliable civil servant. Someone who can get beyond other people's sense of being right and rise above the individual disciplines and specialities. Someone who can easily and successfully complete assignments with a minimum of feedback and complaints. Someone who can act as a loyal, professional and challenging counterweight to 'those on high'.

I recently discovered that the civil service currently has quite a different view of a 'reliable civil servant'. There they think it is someone who implements what senior civil servants have decided on. Someone who serves the senior level and does as he or she is told against 'predictable' and 'conservative' resistance from the lower ranks. If the civil service views the Delta director who is to provide form and content for the plans of the Veerman committee in such a way, then it is no wonder that that same manager is already mistrusted by many, and that he is being dismissed as an exponent of neo-centralism. Anyone who does so is simply remembering past experience and is criticising a trend which is desirable in our urban delta.

Directing is not the same as centralising. In my capacity as dean, over the past few months I have directed a reorganisation process. I have done my best to facilitate change and not to impose things from on high. Everything has been done out of the conviction that intervention is sometimes required, even in a well-functioning environment such as TPM. We must constantly work on profiling our module themes. We shouldn't wait until our backs are up against the wall. Themes such as water and healthcare provide opportunities for TPM and for TU Delft. Yet these things don't just happen by themselves. Sometimes you have to offer a helping hand. The university will benefit on both fronts from a reliable TU Delft Delta director - operating not on the basis of the power of technology, but on the basis of the power of the multi-actor perspective.

Column



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Pioneers on the frontier between science and practice

of the A1 corridor. For instance, the Gaming Street is next to the boardroom. "Here, people can be pioneers on the frontier between hard science and practice."

In view of the rise in popularity of Serious Gaming, two years ago TPM's MT decided to make additional investments in research and facilities at TPM's Center for Serious Gaming. This is the network organisation for TPM researchers involved in gaming. "For instance, we were able to take on researchers and PhD candidates to improve the Center's prestige. The focus was placed on the social consequences and instrumental usability of virtual worlds, in particular for policy and decision-making support, policy analysis, (project) management, professional education and higher education. This approach fitted in seamlessly with other large-scale TPM research programmes with themes such as water management and sustainable (spatial) development.

Valuable research instrument

This year sees the TPM Center for Serious Gaming providing role-plays, computer-aided games and situations which are popular around the world. It is particularly noteworthy that it has also developed into a valuable research instrument. "The Center can make breakthroughs where traditional instruments leave off. For example, you can suddenly transport the port authority to the law courts; something that didn't used to be possible. We are making more progress than ever!"

Commercial computer games are a valuable source of inspiration. "We do use them, but mostly make our own games - often at the request of companies and institutions. Shell, for instance, approached us to develop Supervisor. This is a game which provides a training environment for HSE supervisors in areas where they are drilling for oil. Another example is the Simport game which we developed together with the Tygron gaming company on behalf of the Rotterdam port authority. Participants in this game can virtually fit out the Second Maasvlakte in Rotterdam port as efficiently as possible. Many games have originated in this way and there are all kinds of projects in the pipeline. Unfortunately, we cannot say anything about those yet."

The Center works together with industry, but also other faculties, such as computer studies and industrial design. The aim is to anchor the research and to ensure that it does not become an exclusive TPM issue. "The Center is meant for the entire faculty and beyond. It is also crucial to anchor the expertise, so that this is not lost when someone leaves."

These developments do of course require investment. Next Generation Infrastructure (NGInfra) pays some of these costs. This alliance comprises knowledge institutes, market players and government organisations which aim to prepare infrastructure for the future. "There too there is a need for combining research, visibility and communication to participants, and gaming plays a major part. That's why NGInfra is a co-investor, for example by part-financing PhD candidates. Moreover, the costs will largely be repaid by third-party funding and partnerships with e.g. ProRail, Shell, Maersk, the port authority etc."

Gaming Street

PhD candidates can also make use of Gaming Street. "Imagine that PhD candidates want to support part of their project using a serious game, that's a possibility. As making these games is highly time-consuming and requires special skills, such as artwork and programming, they can turn to a group of students and temporary employees. These people know about scripts, engines and e.g. graphic design, and work on gaming on a project basis. To give an idea: it used to take four years to make a game, nowadays six months."

Center for Serious Games

The TPM Center for Serious Gaming is a (virtual) development and expertise centre for game simulations and serious games. Over the past few years, a broad range of serious games has been developed: games which are not meant for fun, but for education, policy support or training professionals. Here are a few examples:

Simport

TPM researchers made this game for the Rotterdam port authority, together with the Tygron gaming company. Participants can build a virtual Second Maasvlakte in Rotterdam port and include companies which earn back the investment. Simport therefore demonstrates the actual effect of various long-term structuring strategies.

Dike patrol

Water companies can train their dike patrols using this dike inspection simulator. The dike patrols can practise on simulated dikes and are therefore better equipped to do their job.

Supervisor

This game was development for and in conjunction with Shell (see page 3).

ProRail

TPM and ProRail are working together on a game which simulates the goods market. The client's main question: how can we make more efficient use of our rail capacity?

Construct it

A game about project management, aimed at developing a new harbour area in Scheveningen, a partnership between TU Delft, TU Eindhoven and the University of Twente (see page 7).

Eve Online

Igor Mayer believes that the research into Eve Online is particularly interesting. Eve Online is a Massive Multiplayer Online Role-Playing Game (MMORPG) set in space. This online game involves large numbers of players all in a single universe. "The researcher in this, Harold Warmelink, focuses on the question: how do people organise themselves in virtual worlds? And what does this mean for real organisations? The results could supply highly valuable answers."

Maersk

Development of future container terminals (see page 5).

Global Supply Chain Game

A game for simulating global supply chains that can be played world-wide on the Internet. Various universities use this game for teaching purposes. International competitions between universities have taken place as well.

REAL

VIRTUAL

SHELL SUPERVISOR

The latest generation of simulation technologies

It's pouring with rain. Suddenly the sirens sound on the oil platform. The supervisor immediately sets out to investigate and identifies a leak in an oil tank. There's a loud explosion and fire breaks out.

This is just one scenario from the Shell Supervisor game developed by TPM. The Anglo-Dutch oil company contacted TPM six months ago. It was regularly being asked about the latest simulation technologies, but didn't have up-to-date information. "Shell wanted to know exactly what is technically feasible and what simulations and games could do for it as a company," Ronald Poelman of the Systems Engineering section explains. "Shell asked us to make a proof of concept. This involves trying to portray many of the options for the final version in a smaller scale version," Poelman continues.

The research team, which includes Harald Warmelink and Daan Groen of Policy, Organisation, Law & Gaming (POLG), used a dual approach. On the one hand the team built a game to demonstrate the options visually. On the other, the team drew up a roadmap: a map of all the technologies available on the market, plus TPM's opinion of them.

Unreal 3

It was clear to Poelman that the game had to be state-of-the-art. "We often hear that so-called fun games are miles ahead of serious games with respect to technology." Groen and his team develop the games which researchers such as Warmelink and Poelman come up with. "It is essential that Shell is given an idea of what this type of world looks like and how it can move within it. We chose Schoonebeek, as all company personnel are familiar with that location," Groen explains. Schoonebeek (municipality of Emmen, Drenthe) is a training facility for Shell employees. Warmelink and Poelman held interviews with Shell personnel on location and elsewhere in order to make the environment as realistic as possible. Photos, video clips and even maps from Google Earth have also been used. "That's why the game looks so good and so realistic," Poelman says.

Safety

Health, Safety & Environment (HSE) is a major unit within Shell. The company applies a 'goal zero' policy, Warmelink explains. "That basically means zero casualties. This serious game fits in well with this policy. The main character is the supervisor. His job is to guarantee safety location and to call personnel to account. A supervisor has all kinds of roles, many responsibilities and can be deployed in all aspects of the game."

Supervisor comprises three consecutive scenarios. In the first part, the player walks around the location looking for defects: problems which could cause even greater problems at a later date. "A hole in a fence doesn't have many consequences. It's easy to repair," Groen elaborates. "Yet there is also a barrel of chemicals in a hazardous position. If you don't move it, it could get knocked over at some point."

In the second scenario, the player is told there is a truck at the gates with a load of pipes. The supervisor has to ensure that the pipes are unloaded safely. "These steps have to be properly supervised. Yet there are other things going on elsewhere simultaneously that you need to keep an eye on."

In the third phase, everything goes wrong which has not been properly dealt with earlier. Someone trips over the knocked-over barrel of chemicals. If the chemical shower has not yet been repaired, the player has a major problem on his hands. Groen: "Various things can happen. We can also introduce data from outside the game while someone is playing. Take the influence of the weather, for instance. If it's raining, the scene changes and you often have to operate differently. This means the game is different each time. Our primary objective was to show that the technology works. If you can have one person walking around, you can have a hundred."

Feedback

The game takes fifteen minutes. Players receive a summary of items which were or were not properly dealt with. They are also given feedback on what should have been done differently and what they totally overlooked.

The proof of concept has now been completed. This forms a

good basis for further developing the game. Poelman: "At the moment we are consulting on the next phase: implementing a pilot within the organisation. Shell wants to see proof of the benefits of this type of game. We can play a major part in this. We are the intermediary; we say what does and doesn't work and demonstrate what is possible."



For Supervisor we applied the technology used in Unreal Tournament 3. This is the latest generation shooting game for Xbox360 and Playstation.

“We use our TPM baggage every day”



Annelies van der Ham and Joke de Bruijne

So say alumni Joke de Bruijne and Annelies van der Ham. They both started studying SEPAM in 1993. Each chose their own path within the degree course, but both graduated from the Systems Engineering section. After various other jobs, they now both work at YNNO, an advisory bureau for innovative working in Amersfoort. They focus mainly on process innovation in healthcare.

It is no coincidence that they work chiefly in the healthcare sector, on the contrary. After graduation, De Bruijne spent a number of years in finance and Van der Ham worked in logistics. Healthcare appealed to them more, however, thanks partly to its social relevance. De Bruijne: “I prefer to support a polyclinic in implementing changes so that it can help more patients, rather than helping an insurance company to sell more policies. Even though the work is essentially the same.”

Various roles

“One of our tasks is to help healthcare institutes to improve their operational processes,” Van der Ham explains. “In many cases, the motivation is a concrete change, such as the introduction of new technology or changes to the premises. In practice, this means that we have to deal with all kinds of actors and often have to take on various roles. For instance, we analyse how people work together, chart organisational structures and act as intermediaries between technology

suppliers and clients. We also create simulation models which clarify the consequences of innovations on operational processes and we supervise the required changes.”

Skills

De Bruijne adds: “We often operate in complex specialist situations with several parties, each of which has its own set of interests. You need to be able to absorb a great deal of information quickly, to think logically and be capable of assessing the value of all the different viewpoints. These are all skills we learned during the degree course. Incidentally, the most important thing I learned at TU Delft is how to communicate with people from different disciplines. For instance, I can switch easily between engineers, lawyers and doctors because I understand how everyone thinks and speaks from their own disciplines. In that respect, I often feel like an interpreter or translator.”

Power issues

“Other important skills we learned include conceptual thinking, assessing things from various viewpoints and being able to bring across the same message in different ways,” Van der Ham explains. “The degree course was excellent preparation for our work. That doesn’t mean that we didn’t lack certain things. For instance, in retrospect I would have been grateful for more reflection in projects and internships on how you deal as a person with conflicts of interests, different characters and power issues.”

TPM in intensive care

A SAFETY MANAGEMENT SYSTEM FOR AMC

The incorrect administration of medication, a power cut or an infection caused by human failure: these are things they can really do without in the adult intensive care unit at AMC medical centre in Amsterdam. TPM’s Coen van Gulijk designed a safety management system which aims to reduce this type of ‘unintentional damage’ to patients. Medic Dave Dongelmans is to put the system into practice.

“As an IC unit, you shouldn’t wait until something goes wrong, it’s better to be alert and prevent things,” Coen van Gulijk of TPM’s Safety Science section says. “And if something does occur unexpectedly, you have to demonstrate that you are working on improvement processes. This safety management system is excellently suited to this.” These systems have been mandatory in hospitals since January 2008. The Netherlands Health Care Inspectorate monitors their use. Yet in many hospitals, they only involve incident reporting. Van Gulijk: “Safety has long been an issue at the IC unit in AMC, and they wanted more. It is the ideal environment in which to be slightly more ambitious. Nearly 200 highly-educated, smart people work there. They can cope with this.”

Signature

That’s why Van Gulijk, together with a team of doctors and nurses, has come up with a safety management system with a greater number of functionalities, specifically for the IC unit. “This is exactly the kind of professional group for protocols. Policy documents don’t work here. We have drawn up a protocol on the

basis of an analysis of the department, a literature survey and interviews. A fixed committee of five IC staff are going to implement it. The members have been given dedicated time to do so. The protocol comprises a strategic document listing tasks, responsibilities and authorities concerning patient safety. A tactical document has also been drawn up which outlines the tasks more generally. Finally, there are worksheets for reporting on the execution of tasks.” The latter in particular, periodic written reports on execution, is new to IC unit staff. There is a great deal of oral communication on established (medical) protocols, but little is written down. Van Gulijk: “We are making sure a signature is placed next to the responsibilities. This ensures that patient safety is a constant matter for attention among staff and managers. Changes can be made to how tasks are executed. These are decided on by the committee, which meets fortnightly. For the time being I shall remain involved as a researcher. I am personally really interested to see when the system’s limits will be reached. It is a fairly simple model. When will they want something more advanced? And what will they like and what not? It provides us with academic insight into the safety culture in the department. This in turn enables us to develop new instruments geared to this professional group.”

Advance party

“The assignment is now clearer,” says Dave Dongelmans, IC medic and one of the two chairs of the committee which is to implement



the system. “We have spent four years improving the quality and safety of our care, so we have already overcome many difficulties. Thanks partly to TU Delft, we now have a wonderful system. It was important to us that we could use experience gained in other industries, that an external partner could apply pressure on us to meet our obligations and that a lot of the work could be conducted in Delft.” Dongelmans believes the fact that the safety management system was introduced top-down is a matter for attention. “But I haven’t seen any nurses waving banners in the corridors yet. I think the time is right for this system.” Why is it that his unit is an advance party in this field? Dongelmans: “As an IC unit, we believe that we owe it to our standing to set an example. We employ highly-educated staff, our work is largely supported by computers and we have an ambitious group, which is just small enough to commit itself fully to this type of system. The unit’s format and our ambitions were the ideal starting principles.”

VIRTUAL TERMINAL PROTOTYPE OPERATIONAL BEFORE THE SUMMER

Container terminal of the future



APM Terminals is responsible for loading and unloading large container ships in many ports around the world. The company, part of the A.P. Moller-Maersk Group, is constantly seeking innovative technologies to apply in practice.

In conjunction with APM Terminals, TPM's Systems Engineering section is developing the container terminal of the future. The Virtual Terminal prototype is expected to be operational before the summer.

Corné Versteegt, project manager for innovation at APM Terminals, was the one who contacted the TPM faculty. He studied SEPAM at TU Delft and received his PhD on automated logistics systems in 2004. When it comes to new technologies, TU Delft is the obvious choice in view of his background. "You know the people and their modus operandi," Versteegt admits. "However, our choice was mainly based on the fact that we are eagerly awaiting the work that is being done here. They are delivering technologies which we will need in two or three years' time. TU Delft should be proud of that!" Versteegt talks of TU Delft as the preferred supplier in this field.

According to Versteegt, the complexity of container terminals will only increase in future. There are several reasons for this growing complexity. One is technology. "Technology focuses increasingly on automating processes. Take a look at today's container terminals in Rotterdam, where there is currently only one automated terminal. They have a large workforce. That makes it expensive, because labour costs in Western Europe are high. Yet it is also a hazardous environment to work in. That aspect requires greater attention."

Actors

Another factor is the growing number of actors involved in the construction of container terminals. In the past, it was purely a matter between the Port of Rotterdam Authority and the container terminal operator. "Things have changed completely," Versteegt

notes, referring to the development of the Tweede Maasvlakte. National government plays a role due to financing. The Port of Rotterdam Authority runs the project, APM Terminals the terminal. "Yet you also have to deal with environmental groups which monitor everything closely. And you have to arrange permits at local government level."

One of the difficulties which Versteegt encounters is that many people cannot imagine what a container terminal will look like. "It is tricky to talk about complex, large-scale designs, which take several years to be implemented and which most people have difficulty envisaging. That is why we set to work on the virtual terminal. The aim is to construct a container terminal in as realistic as possible a virtual environment; an environment through which you can move freely. By doing so, we can share the virtual environment with all the actors. Clients, locals and authorities can all view the terminal design virtually. Each from their own background and viewpoint. A client, for instance, can see that there is too little space for its containers. It can then indicate that more storage areas are required. We can quickly alter that in this type of virtual environment. This makes the future situation transparent for everyone. The process is therefore much more efficient."

Michele Fumarola, PhD candidate at TPM faculty's Systems Engineering section, has spent the past year working closely with Versteegt. "I graduated from Hasselt in computer studies specialising in multimedia and 3D applications. For the APM Terminals project, I worked on visualising terminals and centring information for terminals which do not yet exist. Corné supplies the information, I implement it in the Virtual Terminal program. I think that I have done about eighty to ninety percent of the programming myself."

Manual work

One major role in the realisation of Virtual Terminal was played by what is known as TPM's Gaming Street. Here, a team of programmers and modellers provides support in developing this virtual environment. "Inputting a container crane takes several days. It is manual work," Fumarola explains. "Once the crane has been added, you don't have to do anything else. You can use

that crane for any virtual container terminal. If APM Terminals comes up with a new crane in future, we will input that too. It is also possible to link information to certain objects, such as Docs and Excel sheets. That is handy for everyone involved in the design of a terminal."

APM Terminals is fast becoming the largest container terminal operator in the world. Virtual Terminal is not just important for Rotterdam, but also for projects in America and Asia. "We can apply this anywhere in the world. First make everything in virtual form and then construct it for real. This is a new development in our sector." Versteegt wants to deploy Virtual Terminal as soon as it is operational. "We want to test how good the system is in a number of projects. We can then hear users' opinions and how we can improve it if necessary. They are the ones who ultimately have to use it."



Erik Pruyt



Hester Goosensen and Bertien Broekhans

Gaming and simulations

Learning simulation techniques and learning from simulations

Lecturer Erik Pruyt teaches second-year TPM students a specific simulation technique. Over seven weeks, he teaches them to make continuous System Dynamics models. After this, students start a project in which they have to apply these modelling skills and then ultimately they can immerse themselves in this topic in greater detail in the Advanced Course. They should then be able to grasp complex relevant policy and social issues in a model. Pruyt: "Using these models, they can then for example learn how decisions taken now can affect the long term. Failure is permissible, because it is just a simulation. This enables them to gain experience in a short period of time, varying from half an hour to two days, which in the real world would take people years to learn the hard way."

This simulation technique enables the modelling of dynamic, complex problems or systems. Examples of such problems include the bank crisis, the cholera epidemic in Zimbabwe and energy transitions. "Last year we made a model of the then current food crisis," Pruyt says. "A terrible thing for those it affects, but our simulations indicate that things will be much worse in future if the transition to the second generation of biofuels is not made at the moment when oil starts to become scarcer." These are random examples of the endless possibilities

for working with simulations. Pruyt: "We can quickly make relatively simple models for topics relevant to policy, which provide insight into the effect of decisions on the dynamics of a system. This helps enormously to see what possible behaviour you can expect when you decide this or that about something."

These simulation models can be converted into games 'at the snap of your fingers', as he himself puts it. On the one hand into flight simulators, whereby one person plays the game and tries to achieve as high a score as possible. On the other, and this is more interesting, into games for various players with different roles. Each player/party then only has at their disposal the information which they would have in reality*.

"These games can be used not only by our students, but also by policymakers or other field players. They are highly educational, although you cannot draw such hard and fast conclusions from a game as you can from thorough, academic research. Games do enable you to develop a good feel for how people can react in reality."

**) See also other articles on these pages.*

'Don't get straight down to calculations, consult with each other first'

In Cartonia*, TPM students have to set up a company in a fictitious country with post-communist traits. A number of regulations and procedures apply which provide participants with specific parameters during the game and also enable supervisors to retain some control. "We always try to create a highly ambiguous environment," Bertien Broekhans explains, supervisor of the game along with Hester Goosensen. "Then students can experience how complex environments can be, even if they initially appear to be very simple."

The Federal Republic of Cartonia comprises four provinces and limited transport options. The company to be created by students contains five parts: general management, research & development, a production line, logistics and marketing & sales. These units possess varying information and objectives. To be able to conduct business successfully, they need to be in constant communication with each other. That is why Cartonia is played in analogue form at a table and not at computers.

Pitfalls

Broekhans enjoys explaining the pitfalls the players encounter. "This game is played by engineers, who are all good at specific things. Yet they are not used to a corporate environment. Give them numbers and they'll immediately start calculating things, while in fact this is the time to start consulting with each other."

The result: raw materials are ordered which cannot be used in the production process. Or twenty trucks are ready to transport the products, while only ten are required.

Events from a whole year are simulated within the time span of one day in Cartonia. The game teaches students to make decisions in complex, changing environments. "Each strategy has a downside," Broekhans explains. "We try to teach students to think about the downside when making decisions. That is precisely why we create that ambiguity and uncertainty."

Innumerable books have been written on this subject, full of advice and blueprints. Broekhans puts their value into perspective. "A theory often sounds highly plausible. Yet it is tricky to apply it in a truly realistic environment. There are nearly always dilemmas. In this game, you learn that you cannot always do things the same way each time, because each situation requires a different method."

**) The Cartonia game was developed by Hanneke Mastik and Richard Scalzo at Erasmus University Rotterdam for Unitech International.*



Laurens de Vries



Arthur van Bilzen

in education

How do you make decisions in an uncertain environment?

The energy market is complex. It's tricky to get a real feel for it, even for professionals such as policymakers and lawyers. Never mind for students. TPM lecturer Laurens de Vries of the Energy and Industry section realised time and again that students did not understand his explanation of the basic concept behind the energy market. "My lectures on the energy companies' strategies and for instance the bid process on the energy market simply did not come across."

With a view to changing this, De Vries worked out a game on paper and set up a spreadsheet. During the lecture he filled in the students' bids, then discussed the results. The method proved a success. "The exam question on this topic was clearly better answered." When the spreadsheet became too large to be practical and De Vries needed one day a week to supervise it, he decided to turn it into a proper game. De Vries did so together with a start-up company of TU Delft graduates.

Now, nearly a year on, the Electricity Market Game is almost ready. It is played via the internet. Five parties can participate, each of which manages one energy company which initially runs eight power stations producing power fuelled by wind, coal, gas or nuclear energy. "It is always difficult to predict trends on the energy market. Students have to make long-term investments and bids, but which decisions should they make when so many factors are uncertain? Its design may not be as fancy as that of many other games, but the game is still exciting."

The game combines short-term operational behaviour with long-term thinking. De Vries: "Students need to understand how the bid process works and how to decide on a price in a market full of competitors. They are forced to invest, otherwise they won't win the game. The effect of players' decisions is analysed after the game has finished. The winner is the party which has the highest company value after about twenty rounds." De Vries' ultimate aim is to deploy the game commercially in order to earn back some of the investment. "Many people can learn from this, even those already working in the market."

Negotiating on Scheveningen Harbour

While The Hague's municipal council really is busy redeveloping Scheveningen Harbour, students of the 3TU Master's in Construction Management and Engineering are also working on it via the 'Construct it' game. Their assignment is to draw up a master plan for this area. One group of students plays the role of the municipal council. The other groups are project developers, each backed by a specific interest group (e.g. the environment and housing), whose task is to try to influence the municipal council's plans.

Arthur van Bilzen and his team from the Delft Centre for Process Management and Simulation (CPS) created 'Construct it' and uses it to clarify the complexity of projects such as Scheveningen Harbour. "We developed this game within the framework of the Process Management subject. The aim is that students practise negotiation skills and gain insight into how complex planning processes work.

"'Construct it' makes students aware of the dynamics of multi-actor systems in a management environment. They learn to negotiate and learn about the complexity of spatial planning," Van Bilzen explains. The game is highly realistic. At the end

there are winners and losers. Students at TU Delft and TU Twente played 'Construct it' for the first time at the start of this year, as a test. They enjoyed playing it, even though not all functionalities were ready at that time. The game has been developed further and fine-tuned on the basis of that test. It will soon be formally delivered, so that the full official version can be included in the curriculum for the next academic year.

"Players receive feedback on their performance. This means that it can later be established which strategies were effective and whether they contributed to the realisation and the quality of the plan," Van Bilzen continues. A debriefing was held after the test. The results, the course of the game and the effectiveness of skills and strategies were evaluated. The students also completed a questionnaire on the structure, functioning and appreciation of the game. "This enables us to improve the game and evaluate the game's contribution to the learning objectives of Process Management as a subject."

See also www.seriousgaming.tudelft.nl and www.cps.tbm.tudelft.nl

Centre for Law & Innovation breaks down barriers between subjects

Giving engineers a feel for the law. With this aim in mind, TU Delft and Erasmus University Rotterdam (EUR) have entered into a partnership, soon to be embodied by the Centre for Law & Innovation. Helen Stout (TU Delft, faculty of TPM) and Suzan Stoter (EUR) are the driving forces behind this special project, which attempts to bring different academic disciplines closer together. "TU Delft students may know about technology, but they have no idea of the legal parameters."

Suzan Stoter and Helen Stout

Stout and Stoter have long been convinced of the need to combine expertise on technology and law wherever possible. "Helen worked here at the Law and Technology department. As a lawyer, she was already trying to make that link," Stoter looks back on the early part of their collaboration about two years ago. "We started to work together on projects and it proved a success: ministries and other clients were so enthusiastic that we decided to expand the concept into a fully-fledged research centre."

Stout noticed that their initiative was both applauded and supported. TU Delft's Executive Board signed a partnership agreement last month which their colleagues at EUR had already signed. The partnership is a special one. Expertise and knowledge used to be mainly exchanged with the other technical universities, Twente and Eindhoven. Stoter: "In this case it involves interaction between different disciplines. Setting up an official platform to do so is new. Cooperation did used to take place, but on a more ad hoc basis. And then many ideas didn't get further than the drawing board."

Missionary work

To achieve their goal, Stoter (who spends two and a half days a week at TU Delft on behalf of EUR) and Stout had to conduct some missionary work. Practical examples proved to be the best way of convincing people. Stout: "Our faculty conducted research into what went wrong at Randstad Rail. It turned out that the legal situation was all wrong. The individual railway, tram and metro legislation did not match. In such a case, engineers no longer know within which framework they have to apply safety regulations. In such situations, we do important work."

Yet it was not easy to gain that recognition, partly due to difficulties they encountered as academics. Stout: "On the one hand, you want to set up an organisation within which you can conduct specific research and provide education. On the other hand, you don't want to be an organiser or manager. It can be tough, especially if you sometimes end up having to start from scratch." Stoter: "We notice that there are plenty of people who want to hitch a lift. Yet we don't just need hitchhikers but also drivers. At such times, you need to summon up a great deal of enthusiasm to continue."

Limited growth

Stoter explains that the Centre for Law & Innovation operates out of a limited growth scenario. "I don't want to be a manager and not get to do any fieldwork myself. In that respect, small is beautiful. We currently work with about twenty people and that can rise to about thirty or forty. The precondition is that it must remain practical for Suzan and myself."

The two are often asked why a separate centre is really necessary. Can't it be done within the existing infrastructure? "No," Stout believes. "The practical side requires a fully-fledged and structural interdisciplinary approach with respect to law and innovation. If you continue to work in separate disciplines, it may occasionally work well, but practice shows that more is needed." Stoter claims that the new centre is also important on the basis that academia should serve society. "We are not a company aiming for a turnover of millions. We make the acquired expertise available to academia."

Even before its official opening, the Centre for Law & Innovation can already list some achievements, Stoter adds. "Making the legislative process more transparent is now official government policy, on the basis of research we conducted." And she has another example: "Something which has often been noted, but about which little has been done, is that existing legislation often causes problems when technological innovation or a different method of business, e.g. public-private constructions, is involved. This leads to legislation being altered each time. We say: steer more towards objectives than resources. A vehicle needs to be fireproof or environmentally-friendly. Quantify that - then innovation can proceed, without first having to alter laws yet again."

NIAS fellowship

Whereas within the Centre for Law & Innovation Suzan Stoter focuses chiefly on innovation in the law itself, Helen Stout specialises in technological innovation and legislation. Stout is to be awarded a NIAS fellowship for this for the new academic year. This follows on from a similar grant which Stout was awarded by the Royal Netherlands Academy of Arts and Sciences (KNAW). This is highly significant for the Centre for Law & Innovation in several respects.

"Interest and funding from social partners are part of our right to exist. At the same time, they also guarantee our independence. We want to remain an academic institute which can itself determine which research it allocates as a priority. If we cannot do so on our own terms and applying academic freedom, we won't do it all. And of course, it is also a prestigious label."

TPM reorganisation: short and sweet

“TPM is a surprisingly positive and talented group of people. Our research and teaching are first class in many respects and we can make even more of these. The future demands this. That’s why we need to position ourselves better,” says Theo Toonen, who became dean of the faculty over a year ago. He explains the main principle behind the fairly smooth reorganisation which TPM has undergone over the past few months. What exactly has changed and what does he think the reorganisation has delivered?

“I couldn’t explain properly to myself or others what it was we did or the structure of the organisation,” Toonen replies to the question about the motivation behind the reorganisation.

“In addition there were a number of personnel problems which I felt were largely due to the organisational structure. Some groups had become too small, didn’t fit in with well with their immediate surroundings or they had been without a professor for too long. The new structure tackles these issues: both our positioning and the personnel problems.” Officially, TPM has undergone a category 1 reorganisation. That means that there were limited changes. These had to be assessed by TU Delft’s Executive Board, but could ultimately be implemented by the dean.

Focus on application fields

The most noticeable change is that TPM now has four departments instead of five. All four department’s key activities are teaching and research in equal weighting. That had not been the case with the old fifth department: Education & Didactics. Its chief aim was to provide TU Delft-wide skills teaching, such as communication training. Toonen: “It is a very significant part of our faculty, but the odd one out when it comes to the TPM research profile. The department only included a small amount of research, namely the Edutec section. We held intensive consultations with the four employees in this section. The section was disbanded and the employees have been moved elsewhere in the faculty.” This department’s teaching activities now come under the dean (under the name Institute for Technology and Communication), as does the Delft Centre for Entrepreneurship (DCE) and the Studium Generale. In practice, the latter is managed by deputy dean Jeroen van den Hoven.

As a whole, the four remaining departments clarify what TPM stands for, partly thanks to a name change for one of them. Toonen: “I see it as follows. The focus is on the application fields of the TPM method. These are modern and future infrastructures and their complex and fascinating dynamics - in relation to modern technological developments. Alongside these, there are three more facet and discipline-related departments which feed the TPM philosophies, each from a different, complementary perspective. The application domains are included in the Infrastructure Systems & Services department (1). This involves infrastructures for transport, mobility, energy, ICT services, water and the urban living environment in an urban delta (i.e. including major large-scale installations and mainports, such as airports and seaports). In future, I would also like to add healthcare. The first discipline-related department, Innovation Systems (2), focuses on innovation problems arising from the economy, applied efficiency, decision-making psychology, entrepreneurship and industriousness. At Multi Actor Systems (3), the focus is on systems engineering, policy analysis and management. In addition to network formation and process organisation, system simulation and serious gaming are becoming increasingly important means for adaptive governance. Finally, there is the Values and Technology: Ethics, Safety and Sustainability department (4), which until recently was called Engineering & Reflection. This department tackles the material from the perspective of fundamental philosophy, applied ethics, law and scientific methodology. Particular attention is paid to design problems in the shape of value sensitive design, sustainability analysis and integrated



risk assessment. All in all, TPM covers relevant and highly important areas of expertise for the social embedding of modern technological developments - and any engineering problems arising from these. The faculty thereby provides insights which are important to the actual impact of technological inventions and designs on social traffic and our economic progress.”

Promoting integration

The Infrastructure, Systems & Services department comprises four sections. Each of the other departments now has three, following the transfer of a few sections. Toonen: “It’s not cast in iron. In TU Delft’s university structure, departments are increasingly the frame of reference, with changing working relationships within them. TPM’s sections are, however, well-functioning, result-oriented and responsible units. I would like to retain the sections, but they need to work more closely with each other. Not just within their own departments but also beyond that. We shouldn’t think in categories but in operating processes and external results. We will also encourage this by creating workstations for partnership projects in accordance with TU Delft’s DRI themes of infrastructures, living environment, energy and health. The initiatives concerning the Graduate School and PhD course are also important to this, supported by the investment budget. Renewal projects will only be honoured if two or three departments are involved. With respect to management, we will also work more via the department structure in order to promote integration.”

Spreading risks and opportunities

The reorganisation is mainly strategic in nature. “Over the past year we have managed to deal with a twenty-percent reduction in direct government funding, which went practically unnoticed

on the shopfloor. We cannot continue with that ad infinitum of course. The credit crisis and the economic downturn will not go unnoticed at universities. The new organisation has to become more resilient and make us better able to respond actively to financial setbacks via internal cooperation. We can also now use the opportunities to the full offered by external structure funds, the Netherlands Organisation for Scientific Research, the EU and commercial clients.” The reorganisation has in principle created a more even spread of people, resources and risks across the faculty. Toonen: “All four departments now have sound opportunities for earning back part of their costs. Participation in the curriculum has also been spread. This is important in these uncertain times. Student numbers remain stable and will probably grow slightly. Yet half of our resources have to come from other sources. The spread of our research capacity for direct government, government agency-allocated and third-party funding is now wider, so in a financial sense too opportunities and risks are better spread across the organisation. ”

Did the reorganisation go completely smoothly? Toonen: “I encountered little resistance, although individual employees did have to adapt. We did everything as carefully as possible, with a great deal of attention on individuals and personal development profiles. The management team did not present the complete picture, but attempted to seek solutions for individual personnel problems which also benefited the faculty. This is what emerged, and I can work well with it. I would like to compliment TPM’s Personnel Committee [the faculty’s employee representative body, Ed.]. In November I asked its members to give me freedom and to place their trust in me to approach change organically, and they dared to do so. I see that as a sign of strength. We always had fruitful discussions and I don’t believe that I have abused their trust in me.”

Dissertations

For more information see: www.dissertaties.tbm.tudelft.nl



Drs. M. VAN DER VEEN
Contracting for better places. A relational analysis of development agreements in urban development projects
 20 May 2009, Delft



Ir. J.J. VAN DER HEIJDEN
Building regulatory enforcement regimes. Comparative analysis of private sector involvement in the enforcement of public building regulations
 9 March 2009, Delft



ALESSANDRA COLLI
A Methodology to Allow Comparison among Different Energy Systems
 6 May 2009, Delft



Ir. H.M. DE JONG
Towards a Single European Electricity Market - A Structured Approach for Regulatory Mode Decision-making,
 7 May 2009, Delft

Paper Awards

Paper Award Roland Ortt



Shirin Tabatabaie, Yenni Setiawan, Roland Ortt, Gayatri Balini and Gustavo Alva

Dr Roland Ortt is "ecstatic" about the Paper Award he received at the IAMOT conference in Orlando on 9 March 2009. He was given the prize for his paper entitled 'From invention to large-scale diffusion in five high-tech industries'. The certificate on his office wall bears witness to it. "But," he stresses, "my student teaching assistants Shirin Tabatabaie, Gustavo Alva, Gayatri Balini and Yenni Setiawan are not mentioned. They are co-authors, so I am going to add their names."

Ortt is a Management of Technology (MoT) programme manager. Each year he attends the International Association of Management of Technology (IAMOT), a forum for academics and people who work in the field. About 200 papers were presented; Ortt was awarded second prize due to the apt mix of academic and social

relevance. "A wonderful experience. You spend years working really hard, but you cannot gauge whether you are doing things properly. This type of award is an excellent gauge. Finally, someone applauds you."

In his article, Ortt looks at the phases prior to the large-scale diffusion of high-tech products, known as pre-diffusion phases. "I distinguish between two, namely: from invention to initial market introduction/application and from market introduction to the start of large-scale production/diffusion. We ask four research questions: how long is each phase? Which factors/actors play a role? How can the factors be used for market analysis and predictions? And what are the strategies of the actors in the pre-diffusion phases?"

Painstaking work

For the first research question, Ortt started to collect data from historical cases in 2003. "To speed things up, I also set my students assignments in addition to my own cases. I also work with student teaching assistants, who in exchange for a sort of scholarship convert the assignments into full cases. We are now nearly 100 cases and 200 weeks' work further. Really painstaking work! This article was the first serious publication. Highly exciting: after all, you don't know whether your investment will bring results!"

In his article, Ortt compares five industries using 50 cases. It is noticeable that the phases vary significantly for each industry. The pharmaceutical industry, for instance, has a very long initial phase and a very short second phase. In electronics, the reverse is true. "To explain these differences we also conducted literature research after the analyses. In this specific example, the reason is regulation."

Ortt was particularly surprised by what they didn't find. "My preconceptions turned out to be false. For instance, I thought that the pre-diffusion phases in the telecom industry would be really long due to the required infrastructure. However, its time spans proved to be average. The telecom industry is obviously so well organised that it can innovate relatively rapidly." The follow-up research will focus on the question of which other factors are related to the length of the pre-diffusion phases. "Personally, I cannot wait until we have reached that stage. I am itching to link up all the factors."

Best Paper Award Nitesh Bharosa



On Wednesday 13 May 2009, during the Sixth International Conference on Information Systems for Crisis Response and Management (ISCRAM 2009), ir. Nitesh Bharosa of the Information and Communication

Technology section was awarded the Mike Meleshkin Best Paper Award for his paper: Reconsidering information management roles and capabilities in disaster response decision-making units.

Marijn Janssen is co-author of this paper. It looks at information system-related roles, tasks and functionalities in emergency aid teams during major disasters.

The study concludes that current information architectures are not adaptive enough to guarantee the quality of information during crisis management and prescribes a number of roles and capabilities which could guarantee quality of information. The roles and capabilities will then be illustrated and developed through case studies in the Netherlands.

The jury report believes that this paper is important because it views a central problem in the field of crisis management from a multi-disciplinary perspective - specifically: "what are the shortcomings of information systems for crisis management and how can we remedy them?"

Professor profile

NAME

Prof. Marija D. Ilić

POSITION

Marija Ilić is an expert in electricity networks and their future. She was recently appointed Visiting Professor of Intelligent Electricity Networks at TPM (Chair in Control of Future Electricity Network Operations). She is also an honorary lecturer in Electrical and Computer Engineering and Engineering and Public Policy at Carnegie Mellon University in Pittsburgh. In addition, Ilić runs her own company: New Electricity Transmission Software Solutions (NETSS, Inc.).

Private life?

"I was born in 1951 in what was then Yugoslavia. In the 1970s I emigrated to the United States to study. I now live in Boston with my husband and three sons aged 28, 25 and 16 but my work takes me to Pittsburgh all the time. In my leisure time, I play basket ball and enjoy Serbian dancing. I am also a keen gardener, so you won't find me with well-manicured hands! I love yoga as well as sailing with my husband and friends in the Caribbean. At weekends, I like to watch films with my youngest son and work for the Serbian church community in Boston."

Highlight of your career?

"I have enjoyed every part of it, but my time at Cornell University ('82-'84) will always have a special place in my heart. I was their very first female assistant professor in Electrical Engineering. It was also a very quiet time, so I had plenty of space to think. I was particularly fortunate to cross paths with Professor Granger Morgan from Carnegie Mellon University. He was the one who opened up my eyes to the fact that Electrical Engineering is not a separate entity, but combines equally well with such subjects as Economics and System Engineering. My subject's power lies in its multidisciplinary approach. In that respect Carnegie Mellon leads the way in the US. Just as TPM does in the Netherlands, actually."

Why this chair?

"I was invited to accept this chair, which I see as a real privilege and an honour. It is the first chair that is completely devoted to electricity infrastructures of the future. Besides, Mellon and TPM have been working closely together for years. I work intensively with Professor Margot Weijnen (Professor of Process and Energy Networks at TPM) on multidisciplinary research into critical infrastructure systems. John Groenewegen and Rolf Kunneke are also highly-valued research partners. Together we study the changing electricity industry and its economic and institutional infrastructure. TPM students also regularly join me to work in Pittsburgh. This chair is an excellent way of reinforcing the partnership between the two universities on a permanent basis."

The challenge in Delft?

"I aim to work even more on promoting a multidisciplinary approach in the curriculum. Students need to learn to look beyond the existing tools and to stray from the conventional paths. For me, Delft offers a very pleasant research environ-

ment, with experts from the world of energy systems, IT systems, infrastructural economy, policy, management and law, as well as people from the world of practice. We can work together to shape the existing electricity infrastructure to ensure that we will have a reliable, affordable and sustainable supply in the future. That is my mission."

The best thing about your work?

"I enjoy working with students. They look at things from a new perspective and challenge you to stay alert. And every student is different, which means you have to adopt a tailored approach to each and every one. You really get to know each other and develop genuine relationships. Nothing is more gratifying than seeing a student opt to pursue a career in my field."

Your best characteristic?

"I love brainstorming. I am not afraid to express my opinions, but am open to other ideas, either from colleagues or from students. I also regard everyone as a unique individual and try to enable everybody to achieve their full potential."

Worst characteristic?

"Somehow or other, I never seem to have enough time, so I often lag behind. I have more ideas than time, so I need to learn to manage my time more effectively."

Source of inspiration?

"My mentor, John Zaborszky, who has sadly passed away. He took care of me in 1975 when I went to work at Washington University in St. Louis as a student teaching assistant. He taught me all I know, including how to prevent large-scale power blackouts. I owe him so much. We enjoyed a lifetime friendship and wrote the book Dynamics and Control of Large Electric Power Systems together. My second source of inspiration was the University of Belgrade. It was there that I got a thorough grounding in the faculty of Electrical Engineering. Finally, my mother was a major source of inspiration for me. She taught me that you should always set the bar higher when you want to achieve something. My book is dedicated to her."

Role model?

"Unfortunately, there are far too few female role models. For me, Margot Weijnen is certainly one, as is Dr Elisabeth Drake from the Massachusetts Institute of Technology. Elisabeth was a great example for me, as I try to be for others. Not because I am a feminist or anything, but because I know from experience how important a role model can be."

Your philosophy of life?

"Make sure you get the most out of every day. And live for now and not in the past. I have had this attitude since 2001, when I was faced by serious health issues. That is now a thing of the past, but it has transformed my perspective on life."



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Curius

The final exam period is approaching, the year is drawing to a close and so, too, is our Curius year. There are still activities to come, however, and preparations for next year are of course already well under way. We have had a very busy few months. The 16th birthday of Manius Curius was celebrated during DIES week, the activities committee took all the adrenaline junkies hydro-speeding and the Career Event was also held for Master's degree students.

On Wednesday 13 May, we welcomed an important visitor to the faculty, State Secretary for Finance Jan Kees de Jager. The theme of his well-attended lunch lecture was innovative entrepreneurship, something of which De Jager has had personal experience in both his field and his early professional life. He opened his lecture by naming a number of insights into the history of innovation and the preconditions required for innovation. It turns out that when it comes to innovation we should focus more on small businesses than multinationals. Small businesses better understand the need to put innovative products on the market. These are often subsequently adopted by larger companies. Another new trend is that large companies, such as Philips, create suitable nearby locations to encourage small businesses. We later learned that De Jager had set up a highly successful business during his student years, which was able to survive its first few years thanks to its innovative solutions. In his capacity as State Secretary for Finance he suggested a number of opportunities for aiding company innovation, even in these difficult financial times.



All in all, it was a clear discourse on innovation. Afterwards De Jager was presented with a Senz Umbrella, although it was no surprise to discover that he already possessed one.

Inquisitive Master's degree students were given an opportunity to find out real technology and policy management companies elsewhere. The international business tour visited companies in the Netherlands, Germany and Spain. In the Netherlands, that meant visits to Bain & Company, KPMG, Philip Morris and Exxon Mobile. In Germany we were the guests of Bayer and subsequently flew to Barcelona.

There we called on ABB, the council transport company and the Dutch Consulate. We naturally also enjoyed the fine weather, the cultural highlights and the convivial atmosphere.



The 16th Board of SVTB Curius

TPM's educational programmes

- BSc Systems Engineering, Policy Analysis and Management ('Technische Bestuurskunde', TB)
- MSc Systems Engineering, Policy Analysis and Management (SEPAM)
- MSc Management of Technology (MoT)
- MSc Engineering and Policy Analysis (EPA)
- MSc Transport, Infrastructure and Logistics (TIL) (in cooperation with the Faculty of Civil Engineering & Geosciences and the Faculty of Mechanical, Maritime and Materials Engineering)
- MSc Information Architecture (IA) (in cooperation with the Faculty of Electrical Engineering, Applied Mathematics and Computer Science)
- MSc Geomatics (in cooperation with the Faculty of Civil Engineering & Geosciences and the Faculty of Aerospace Engineering)

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Did you thoroughly read the available information and are you considering enrollment in a TPM-programme? Are you not sure your educational background is sufficient? Then please contact one of our study advisors:

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Ask TPM

New technologies are often received with much scepticism. It is difficult to say whether this is down to the arrival of new technologies being trumpeted too loudly or to people basically being highly conservative. Moreover, new technologies are often difficult to explain to users. For instance, the first car was initially described as a motorised carriage.

And now there is Twitter. According to Wikipedia, Twitter is an 'internet service which users use to publish brief messages. It is a social networking site on which, as with Facebook, you can create a profile and an avatar.' Other descriptions view Twitter as a mix of a weblog and instant messaging (or: microblogging), as 'extended' text messaging, and Internet expert Francisco van Jole recently called Twitter the 'CB radio of the Internet' in the newspaper de Volkskrant. A more abstract description of Twitter is: reporting what you are doing in no more than 140 characters. You can also read what your friends are up to.

Although Twitter's core question is 'what are you doing?', another crucial question is: does Twitter have a future or is it just the latest hype? We asked Dr Patrick van de Duin, Assistant Professor of Future Research at the Technology, Strategy & Entrepreneurship section..

twitter



"The signs are reasonably promising. For instance, in the US the number of hits to Twitter.com doubled to 8 million between January 2009 and March 2009. And 11% of Americans have now used Twitter at some point. In addition to its numerical growth, there are also other types of success stories. For example, the first sensible news on the attempted attack on the Dutch Royal Family was published via Twitter. In the case of the US Airways plane's emergency landing in the Hudson and the recent crash of the Turkish Airlines plane near Schiphol, initial reports also surfaced via Twitter.

Yet Twitter does not just report on disasters. It is also informative and handy. Twitter has already been used to raise a large sum of money for financing projects in the Third World, and a growing number of companies view Twitter as a new marketing tool which can be used to share information quickly and cheaply and to gauge the preferences of (potential) clients. With respect to the latter, however, companies should be wary of Twitter causing a backlash. Internet users increasingly determine themselves how they deploy the Internet for their own purposes and are becoming less keen on specific websites which only provide information and are therefore not interactive enough.

Francisco van Jole (internet journalist and writer) has another argument why Twitter could go the distance. Twitter is less anonymous than the old Internet (Internet 1.0). This means that taunting and abusing each other from under the cover of false names is almost a thing of the past. Just as Dutch TV star Gordon recently announced that 'humiliation TV' is dead, Twitter also seems to provide a kind of feel-good Internet whereby the opportunity to make and retain friends is essential to success.

Twitter is namely a close relative of similar social Internet services, such as Facebook and Hyves. And if Twitter also manages to hook up successfully with IRL Connect (a location-based network), it may be that Twitterers will not just say what they are doing but also where they are doing something: 'What are you doing and where are you doing that?'

When determining Twitter's future degree of success, you shouldn't rely on your own preferences. 'I don't like it, so it won't work' is not logical in a virtual world in which social capital is gaining in significance. Using yourself as a gauge has little point. It would be interesting to find out what Twitter could do for TPM. Surely we all want to know what the dean is up to right now?