



 **TU Delft**

Annual Report **2013**

Annual Report 2013

Delft University
of Technology

Foreword

The national and international playing field of higher education and research is continuously in motion. For this reason TU Delft has formulated a clear strategy and ambition in its Roadmap 2020, to ensure that it remains a leading university of technology with a global reputation. As part of this strategy, TU Delft has set specific, high priorities and ambitions for education, research and knowledge valorisation in its performance and profiling agreements with the Minister of Education, Culture and Science. With a solid financial position, as well as a culture of freedom, cooperation, consultation and supervision, TU Delft can realise its strategic ambitions. These features constitute an excellent basis for realising the strategic objectives for education, research, knowledge valorisation and the necessary renovation of the campus and facilities. Results for 2013 clearly show that TU Delft is on course in the realisation of its strategic priorities from the Roadmap 2020 and its performance and profiling agreements.

In 2013, the majority of our graduates were able to find a job almost immediately. This is an important indication that our engineers are still in high demand in the labour market. More than ever, this job security attracts the attention of prospective students in the current economic climate. TU Delft was therefore able to enjoy a high student intake again last year. It is important to ensure that all of those students are in the right place as soon as possible. We are therefore committed to stimulating study success in all phases of the study programme - from the programme choice and the link between VWO (pre-university education) and WO (university education) to the student progress in the Bachelor's and Master's degree programmes. This approach has yielded good results - in 2013, 74% of the students received a positive binding recommendation on the continuation of their studies (BSA).

TU Delft continues to score highly in international rankings. We are proud to have been awarded 42nd place in the Times Higher Education Reputation Ranking.

A good reputation leads to high expectations, however. In order to remain attractive to top scientists and students, we have to ensure that our facilities live up to our reputation. That requires significant investments in our campus. This is why we have formulated an ambitious campus strategy for the creation of a 'Living Campus' in the coming years. The 'Living Campus' is a well-equipped living and working environment appropriate to a highly-ranked international university. Excellent facilities are crucial for the research and educational activities at TU Delft. An important example is the establishment of the Advanced Research Center 'QuTech', where TU Delft, with the support of the Dutch government, will collaborate with knowledge partners and companies on the next generation of computers: the quantum computer.

While the quantum computer can lead to a new digital revolution, a similar digital revolution is already occurring in the field of education. As high as the numbers of campus students are, they pale in comparison to the numbers



of students we reach with online education. The Massive Online Open Courses on the EdX platform were important successes in 2013. Two courses on water purification and solar energy attracted no fewer than 80,000 enrolments. In order to make excellent education more widely accessible, we have also been offering online Master's degree courses since 2013. For our own students, the goal is mainly blended learning, a combination of face-to-face teaching and online learning. The quality-enhancing potential of this type of learning is already evident - students can familiarise themselves as far as possible with the theory through online study, taking the discussions during contact hours to a far higher level. In order to respond more effectively to these developments, we have founded an Extension School along the lines of the Harvard Extension School. At this school, all of TU Delft's open and online education can be offered to students across the world.

The results of our research and educational efforts must ultimately benefit society at large. In this regard, we must see our university

as part of the region, where we are committed to strengthening cooperation. In 2013, joint institutes, the LDE Centres, were established with Leiden University and Erasmus University Rotterdam. TU Delft collaborates with, among others, the Erasmus Medical Centre and the Leiden University Medical Centre on the realisation of the Holland Particle Therapy Centre (HollandPTC), a proton therapy clinic for the treatment of cancer. During the reporting year, TU Delft joined forces with regional partners in the Innovation Quarter, which aims to improve the competitive position of the region by investing in promising technology companies. TU Delft is obviously not new to high-tech start ups, having already founded hundreds of companies. Since 2005, we have been helping young entrepreneurs get started at the YESDelft entrepreneurial centre. We place great value on entrepreneurship in our curriculum.

We have also been seeking cooperation outside of the region, primarily in research fields in which we can make a difference with our global partners. Intensive partnerships have therefore been

established in Joint Research Centres. These Joint Research Centres - in China, Brazil and Vietnam - serve as a base of operations for researchers, students and companies affiliated with TU Delft. Naturally, the reverse is also possible. While we sometimes jokingly refer to ourselves as "MIT on the Schie", we have succeeded in bringing the Massachusetts Institute of Technology to the IJ. Together with MIT and the Wageningen University and Research Centre, we are working on establishing a new institute of technology in Amsterdam: the Amsterdam Institute of Advanced Metropolitan Solutions (AMS). At this institute, we will collaborate in fields such as water, energy, waste, food and data, using the city as a "living lab". This initiative embodies our vision regarding the core activities of a university - providing top-quality education and conducting top-quality research, where new knowledge can lead to increased wealth and improved welfare and safety in the city, the region and the world via economic activity.

Executive Board, TU Delft

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Report of the Supervisory Board 2013

In 2013, the Supervisory Board was made up of the following members:

- Ir. G.-J. Kramer, president, former managing director of FUGRO N.V. (appointed until 1 July 2013)
- Drs. ir. J. van der Veer, president, former CEO of Shell (appointed from 1 July 2013 to 1 July 2017, first term)
- Professor D.D. Breimer, former Rector Magnificus/President of the Leiden University Executive Board (appointed until 1 May 2015, second term);
- Ms Drs. K.M.H. Peijs, former Queen's Commissioner for the Province of Zeeland (appointed until 1 June 2015, second term)
- Drs. J.C.M. Schönfeld, former vice-president and CFO of Stork NV (appointed until 1 April 2016, second term)
- Ms Ir. L.C.Q.M. Smits van Oyen MBA, DGA/Administrator of companies and organisations in the field of ICT, Healthcare, Tourism and Nature Conservation (appointed until 1 January 2017, first term)

VISION AND STRATEGY

The institutional plan developed in 2012, the 'Roadmap TU Delft 2020', will determine the university's course until 2020. The Supervisory Board was closely involved in the development of this vision.

The Supervisory Board is actively involved in the further development of the strategic LDE partnership. To this end, the Board frequently communicates with the Supervisory Boards of Leiden University and Erasmus University Rotterdam. LDE Joint Regulations were drawn up at the end of 2013.

Each quarter, the real estate issues of TU Delft are discussed in the meeting of the Supervisory Board. In 2013, this mainly concerned the campus vision, the real estate strategy and the plans for the new construction of the Faculty of Applied Sciences.

The Supervisory Board is also actively involved in the developments in the field of education. Matters such as new study programmes, whether or not to establish a numerus fixus for a study programme, stricter binding recommendations on the continuation of studies, the quality assurance policy, and insight into the (re)accreditation processes of the programmes are regularly discussed with the Board. The developments and strategy of TU Delft in the area of online education are closely monitored by the Board.

Moreover, the Supervisory Board has been actively involved in the planning of the Holland Particle Therapy Centre (HollandPTC) and has taken note of the Amsterdam Institute for Advanced Metropolitan Solutions, an institute in the field of applied urban technology and design, established in cooperation with the municipality of Amsterdam, Wageningen University and Research Centre, MIT and various companies, such as Shell.

ADMINISTRATION AND MANAGEMENT

In 2013, the Supervisory Board held four regular meetings with the Executive Board and four meetings without the Executive Board. Furthermore, topical subjects were discussed during an informal evening meeting with the Executive Board.

Once again the Supervisory Board also visited a number of organisational units this year, including several faculties, the Library and the Science Centre. Moreover, the new president visited deans, directors and the president of the Works Council in order to get acquainted with them.

The Supervisory Board participated in the research conducted by the Education Inspectorate into 'Good Governance' in higher education.

To enable the Supervisory Board to perform its supervisory task well, subjects such as (anticipated) amendments to the law, activities in the field of scientific integrity, the code of ethics and Integral Safety will be discussed with the Board.

PERSONAL AND INTERNAL AFFAIRS

The state secretary of the Dutch Ministry of Education, Culture and Science has appointed Mr J. van der Veer to be the president of the TU Delft Supervisory Board with effect from 1 July 2013. Mr Van der Veer is the successor to G.-J. Kramer, who was the president of the Board for the past eight years. TU Delft is very grateful to him, and the Supervisory Board and the Executive Board have expressed their thanks to him on various occasions. After an open recruitment process, the Supervisory Board appointed Mrs J.L. Mulder to be Vice-President for Education & Operations (VPEO) of the Executive Board on 1 April 2013 for a period of four years. Mrs Mulder succeeded Mr P.M.M. Rullmann, who was a member of the TU Delft Executive Board from May 2002 to April 2013. The Supervisory Board thanked Mr Rullmann on the occasion of his departure for the inspiring way in which he



fulfilled his position.

After an internal consultation round, at the end of 2013 the Supervisory Board reappointed the Rector Magnificus, Prof. K.Ch.A.M. Luyben for a period of four years, starting on 1 January 2014.

The Remuneration Committee conducted evaluation interviews with individual board members in 2013.

FINANCES AND OPERATIONAL MANAGEMENT

Audit Committee

The Audit Committee met four times in 2013. Recurring agenda points were the further development of the management control system of TU Delft, the results of the activities of the Internal Audit Function and the financial results, including the 'review' project and the cash flow. Attention was also paid to the progress and follow-up of the points from the reports of the external accountant concerning 2012 and the 2013 TU Delft safety profile. Additionally, the discussion about the 2012 audit report and the resulting improvement measures were on the agenda in April. Partly with a view to the major future investments in real estate, the committee paid attention to both the real estate organisation and the important/major investment project Nieuwbouw TNW Zuid, including the financing of this new construction. The development of the HollandPTC project was also discussed.

During an additional meeting in November, the implementation of the governance and control vision of TU Delft was specifically discussed. This is based on a COSO framework (internal control) that is in line with the previously developed management control system. The external accountant's 2013 management letter, the 2014 budget and other items were on the agenda in December. The president of the Audit Committee meets with the director of Finance on a monthly basis. He also has ad-hoc meetings with the Audit Manager of the Internal Audit Function.

Supervisory Board

In its meeting on 25 April 2013 the Supervisory Board approved the 2012 Annual Report and the Financial Statements; in its meeting on 11 December 2013 the Board approved the Budget for 2014. During its meetings in 2013, the Board focused a great deal of its attention on the financial position of TU Delft, prepared

by the Audit Committee. At each meeting, the Finance director presented a controller letter about the previous quarter.

The special subjects in this regard were: the organisation of the risk management of TU Delft, the long-term financing of necessary investments, strengthening the control of operational management in the broad sense and the completion of the review operation. The Supervisory Board concludes that the financial position of TU Delft is healthy and that the control of operational management has been further strengthened.

EMPLOYEE PARTICIPATION

The Higher Education and Research Act (WHW) includes the independent right to direct consultation between staff representatives and the Supervisory Board, the right to nominate one of the members of the Board and advisory powers for the profiling of the Board members. The Supervisory Board and the representative bodies have made procedural agreements concerning these matters. One of the members of the Supervisory Board has conducted informal discussions with the Confidential Committee of the Works Council on several occasions. Furthermore, the Supervisory Board sought the advice of the Works Council on the appointment of the VPEO and the reappointment of the Rector Magnificus.

IN CONCLUSION

TU Delft's policy regarding the salary of the administrators and supervisors is in line with the agreements made with the Ministry of Education, Culture and Science. From the start of 2012, new contracts were drawn up in accordance with the new Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT).

According to the judgement of the Supervisory Board, in 2013 the Board continued to perform its task in accordance with the principles of good governance, as laid down in, for example, the Universities Good Governance branch code of the Association of Universities in the Netherlands (VSNU). In the opinion of the Supervisory Board, the principle of independence was also honoured in 2013.

1. TU Delft in brief

1.1 Institutional profile

Delft University of Technology aims to continue to offer a full range of high-quality disciplines, research and degree programmes in the engineering sciences, while maintaining its unique facilities. By doing so, TU Delft wishes to retain its prominent global reputation as a university of technology that is regarded as a world leader by its peers. TU Delft wants to remain a breeding ground for cutting-edge scientific and technological developments in order to answer the great societal challenges of our age. TU Delft has the most complete range of engineering sciences in the Netherlands and trains approximately half of the country's science and technology students. Nearly 100% of the engineers trained in Delft find employment within a year of completing their degree. TU Delft aims to maintain these positions.

VISION

How do we view our role in society?

The increasing number of people on the planet and their drive to achieve ever-higher levels of prosperity raises some major questions for society. Technology is essential in answering these, as is the underlying scientific knowledge generated and disseminated by modern universities of technology. The modern university of technology is a source of new scientific understanding and technological breakthroughs. It also trains scientists and engineers, and provides them with a broad academic grounding. As such, it is a catalyst of innovation and economic growth. With their advanced expertise and know-how, engineers are vital to our society and economy. It is they who develop the science-based technological solutions which enhance many people's lives. As one of the world's leading training grounds for these engineers, TU Delft views its role in society as supplying technological solutions that take us significantly further along the road towards sustainability and a flourishing economy. We position ourselves as an open academic community which, through its scientific personnel and graduates, is represented throughout the academic world and is rooted in our own regional and national, social and economic environment.

AMBITION

What are we trying to achieve?

TU Delft wishes to remain a technology university with a leading global reputation. To do this, our aim is to maintain a full range of high-quality disciplines, courses and unique facilities in the engineering sciences. Collaboration is an essential part of this, on the basis of our strong identity and reputation. TU Delft wants to be a breeding ground for cutting-edge technological scientific developments to meet the great societal challenges of our age. It is also our ambition to be viewed by the business community as a source of outstanding professional scientists and engineers, as a producer of excellent practical knowledge and as an innovative partner. In other words, as a university where new business activities are allowed to blossom and where the research and education have a significant impact on the competitive economic environment. TU Delft wants to be a place where academics and students think in interdisciplinary and multidisciplinary terms, and where science, design and engineering are the primary driving forces behind teaching and research. We wish to be an inspiring, progressive and gender-aware institution, attracting the world's best scientists and most gifted students in the knowledge that their talents will be allowed to develop to the full here.

MISSION

What are our main tasks?

TU Delft's mission is to make a significant contribution towards a sustainable society for the twenty-first century by conducting ground-breaking scientific and technological research which is acknowledged as world-class, by training scientists and engineers with a genuine commitment to society and by helping to translate knowledge into technological innovations and activity with both economic and social value.

CORE VALUES

What do we stand for?

Respect, integrity, expertise, involvement, transparency and avoiding conflicts of interest. These are the core



values guiding everyone associated with TU Delft. Our modus operandi as an institution is trust – by which we mean that every member of our community is expected to comply with the core values, to draw inspiration from them and to feel responsible for upholding them. All at TU Delft should act with a sense of social responsibility and be aware of technology's value to and impact upon society. Our staff, our students and our guests are all open about the roles they play and the activities they perform. Much of what the university does is situated on the interface between the public and private sectors. Avoiding conflicts of interests is therefore a key guiding principle for us. Ours is a learning organisation, with a culture in which drawing lessons from positive experiences elsewhere – as well as from 'what went wrong' comes as second nature.

- **RESPECT**

TU Delft stands for proper appreciation of everyone's qualities. Freedom to excel is at the heart of all we do, both academically and in supporting roles. There is no place here for any form of discrimination, for other kinds of intentional unfair treatment or for anything which prejudices TU Delft as an institution.

- **INTEGRITY**

TU Delft stands for honest staff and students who think and act in an open manner, who demonstrably put the interests of science and society before their own personal and private advantage, who interact critically and constructively and who are not afraid to challenge unacceptable behaviour.

- **EXPERTISE**

TU Delft stands for staff who always act with the utmost professionalism. Again, freedom to excel is crucial here, both academically in supporting roles. We expect all our staff to stay fully informed about their work and their discipline in general. They should strive to be leaders in developing knowledge, in pushing

back the boundaries of research, in providing inspiring education, and in supporting one another, while upholding the interests of the university as a whole.

- **INVOLVEMENT**

TU Delft stands for staff and students who are actively involved in the development of both the university and wider society. Our public responsibility as an academic institution – helping to resolve the great societal challenges of the decades ahead – is firmly reflected in our educational curriculums, research, designs, student projects and support activities.

- **TRANSPARENCY**

TU Delft stands for an environment in which staff, students and guests communicate openly with one another. This ensures that education, research, valorisation, governance and decision-making processes at all levels within the university are verifiable. These core values are integral to the way we want to operate as an institution and the manner in which we tackle the challenges presented to us by society.



1.2 TU Delft 2020 profiling themes

TU Delft is strengthening its institutional profile and its ambition level along the lines of the profiling themes listed below, which are laid down in the institutional plan, the TU Delft Roadmap 2020. The backgrounds for these profiling themes and the proposed actions will be outlined in the individual chapters. TU Delft possesses a functional management control framework, the institution-wide Planning & Evaluation Cycle, for realising the strategic objectives set in the TU Delft Roadmap 2020. TU Delft is thereby able to identify risks and uncertainties, monitor processes and, when necessary, adjust the aims and the realisation of those aims in an informed and timely manner.

STUDENTS & EDUCATION

- Delft Extension School
- Differentiation and breadth in BSc programmes
- Profiling of MSc programmes
- Professional Doctorate in Engineering
- Graduate School – Doctoral Education
- Postacademic courses
- Quality of student intake
- Success rates: graduating within the standard term is the norm
- Excellence programmes
- Modern teaching methods, including digital forms
- Teaching abilities of academic staff
- Institutional accreditation, quality assurance and student satisfaction
- 3TU and Leiden-Delft-Erasmus partnerships

RESEARCH

- Scientific profile: science, design, engineering
- TU Delft research priority areas
- Focus and mass in research programming

- Interfaculty alliances – TU Delft institutes
- ‘Grand challenges for society’ – four priority areas
- Strategic research co-operation
- International peer reviews and rankings
- Individual and group quality
- Top sectors and Horizon 2020
- Fundraising
- Need for state-of-the-art research infrastructure

VALORISATION

- TU Delft valorisation profile, 2012-2020
- Structural co-operation with business and government
- Co-operation with SMEs
- Delft Technological Innovation Campus
- Support organisation – TU Delft Valorisation Centre
- Entrepreneurship training and development of new commercial activity
- Intellectual property
- Debate on ethical aspects of public-private partnerships

1.3 Highlights

In addition to fulfilling the performance and profiling agreements, the listed profiling themes also focused on the following subjects in 2013:

DELFT EXTENSION SCHOOL

TU Delft is developing an Extension School along the lines of the Harvard Extension School, in which all of TU Delft’s open and online education can be offered to students across the world. TU Delft’s aim is to respond even more effectively to recent developments in this area and meet the massive growth in demand for this type of education. TU Delft has recently intensified its open and online activities. The university has already

been active in OpenCourseWare (OCW) since 2006. Course materials for more than 130 courses are already available online for anyone who wishes to use them. Lectures have been available on iTunesU since 2010. TU Delft students and others with an interest can watch video recordings of more than 10,000 lectures via OCW and iTunes. In two Bachelor's degree programmes, online lectures have been part of the regular study programme since 2013 (known as blended learning). There are also three Master's programmes that can be taken fully or partially online. Towards the end of 2013, 80,000 people from more than 100 different countries took two Massive Open Online Courses (MOOCs) offered by TU Delft.

GRADUATE SCHOOL

The TU Delft Graduate School has raised the university's international profile, as well as its appeal as a training centre for new generations of researchers. TU Delft will use additional means of intensification in order to rapidly increase the PhD completion rate and shorten the PhD duration within the Graduate School. The Graduate School offers PhD students a Doctoral Education, a study programme consisting of research skills, subject-related skills and personal development. Agreements concerning the progress of the PhD work will also be recorded (digitally), with mutual obligations for the PhD student and the PhD supervisor. TU Delft chooses to carry out a critical evaluation to guarantee the quality of the intended PhD period and to decrease the turnaround time; the go/no go moment after 1 year is crucial in this regard. On 1 January 2012, the Graduate School formally opened at all faculties for contract and standard PhD students.

JOINT RESEARCH CENTRES

The world of science is undergoing great changes as a result of the shift in priorities in the global economy. In response to this changing playing field, TU Delft has formed strong alliances with global partners in the Joint Research Centres. These Joint Research Centres serve as a base of operations for researchers, students, companies affiliated with TU Delft and our global partners. In addition, they stimulate cooperation with foreign funds, make it easier to attract talent and provide access to new research facilities and environments not available in Europe. TU Delft has Joint Research Centres in China, Brazil and Vietnam. In 2013, partnerships were established in Changzhou and Hanoi.

QUITECH

TU Delft is leading the Netherlands in building the next generation of computers: the quantum computer. In order to realise this, the QuTech Advanced Research Center has been established. QuTech will form the bridge between research into the development of the quantum computer and the Dutch high-tech industry. The establishment of QuTech is one of the components of the Dutch Knowledge and Innovation Contract. TU Delft is contributing five million euros every year, while the Dutch government, together with TNO, is providing

an annual contribution of four million euros. NWO, the Foundation for Fundamental Research on Matter, and early adaptors from the business community are also contributing.

HOLLANDPTC

TU Delft is working together with partners such as the Erasmus Medical Centre and the Leiden University Medical Centre to create the Holland Particle Therapy Centre (HollandPTC), a proton therapy clinic. The Technopolis Science Park is the intended location of this centre for treatment and research. On 2 December 2013, the Dutch Ministry of Health, Welfare and Sport granted the Holland Particle Therapy Centre (HollandPTC) a licence in accordance with the Special Medical Procedures Act (SMPA), allowing the – as yet to be built – Delft centre for treatment and research to perform proton therapy cancer treatments. HollandPTC aims to start treating the first patients in 2016.

ADVANCED METROPOLITAN SOLUTIONS (AMS)

Together with MIT and the Wageningen University and Research Centre, TU Delft won the Amsterdam municipality's bid to establish a new institute of technology. The proposal was selected in a competition in which 13 international consortia participated. The proposed Amsterdam Institute of Advanced Metropolitan Solutions from TU Delft, the Wageningen University and Research Centre and MIT will be a leading institute for applied metropolitan technology, an active knowledge institution for urban planning and design. The Amsterdam Institute of Advanced Metropolitan Solutions will focus on 'living labs', with Amsterdam acting as a testing ground for new concepts that may improve the quality of life in metropolises in the future.

3TU

The 3TU.Federation of the three Dutch universities of technology aims to optimise the performances of and collaboration between the three technical universities in order to strengthen the international position of the Netherlands. On 13 May, 3TU signed the National Technology Pact 2020 along with representatives of employers, employees, educational organisations, regional government bodies and the national government. The Technology Pact is intended to produce an additional 30,000 engineers each year. The 3TU.Federation is committed to participating in actions related to its three priorities: (1) choosing technology, (2) learning in the field of technology, and (3) working in the field of technology. One eye-catching proposal is the creation of a 3TU Centre for Engineering Education.

STRATEGIC ALLIANCE WITH LEIDEN UNIVERSITY AND ERASMUS UNIVERSITY ROTTERDAM

TU Delft, Leiden University and Erasmus University Rotterdam continued to develop the strategic regional alliance in 2013. The alliance between TU Delft, Leiden University and Erasmus University Rotterdam provided

starting funds to 8 centres in 2013. At these centres, researchers supplement expertise that is not available in their own university. In April, a kick-off meeting was held in the Aula of TU Delft. Furthermore, 12 new staff members were hired for the new LDE Traineeship.

DELFT RESEARCH-BASED INITIATIVES AND TU DELFT INSTITUTES

TU Delft explicitly links academic profile and societal position by systematically arranging the research potential around the major societal themes of health, energy, living environment, infrastructure and mobility. TU Delft takes national research priorities and international research priorities at European level into account. The university wants to further strengthen its national and international image in a specific number of upcoming fields by virtually bundling research capacity in university-wide institutes. The TU Delft Safety & Security Institute was added in 2013

INTEGRITY PROGRAMME AND TU DELFT CODE OF ETHICS

TU Delft expects everyone, whether staff, student or guest, to act responsibly with regard to the ethical aspects of their work or study. However, situations can always arise which are not clear-cut. Especially in current day society, in which the dividing lines between the professional and the private and work and home are fading more and more, and we are increasingly confronted with complex issues and difficult questions in our work. TU Delft has an integrity policy for supporting students and staff, with a Code of Ethics, various regulations and committees. In 2012 and at the beginning of 2013, the TU Delft Code of Ethics was discussed at the university in more than thirty meetings with scientists and support staff. A confidential adviser on academic integrity and administrative integrity was appointed in 2013, and the following regulations were established: the TU Delft business travel expenses refund scheme, the TU Delft regulations for ancillary activities, and the TU Delft Academic Integrity Complaints Regulations. TU Delft wants to continue the discussion on integrity and ethical dilemmas with staff members and further increase awareness of this subject.

1.4 Administration and boards

TU Delft is an institution governed by public law; the Higher Education and Scientific Research Act (WHW), as well as administrative law with its fundamental principles, apply to it. The responsibilities and authority of the Executive Board and the Supervisory Board are laid down in the WHW. The Good Governance branch code of the Association of Universities in the Netherlands (VSNU) is applied and observed by TU Delft. In 2014, the regulations for the Supervisory Board and the management and administrative regulations (BBR) will be adjusted in view of the branch

code and the government vision of good governance.

EXECUTIVE BOARD

The Executive Board is the highest administrative body of TU Delft and is tasked with the administration and management of the university. The Executive Board is currently composed of three members, who are appointed by the Supervisory Board. When appointing these members, the Supervisory Board confidentially consults with the Works Council and the Student Council (at the institutional level). The Executive Board and the Secretary General of the university are supported by the Administrative Office.

Division of tasks

The basic principle is that the collegial policy model is applied to subjects that are of importance to all board members. Furthermore, the president has the final responsibility for the administration of the university. In 2013, Paul Rullmann was succeeded by Anka Mulder as vice-president for Education and Operations.

The president

- Strategy and policy of the institution;
- Promotion of the external network;
- Marketing and Communication portfolio;
- Real Estate portfolio;
- Financial strategy portfolio.

The Rector Magnificus

- The academic course of the university in education and research;
- The appointment of full professors and key academic positions;
- Research portfolio;
- Valorisation portfolio;
- Library portfolio;
- Human Resources portfolio.

The vice-president for Education and Operations

- Administrator of the University Corporate Office;
- Educational affairs portfolio;
- Student affairs portfolio;
- Operations portfolio;
- ICT portfolio;
- Facility Management portfolio;
- Safety portfolio;
- Electronic and Mechanical Support portfolio.

FACULTIES

- Faculty of Architecture and the Built Environment, dean: Prof. K. (Karin) Laglas
- Faculty of Civil Engineering and Geosciences (CEG), dean; Prof. B.M. (Bert) Geerken
- Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), dean: Prof. R.H.J. (Rob) Fastenau
- Faculty of Industrial Design Engineering (IDE), dean: Prof. M.A. (Ena) Voûte
- Faculty of Aerospace Engineering (AE), Prof. H. (Hester) Bijl
- Faculty of Technology, Policy and Management



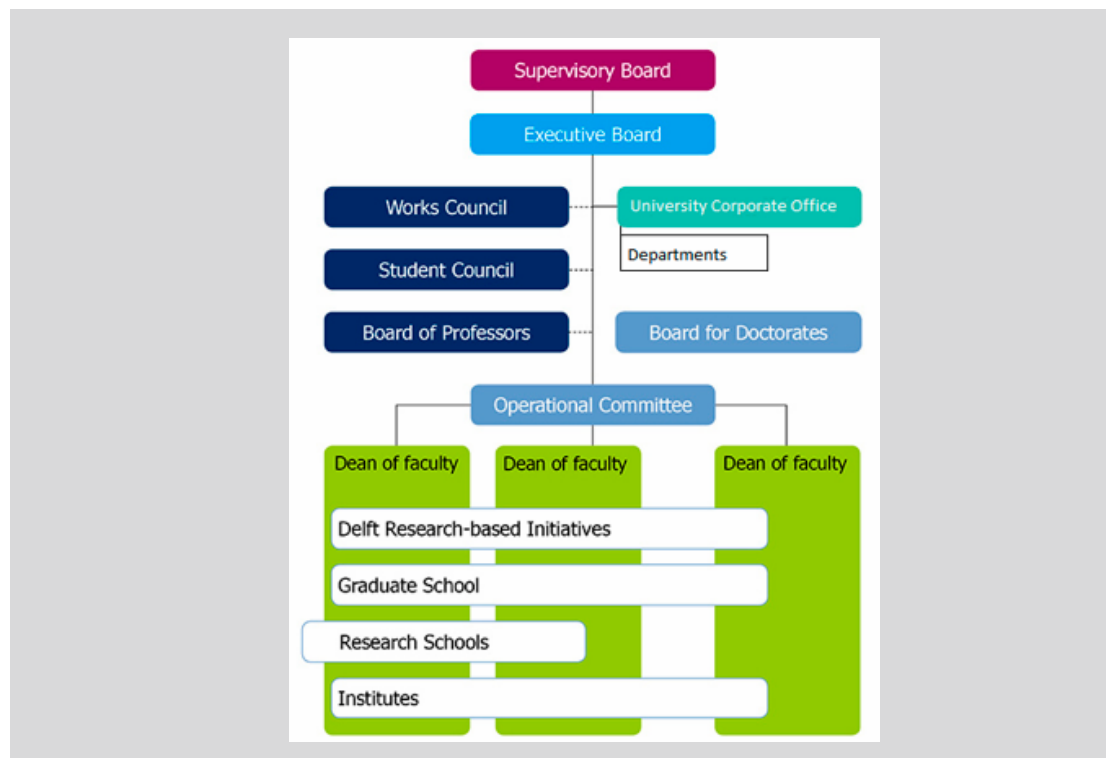
President of the Executive Board - Mr D.J. van den Berg



Rector-Magnificus (tevens vice-voorzitter) Prof. K.Ch. A.M. Luyben



Vice-President for Education & Operations Ms J.L. Mulder



- (TPM), dean: Prof. T.A.J. (Theo) Toonen
- Faculty of Applied Sciences, dean: Prof. T.H.J.J. (Tim) van der Hagen
 - Faculty of Mechanical, Maritime and Materials Engineering (3mE), dean: Prof. T.S. (Theun) Baller

UNIVERSITY CORPORATE OFFICE

The University Corporate Office (UCO) is responsible for providing services to students, personnel and other stakeholders. The UCO staff contributes to the realisation of TU Delft's ambition to be a world-class university in the 10 fields of expertise (domains) listed below. The University Corporate Office supports TU Delft as a whole, and facilitates and coordinates administrative processes. The University Corporate Office has an important task related to initiating and implementing the administrative agenda of TU Delft. This is done in close cooperation with the decentralised TU Delft-University Corporate Office organisation.

BOARD FOR DOCTORATES

The Board for Doctorates has the following tasks::

- The establishment of the Doctoral Regulations;
- The appointment of PhD supervisors and the forming

of doctoral committees;

- The conferment of the doctorate;
- The conferment of the honorary doctorate;
- Advising on the establishment of endowed chairs.

In 2013, the Board for Doctorates was made up of the following members:

- Rector Magnificus Prof. K.C.A.M. (Karel) Luyben - president
- Vice-Rector Prof. P.A. (Peter) Wieringa - vice-president
- Prof. Karin (K.) Laglas
- Prof. B.M. (Bert) Geerken
- Prof. R.H.J. (Rob) Fastenau
- Prof. M.A. (Ena) Voûte
- Prof. H. (Hester) Bijl
- Prof. T.A.J. (Theo) Toonen
- Prof. T.H.J.J. (Tim) van der Hagen
- Prof. T.S. (Theun) Baller

BOARD OF PROFESSORS

The Board of Professors advises the Executive Board on the quality assurance for the academic staff,

Domain	director
Executive secretariat	Dr. G.J.L. (Gert Jan) Scheurwater
Strategic Development	Dr. G.J.L. (Gert Jan) Scheurwater
TU Delft Library	Ir. W.J.S.M. (Wilma) van Wezenbeek
Electronic & Mechanical Support Division	G. (Gerrit) Kahlman
Facility Management & Real Estate	Ir. J.G. (Anja) Stokkers
Finance	Ir. M.N.A.J. (Mariëlle) Vogt
Human Resources (HR)	Drs. M.J. (Machiel) Hermans
Information and Communication Technology	Ir. P.M. (Peter) van Schaik
Marketing en Communication	Ir. J.J.M. (Mark) Lammerts
Education and Student Affairs	Drs. T. (Timo) Kos
Legal Services	Mr. drs. S. (Saskia) Voortman



particularly on:

- the policy for maintaining and/or increasing the quality of the academic staff;
- the proposals for the (re)appointment of full professors;
- the development of criteria and procedures for the promotion and (re)appointment of the academic staff;
- the development of a quality-oriented career policy for the academic staff;
- guarantees for the optimal performance, the rights and obligations, and the terms of employment of the academic staff.

The Board of Professors advises the Executive Board on the selection of candidates for the position of Rector Magnificus and acts as a sounding board for the Executive Board in matters of importance to the institution.

The Board of Professors evaluates the selection of guest lecturers and research fellows, and evaluates the proposals for awarding Royal honours to full professors and associate professors.

In 2013, the Board of Professors was made up of the following members:

Chair

- Prof. J. (Jenny) Dankelman
- Prof. J.T. (Jack) Pronk (as of 1 November 2013)

Members

- Prof. R. (Rinze) Benedictus
- Prof. J.C. (Han) Brezet
- Prof. J. (Jenny) Dankelman
- Prof. P.P.M. (Paul) Hekkert (as of 1 November 2013)
- Prof. M.J. (Jeroen) van den Hoven (as of 1 June 2013)

- Prof. U. (Ulrich) Knaack (as of 1 November 2013)
- Prof. J.T. (Jack) Pronk
- Prof. J.G. (Jan) Rots
- Prof. H.H.G. (Huub) Savenije
- Prof. A.J. (Alle-Jan) van der Veen

OPERATIONAL COMMITTEE

The Operational Committee is composed of the members of the Executive Board and the deans. In the Operational Committee, the Executive Board consults with the deans on matters of general importance to the entire university. This is partly in relation to the specific interests of the faculties and is aimed at improving unity and the development of the university as an institution of scientific research and education.



EMPLOYEE PARTICIPATION

Works Council (WC)

The Works Council is an employee representative body, elected for three years and composed of 21 members. The Works Council has a number of powers, which are laid down in the Works Councils Act (WOR). The Works Council uses its authority to exercise influence and control over the policies of the Executive Board. They frequently consult with each other. The Executive Board and Works Council signed a covenant in 1998, which contained agreements on adding to the powers of the Works Council concerning the annual budget, the appointment of a dean or a director of a central service, and the working method for reorganisations.

Local Consultation Body (LO)

In accordance with the Collective Labour Agreement (CAO) for Dutch universities, TU Delft has a Local Consultation Body for consultation between the trade unions and the Executive Board on matters relating to terms of employment. In accordance with the Works Councils Act, the Works Council also has a number of powers in this regard. In 2002, the Executive Board, the Works Council and the unions signed a covenant in the Local Consultation Body concerning their interrelationships in cases of overlapping authority. In certain cases, the unions advise the Works Council in the Local Consultation Body; in other cases, the opposite occurs.

Student Council (SC)

The Student Council is a student representative body. The Student Council represents the interests of the students and consults with the Executive Board. The Student Council is elected for a year and has 10 members. In the 2012-2013 academic year, the Student Council consisted of two parties, Lijst Bèta and ORAS.

In 2013 the Student Council was made up of the following members:

Up to September 2013

E.J. (Enne) Hekma, chair	ORAS
C.G.J. (Casper) Hügel	ORAS
D.F.M. (Diederik) Kuipers	Lijst Bèta
E.M. (Eva) Nieuwenhuis	ORAS
R.J. (Rosanne) le Roij	Lijst Bèta
C.P.J. (Christiaan) Rijnveld	ORAS
T. (Tristan) Steegman	Lijst Bèta
P.A. (Peter) Swier	ORAS
A.C. (Anna) van der Togt	ORAS
L.M. (Lisanne) van Wijngaarden, secretary	Lijst Bèta

As of September 2013

S.J.B.M. (Sjoerd) Bastiaansen	Lijst Bèta
N.J. (Jochem) Brouwer	ORAS
L.J. (Laura) van Buggenum	Lijst Bèta
M.M.D. (Myrthe) Gillis	ORAS
C. (Chiem) Ringers, voorzitter	ORAS
B.P. (Bob) Smits	ORAS
V. (Veerle) Steenhuisen, secretary	Lijst Bèta
V.J. (Vincent) Steenkamp	ORAS
J. (Jet) ten Voorde	ORAS
A.M. (Annelot) Wartna	ORAS

General Assembly of Councils (GV)

The General Assembly of Councils, the Works Council and the Student Council together form the representative body as defined by article 9.30a, first paragraph, of the WHW. The Executive Board must seek the approval of the General Assembly of Councils before making a decision on the subjects mentioned in the second paragraph. These subjects include the strategic plan, the system of quality assurance and the Executive and Management Regulations.

In 2013 the Works Council was made up of the following members:

Succeeded by:		Group
J.H. (John) Baggen		AbvaKaboFNV
A. (Aad) Beeloo		AbvaKaboFNV
M. (Menno) Blaauw		Democratisch Beleid
V.P.M. (Vincent) van Croonenburg		CMHF/AC-HOP
P. (Peter) van Dijk		AbvaKaboFNV
F.R. (Regina) Edoo		AbvaKaboFNV
B.H. (Dineke) Heersma, voorzitter		CMHF/AC-HOP
D. (Dick) Hoeneveld		Vrije lijst
A. (Ad) den Hollander		CMHF/AC-HOP
M.H. (Margreet) Koopman,	until 01-09-2013 and also secretary (vacant position)	AbvaKaboFNV
H.X. (Hai Xiang) Lin		CMHF/AC-HOP
E. (Erik) Louw		Democratisch Beleid
J.J. (Jaap) Meijer		Democratisch Beleid
D.A. (Danko) Roozmond, vice-voorzitter		Democratisch Beleid
B. (Ben) Stuivenberg		Democratisch Beleid
M.P. (Maaike) Swarte		Democratisch Beleid
N. Tholen, secretaris as of 01-09-2013		Democratisch Beleid
A.C.E. (Annemarie) van de Vusse		Democratisch Beleid
N. (Relly) van Wingaarden		AbvaKaboFNV
W. (Wil) Schuite		AbvaKaboFNV
n.n.	opening since 15-12-2012	AbvaKaboFNV

FACULTY REPRESENTATIVE BODIES

PERSONNEL COMMITTEES

The Works Council of TU Delft has established personnel committees at the faculties and the University Corporate Office. This decision (and the rights granted to the Personnel Committee) is based on article 15, paragraph 3, of the Works Councils Act. In accordance with the institutional decision of the Works Council, Personnel Committees (abbreviated to OdC at TU Delft) have the authority to consult with the

individual in charge of the relevant department. This means that the rights and powers of the Works Council are transferred to the Personnel Committees in matters that concern the department. There are two exceptions to this:

- the WC can decide to handle a matter itself;
- an OdC may not take legal action itself.

The functioning of the personnel committees therefore is very similar to the functioning of a works council.

FACULTY STUDENT COUNCILS

The Faculty Student Council (FSC) is the highest student consultative body within the faculty. It represents the interests of students in a range of areas: faculty policy, strategy formulation and facilities. Elected annually, the Faculty Student Council is made up of student members who jointly represent the interests of students. The faculty student councils have a minimum of 5 members and can have a maximum of 15 members, depending on the size of the faculty. Their term of office lasts one year.

The faculty student councils make an active and valued contribution to the formulation of the faculty's education and student policy. For example, the Faculty Student Council has advisory powers over the faculty budget and the right of approval with regard to the course and examination regulations (OER) and the regulations for implementation (UR). In addition, the Faculty Student Council contributes ideas to matters such as the the formulation of the strategy. The Faculty Student Council holds a meeting with the dean, the Director of Studies and the head of the faculty every month.

1.5 TU Delft key indicators 2013

Direct funding	M€ 415.3
Indirect funding	M€ 42.0
Contract funding	M€ 101.2
BSc/MSc student intake	3,914
BSc intake	2,876
MSc intake	924
Bridging programme intake	114
BSc/MSc student population	18,781
Population of Bachelor's students	10,823
Population of Master's students	7,622
Bridging programme population	336
BSA achieved	74%
Propeuse obtained in one year	34%
PhD degrees obtained	353
PDEng diplomas	23
PhD pass rate within 5 years (staff PhD candidates)	41 %



2. Education

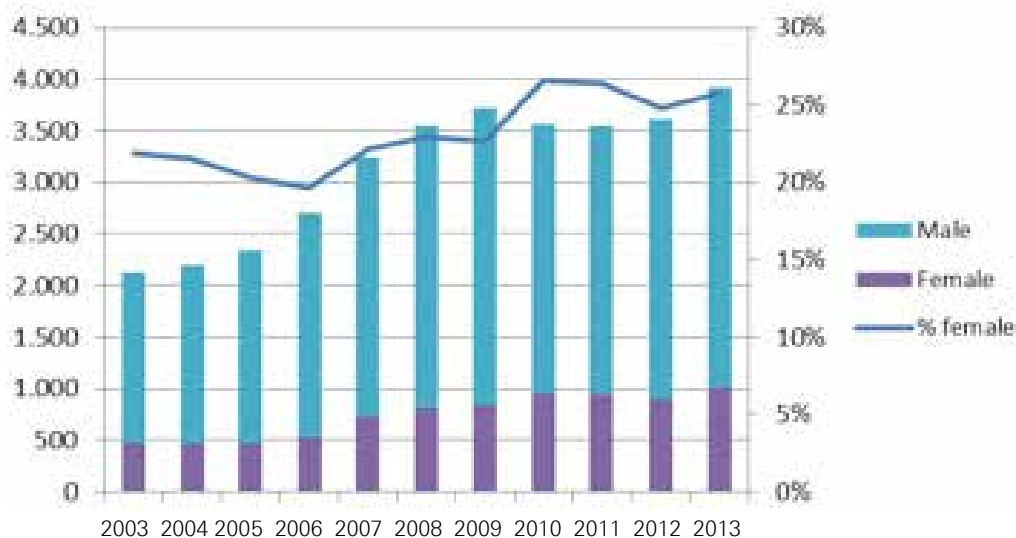
2.1 Introduction

University education faces great challenges. TU Delft remains committed to offering high-quality academic education to a growing number of students, while making optimal use of the opportunities provided by modern (digital) teaching methods.

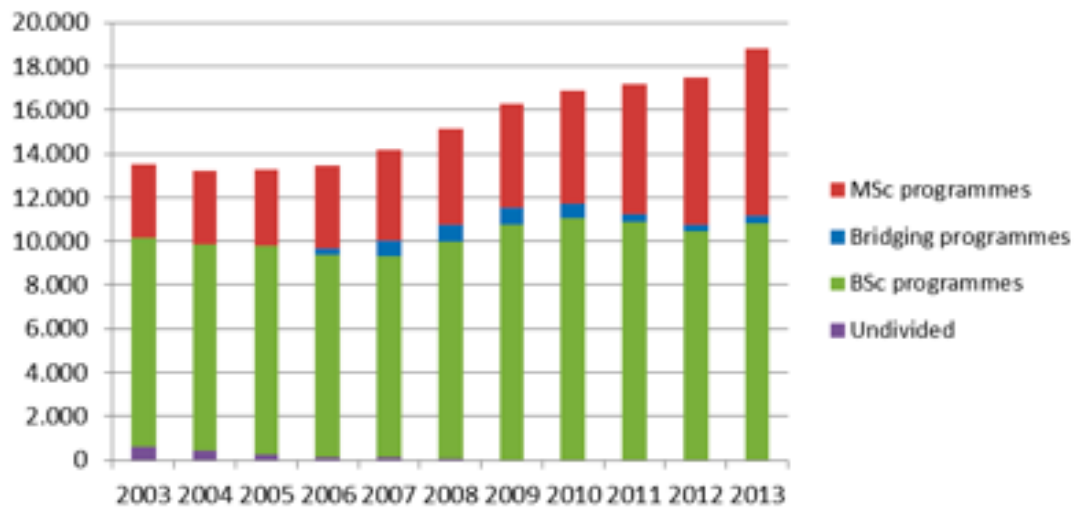
Increasing the study success rate was once again a major priority in 2013. Nearly all degree programmes have introduced new curricula, based on modular education and aimed at the improvement of the “studiability” of the programmes. UTQ training was used to improve didactic quality. In addition, specific attention was paid to student support and guidance, both with regard to the support offered by professors and the establishment of student mentoring groups. A new information programme aims to provide prospective students with sufficient information before they choose their programme. At the Science Centre, a single contact point has been created for students from both the upper and lower years of VWO (“pre-university education”).

A number of significant international developments occurred in the field of online education in the past two years. Prominent universities have joined consortia such as Coursera and edX, which cooperate in developing and offering open online education aimed at a global population of initial and post-initial students. TU Delft was one of the first European universities to join edX, thereby consciously choosing a pioneering strategy. Open and online education provide opportunities for realising strategic objectives related to quality and accessibility. In relation to study success, ‘blended learning’ has been implemented in Bachelor’s programmes. By implementing ‘blended learning’, the university can provide its students with better and more flexible support for following lectures and self-study. By using concepts such as the ‘flipped classroom’, more time can be set aside for teaching methods that are activating during face-to-face teaching.

Student intake according to gender



TU Delft population per study phase, 2003-2013



2.2 Education profile

TU Delft offers science and technology degree programmes in the fields of science, engineering & design, aimed at responding to the societal demand for highly-qualified engineers. With its engineering education, TU Delft wants to contribute to solving major societal problems in areas such as infrastructures of large cities, climate, health and safety.

TU Delft covers nearly the whole range of engineering disciplines with its degree programmes, while its programmes in the fields of Aerospace Engineering and Geosciences are unique in the Netherlands. The compact and partly unique programmes on offer for qualitatively excellent initial and post-initial education, the societal orientation, the international orientation and the application of modern (including digital) teaching methods are defining factors of TU Delft's profile.

BACHELOR'S AND MASTER'S DEGREE PROGRAMMES

TU Delft offers 15 Bachelor's degree programmes and 30 Master's degree programmes. Key elements of these programmes are taught by multiple departments at TU Delft. A portion of the programmes are taught jointly with other universities - sectorally in the 3TU partnership with Twente University and the Technical University of Eindhoven, and regionally with Leiden University and Erasmus University Rotterdam. All our MSc courses are taught in English. TU Delft has a number of basic principles for the expansion or adjustment of the programmes on offer. A degree programme must stand out regionally and nationally in terms of content, must be supported by excellent research, must provide students with sufficient critical mass in a steady state situation, and must be relevant to the labour market.

The intake of new first-year students in our programmes has increased to 4,000 students, which is an increase of 8% compared to the previous academic year. The intake of students in Bachelor's degree programmes has increased by 12%, while the external intake in Master's degree programmes has increased by 1%. The number of graduates entering with a Bachelor's degree from a university of applied science (HBO) decreased by 14% to 114 students.

The number of female students has more than doubled in the last decade. In 2003, there was an intake of 465 female students, compared to over 1,000 in 2013 - the percentage of women in the intake in all degree programmes was 26%; 23% in the Bachelor's degree programmes and 35% in the Master's degree programmes.

The number of students at TU Delft has increased in 10 years from 13,550 to 18,781 in 2013 - an increase of 39%. The growth in this period is 13% in the Bachelor's degree programmes and 134% in the Master's degree programmes.

Compared to the previous academic year, the total number of students at TU Delft increased by 8%: 3% in the Bachelor's degree programmes and 14% in the Master's degree programmes.

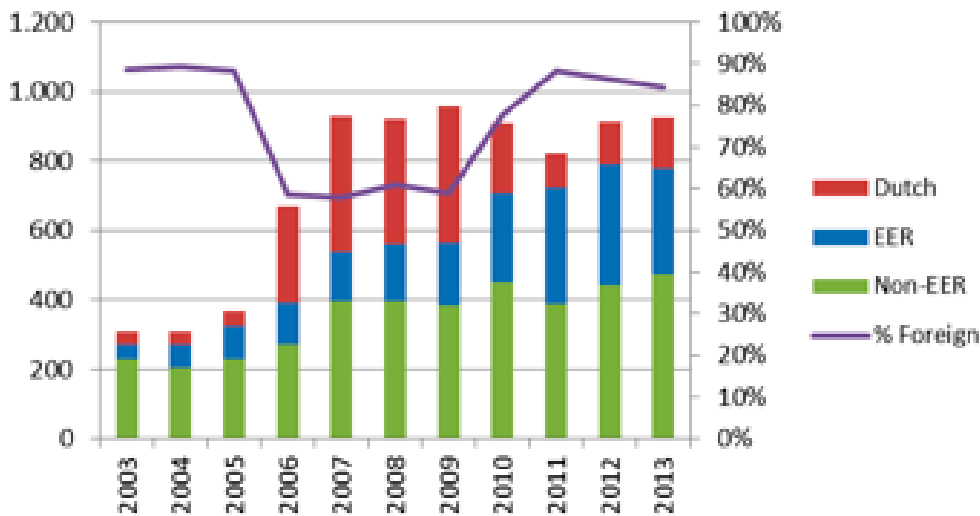
HBO TRANSFER

In 2013, 115 HBO (higher professional education) students were enrolled in bridging programmes, which constitutes a decrease of 14% compared to 2012 (132 students). It must be noted here that the Architecture degree programme has an intake time in February in which approximately 50 students enrol each year. In total, TU Delft offers 37 different bridging programmes. In 2013, 336 students participated in the bridging programmes, a number which is almost equal to the number of students in 2012 (326 students).

MOBILITY

The international interest in TU Delft within the existing

TU Delft Master intake according to nationality



Concerns new entrants

exchange programmes is still increasing. The incoming mobility for the 2009/10, 10/11, 11/12 and 12/13 intakes are, respectively, 383 / 394 / 411 / 462, with TU Delft expecting further growth in 13/14.

More than 1400 Dutch students gained international experience during the course of their study this year. Half of those students did this through an exchange programme or an internship. Since 2012, the number of travel insurances issued to outgoing students have been registered. The students register the foreign experience themselves and in exchange receive free accident insurance from TU Delft for the study period abroad. In 2013, more travel insurances were issued, which seems to point to an increasing outgoing mobility

TU Delft received international applications to the Master's degree programme from students from 109 different countries in 2013, whereby the number of students from China and India that chose to apply to a Master's programme at TU Delft especially increased. The total intake of new foreign students has remained about the same.

CLINICAL TECHNOLOG

In 2013, the faculty of Mechanical, Maritime and Materials Engineering (3mE) developed the new clinical technology Bachelor's degree programme in collaboration with the university medical centres of Rotterdam and Leiden. This was done in response to a growing need for trained technologists with medical knowledge. A clinical technologist performs new, complex treatments and develops new treatment methods. The clinical technologist has the authority to perform a number of medical procedures, but acts on the express instructions of a doctor. The programme is expected to be offered as of September 2014.

EXCELLENCE PROGRAMME

The TU Delft policy of excellence aims to provide talented students with a fitting and challenging learning environment. TU Delft has various activities aimed at the best-performing students (top 10%) in the programmes, such as double-degree programmes, MSc. Scholarships and the Honours Programme Delft.

Of the 2012 intake, 7.2% of the students participated in the Honours Programme for Bachelor students. The percentage of students who participated in the Honours Programme for Master students was 4.3%. Last year was distinguished by the further enlargement of the honours community. The student honours club organised various events for honours students, such as the Honours Concert, 'pitch-your-project' and a networking day. These events were well attended. In addition, the cooperation with the Honours Academy of Leiden University has been expanded. This led to the Delft honour students now being able to participate in different honours classes in Leiden. Delft and Leiden honours students organised a joint educational trip to CERN in Switzerland last summer.

Not only does TU Delft stimulate excellent students to accomplish special achievements in education, it also supports students who combine a study with a sports career at national and international level. Approximately 80 students were eligible for special educational services based on their sports programme, which is usually a process that has a major impact throughout the whole study period. These students are considered athletes if they are given athlete status by their sports federation or the national sports federation NOC*NSF.

In addition to study support, these students also receive financial assistance, such as when their study progress has been delayed due to their sports career. Students can make a claim for this assistance under the so-called Graduation Support Scheme (RAS). Furthermore, students may make free use of the sports facilities on



campus, thereby efficiently organising their time. In cooperation with the Laga student rowing association and the Woonbron housing corporation, a student house was opened for athletes, in which they can study in peace and live together with like-minded individuals.

GRADUATE SCHOOL

The TU Delft Graduate School raises the university's international profile, and with that our appeal as a training centre for new generations of researchers. The Graduate School offers PhD students a Doctoral Education, a study programme consisting of research skills, subject-related skills and personal development. PhD students make arrangements with their supervisors in a digital PhD agreement. In the Doctoral Monitoring Application, the PhD students can track the progress of their intended PhD period. A critical evaluation has been chosen in order to guarantee the quality of the intended PhD period and to reduce the traditionally long turnaround time. The go/no go moment after a year is a milestone within the Graduate School; it is an evaluation aimed at determining if the PhD student is capable of correctly and successfully completing his/her PhD research.

In 2013, the focus was on the layers of depth of subtopics such as Doctoral Education, registration and monitoring of PhD tracks, supervision quality, doctoral culture at the faculties, and the doctoral policy. In addition, the corporate Graduate School conducted 390 intake interviews with new PhD candidates and organised 115 training programmes in the field of transferable skills, in which 627 PhD students participated. The new PhD student monitoring system, the Doctoral Monitoring Application, was assessed, which led to actions aimed at improving PhD tracks and making them simpler in the coming years.

PROFESSIONAL DOCTORATE IN ENGINEERING

At the 3TU.School for Technological Design, the Stan Ackermans Institute, the three universities of technology train engineers to be technical designers. These two-year post-Master's programmes are a co-production of the three universities of technology and the business community, both SMEs and larger enterprises. The participants follow a customised curriculum focused on specific technical subjects, as well as general skills.

TU Delft has established five Professional Doctorate in Engineering programmes at the Stan Ackermans Institute: Process and Equipment Design, Bioprocess Engineering, Bioproduct Engineering, Chemical Product Engineering and Comprehensive Design in Civil Engineering.

POST-INITIAL EDUCATION

In order to position the post-initial education more clearly in the programmes on offer at TU Delft, the Executive Board has established a new structure, based on the system initiated by the ETH Zürich in Switzerland:

1. Master of Advanced Studies. These are accredited post-initial Master's degree programmes that are firmly anchored in the research of a faculty, are worth at least 60 ECTS and will lead to an accredited Master's degree.
2. Diploma of Advanced Studies. This refers to internally certified programmes consisting of a cohesive package of modules that are worth more than 30 ECTS altogether, and for which a diploma is awarded.
3. Certificate of Advanced Studies. This refers to internally certified study activities worth at least 10 ECTS and for which a certificate is awarded.

BERLAGE MASTER IN ARCHITECTURE AND URBAN DESIGN

The Faculty of Architecture and the Built Environment has developed a postgraduate Master's degree programme for Master's students that graduated in architecture or related fields. The programme has a study load of 90 ECTS. This Master's degree programme is part of the Berlage Institute and builds upon the qualifications of initial Master's programmes of the specialisation. The focus lies on qualifications for theory, methodology, interdisciplinarity and involvement in research programmes that UNESCO uses for the specialisation. The proposal for the new programme has been submitted to NVAO for a limited assessment for new programmes.

MASTER CITY DEVELOPER

The Faculty of Architecture and the Built Environment, Erasmus University Rotterdam and the City of Rotterdam have signed an agreement confirming their collaboration in the Master City Developer degree programme. The Master City Developer is an accredited university degree programme focusing on urban development. The three founders of the degree programme have already provided ten successful courses, resulting in more than 200 graduates. Currently, 50 professionals are enrolled in the programme.

2.3 Education quality

The internationally recognised quality of the Delft engineer diploma is one of the pillars of TU Delft's reputation. To safeguard it at all levels throughout the university, we have put in place a comprehensive and transparent system of quality assurance.

TU Delft enjoys an effective organisational and decision-making culture, with the consultative model at its heart. The quality of the education is guaranteed by intensive cooperation between the students, the academic staff and the administration. The opinions of students, graduates and the business community on the quality of the degree programmes are part of the quality assurance.

TU Delft passed the Institutional Quality Assurance Test in 2011. Following this the degree programmes will be evaluated in accordance with the so-called limited programme evaluation.

PROGRAMME EVALUATIONS

The Bachelor's and Master's degree programmes with an accreditation expiration date of 31 December 2013 were reviewed in 2012 and received a positive assessment from the NVAO.

The Bachelor's and Master's degree programmes with an accreditation expiration date of 31 December 2014 were also reviewed in 2013. They have submitted a formal application for re-accreditation to NVAO. The NVAO is processing these applications.

Faculty	Bachelor's degree programme	Master's degree programme
Architecture and the Built Environment	<ul style="list-style-type: none">• Architecture and the Built Environment	<ul style="list-style-type: none">• Architecture, Urbanism & Building Sciences
Mechanical, Maritime and Materials Engineering	<ul style="list-style-type: none">• Mechanical Engineering• Maritime Engineering	<ul style="list-style-type: none">• Mechanical Engineering• Marine Technology• Offshore & Dredging Engineering• Materials Science & Engineering• Biomedical Engineering• Systems & Control
Civil Engineering	<ul style="list-style-type: none">• Civil Engineering• Applied Earth Sciences	<ul style="list-style-type: none">• Civil Engineering• Transport, Infrastructure & Logistics• Applied Earth Sciences• Construction Management and Engineering
Applied Sciences	<ul style="list-style-type: none">• Life Science & Technology• Molecular Science & Technology	<ul style="list-style-type: none">• Life Science & Technology• Chemical Engineering• Science Education & Communication

The Bachelor's and Master's degree programmes with an accreditation expiration date of 31 December 2013 were reviewed in 2012 and received a positive assessment from the NVAO.

Faculty	Bachelor's degree programme	Master's degree programme
Architecture and the Built Environment		• European postgraduate master Urbanism
Electrical Engineering, Mathematics and Computer Science	• Computer Science • Applied Mathematics	• Computer Science • Applied Mathematics
Industrial Design Engineering	• Industrial Design Engineering	• Design for Interaction • Integrated Product Design
Aerospace Engineering	• Aerospace Engineering	• Aerospace Engineering
Applied Sciences	• Applied Physics	• Applied Physics

The Bachelor's and Master's degree programmes with an accreditation expiration date of 31 December 2014 were also reviewed in 2013. They have submitted a formal application for re-accreditation to NVAO. The NVAO is processing these applications.

TEACHING QUALITY

There is a major commitment to developing teaching skills in various areas. The updated track for the Basic University Teaching Qualification (UTQ), which is completely in English, was run for the second time. The qualification track has been optimised. Professors have rated this positively. In 2013, 99 professors started the 1st module of the UTQ, while 30 professors earned a certificate after completing the entire track.

Acquiring the UTQ qualification is obligatory for all new teachers with less than five years of teaching experience. Structural attention is also paid to the qualification of current professors. This includes gaining insight into the didactic quality of the professors and their previously acquired competencies; each professor is evaluated on the degree to which they are qualified for the development of education and for teaching. On the basis of the results of this test, professors either have to earn a UTQ qualification or are exempted from it.

In addition, a Didactic Leadership Course was organised for the first time in cooperation with Erasmus University Rotterdam in 2013. The strategic aim of the course is to strengthen the educational framework of the university organisation. The course contributes to building up a network of didactic leaders at Erasmus University Rotterdam and TU Delft, as well as to improving the opportunities for a career in the field of education. Seven individuals from TU Delft have participated in this course. Next year, the course will be offered as part of the LDE partnership.

COMPLAINTS DESK

The Central Complaints Desk is managed by the student counsellors. They frequently communicate with the ombudsman for students. The ombudsman handles complaints at the specific request of the student or when mediation is desired. Of these 34 (one student submitted three complaints) complainants, 24 were Dutch citizens and 10 students were foreign citizens. The nature of the complaints is very diverse. Most complaints are settled within a week. This is faster than the legally obligatory response time of three weeks.

2.4 Study success

TU Delft is committed to stimulating study success in all phases of the degree programme - from the programme choice and the link between VWO (pre-university education) and WO (university education) to the student progress in the Bachelor's and Master's degree programmes.

THE LINK WITH SECONDARY EDUCATION

At the Science Centre Delft a single office has been created for activities aimed at the upper classes of VWO ("pre-university education"). The Science Education & Communication section of the faculty of Applied Sciences collaborates with the Bèstasteunpunt Zuid-Holland on the professionalisation of and support for teachers of secondary education in the region. To strengthen the link with VWO, a policy advisor has been appointed to the position of project leader in order to further develop the Bèstasteunpunt Zuid-Holland.

Bridging monitor

TU Delft, Radboud University Nijmegen and Twente University have developed an online bridging monitor, which allows each school to gain insight into how successful their graduates are at the relevant universities. The implementation of the monitor at other universities is on the agenda in 2014.

Information

The information programme has been modernised in order to better inform prospective students. The information is now based on the various phases that a pupil must go through when choosing a degree programme. The most significant changes have been made to the open days. The open days in May are aimed at VWO 4 and 5 pupils and their parents who are orienting themselves. The open days in October are aimed at VWO 5 and 6 pupils who want to gain more in-depth knowledge of one or two degree programmes. Finally, a 'last question day' for VWO 6 pupils has been created for answering questions about their definitive programme choice.

Covenant with Jet-Net

Jet-Net, the Youth and Technology Network of the Netherlands, is an alliance between companies,



education and government. The aim is to give HAVO/VWO school students a realistic picture of science and technology, and to interest them in a scientific and technical follow-up degree programme. TU Delft has signed a covenant with Jet-Net. This partnership should lead to improved mobility for pupils in the direction of academic science and technology programmes.

'Studie in Cijfers'

TU Delft is the first university to introduce 'Studie in Cijfers', a project aimed at providing prospective students with fact sheets that enable them to compare degree programmes in terms of criteria such as contact hours, career prospects and student satisfaction. On 15 April, Minister Bussemaker visited TU Delft to launch the 'Studie in Cijfers' fact sheet of the university.

Introduction Programme

The reception of international students starts with an extensive introduction programme that is highly valued by the international student community. The introduction programme is offered twice a year and is geared to facilitating the rapid acculturation and integration in the Netherlands, Delft and the degree programme. An active online community is mobilised in the months leading up to the introduction programme. This allows prospective students outside of the Netherlands to gain sufficient information in advance, communicate with fellow students and ask questions in periodic live chats. In 2013, 1200 new international students were welcomed at the university.

STUDY SUCCESS MEASURES

New Curricula

An important measure in the Study Success package of the Executive Board is the adjustment of the Bachelor's degree curricula. The faculties have been provided with preconditions and recommendations for the development of the new curricula. These preconditions and recommendations were included in the 'Charting a course for study success' memorandum of October 2011.

On 2 September 2013, 10 Bachelor's degree programmes were launched with a new curriculum. A phased implementation was chosen for a number of programmes (the new 1st year in September 2013 and the new 2nd and 3rd years in September 2014) and an immediate implementation of the new Bachelor's degree curriculum was chosen for four programmes (Architecture, Civil Engineering, Computer Science and Applied Mathematics).

Binding recommendation

An analysis of the binding recommendations on the continuation of studies (BSA) over a period of three years revealed a higher percentage of positive recommendations, although there were differences between degree programmes. Together with the assessment that drop-out increasingly occurs before 1 February, the analysis shows that the aim of the BSA - ensuring that students are in the right place - has been achieved at most faculties. Appeal procedures rarely take place and the BSA procedure is running well. This analysis is based on, among other things, the student surveys. These surveys showed that students accept the BSA and are satisfied with the procedure and support, but also showed that they only realise at a late stage that they will not meet the ECTS requirements.

In the 2012/2013 academic year, the BSA requirements were raised from 30 ECTS to 45 ECTS. Despite this substantial increase, the negative recommendations only increased by a total of 1%. The faculty percentages differ greatly. The percentage of positive recommendations, excluding study terminations, ranges from 66% (EEMCS) to 87% (IDE).

The Executive Board has made agreements for improving the results with the management of the programmes that received an above-average score for negative recommendations. The agreements will be monitored in the quarterly meetings that the Executive Board organises with the faculties.

	09/10	10/11	11/12	12/13
positive	72%	76%	77%	74%
negative	24%	20%	21%	22%
postponed	4%	4%	2%	4%

Table: Definitive (positive, negative and postponed) BSA recommendations in percentages

** the percentage of negative recommendations and the percentage of study terminations is not comparable to the results of the performance agreements regarding drop-out and switch in, as described in chapter 7. It is possible for a student to receive two recommendations (when enrolled in a second programme). In addition, approximately 9% of the students switches to a different programme within TU Delft after receiving a negative recommendation. This group of switchers is registered as drop-outs at the programme level, but the group remains registered as TU Delft students at the institutional level.*

Bachelor-before-Master

Enrolling in a Master's degree programme at TU Delft is only possible if the student has successfully completed the Bachelor's degree phase or a bridging programme. However, it is still possible to invoke the hardship clause in special circumstances. Due to the small number of appeals based on the hardship clause, all Bachelor-before-Master committees have been abolished. The assessment of the applications has been presented to the Directors of Education, who agree on the guidelines. In addition, the grants are centrally administered, so that monitoring is possible. In 2013, 110 students were admitted to a Master's degree programme on the basis of the hardship clause; a total of almost 1700 students progressed to the Master's programmes.

Student support

The focus of academic counsellors is on supporting students in achieving a positive binding recommendation, which required 45 ECTS for the first time. The Study Support steering group has made a number of recommendations for the improvement of the mentorship and for the focused support of second and third-year students. A decision was made to use an individual approach to the students

and to pay attention to the needs of all students, even the students who perform well. The faculties have developed different initiatives - for example, a resit coordinator was appointed, all faculties have organised mentor groups and various study tools were implemented to enable the students to study more effectively. Examples: Smart study workshops, tips and tricks on Blackboard for effective study habits, online study help-exchange, information on tutoring possibilities and the Mathematics Office.

Numerus fixus

TU Delft operates a numerus fixus for three degree programmes. The numerus fixus is in force for these three programmes as the fast-growing, very large number of students wishing to enrol means that without fixing a cap on student intake, the quality of the education could no longer be guaranteed. For the 2012-2013 academic year, these programmes also made use of the option for decentralised selection. The programmes in question are Architecture, Industrial Design Engineering and Aerospace Engineering. Architecture and Aerospace Engineering have made 20% of their teaching capacity available to students with special qualifications. Industrial Design Engineering has made 15% available. As a result of the numerus fixus, we can see the intake decreasing for these three degree programmes.

	Limit numerus fixus	Intake (1 Dec)*
Architecture	450	235
Industrial Design Engineering	330	283
Aerospace Engineering	440	370

*A higher intake was measured on 1 October.

PERFORMANCE AGREEMENTS

The progress on the 2012 performance and profiling agreements concerning education are described separately in chapter 7.

LINK TO THE LABOUR MARKET

Every two years, recent graduates of TU Delft are surveyed using the so-called WO Monitor. The survey was conducted again in 2013. The results are expected at the beginning of 2014. The WO Monitor survey completed by graduates from the 2009/2010 academic year reveals that TU Delft alumni are very satisfied with their Master's degree programme: Given the choice, 86% would follow the same programme at TU Delft. Unemployment among TU Delft alumni seems to be decreasing - 3.8% of the respondents stated they were unemployed, compared to 6.3% in 2009. Furthermore, the alumni regard their degree programme as intellectually challenging (an average score of 7.8, compared to a nationwide score of 7.5) and internationally oriented (an average score of 7.3, compared to a nationwide score of 6.5). The alumni assessment of the didactic quality and an availability of professors is comparable to the national average: a

score 7.0 compared to a nationwide score of 7.2 and a score of 7.5 compared to nationwide score of 7.6 respectively.

2.5 Modern (digital) teaching methods

TU Delft has been active in the field of open and online education in the form of OpenCourseWare (OCW) since 2007. TU Delft further expanded its activities in 2012. For example, the first online Master's degree programme was developed; TU Delft was the first European university to become a partner of edX, the platform established by MIT and Harvard that offers massive open online courses (MOOCs) of leading universities. Two DelftX MOOCs offered on edX have jointly attracted 80,000 students. The edX platform currently has 31 partners, which jointly offer a total of 130 online courses. The number of online students has increased to 1.8 million in one and a half years. At the end of 2013, the Executive Board requested the development of an innovation programme in the field of open and online education, enabling the more rapid development of this type of education in the coming years. Furthermore, TU Delft also wants to better serve those students seeking education within the framework of lifelong learning.

OpenCourseWare

The number of courses on OpenCourseWare was expanded last year. 23 new subjects have been added, bringing the total up to 123. In addition, initiatives have been started for linking the courses to specific TU Delft activities. One example is the DUT Racing Team page, on which related courses can be viewed. The idea behind this is that these student projects generate a lot of media attention, which eventually contributes to more international interest in the education of TU Delft.

OpenCourseWare in Europe project

TU Delft is the initiator of the EU-financed OpenCourseWare in Europe project, in which five European institutions participate: TU Delft, Universidad Politécnica Madrid, Universitat de Barcelona, Katholieke Universiteit Leuven and Université de Lyon. The project is geared to expanding and broadening the use of OpenCourseWare and Open Education in Europe by, for example, identifying and itemising obstacles, and creating awareness of these obstacles at European universities. The project marked the start of a European network of members of the OpenCourseWare consortium.

Online Master's degree programmes

As part of the 'Online Distance Learning' programme, three pilots were launched which (almost) entirely consist of online Master's education. A total of 37 courses from 3 Master's degree programmes were converted to an online variant for this programme. Starting in September, these online courses will

be offered to students for the first time. For the 'Aerospace Structures and Materials' track, 6 online courses were designed, in which 12 online students enrolled, distributed over the 6 courses. The 'Water Management' track has made all obligatory courses of the curriculum available online and an average of ten online students enrolled in each one of those courses. The Master's degree programme 'Engineering & Policy Analysis' has six online courses that are being taken by 31 regular TU Delft students, with contact moments at the faculty.

MOOCs

On 16 September, the first two Massive Open Online Courses (MOOCs) of DelftX were launched: Solar Energy and Water Treatment, with a total of 80,000 enrolled participants. These MOOCs were completed at the end of November. A total of approximately 3500 participants received a certificate of completion. The participant survey results reveal a very positive picture. Nearly half of the surveyed students of Solar Energy stated they were interested in following an (online) Master's programme at TU Delft. Three new MOOCs will be launched in the new year: Introduction to Aeronautical Engineering (AE), Next Generation Infrastructures (TPM) and Credit Risk Management (EEMCS).

Blended learning

Blended learning is an optimal mix of face-to-face education and online learning, which should lead to more effective, efficient and varied education. TU Delft started a project for implementing the concept of blended learning curriculum-wide in a single Bachelor's degree programme, namely Technology, Policy and Management, in order to assess how this can contribute to an increase in the study success rate of the programme. In the first year of the Bachelor's degree programme Technology, Policy and Management, a 'blended' programme will be implemented in the 2013-2014 academic year. The initial reactions have been positive. Discussions on the implementation of the second and third-year courses have begun.

Online tests

An increasing number of exams and tests are being taken digitally. Currently, this concerns 12% of all tests. Special e-invigilators have been trained for the supervision of these types of tests.

Extension School

With the extremely successful activities mentioned above, TU Delft has made significant progress in the area of open and online education, and has obtained a position as one of the pioneers in Europe. Given the speed of the international developments in the area of open and online education, the possible impact on competition between universities and the choices of future international students, the Executive Board has commissioned a plan for the next phase in the development of open & online education. The



goal of this is to improve of the quality of the online and (blended) campus education of TU Delft, reaching potential new target groups of students, and the enlargement of the international academic networks that are currently being created around open and online education. This has resulted in a plan for a two-year innovation programme for founding a so-called Extension School, in which all of TU Delft's open and online courses, both free and paid, are offered together to an international population of online students. These developments provide new, and until recently unknown, opportunities for sharing the knowledge and research results with an international public. Furthermore, the developments provide opportunities for enhancing the international reputation of TU Delft's education and research via this path, thereby attracting future talent.

2.6 Cooperation

3TU. FEDERATION

The 3TU.Federation makes an important contribution to the development of technology education programmes and to technology research in the Netherlands. TU Delft, Eindhoven University of Technology and Twente University jointly offer five Master's degree programmes and 20 professional Doctorate in Engineering programmes.

3TU Study Programmes

Master's degree programmes

- Construction Management and Engineering
- Embedded Systems
- Systems and Control
- Science Education and Communication
- Sustainable Energy Technology

Re-accreditation of 3TU Master's degree programmes

The NVAO found a discrepancy in the re-accreditation of the Master's degree programmes between the ambitions regarding the degree of commonality at the launch of these programmes and the current situation. For the next accreditation round, agreements have been made regarding this discrepancy with the NVAO; the 3TU.Federation will update the commonality ambitions of these programmes in order to ensure that they are assessable. During the next round of visitations, the visitation committees will compile a report on the quality of the programmes for each location, as well as a separate report on the commonalities that have been achieved.

Technology Pact

The 3TU.Federation and representatives of employers, employees, educational organisations, regional authorities and the government signed the National Technology Pact 2020. The Technology Pact is expected to ensure the addition of 30,000 engineers each year. The 3TU.Federation takes part in actions focused on the three priorities: Choosing technology, Learning in technology and Working in technology.

3TU Technology Sector Plan

The implementation of the first part of the 3TU Technology Sector Plan was completed in December 2013. The central themes in the plan were: revision of the Bachelor's programmes, monitoring and support, excellent professors, internationalisation, digitalisation of education, PhD conferral and combining Professional Doctorate in Engineering programmes at the Stan Ackermans Institute and maths education. The 3TU.Federation has submitted a follow-up plan for the period 2014-2015, which emphasises the following for the field of education: the operationalisation of



a 3TU Centre for Engineering Education (CEE), the continued strengthening of the 3TU Master's degree programmes, increasing the intake, and giving additional boosts to the Professional Doctorate in Engineering programmes and mathematics education.

LDE ALLIANCE

Collaboration in the field of education between TU Delft, Leiden University and Erasmus University has already been going on for a long time; the three universities have a number of joint degree programmes, as well as programmes and tracks that feature close cooperation.

The focus was initially on forming centres, thereby mainly stimulating research cooperation. In 2013, a decision was reached to found the Centre for Education and Learning, which is mainly focused on research into measures for increasing study success, the development of teaching skills and the effects of online learning.

The Bachelor's degree programme Clinical Technology, a joint new programme of the three universities, starts in September 2014, providing it receives the NVAO's approval. The programme has acquired the character of a 'joint degree', whereby the ratio of medical/technical courses is about 50/50. Teaching sessions mainly occur at TU Delft, but students will also take a number of courses in Leiden or Rotterdam.

2.7 Miscellaneous

Career Centre

The Career Centre for students and PhD candidates has organised more than 100 group activities. These activities and the individual career discussions ensure that the students, PhD candidates and alumni are brought one step closer to the labour market up to one year after graduation. The courses on offer, both in Dutch and in English, are now also provided on location.

Alumni activities

TU Delft maintains an active policy of seeking contact with alumni. Newsletters, the Delft Outlook science and alumni magazine, meetings and social media are used to achieve this aim. In 2013, five alumni meetings were organised in the Netherlands. The most important meetings were the annual alumni event with 750 alumni, and the Ladies Round Table at Shell, which 65 alumni participated in and 80 followed via live stream. Alumni meetings were also organised abroad. This allowed TU Delft to establish connections with hundreds of foreign alumni. There were alumni meetings in Istanbul, Aruba, London, Aberdeen, Jakarta, Brussels, Singapore, Beijing, Shanghai, Bangalore, Athens and Paris, among other locations. Alumni chapters were founded in different parts of the world. A group of volunteers runs these chapters and has the task of organising an activity twice a year. The chapters in London, Brussels, Jakarta and Istanbul have already been established. Athens, Singapore, Shanghai, Beijing, Bangalore, New Delhi and Paris are still in a start-up phase.

TU Delft also has an active alumni community on LinkedIn. This group has grown to include 21,000 alumni.



Second study fee

The institutional tuition fees that students pay for a second study is equal to the statutory tuition fee. TU Delft has charged this statutory fee for both a second study started when the student was already enrolled in a first study and for a second study started after the completion of the first study.

Second degree subsidy scheme

Within the framework of the Second Degree subsidy scheme, € 58,129.05 has been received for five Master's degrees earned in the 2010/2011 academic year. These students were simultaneously enrolled in another Master's degree programme.

Graduation Support Scheme (RAS)

In 2013 calendar year, 1324 RAS applications were submitted. Of these applications, 1164 were submitted by Dutch students. The other 160 applications were submitted by 151 foreign students. These foreign students represent 35 different nationalities.

Number of EU students (including Dutch students)	Total amount paid to EU students	Number of non-EU students	Total amount paid to non-EU students	Total RAS grants
1200	K€ 1383	100	K€ 346	1729

Overview of RAS payments

3. Research

3.1 Introduction

In 2012, TU Delft laid down its research vision and ambitions in the strategic plan - the TU Delft Roadmap 2020 - and in its Proposal for Performance Agreements submitted to the state secretary of the Ministry of Education, Culture and Science.

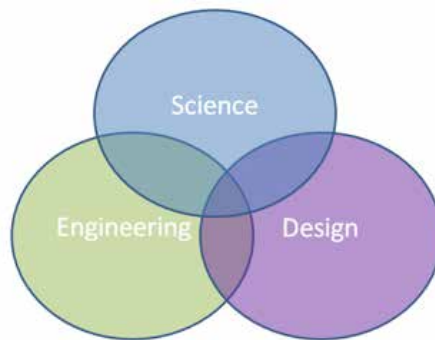
TU Delft aims to cover almost the entire range of engineering sciences. This technical and scientific breadth forms the basis for TU Delft's strong disciplinary specialisation profile. The research questions TU Delft tackles are mainly inspired by important current and future challenges facing society.

Fundamental & Utility-driven research

The strategic position of the research is determined by the source of the research question and the way in which that question is approached. In the figure below, the spectrum of possible research questions is shown on the horizontal axis, ranging from purely curiosity-driven (extreme left) to purely utility-driven (extreme right). TU Delft is overwhelmingly involved in the domain of utility-driven questions. The vertical dimension in the figure indicates the manner in which the research question is processed, which can range from purely pragmatic (top) to very fundamental (bottom). The character of a university is the fundamental approach to research questions; where else could this approach be found? This leads to utility-driven hypotheses that are processed in a fundamental way for a long period of time (>8 years).

Science, Engineering & Design

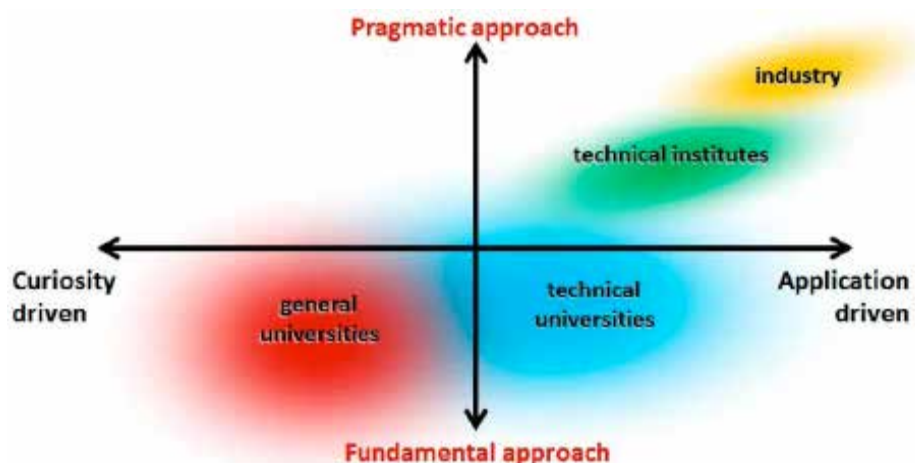
Multiple approaches are possible with regard to the research. The balance between three key dimensions is characteristic of TU Delft; these three are: Science, Engineering and Design. It can be roughly stated that these key dimensions are connected to a more reductionistic/deterministic approach for the Science dimension, a constructive/combining dimension for

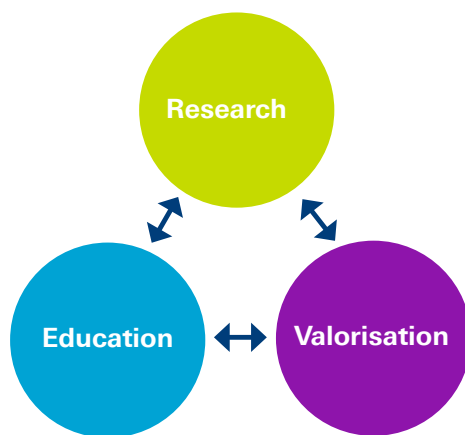


Engineering, and a integrating/holistic/designing dimension for Design. It should be evident that these three dimensions show a strong degree of overlap, as is indicated in the figure below.

Knowledge Triangle

The technical and scientific knowledge acquired through research activities feeds naturally into the education and knowledge valorisation at TU Delft. Equally, interaction with inquisitive and critical students, businesses and government agencies also results in new and





unexpected research questions. Research, education and knowledge valorisation inspire one another.

3.2 Academic profile

The eight faculties of TU Delft combine approximately 40 technical and scientific disciplines and their many specialisations. TU Delft's many different disciplines are a key factor in the success of its multidisciplinary and interdisciplinary thematic cooperation. This profile is firmly rooted within the departments of TU Delft's faculties and in the teaching and research remit of its professors. The professors and other scientific staff members are therefore the front-line representatives of the scientific profile of TU Delft. They are the driving force behind the groundbreaking technical and scientific research conducted by the university.

TU Delft Review Agenda

Under the TU Delft Review Agenda, a long-term programme was initiated in 2010 to clarify the scientific profile of each faculty. As part of this, the

TU Delft faculties have drawn up internal reprofiling and restructuring proposals to generate total savings of € 45 million on an annual basis. This university-wide operation has also led to some major decisions, including the merger, downsizing and even closure of certain departments and degree programmes. The last components of the review agenda were implemented in 2013. At the faculty of Technology, Policy and Management (TPM), for example, the departments Innovation Systems and Values and Technology were merged to form the new department Values, Technology and Innovation. At the faculty of Mechanical, Maritime and Materials Engineering (3mE), the department Marine Technology and Transport was restructured. Finally, the Executive Board decided to make the OTB Research Institute for the Built Environment a specifically recognisable department at the Faculty of Architecture and the Built Environment.

Research facilities

In order to attract scientific talent, to conduct groundbreaking research and to train new generations of engineers, TU Delft is heavily dependent on high-quality but expensive research infrastructure. This allows us to test the real-life practicality of models simulated on computers. The ability to test the technical and scientific models is something no other Dutch university is able to do on such a large scale and a defining factor of TU Delft's profile in the international research landscape. TU Delft has a wide range of research facilities on its campus. These facilities are unique in the Netherlands and are used to conduct research for business and industry. They range from wind tunnels, a nanolab, fermentation facilities, robotics and a research reactor, to serious gaming and product evaluation.

TU Delft is directly involved with 8 of the 28 large-

Faculties	Wetenschappelijke zwaartepunten	
Architecture and the Built Environment	Architecture	Urbanism
	Real Estate & Housing	OTB
	Architectural Engineering + Technology	
Civil Engineering and Geosciences	Structural Engineering	Geoscience & Remote Sensing
	Transport & Planning	Hydraulic Engineering
	Geoscience & Engineering	Water management
Electrical Engineering, Mathematics and Computer Science	Software and Computer Technology	Intelligent Systems
	Microelectronics	Applied mathematics
	Electrical Sustainable Energy	
Industrial Design Engineering	Design Engineering	Product Innovation Management
	Industrial Design	
Aerospace Engineering	Aerodynamics, Wind Energy, Flight Performance and Propulsion	Aerospace Structures & Materials
	Control and Operations	Space Engineering
Technology, Policy and Management	Multi Actor Systems	Values, Technology and Innovation
	Engineering Systems and Services	
Applied Sciences	Bionanoscience	Imaging Physics
	Biotechnology	Quantum Nanoscience
	Chemical Engineering	Radiation Science & Technology
Mechanical, Maritime and Materials Engineering	Process and Energy (P&E)	Materials Science and Engineering
	Biomechanical Engineering	Precision and Microsystems Engineering
	Maritime and Transport Technology	Systems and Control

scale facilities from the Dutch Roadmap of Large-scale Facilities released in 2012. In October 2013, six of the facilities that TU Delft is involved with submitted an application to NWO for the funding of the large-scale research infrastructure. The results of this call will be announced in 2014.

In 2012, the government agreed to provide additional funding for the Reactor Institute Delft (RID) worth € 38 million. Thanks to this contribution from the Ministry of Education, Culture and Science, the RID can implement the OYSTER (Optimized Yield - for Science, Technology & Education - of Radiation) investment programme, thereby making a significant contribution to medical research in the future. Last year, the reconstruction of the reactor, which included the addition of a cold source, was put out to European tender. Three internationally recognised nuclear companies are competing to carry out this reconstruction. This cold source will enable the RID to develop new instruments for research into cancer and materials for sustainable energy technology. Furthermore, the first newly designed innovative neutron measurement instrument was constructed and connected to the reactor.

3.3 Thematic cooperation

Research subjects are often so complicated and wide-ranging in nature that the only way of responding to them is to adopt a thematic approach in which various disciplines cooperate in multidisciplinary and

interdisciplinary alliances.

TU Delft organises and participates in this thematic cooperation at interfaculty, sectoral, regional, national and international levels through initiatives such as:

- TU Delft Institutes
- TU Delft Research-based Initiatives
- 3TU.Centres of Excellence
- LDE Centres
- Research schools
- Top sectors
- European programmes
- Joint Research Centres

In its choice of subject matter within themes, TU Delft aligns itself with the Dutch agenda on science and innovation policy. The Top Sectors Policy is important in this regard. In the European Union, TU Delft aligns itself with the themes of Horizon 2020 and with the Knowledge & Innovation Communities (KICs).

TU DELFT INSTITUTES

The university wants to further strengthen its national and international image in a specific number of upcoming fields by virtually bundling research capacity in university-wide institutes. The TU Delft Safety & Security Institute was added in 2013 to the institutes that already started.

TU Delft Safety & Security Institute

The TU Delft Safety & Security Institute responds to societal changes that create new problems in the field



of industrial and public safety and security in the case of intentionally malevolent human actions. Six faculties and fifteen chairs of TU Delft are involved with the institute in the areas of flood, transport and evaluation risks, chemical, nuclear, public and constructive safety, cyber security, risk policy and ethics.

TU Delft Wind Energy Institute

Five faculties are working together on subjects related to wind energy. The institute is closely involved with the Energy top sector and provides the director of research for the 'Offshore wind' Top Consortium for Knowledge and Innovation. The kick-on event focused on future employment and the related requirements for programmes in the field of wind energy, such as the Erasmus Mundus European Wind Energy Master, which is coordinated by TU Delft.

TU Delft Robotics Institute

The scientific challenge for the TU Delft Robotics Institute is to get robots and humans to work together effectively in unstructured environments. Six faculties and fifteen chairs are collaborating on three themes at the institute. As part of the 'Factory of the future' FP7 programme, the European Union appointed TU Delft as the coordinator of the 'Factory in a day' project in 2013. The goal of the project is to stimulate the use of advanced robot technology in small and medium-sized enterprises.

TU Delft Process Technology Institute

The institute is working on three applications: process intensification, biochemical process technology and process technology for advanced materials. The institute has been admitted to SPIRE, a public-private partnership within the European Horizon 2020 programme. In September 2013, the first course of the institute was launched on Gas-Phase Processing of Nanostructured Solids.

TU Delft Transport Institute

The institute is involved in three fields of work related to the 'Integrity' theme: space & mobility, microsimulation and scheduling & routing. NWO approved three projects of the Transport Institute in 2013 as part of the China-Netherlands programme. These projects concerning solutions for global urbanisation are carried out jointly with the Tsinghua University, Tongji University and the Shanghai JiaoTong University.

In 2013, the Dutch Automotive Vehicle Initiative was launched with its partners Connexxion, RDW, TNO, TU Eindhoven and Toyota Motors Europe. The goal of this initiative is to integrate autonomous vehicles on the public roads as soon as possible. The institute was a guest organisation at the 16th International IEEE Conference on Intelligent Transportation Systems and the 20th International Symposium on Transportation and Traffic Theory. In 2013, four TU Delft Master's degree programmes related to transport were further tailored to each other.

TU Delft Climate Institute

The institute focuses on the following research themes: extreme weather and the city, aerosols, radiation and clouds, rising sea levels, climate knowledge & policy, and the icecap. With the institute, TU Delft plays a pioneering role in the field of acquiring knowledge about climate change, mitigating and adaptive measures, and climate policy. In 2013 the institute participated in various climate monitoring programmes and the European Climate KIC.

TU DELFT RESEARCH-BASED INITIATIVES

TU Delft makes the link between its scientific profile and position within society explicit by systematically organising its substantial research potential around major themes within society. These take into account national research priorities and international research priorities at EU level. Health, energy, the living



environment and infrastructures & mobility are the most important themes in today's society. This is why in 2009 TU Delft established Delft Research-based Initiatives (DRIs) in these four areas.

The Delft Research-based Initiatives aim to make an important scientific contribution to solving issues facing society that relate to these four themes, working from a thematic, multidisciplinary cooperation. The Delft Research-based Initiatives engage with the government and the business community, identify opportunities and actively spotlight innovative science. In addition to stimulating multidisciplinary research that is in line with (inter)national research funding agendas, the Delft Research-based Initiatives also have a strong inspirational effect on students and education. During the reporting year, the Delft Research-based Initiatives prepared a self-evaluation for the 2009-2013 period and a strategic perspective for the 2014-2020 period. The self-evaluations and strategic perspectives will be assessed by the Executive Board in 2014.

DELFT ENERGY INITIATIVE

FOM subsidy

A joint study conducted by the Electrical Engineering, Mathematics and Computer Science and Applied Sciences faculties on sun-to-hydrogen conversion is funded by the 'CO₂-neutral fuels' programme of the Energy top sector. In this study, scientists will develop water splitters with the aid of inexpensive and widely available materials, such as silicon, carbon and metal oxides.

Fund for pioneering energy proposals

The Delft Energy Initiative Fund offers financial support to students, PhD candidates and scientists of TU Delft who have a commercial idea requiring a pilot project or the construction of a testing facility. The first round in 2013 resulted in two winners: the Kite Power research team's kite that generates energy and the Luminescent

Solar Concentrator that collects sunlight and converts it into electricity.

TU Delft partner in NERA

The Netherlands Energy Research Alliance (NERA) was founded in cooperation with TU Eindhoven, Twente University, FOM, ECN and TNO. The NERA aims to bring together and stimulate national public research efforts in the field of energy, and discuss national developments, such as the energy top sector and the TKIs. In this way, NERA can respond better to the European Horizon 2020 programmes.

Student activities

The Energy Club of the Delft Energy Initiative brings together students with a passion for (sustainable) energy. In 2013, the Energy Club organised the second national All Energy Day, a field trip to the Danish island Samsø, and an Energy Festival on the TU Delft campus. Bouwend Nederland is supporting Delft's entry in the Solar Decathlon student competition for the construction of a sustainable energy-neutral residence.

Energy education

In April, the Executive Board and the deans approved the investigation into the desirability of an Energy Bachelor's degree programme. In September, a curriculum committee was formed with the EEMCS, TPM, 3ME and CEG faculties to work on final achievement levels and content. The Delft Energy Initiative put together an elective package for MSc Honours students in order to create a Honours programme with an energy label.

Green Village

The Green Village, a testing ground for innovative energy systems on campus, will be constructed on the former site of the Faculty of Architecture and the Built

Environment and will include laboratories, workplaces and meeting areas. Construction will only start once the necessary initial budget has been determined and approved.

Energy master class for Members of Parliament

TU Delft researchers have given an energy master class to energy spokespersons from the Dutch House of Representatives and made substantive contributions to parliamentary debates on shale gas and the Energy Transition in Germany.

DELFT ENVIRONMENT INITIATIVE

In 2013, the focus was on the implementation of the agreements made at the end of 2012. Team formation and activities such as lunchtime lectures relating to new and refined themes were started. Social Impact has been designated as the new theme, aimed at emphasising the social aspects of technology - direct interaction with people (for example: end users, stakeholders) as the starting point of innovation. The goal of social impact is structuring current initiatives, implementing them in a practical way and making them visible.

Rain radar in Rotterdam

In April, the City of Rotterdam and the Province of Zuid-Holland jointly commissioned the construction of a rain radar on the roof of the Delftse Poort office building on Weena. The rain radar will yield a very accurate picture of precipitation patterns in the city and thus help prevent flooding and water damage. The

acquisition of the rain radar is part of the European project RainGain, in which TU Delft plays a leading role.

Green light for Maps4Society





In April, the STW technology foundation approved the further implementation of the Maps 4 Society programme, of which TU Delft is the initiator. A sum of € 3 million will be made available for a 'smart and user-oriented geo-formation infrastructure'. A recurring theme of the programme is the transition from the old map thinking to a dynamic and integrated geo-information chain. Companies can support project proposals from universities in kind.

TAHMO

In August, the Final Challenge of the TAHMO Sensor Design Competition was held in Nairobi. Twelve participants from Nigeria, Kenya, Uganda, Zimbabwe and Spain worked together on a weather station 'for Africa, from Africa', which can send all sorts of meteorological data to a website with analysis and visualisation capabilities. The TAHMO project is focused on the construction of a closed network of inexpensive and robust hydrometeorological stations south of the Sahara. By combining data with models and satellite observations, a complete picture can be obtained of the dispersal and fluctuations of water flows and water supplies.

Testing ground for floods

In June, the official opening of Flood Proof Holland took place. Flood Proof Holland is a testing ground for

Delft Research-based initiatives	Energy	Environment	Infrastructures & Mobility	Health
				
Staff(fte)	700	250	425	200
Onderzoek thema's	<ul style="list-style-type: none"> • Policy innovation and market design • Clean fossil and Nuclear energy • Sustainable energy technologies • Enabling technologies and infrastructure 	<ul style="list-style-type: none"> • Sensing our environment • Modelling our environment • Shaping our environment 	<ul style="list-style-type: none"> • Safe & livable Delta areas • Sustainable Mainports & Hubs • Safe, Efficient, Clean & Intelligent Transport • Available & Sustainable Infrastructures 	<ul style="list-style-type: none"> • Medical Imaging & Image Guided Medicine • Interventions & Care • Targeted Molecular Technology • Home care technology
Top sectoren	Energy, Water, High Tech Systems & Materials, Chemistry	Energy, Water	Logistics, Water, High Tech Systems & Materials	Life Sciences & Health, High Tech Systems & Materials, ICT

innovative temporary flood defences, located adjacent to the A13. This testing ground allows companies, government bodies and knowledge institutions to test and demonstrate innovative flood defence measures (alternatives to sandbags). The project has been realised as part of the Valorisation Programme for Delta Technology & Water, of which TU Delft is the coordinating university.

Digital Delta launched

Rijkswaterstaat, IBM, the Delfland Water Board, TU Delft, and Deltares announced the launch of the Digital Delta project on 25 June. These organisations will jointly examine how more effective ways of sharing information and the smart re-use of ICT applications can improve water management in the Netherlands and, at the same time, enhance the economic position of the Dutch water industry internationally. The Delft Environment Initiative supports this research.

Fat algae

Algae show great potential for the large-scale production of oil. TU Delft researchers have recently developed a method for selecting the fattest types from among algae. The goal here is to have the algae store as much oil as possible and then crush them to produce biodiesel. Algae Food & Fuel will be investing heavily in this algae technology in the next six years. The contract between Algae Food & Fuel and TU Delft was formally agreed during the Innovation Relay (Innovatie-estafette) in November 2013.

DELFT HEALTH INITIATIVE

Technology plays a key role in the rapid developments in the fields of life sciences and health. TU Delft's activities in this domain are increasing and expanding, both for content-related themes and scientific disciplines. The Delft Health Initiative tackles the following themes within education, research and valorisation: Medical Imaging & Image Guided Medicine, Interventions & Care, Targeted Molecular Technology, and Vitality. In addition to ensuring internal cooperation within TU Delft, and making contributions to the profiling of medical and technical activities in Delft, regional cooperation is also an important objective of the Delft Health Initiative. There is close collaboration between the UMCs, universities, local/regional government bodies and companies in the Medical Delta.

Medical Delta

In April 2013, the European Innovation Partnership for Active and Healthy Ageing (EIP AHA) designated Medical Delta as a 'reference site', thereby recognising it as an important innovation cluster in Europe. On 1 July 2013, Medical Delta was awarded two stars during the Reference Sites Star Award Ceremony. This year, the strategic plan has been finalised and its declarations of intent signed with Syntens and TNO. Furthermore, the three Medical Delta Cafés each attracted between 100 and 200 people (employers,

engineers, medical and healthcare professionals) in 2013.

Medical innovations

During the MedTechWest event in June, the Innovative Medical Devices Initiative (IMDI) Centres of Research Excellence presented their innovations in image-guided medicine (MDII), neurorehabilitation (NeuroControl) and minimally invasive techniques (NIMIT). In 2013, the three IMDI CoREs were very successful in obtaining additional research funding from the Life Sciences & Health Top Sector and from the STW Technology Foundation.

HollandPTC Proton Clinic

On 2 December 2013, the Dutch Ministry of Health, Welfare and Sport granted the Holland Particle Therapy Centre (HollandPTC) a licence in accordance with the Special Medical Procedures Act (SMPA). Cancer treatments involving proton therapy can now be performed in the Delft centre for treatment and research, which still has to be built. HollandPTC aims to treat the first patients in 2016.

Doctoral Programme on Ageing

In the 2012-2013 academic year, 5 Delft PhD students and 20 PhD students of the IDEA League partners participated in the 'Doctoral Programme on Ageing & Sustainability', with sessions in Tokyo, Delft and Zürich.

DELFT INFRASTRUCTURES & MOBILITY INITIATIVE

A new course

In 2013, the Delft Infrastructures & Mobility Initiative developed a new strategy. Priority is given to working out the details of the vision for the integral design and management of so-called wet and dry infrastructures, and the creation of an integrated honours programme at the Master's degree level for the infrastructure and living environment domains. The Integral Design of Infrastructures publication released in 2013 and the inventory of technology trends and infrastructure challenges in government agendas are important input for this. In addition to the more project-based approach to the activities initiated by the Delft Infrastructures & Mobility Initiative, the approach to stimulating and facilitating bottom-up initiatives of both scientists and students, which has proved to be successful, will be continued.

Cooperation agreement with the Ministry of Infrastructure and the Environment

The earlier cooperation agreement with the Ministry of Infrastructure and the Environment will be expanded for the 2013-2017 period. This is due to the merger of the Ministry of Transport, Public Works and Water Management and the Ministry of Housing, Spatial Planning and the Environment. The focus is on knowledge-sharing through master classes, practical seminars and summer schools, and interesting



students in jobs in the domains of infrastructure, environment and related professional fields. With the renewed agreement, the Delft Infrastructures & Mobility Initiative will play both a substantive and connecting role within TU Delft and in the cooperation with the ministry.

Link to the labour market for alumni

The Delft Infrastructures & Mobility Initiative has made a more detailed analysis of the link between engineers graduating from TU Delft and the labour market, following a discussion on this subject within the advisory council, which includes representatives from Royal HaskoningDHV, BAM Groep, Van Oord BV, the Ministry of Infrastructure and the Environment and the State Advisor for Infrastructure & the City. The analysis revealed that 78% of the Delft alumni find a job related to their study. This figure is in contrast to the findings of the Science and Technology Platform, which indicate that two-thirds of science and technology graduates do not have a scientific and technical position in their first job. Furthermore, 78% of the TU Delft alumni state that their study adequately prepared them for a start in the labour market. The message of the advisory council on the necessity of technically and scientifically trained project managers and the development of soft skills for engineers has been translated into the new strategy.

Student projects abroad

In 2013, the Delft Infrastructures & Mobility Initiative supported six multidisciplinary research projects of Master's students abroad. Groups of 4 to 5 students conducted research in China (Sustainable Port Development - Guangzhou), Brazil (Coastal Erosion), Chile (Port Preparedness and City Evacuation for Tsunamis), the United States of America (Flood protection for Jamaica Bay, New York), and Jamaica (Feasibility Transshipment Port).

Coastal Quality Studio

The Coastal Quality Studio presented its vision regarding the Dutch coast in a closing debate and publication. The central question in the debate was how to link water safety and new opportunities for spatial quality, housing, tourism and accessibility. The studio was founded as an important cooperation platform for bringing together theory, practice, stakeholders, disciplines and specialist expertise. The results of the studio are also described in the strategic coastal vision of the Delta programme. The Delft Infrastructures & Mobility Initiative supported this project in order to allow the designing research and the multidisciplinary approach to reach an integral vision.

RESEARCH SCHOOLS

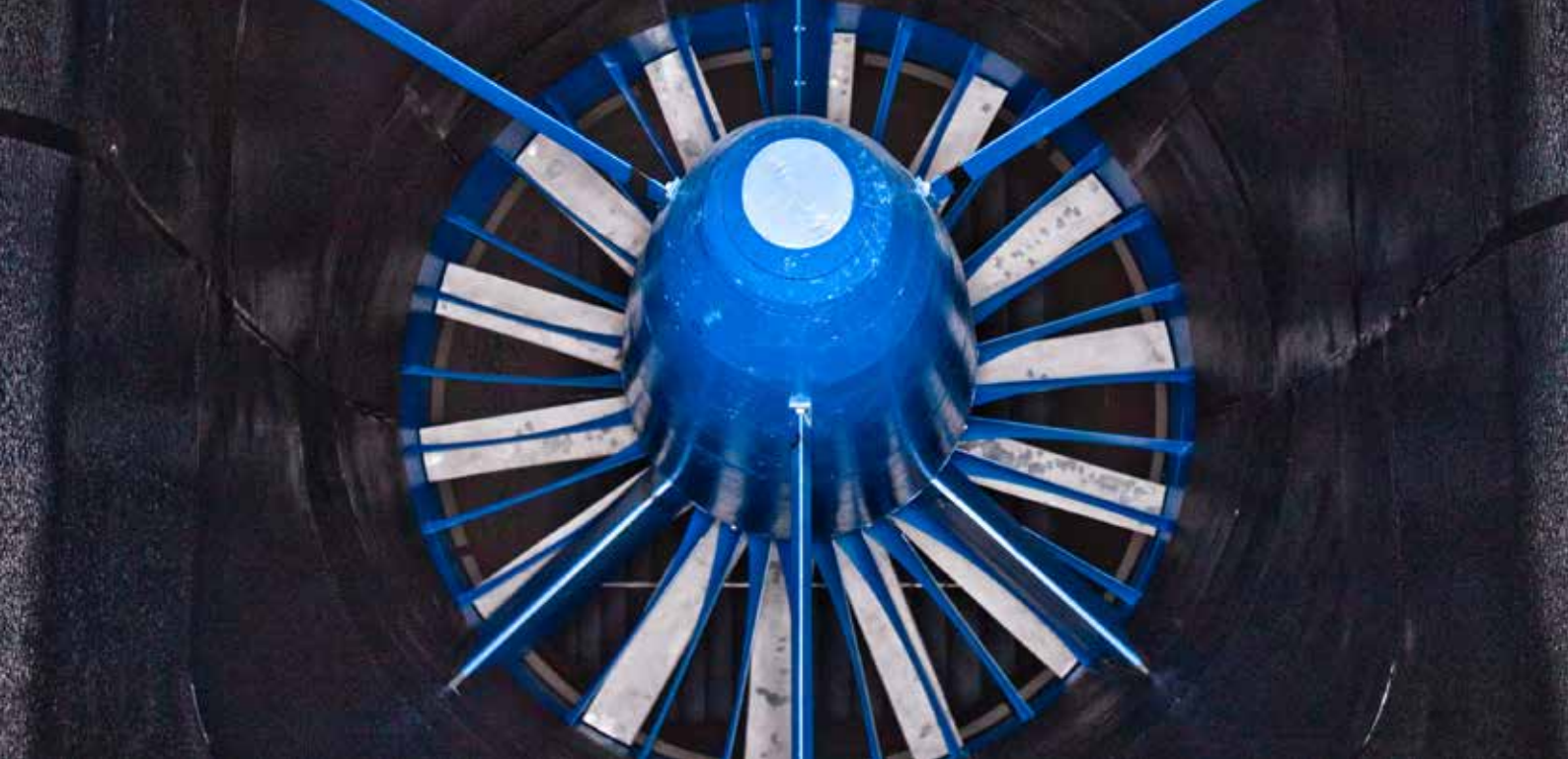
In 2013, TU Delft continued its activities in the research schools for which it acts as the coordinating university or in which it participates. Research schools offer substantive courses to PhD candidates and enable them to establish contacts with researchers at other Dutch universities. TU Delft considers the accreditation of its research schools by the KNAW as an important quality label.

The future of the existing and possible new research schools will be considered based on the developments of the Graduate School.

TU Delft was the coordinating university of the following six research schools in 2013:

- Advanced School for Computing & Imaging (ASCI)
- Centre for Technical Geoscience (CTG)
- Delft Institute for Microsystems and nano-electronics (DIMES)
- Dutch Institute of Systems and Control (DISC)
- J.M. Burgerscentrum – Research School for Fluid Mechanics (JMBC)
- Transport Infrastructure and Logistics (TRAIL)

In 2013, TU Delft participated in thirteen research schools partly accredited by the KNAW/ECOS:



- Casimir Research School (CASIMIR, physics)
- Engineering Mechanics Research School (EM)
- Institute for Programming research and Algorithmics (IPA)
- Netherlands Graduate School of Urban and Regional Research (NETHUR)
- Netherlands Institute for Catalysis Research (NIOK)
- Netherlands Institute of Government (NIG)
- Netherlands Research School in Process Technology (OSPT)
- Dutch Research School of Philosophy (QZSW)
- National Dutch Graduate School for Polymer Science & Technology (PTN)
- School for Information and Knowledge Systems (SIKS)
- Vening Meinesz Research School of Geodynamics (VMSG)
- WONDER is a fusion of SIMATH, EIDMA (Euler Institute for Discrete Mathematics) and MRI (Mathematical Research Institute)
- Netherlands Graduate Research School of Science, Technology and Modern Culture (WTMC)

The university Graduate School was officially launched in January 2012. In 2013, the relations between the research schools and the Graduate School were strengthened. In addition, two meetings with the Rector Magnificus and the research directors of the coordinating research schools were held.

Top Research Schools

TU Delft participates with the Delft branches of the Centre for Technical Geosciences (CTG research school) and the Vening Meinesz Research School of Geodynamics (VMSG) in top research school Netherlands Research Centre for Integrated Solid Earth Science (ISES). Through its participation in the

Netherlands Institute for Catalysis Research (NIOK) research school, TU Delft also participates in the top research school NRSC Catalysis.

Re-accreditation

In 2013, the KNAW Accreditation Committee for Research Schools approved applications for re-accreditation from the research schools J.M. Burgerscentrum - Research School for Fluid Mechanics (JMBC) and Transport Infrastructure and Logistics (TRAIL), of which TU Delft is the coordinating university. The following research schools in which TU Delft participates were also re-accredited in 2013: Casimir research school, Engineering Mechanics Research School (EM), Institute for Programming research and Algorithmics (IPA) and the Netherlands Institute for Catalysis Research (NIOK).

REGIONAL COOPERATION - LEIDEN-DELFT-ERASMUS

Background

The regional cooperation between the universities of Delft, Leiden and Rotterdam - in the form of a strategic alliance - was inspired by positive experiences with the partnerships involving the three universities that have existed for more than a decade, as well as the huge potential inherent in the cooperation between complementary institutions in such close geographical proximity to one another.

The combination of a broad-based general university (Leiden), a broad-based university of technology (TU Delft) and a more specialised institution (Rotterdam), all situated relatively close to one another in a densely populated, economically important and internationally operating region – which includes the Port of Rotterdam and the third UN city, The Hague – opens up huge opportunities to add value in education,

research and valorisation.

The aim of the strategic alliance is to realise these opportunities - together, they are greater than the sum of their parts.

The alliance covers a unique combination of specialisations, with the universities working together along substantive lines to further improve the quality of education and research by means of clearer national and international profiling of the range of courses on offer and better national and international positioning of research activities.

It will make the complementary courses on offer more accessible and more tailored to each other.

The alliance will also result in new, multidisciplinary course combinations that are better able to compete on the international stage. The current range of joint programmes and joint tracks is to be expanded for this. The alliance also opens up better opportunities to develop the support for teaching and professors, which requires expertise in these fields to be combined.

The institutions will also be able to develop their own distinctive research profiles. Collaboration between disciplines will better enable them to make an effective contribution to the Grand Challenges formulated by the European Union and the Top Sectors being prioritised by the Dutch government. Furthermore, with the combined volume of their scientific activity, it will put them in a better position to retain their global academic leadership. All of this will add value to the research position of the Netherlands as a whole. The ambition is that, by joining forces, all three universities will be in a better position than ever to attract academic talent and stand a greater chance of securing external resources for research.

Realisation 2013

The strategic alliance between the three universities, Leiden, Delft and Erasmus, was further substantively strengthened in 2013 by the formation of multidisciplinary centres and activities in the fields of programmes on offer, excellence tracks, operational management and governance.

Centres

In 2013, eight multidisciplinary centres were launched. Through research and educational activities, these centres focus on the international issues facing today's and tomorrow's society: the economic and financial

crisis, global heritage, ports and airports in relation to their hinterlands, innovation in Africa, governance of complex societies and organisations, sustainability, safety and educational research.

The multidisciplinary and interdisciplinary, thematic partnerships respond substantively to the major societal issues on which the European research policy 2020 and the Dutch Top Sectors policy are based.

A number of centres focus primarily on research, while others focus more on education in their plans.

The Centre for Education and Learning has a specific nature - it mainly focuses on research into measures for increasing study success, development of teaching skills and online learning.

The centres submitted their action plans in spring 2013. A number of plans are now in the implementation phase. Some centres focus on a further demarcation of the theme, on the continued addition of other disciplines or on the continued development of these educational plans.

During a period of three years, the centres receive a starting sum for the development and implementation of their activities. The centres are organised virtually - the personnel are appointed at one of the universities (in some cases, a double appointment is up for discussion) and participate in a centre. There are no legal persons. A number of centres may eventually be provided with a physical location.

Medical Delta

In the field of medical technology, the three universities have been working together intensively in the Medical Delta consortium since 2006. The mission of Medical Delta is to achieve breakthroughs in the medical sciences and healthcare, develop new technologies and stimulate related economic opportunities. The alliance is committed to further strengthening the strategic position of Medical Delta, thereby enabling the continued use of regional and international opportunities in the field of medical technology. In April 2013, the European Innovation Partnership for Active and Healthy Ageing (EIP AHA) designated Medical Delta as a 'reference site', thereby recognising it as an important innovation cluster in Europe.

Education

The three universities plan to expand their range of educational opportunities, in addition to making them

Centre	Scientific initiator
Education and Learning	prof. dr. J.H. van Driel (LEI)
Financial and Economic Governance in the EU	prof. dr. F. Amtenbrink (EUR)
Frugal Innovation in Africa	prof. dr. P. Knorringa (EUR)
Global Heritage & Development	prof. dr. J. Kolen (LEI)
Governance	prof. dr. C.W.A.M. van Paridon (EUR)
Metropolis and Mainport	prof. dr. R.A. Zuidwijk (EUR en TUD)
Safety and Security	prof. dr.ir. J. van den Berg (TUD)
Sustainability	prof. dr. T.A.J. Toonen (TUD)

more attractive. It is becoming easier for students from the universities in Leiden, Delft and Rotterdam to follow the educational programmes and courses of their choice at the three universities.

In 2013, the preparations for the joint Bachelor's degree programme Clinical Technology were completed. This programme has acquired the character of a 'joint degree'. The programme has already been approved by the NVAO and will start in September 2014.

The three universities developed the minor programme 'Responsible Research and Innovation' in 2013, which will be offered as of September 2014. A Cyber Security post-initial Master's degree programme has been developed in cooperation with The Hague University of Applied Sciences, the government and the business community. This programme will start in September 2014, providing it receives the NVAO's approval.

With regard to the honours programme, the deans responsible have discussed further cooperation, including making the honours programme courses on offer mutually accessible.

The Centre for Education and Learning is a partnership between the three universities aimed at strengthening their position in the field of online education. This can be achieved by, for example, applying for joint subsidies, sharing expertise, conducting research into the learning effects of different forms of online education.

Operational management

The priority of the alliance is cooperation in the primary processes. In the area of operational management, coordination possibilities and the sharing of knowledge and expertise are being investigated. In 2013, a joint traineeship programme was launched with 12 positions for recent graduates. The trainees will work on three projects in at least two of the participating universities during a period of two years.

Many of the programmes on offer will be open to personnel from the three universities.

The three libraries shared their knowledge of the type of service at the three universities in meetings.

Governance and support

The alliance is controlled by a steering group of the Executive Boards of the three universities. The rules of the alliance have been laid down in Joint Regulations, which were approved by the representative bodies and the Supervisory Boards of the three universities. The three universities established a fund for financing joint activities, with each university setting aside a fixed amount for the fund every year. The fund is not used to structurally finance activities. The resources allocated are incidental starting amounts for new activities. The alliance is supported by a programme manager and a communications advisor.

3TU.FEDERATIE

Within the framework of the 3TU.Federation, the three technical universities in the Netherlands have joined forces to strengthen their position on both

the national and international level. The federation's strategy is focused on a clearer demarcation of the technology domain, whereby the Dutch technology profile is refined and linked to European social themes and programme budgets. The strategy's aim is to strengthen the technical and scientific sector by cooperation and a thematic link. The 3TU.Federation focuses on both research and education. Executive Board president Dirk Jan van den Berg became the president of the 3TU.Federation in November. In 2013, Design United was recognised as the ninth 3TU Centre of Excellence.

The signing of the National Technology Pact 2020

On 13 May, a diverse group of representatives of employers, employees, educational organisations, regional authorities and the government signed the National Technology Pact 2020. Arno Peels (TU/e), in his role as the chairman of the 3TU.Federation, was one of the signatories. The Technology Pact is expected to ensure the addition of 30,000 engineers each year. The 3TU.Federation is committed to carrying out actions related to its three priorities: (1) choosing technology, (2) learning in the field of technology, and (3) working in the field of technology. One striking proposal is the creation of a 3TU Centre for Engineering Education.

3TU Innovation & Technology Conference

At the 3TU Innovation & Technology Conference on 6 December 2013, approximately 300 visitors were able to see what the three universities of technology can accomplish together. This technology fair featured demonstrations, interactive workshops and lectures relating to the fields of high tech & health and energy & mobility. The three Rector Magnifici signed the Consortium Agreement of the 3TU.Data Centre, thereby demonstrating their commitment to continued investments in the joint data centre in the coming years.

Presentation of the 3TU.Implementation Plan 2014-2015

In July, the 3TU.Federation presented the 3TU.Implementation Plan 2014-2015 to the Ministry of Education, Culture and Science for the use of the reserved resources for the 3TU.Sector Plan Technology. This plan contains proposals for continuing the cooperation in the fields of education and research. The vision on federation and priority forming, as formulated in 2005 at the launch of the 3TU.Federation, remains the basic principle for the plan. The reserved resources enable the 3TU.Federation to stimulate new substantive fields and develop them in a high-quality way within the existing alliance.

In 2013, the nine 3TU Centres of Excellence were:

- 3TU.Centre for Intelligent Mechatronic Systems
- 3TU.Centre for Dependable ICT Systems
- 3TU.Centre for Sustainable Energy Technologies
- 3TU.Centre for Multiscale Phenomena
- 3TU.Centre for Bio-Nano Applications
- 3TU.Centre for Ethics and Technology



- 3TU.Centre for the Built Environment
- 3TU.Applied Mathematics Institute
- 3TU.Centre Design United

JOINT RESEARCH CENTRES

As a result of shifting priorities in the global economy, the scientific world order is undergoing significant changes. This changed playing field has led TU Delft to expanding its partnerships in emerging knowledge economies by means of the Joint Research Centres. The Joint Research Centres make it easier to attract foreign talent, cooperate with foreign funds, research and education in state-of-the-art laboratories and research environments that are not available in the Netherlands and Europe, and cooperate with the Dutch business community in these countries.

In 2013, a partnership agreement was signed with the municipality of Changzhou on the subject of Solid State Lighting, during the visit of Dutch prime minister Mark Rutte to China. In December, TU Delft and the Water Resources University (WRU) in Hanoi started the joint venture VINWATER, Vietnam Netherlands Centre for Water and Environment. This took place during a visit to Vietnam by Melanie Schultz van Haegen, Minister of Infrastructure and the Environment. VINWATER will carry out commissions in the field of water management for third parties, such as the Vietnamese government.

TU Delft Brazil has had its own office on the campus of the University of Campinas (UNICAMP) since July. From this office, activities are initiated and facilitated for joint R&D and doctorate programmes, courses and workshops in the field of the biobased economy. TU Delft and UNICAMP agreed to jointly train 25 PhD students before 2020. In addition, projects have been launched with companies and UNICAMP

3.4 National programmes

Top sectors

TU Delft is an active participant in 7 of the 9 top sectors: Water, Chemicals, Energy, High-Tech Systems and Materials, Life Sciences and Health, Logistics and the Creative Industry. TU Delft personnel are active in various bodies related to the top sectors. Dean Tim van der Hagen, for example, participates in the leading team of the Energy top sector and the Rector Magnificus Karel Luyben is a member of the leading teams of the Chemicals and Water top sectors. Furthermore, many scientists, including Fred van Keulen (3mE), Marcel Stive (CEG) and Luuk van der Wielen (Applied Sciences), actively contribute to the creation of the innovation road maps within the various leading consortia for knowledge and innovation.

There have been many calls for proposals related to the top sectors via NWO, STW, ZonMW and AGNL in which TU Delft proposals have been approved. For example, four out of five grants for TU Delft, including Jules van Lier's (CEG) 'anaerobic waste water treatment in extreme situations', were approved in the STW call for the Water top sector at the end of 2013. Projects running in the other sectors range from Pieter Kruit's (Applied Sciences) 'massively parallel electron-beam imaging' and Leo de Vreede's (EEMCS) 'smart energy efficient digital communication' in the HTSM top sector to Hans Wamelink's (Architecture and the Built Environment) 'the future role of the architect within the value chain' in the NWO call for the Creative Industry top sector.

QuTech Advanced Research Centre

The Ministry of Economic Affairs and NWO, FOM and STW are investing in the establishment of a unique QuTech Advanced Research Centre at TU Delft, in cooperation with TNO. Researchers of the Applied Sciences and EEMCS faculties and from TNO will

In 2013, NWO awarded the following grants to TU Delft researchers.

Vici grants

Eelco Visser (EEMCS)	<i>The Language Designer's Workbench</i>
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Vidi grants

Rienk Eelkema (Applied Sciences)	<i>Steering smart materials with catalysts</i>
Jorge Gascon (Applied Sciences)	<i>Enzyme mimics for bright energy future</i>
Jeroen Kalkman (Applied Sciences)	<i>Zebrafish in a new light</i>
Lucia Nicola (CITG)	<i>Tackling the problem of 'friction' with computers</i>
Alessandra Palmigiano (TBM)	<i>Logics for social behaviour</i>
Riccardo Riva (CITG)	<i>Rising sea levels unravelled</i>
Brian Tighe (3mE)	<i>Jamming and unjamming in flows</i>
Andy Zaidman (EWI)	<i>Learning from software errors</i>

Veni's

Marie-Eve Aubin-Tam (Applied Sciences)	<i>Real-time tracking of toxin invasion'</i>
Enrique Burzuri (Applied Sciences)	<i>Graphene and molecules for quantum computation</i>
Neelke Doorn (TPM)	<i>How are flooding risks distributed fairly?</i>
Bram Klievink (TPM)	<i>Cooperation and governance in the information age</i>
Marios Kotsonis (AE)	<i>Using plasma to make aircraft more efficient</i>
Jan Kwakkel (TPM)	<i>How much climate adaptation is needed?</i>
Richard Lakerveld (3mE)	<i>Making minuscule structures</i>
Joost Rutger van der Neut (CEG)	<i>Seismic imaging with two-sided illumination</i>
Volkert van Steijn (Applied Sciences)	<i>Scouting for micro-organisms in micro droplets</i>
Wilson Smith (Applied Sciences)	<i>Solar fuels for a sustainable future</i>
Behnam Taebi (TPM)	<i>Nuclear waste: a transnational problem?</i>
Tim Taminiau (Applied Sciences)	<i>Rectifying quantum errors</i>

conduct research into the construction of a quantum computer and quantum internet under the guidance of director of research Leo Kouwenhoven. This will involve collaboration with external industrial partners such as Microsoft and a large number of Dutch companies such as Leiden Cryogenics, Atos and Fox IT. The interest of the national and international business community in quantum computing and quantum communication increased significantly in 2013. The Advanced Research Centre offers a modern approach for linking the excellent science of both TU Delft faculties to TNO research and cooperation with companies. TU Delft is the global leader in the

creation of a crossover field between physics, electrical engineering, mathematics and information. Moreover, this allows TU Delft to host one of the world's largest quantum research clusters.

2013 Zwaartekracht grants

TU Delft, together with the universities of Nijmegen, Utrecht, Wageningen and Utrecht/NIOZ, received a Zwaartekracht grant of € 22.9 million from the Ministry of Education, Culture and Science for the Soehngen Institute for Anaerobic Microbiology (SIAM). This institute aims to create a sustainable economy based on biomass. Microbes that can survive without oxygen

Joint Research Centres 2013

TU Delft – Beijing Research Centre on Solid State Lighting	China: Beijing, Changzhou
Wuhan University – TU Delft Joint Research Centre on Spatial information	China: Wuhan
SCUT – TU Delft Joint Research Centre on Urban Systems & Environment	China: Guangzhou
Hohai – TU Delft Water Research Centre	China: Nanjing
TU Delft Brazil on Biobased Economy	Brazil: Campinas
Vietnam Netherlands Centre for Water and Environment	Vietnam: Hanoi



will play an important role in this economy, alone or in complex microbiological communities. This includes, for example, the production of biogas, the conversion of organic waste into bioplastics and improved health as a result of optimised microflora in the intestines. Greenhouse gases can also be captured or converted into harmless materials with the help of micro-organisms. The SIAM will be looking to discover new anaerobic microbes that can be used for this purpose. The consortium will also establish a leading Master's programme and graduate school of Microbiology in order to train a new generation of microbiologists.

Amsterdam Institute for Advanced Metropolitan Solutions

For its new institute of technology, the City of Amsterdam has chosen the proposal of the consortium comprising TU Delft, Wageningen UR and MIT. The Amsterdam Institute for Advanced Metropolitan Solutions (AMS) is a plan for a leading institute in applied urban technology and design. Across the world, people are increasingly moving into cities; by 2030, around 70% of the world's population is expected to live in major cities. This presents great challenges for society, especially relating to traffic flow, food, waste, energy and health. AMS is adopting a multidisciplinary approach to conducting research into these issues, developing concrete solutions and implementing them on testing grounds in Amsterdam. The consortium for the Amsterdam Institute for Advanced Metropolitan Solutions is a network of partners that reaches across the world. TU Delft, Wageningen UR and MIT form the academic heart of the initiative. They are working together with partners Accenture, Alliander, Cisco, IBM, KPN, Shell and Waternet, Amsterdam Smart City, ESA, TNO, Waag Society and the city of Boston.

3.5 European programmes

Introduction

The number of European research projects at TU Delft increased from 250 in 2012 to 288 in 2013. TU Delft coordinates 27 EU projects that are currently being carried out by consortia. In the Netherlands, TU Delft is the university with the most participations in the seventh framework programme (FP7) of the European Union; only TNO has participated more often in this programme. In the European Union, TU Delft is ranked 34th in the number of participations in FP7 projects. TU Delft is strong in the FP7 domains of ICT, Transport and Materials, and process technology. In 2013, TU Delft became increasingly active in the ERC, Marie Curie and KIC programmes.

Horizon 2020 preparation

In the autumn of 2012, 150 research ideas were formulated and prioritised per faculty on the basis of the main topics of Horizon 2020, the eighth framework programme of the European Union. In this way, researchers came across Horizon 2020 early. Every research idea received feedback on the possibility of continued development in Horizon 2020. The inventory has also been provided by TU Delft to the national Horizon 2020 sounding board groups and, where opportune, offered to file holders in the European Commission. With regard to several topics important to TU Delft, the approach has led to inclusion in the texts of Horizon 2020 work programmes for 2014 and 2015: quantum computers in the FET work programme, nanoscience in the NMP work programme and Organ-on-a-chip in the HEALTH work programme.

Climate KIC

In 2013, 8 applications for PhD students from TU

In 2013, the European Research Council (ERC) awarded the following personal grants to researchers of TU Delft.

ERC Advanced Grants

Teun Klapwijk (Kavli Institute TU Delft)	<i>Astronomy technology for research into quantum materials</i>
Michel Verhaegen (3mE)	<i>Sharper images with iCON</i>

ERC Starting Grants

Jorge Gascon (Applied Sciences)	<i>Gas separating membranes of the future</i>
Pouyan Boukany (Applied Sciences))	<i>Engineering DNA transfer into cells</i>
Grégory Schneider (Applied Sciences)	<i>A 'chemical' and 'biological' eye on graphene</i>

ERC Consolidator Grants

Angelo Simone (CEG)	<i>Computational modelling of structural batteries</i>
Maarten van Ham (Architecture and the Built Environment)	<i>Socio-spatial inequality, deprived neighbourhoods, and neighbourhood effects</i>

ERC Synergy Grants

Leo Kouwenhoven (Applied Sciences), Lieven Vandersypen (Applied Sciences) and Carlo Beenakker (Leiden University)	<i>Quantum Computer Lab</i>
Marileen Dogterom (Applied Sciences) and Anna Akhmanova (Utrecht University)	<i>ODELCELL: Building a Model Cell to Achieve Control of Cellular Organization</i>

Delft were approved by the Climate Knowledge & Innovation Community (KIC) of the European Institute of Technology (EIT). In addition, three new TU Delft start-ups made it to the acceleration programme and a Climate Market Accelerator subsidy was awarded. The proposal of Arjan van Timmeren, David Keyson and Sacha Sylvester and the ETH Zürich for the flagship Building Technology Accelerator was also approved.

Marie Curie Initial Training Networks

In 2013, two proposals for Marie Curie Initial Training Networks, which provide funding for training foreign researchers, were approved. The ADvanced OPTical SYStem Design of Prof. Paul Urbach (Applied Sciences) will develop new optical design tools in an alliance between six knowledge institutions and four companies from Europe and Russia. A total of 14 PhD students will be trained. HFAuto (Human Factors of Automated Driving) of Riender Happee and Joost de Winter (3mE) examines how people handle highly-automated car driving in order to improve the human-machine interface. A total of 14 PhD students will also be trained in this.

Marie Curie grants

In 2013, Marie Curie grants were awarded to 52 researchers of TU Delft. Marie Curie grants allow young, promising researchers in Europe to conduct research at and with another European research institute without limitations with regard to research topics, and sometimes in cooperation with companies.

3.6 Quality and productivity

RESEARCH RESULTS & RANKINGS

Scope of the research

TU Delft uses external funding, research efforts of the

academic staff and PhD student numbers as indicators of the scope of the research.

Funding

The total joint scope of the sources of research funding increased from M€ 534.7 in 2012 to M€ 558.4 in 2013. The government funding increased by 8% to M€ 415.3. The indirect funding increased by 31.5% to M€ 42. The contract funding increased by 14.3% to M€ 101.2. Relatively speaking, the scope of the government funding increased in 2013 vis-à-vis 2012, but it is still not the same portion it was in 1999. Back then, the government funding was 81% of the total scope of the three sources of funding, but in 2013 it was 74%.

Research effort

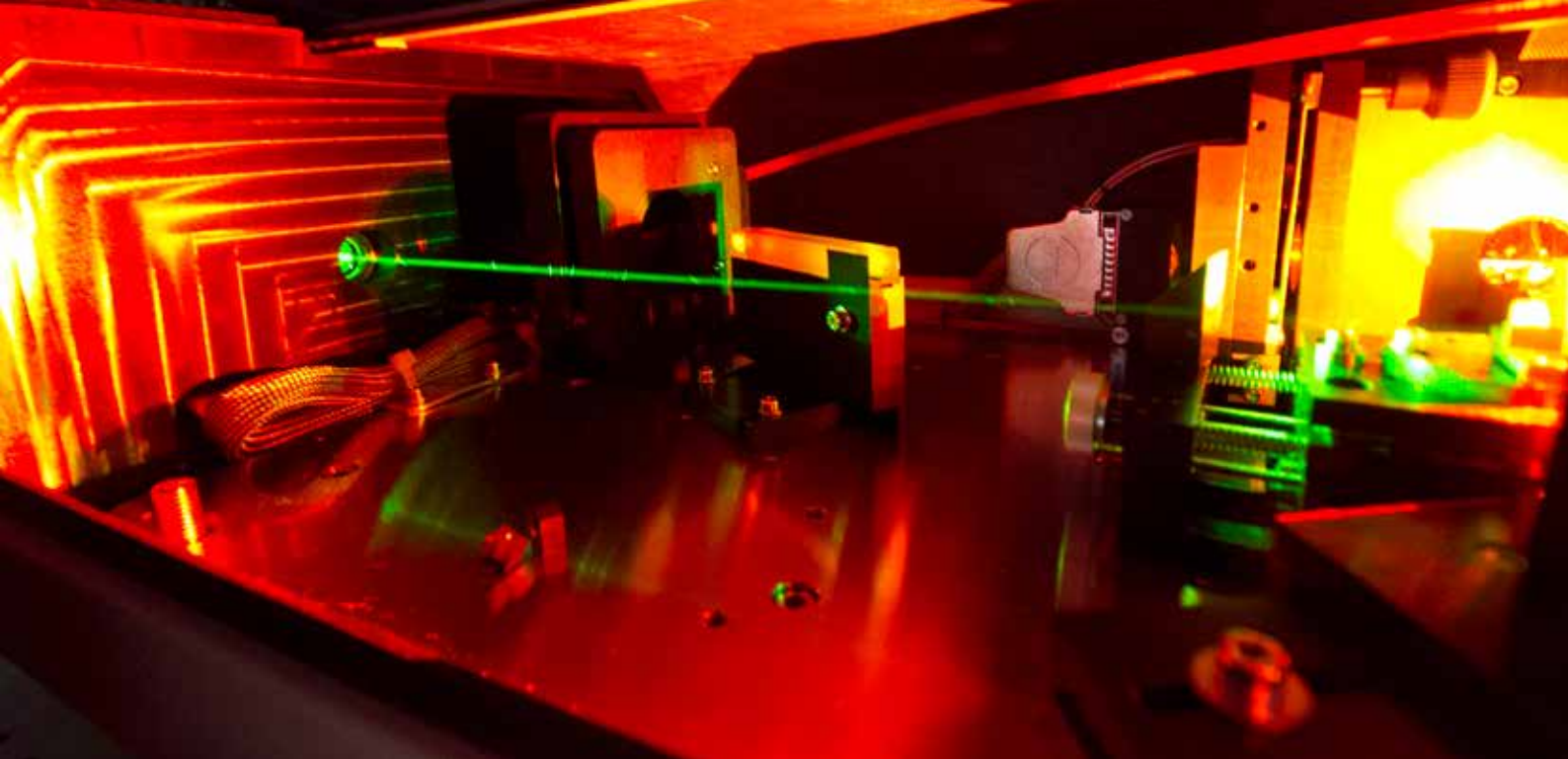
The 2012 research effort for the TU Delft is determined on the basis of effort percentages per function category. The total research effort of the academic staff increased in 2012. The proportion of the effort for indirect and contract funding increased to 0.53 and 1.81 respectively from 2009 to 2012 compared with the direct funding (referred to as the 'social' and 'scientific ability to acquire funds' by the Rathenau Institute).

PhD student numbers

In 2013, the number of PhD candidates increased by 3% to 2396 individuals. Expressed in full time equivalent, this is an increase of 4%. Of these PhD students, 1423 are non-salaried, paid by external parties. The number and proportion of these non-salaried PhD candidates is increasing. The top ten countries of origin of these foreign PhD students at TU Delft are: China, Iran, India, Italy, Germany, Turkey, Portugal, Greece, Spain and Belgium.

Research productivity

The number of publications, as shown in table 2.1



from Appendix 4, are in accordance with the VSNU definitions of 2010 and in line with the SEP protocol. The number of scientific publications - refereed and non-refereed magazines, books, book volumes, etc. - decreased by 3% from 5604 in 2012 to 5432 in 2013. The decrease in 2013 is once again mainly due to a significant decrease in refereed conference papers (10%). Compared with the 2003 reference year, the volume increased by 7%, but a structural decrease can be seen from 2010. With 681 specialist publications in 2013, these types of publications also decreased in comparison with 2012. The number of popular publications, on the other hand, has increased from 209 in 2012 to 256 in 2013 (22.5%). Finally, the miscellaneous research output (with editorships, book reviews, abstracts, interviews, etc.) remained almost unchanged in 2013 compared with 2012: 1667 versus 1643.

Doctorates

The number of doctorates conferred increased from 303 in 2012 to 353 in 2013. The proportion of foreign students holding a doctorate further increased from 23% in 1997 to 72% in 2012.

PhD completion rate

TU Delft has adjusted the internal definition of the PhD completion rate indicator to be in line with the aim of the VSNU, with an eye on optimal compatibility, and with what was agreed on by all Dutch universities. The total completion rate of the new employee-PhD candidates (standard PhD candidate) is approximately 74% (2001-2006 intake). The percentage of new PhD candidates that obtain their doctorate within five years is approximately 41%. If the PhD students that terminate their doctoral research within 18 months are omitted from this group, the percentages will then increase to 80% and 45% respectively.

RESEARCH IMPACT

International rankings give an indication of what others think about the quality of TU Delft as a whole or in relation to a specific discipline. Different rankings show that TU Delft belongs to the top universities in Europe and the world, especially in the field of Engineering and Technology. In addition to the specialised Engineering and Technology rankings, various subject rankings are important to TU Delft. Moreover, international students seem to be interested in the relative position of TU Delft compared with other European universities of technology. The different international rankings each have (methodological) shortcomings. Where appropriate, TU Delft uses international rankings in its recruitment and internationalisation policy. The results of the rankings listed below are important to the international positioning of TU Delft.

Academic Ranking of World Universities 2013 (Shanghai-Ranking)

In the general ranking, a ranking list based on past and present research achievements, TU Delft occupies a position between 201 and 300, just as it did last year. However, TU Delft fell in the 'Engineering/Technology and Computer Sciences' Field Ranking from a position between 76-100 to 101-105 (see Table 3.1 of Appendix 4). TU Delft occupies the same position as last year in the Subject Field 'Computer Science': 101-150.

Times Higher Education World University Ranking 2013-2014 (THE-Ranking)

In this ranking, TU Delft has risen in comparison with last year: from position 77 to 69. In the 'THE Top 50 Engineering & Technology', TU Delft also has risen in comparison with 2012: from 32 to 23 (see Table 3.2 of Appendix 4). In the 'Times Higher Education World Reputation Ranking', TU Delft occupies a position between 51 and 60, just like last year. This means that



TU Delft is the highest-ranking Dutch university, which was also the case in 2011 and 2012.

QS World University Ranking 2013/2014

TU Delft returned to the top 100 of the general ranking list again this year, occupying position 95. Last year, TU Delft still occupied position 103. The position of TU Delft has also improved in comparison with last year, both in the 'Engineering & Technology ranking' (from 18 to 15) and the 'Natural Sciences' ranking (from 91 to 63; see Table 3.3 of Appendix 4). In the four subject rankings, TU Delft occupies a position in the top 20:

- Engineering & Technology – Chemical Engineering (10)
- Engineering & Technology – Civil & Structural Engineering (4)
- Natural Sciences – Environmental Sciences (17)
- Engineering & Technology – Mechanical Engineering (18)

Leiden Ranking

The Leiden ranking describes the performance of 500 important universities around the world, with at least 500 publications per year. In terms of impact, TU Delft scores 168th place with a mean normalised citation score (MNCS) of 1.09 and 164th place with 11.5% of the TU Delft publications in the most quoted 10% of the publications in a field (PPTop 10%).

University-Industry Research Cooperation Scoreboard

With a score of 14%, TU Delft is one of the world's best universities in terms of the percentage of joint research publications (published in collaboration with the business community) of the total number of research publications. TU Delft occupies second place (after TU Eindhoven) on this University-Industry Research Cooperation Scoreboard of the CWTS.

QUALITY ASSURANCE AND ORGANISATION

Quality assurance

In accordance with the standards of the Standard Evaluation Protocol 2009-2015, TU Delft aims to achieve a score of 4 or 5 ('very good' - 'excellent'). The evaluation is based on four criteria: productivity, quality, viability and relevance. TU Delft's ambition is to be rated at least 'very good' on all evaluation criteria. The long-term planning of the TU Delft faculties pays attention to quality assurance for research and its link to the faculty research portfolio and the teaching chair strategy. TU Delft aims to have its own research evaluated together with similar research of other universities.

After a research evaluation takes place, the Executive Board will submit a request to the relevant dean for the formulation of a plan for improvement and change based on the committee's evaluation and their suggestions for improvement. This plan is then discussed in a bilateral consultation between the Rector Magnificus and the dean, and is subsequently adopted by the Executive Board. The plan for improvement and change is used as the basis for the midterm review, which also looks ahead at the next research evaluation; the cycle is thereby concluded.

RESEARCH EVALUATION IN 2013

Architecture

Within the framework of its midterm review, the Faculty of Architecture and the Built Environment organised a research week with peers from UCL Bartlett and ETH Zürich, among others, in November.

Civil Engineering and Geosciences

In 2013, the Civil Engineering plan for improvement and change was formulated at CEG. It was also decided that the Geoscience & Engineering and



Geoscience & Remote Sensing departments will prepare a research evaluation together for the period 2008-2014.

Electrical Engineering, Mathematics and Computer Sciences

The QANU Research Review Electrical Engineering 2011 report was accepted by the parties involved at the beginning of 2013. The EEMCS subsequently formulated a plan for improvement and change. The midterm review has been postponed until 2015. Computer Science and Applied Mathematics both organised a midterm review at the end of 2012. Associated reports - released in 2013 - have provided enough leads for the next evaluations, which will take place in 2015.

Industrial Design Engineering

In 2013, the IDE faculty started to make preparations for a research evaluation in 2014.

Aerospace Engineering

The AE faculty submitted a request to be evaluated in 2014 instead of in 2013, because an accreditation inspection already took place in 2013. The preparations for an evaluation in 2014 have already been initiated.

Technology, Policy and Management

In October, the TPM faculty organised an international benchmark within the framework of a midterm review at the Stevens Institute of Technology in Hoboken, with peers from the RWTH Aachen, University of Arizona, MIT, National University of Singapore, Carnegie Mellon University, George Mason University and Stevens as the guest university. The Philosophy of Technology, Design and Values research programme participated in the Philosophy 2005-2011 national evaluation in November 2012. The committee felt that the philosophy research at Delft was of 'very good' quality;

the scores are quality = 3.5; productivity = 4; relevance = 4.5; viability = 4. In October 2013, the report of the review committee was submitted to the Executive Board and subsequently formally accepted.

Applied Sciences

Applied Sciences has submitted a plan for improvement and change. Preparations for a midterm review in 2014 have also been initiated. Chemical Engineering, together with its 3TU partners, submitted a request for the postponement of the next research evaluation until 2015. A plan of action is expected in the summer of 2014.

Mechanical, Maritime and Materials Engineering

The preparations at the 3mE faculty for the 2014 research evaluation are in full swing. At first, there was coordination with TU Eindhoven and Twente University, but after adequate consultation it was eventually decided to continue the evaluation process individually, because it proved to be impossible to jointly assess all 43 programmes of the three universities.





4. Valorisation

4.1 Introduction

Valorisation is the process of creating value from knowledge by making knowledge suitable or available for economic or social purposes and by making it suitable to be translated into competitive products, services, processes and new business activities. TU Delft also views securing additional research funding and (to a lesser extent) indirect and contract funding as an important part of its activities in the field of valorisation.

Valorisation is the third official core activity of universities, in addition to research and education. Moreover, it reflects TU Delft's role in society and its mission to contribute towards a competitive economy. The main focus here is the transfer and application of technical-scientific knowledge, with the goal of making a contribution to sustainable and innovative solutions to societal problems. The university generates additional revenue ('turnover') by capitalising on knowledge by means of, for example, the marketing of inventions, conducting contract research for the business community and successfully submitting research proposals in the Netherlands and the EU.

Strengthening the collaboration with the business community at international, European and national levels is important in this regard. Furthermore, the focus is on strengthening the region by participating in regional innovation clusters, among other things. The TU Delft innovation campus, which includes Science Park Technopolis, contributes to an economically strong and innovative region. To support these activities, the university focuses on stimulating entrepreneurship by providing its students with entrepreneurial education, the YES!Delft incubator and active support in the area of Intellectual Property (IP). In addition to the Valorisation Centre, the TU Delft Holding also plays an important facilitating role in this process.

4.2 Entrepreneurship@tudelft

Entrepreneurship will continue to be an important theme in the coming years, both for students and (young) researchers at TU Delft. Through entrepreneurial education, they will learn about the option of entrepreneurship. The YES!Delft incubator supports new, promising and technology-driven businesses. The creation of a strong patent portfolio is one of the necessary preconditions for this and the TU Delft holding focuses on the scouting and screening of business cases that enable TU Delft to participate in potentially successful start-ups. In the second half of 2013, an initial exchange of ideas occurred in order to virtually bring together the activities under the name 'Entrepreneurship@tudelft'.

Entrepreneurial education

The Delft Centre for Entrepreneurship (DCE), which is part of the Technology, Policy and Management (TPM) faculty, offers and develops an educational programme in entrepreneurship. Entrepreneurial subjects and courses are offered at all levels of education (Bachelor's, Master's and PhD). The DCE also focuses on linking education to research programmes in the field of responsible innovation.

In 2013, 21 Master's students obtained their entrepreneurship research endorsement and around 300 students participated in entrepreneurial subjects, via, for example, the valorisation programme Delta Technology and Water, which was financed by the EFRO programme of the EU.

Other faculties also offer entrepreneurial education and/or have plans to do so. In 2013, the foundation was laid for the further diversification of the entrepreneurial education on offer through TU Delft's participation in the Climate KIC and the ICT KIC.

YES!Delft

TU Delft wants to make its students and employees aware of the opportunities offered by entrepreneurship and also provide practical support for the establishment and development of a company. The YES!Delft incubator, established in 2005, plays an important role in this. YES!Delft offers coaching, training, facilities and access to relevant networks (investors, clients, languages)



to promising new companies. To date, 130 high-tech start-ups have started under the umbrella of the incubator. These companies have an impact on different technical sectors such as medical technology, cleantech, ICT, industrial applications and consumer products.

In 2013, 14 new companies were admitted to YES!Delft.

Intellectual Property (IP) policy

Patent protection of developed technologies makes it possible for companies or investors to exploit inventions. In addition to selling IP and providing licences to market parties, the aim is to create spin-outs arising from the knowledge developed at TU Delft. TU Delft participates in a number of these starting companies through the TU Delft Holding. The 'profit' or added value of the patents not only benefits the university, but also others.

When obtaining research assignments from the industry - in the form of contract research, for example - agreements concerning IP are a part of the cooperation agreement and/or the framework contract to be entered into.

In 2013, 73 invention disclosures were requested, which led to 47 patent applications. A total of 16 contracts concerning the patent portfolio were entered into in 2013.

TU Delft Holding

TU Delft Holding BV was founded in order to help implement the TU Delft valorisation policy and to ensure the realisation of the university's valorisation objectives, insofar as their implementation occurs through its own legal entities. TU Delft is the sole owner of TU Delft Holding BV. Within the holding, expertise is available concerning the following:

- Relevant networks in industry, venture capitalists
- Legal and financial structures with regard to (the establishment of) holdings
- Coaching and supervision of holdings
- Administrative aspects, consolidation and valuation issues with regard to (majority) holdings
- Taxation and regulations.

In addition, TU Delft Holding - together with partners from the industry, the financial world and the government - is active in the realisation of financial instruments that can be used by high-tech start-ups. These financial instruments consist of a Proof-of-Concept fund, a pre-seed fund and a number of seed investment funds. These instruments are necessary in order to commercialise new inventions or knowledge. Traditional funding instruments (bank loans, research subsidies or venture capital) are not suitable for this phase, due to the greater risks or the applied nature of the activities. In 2013, the treasury statute of the holding was finalised.

TU Delft Holding has two subholdings:

- Innovative companies that have arisen from the expertise of TU Delft are incorporated in Delft Enterprises. These companies have grown from an innovation that has been developed at the university. Usually these are inventions that have been the subject of research for many years. TU Delft's aim is for these companies to become independent in the near future.
 - o A new company, Delft Advanced Biorenewables, was incorporated in the holding in 2013.
 - o A management fee was also awarded to this subholding in 2013 to cover the fixed costs for a period of 4 years.
- TDH Services includes service companies that perform work in the field of valorisation and/or are an

extension of the activities of TU Delft; for example, the YESDelft incubator.

- o Innovation Quarter, the regional development company for Zuid-Holland, was founded in 2013. Science Port Holland and the Kennisalliantie were incorporated in this company. TU Delft participates in both the participation fund and the development company.
- o With the collaboration of the LUMC and the Erasmus MC, the BV Holland Particle Therapy Centre was founded in 2013 in order to establish a proton clinic in Delft.
- o Vinwater, an entity that should enable further joint research in the field of water resources engineering, was established with the collaboration of the Water Resources University in Vietnam.
- o In 2013, a framework for the funding of this subholding was adopted.

4.3 Innovative region

TU Delft is committed to being an attractive partner for regional knowledge institutions, companies and governmental bodies. The focus is on strengthening regional innovation clusters in the field of cooperation between public and private sectors, such as Medical Delta, Cleantech Delta, and Safety and Security Delta.

Regional Development Company

The university participates in the Regional Development Company Innovation Quarter, founded in December 2013, which will focus on the three main areas mentioned above. The most important objectives of the Regional Development Company are employment growth, the strengthening of innovative power, the improvement of regional cooperation and investments in promising technological companies. The prime focus is on development and innovation, marketing and acquisition and participation and financing.

Science Park Technopolis

Science Park Technopolis is part of the TU Delft campus and is a location for international high-tech companies, knowledge institutions and spin-offs.

In 2013, Applikon Biotechnology moved into Science Park Technopolis. Applikon is a Dutch producer of bioreactors that operates globally. Approximately 100 people will work at the new headquarters in Delft and all production, research and development will be carried out there.

TU Delft is collaborating with, among others, the Erasmus Medical Centre and the Leiden University Medical Centre on the realisation of the Holland Particle Therapy Centre (HollandPTC), a proton therapy clinic for the treatment of cancer. Science Park Technopolis is the intended location of this centre for

treatment and research. On 2 December 2013, the Dutch Ministry of Health, Welfare and Sport granted HollandPTC a licence in accordance with the Special Medical Procedures Act (SMPA). Cancer treatments involving proton therapy can now be performed in the Delft centre for treatment and research, which still has to be built. HollandPTC aims to treat the first patients in 2016.

4.4 Alliances with businesses

In the Strategic Plan (Roadmap TU Delft 2020) adopted in 2012, TU Delft stated its commitment to substantially strengthen the alliances with businesses in the coming years with the aim of realising a substantially greater volume of contract research with the national and international business community. To date, the focus of the contract research agreed on at central level by TU Delft has been on a number of multinationals within the top sectors HTSM and Chemistry, as well as a number of branch organisations mainly consisting of SME companies. In addition, the business community and the departments of the faculties know where to find one another, especially the faculties with a clear market or industry profile, or with many alumni in the market. TU Delft is already working with nearly all large R&D parties in the Netherlands. The majority of the contract research at TU Delft is conducted by Dutch companies or Dutch branches of foreign multinationals.

The aim is to continue and expand this 'regular' contract research in the coming years, focusing on the major importance of intensive collaboration with market shapers (technology shapers and disruptive innovators). These are often innovative European companies and/or multinationals with a high brand index or science-driven creative start-up companies. In June 2013, the Executive Board agreed to the proposed plan of action for realising these ambitions. Part of this plan of action involves a temporary increase in the number of account managers at TU Delft.

4.5 Joint Research Centres

Forming partnerships in the Joint Research Centres enables TU Delft to expand academic relationships with emerging knowledge economies. The Joint Research Centres also aim to support the Dutch business community abroad. TU Delft Brazil collaborates with companies such as DSM. The Beijing Research Center has an intensive partnership with Philips. In 2013 two new research centres were launched in Changzhou (China) and Hanoi (Vietnam).



4.6 Valorisation indicators

In view of the third core activity, Knowledge Valorisation, government and society require universities to make their valorisation efforts transparent. To this end, the Dutch universities formulated their valorisation objectives in their performance agreements with the Ministry of Education, Culture and Science in 2012. In 2013, the universities subsequently developed a workset of indicators for measuring the efforts and results of their valorisation activities.

An important basic principle here is that every university makes its own choices and formulates its own ambitions. In the 2014-2015 period, this work set will be further developed and tested. In 2016, this process must result in a tested and validated set of indicators for making the university efforts in the complex context of valorisation transparent. TU Delft's workset of valorisation indicators was formulated within the framework of the 3TU partnership in coordination with Twente University and Eindhoven University of Technology.

4.7. TU Delft Valorisation Agenda 2020

TU Delft has described the main points of the proposed valorisation policy in its TU Delft Roadmap 2020 Strategic Plan. The process of further implementing these main points started in 2013. The outline document adopted in 2013, Towards a Valorisation Agenda, established a framework for discussion. Subjects such as the alliance with businesses, the IP policy, fundraising and personal subsidies were discussed at a number of meetings.

Those present at these meetings included the Distinguished Professors appointed in 2012, Luuk van der Wielen and Sybrand van der Zwaag, the chairmen of the Delft Research-based Initiatives and the directors of the TU Delft Institutes. The subject was also on the agenda at the bilateral spring meetings of the Executive Board with the management teams of the faculties. The main topic of discussion was European and Dutch research funding.

In October, a draft version of the TU Delft Valorisation Agenda 2020 was discussed with the deans of the university, as well as with a number of external stakeholders. TU Delft's valorisation agenda is expected to be adopted in the first quarter of 2014.

4.8 Valorisation Grants

The STW technology institute awards Valorisation Grants to enterprising researchers for the development of innovative high-tech business activities that are based on knowledge developed at the university or at the research institute of the researcher. The Valorisation Grant is meant to bridge the so-called funding gap and enable researchers to construct a prototype.

In 2013, STW awarded 15 Valorisation Grants to researchers of TU Delft. There are two types of payments in this programme. Phase 1 is the feasibility study, in which a maximum sum of € 25,000 is awarded per project. Twelve Delft researchers received a Phase 1 subsidy in 2013. Phase 2 is the valorisation phase, in which a maximum sum of € 200,000 is awarded per project. Three Delft researchers received a subsidy in Phase 2.



STW Phase 1 valorisation grants awarded

Prof. Dr. F.M. Mulder	Long life battery for on-grid storage
Prof. Dr. T.J. Dingemans	A technology accelerator for high-performance polymers
Dr. R.B. Staszewski	Digitally intensive millimeter-wave frequency generation
Ir. M. Hajian	A portable electronic document reader for the visually impaired (blind)
Ir. B. van der Grinten	RooT tilting vehicle suspension
Prof. dr. ir. M. Zeman	In-line steady-state solar simulator
Prof. dr. B. Ninaber van Eyben	A biodegradable tent for music festivals
Dr. ir. J.F.M. Molenbroek	EXO-SHOES
Prof. dr. ir. W.S.J. Uijttewaal	Technical and Commercial Feasibility Study of Hydro-Powered Irrigation Pumps
Ir. E.A. Arkenbout	VAMOS
Prof. dr. B. Dam	Low cost Eye readable Hydrogen Detector for Diagnosis of Lactose Intolerance and Fructose Malabsorption
Ir. L.W. Baas	Reliable Screening for Skin Cancer - The Optical Skin Scanner

STW Phase 2 valorisation grants awarded

Dr. ir. M. Wisse	Fleet Cleaner: a robot for cleaning the shell plating of a ship
Dr. ir. R.B. Staszewski	Time-of-flight 3D imagers for robotic and automotive vision
Prof. dr. ir. J.L. Herder	High-Performance Energy Harvester (HiPER)



5. University campus and facilities

5.1 Introduction

TU Delft scores highly in international university rankings and wants to continue to do so. The end of the lifespan of several buildings is an opportunity to contribute to the realisation of this ambition. To this end, TU Delft is investing in large-scale renovation and new construction on campus in order to ensure that the accommodation is appropriate to the leading position of TU Delft. This optimisation process is complex, in part due to the many different ways of thinking – both within and outside TU Delft – which influence the development. The challenge is to, despite this complexity, realise a single campus that supports the TU Delft community as a whole. Working towards such a Living Campus is a lengthy process. The scope of the intended investments in property will have a major impact on the financial management of TU Delft. Accommodation has a strategic nature, so the choices made will have long-lasting effects. This makes a long-term framework for campus development both desirable and necessary.

Campus Vision and Real Estate Strategy

The Executive Board agreed to the campus vision and the real estate strategy in the reporting year. The basis for the new campus vision is the concept of the ‘Living Campus’, which involves providing a living and working environment with the facilities required by an international university. The campus vision does not just focus on the development of the TU Delft area (including Technopolis), but also on the connection to the adjoining areas and infrastructures.

TU Delft has plenty of accommodation, but it is not always the right kind. The goal for the coming years is to decrease the footprint and to improve the accommodation quality and ensure it is the right type. Herein lies the essence of the multifunctional use of the buildings. On the one hand, a building can be optimally used by accommodating multiple users in it. On the other hand, a building can be given a flexible layout to allow it to have different functions.

The Real Estate Strategy and the ensuing project list of real estate changes are determined by the campus vision. These changes cover such matters as new construction for the Applied Sciences faculty, the renovation of the building for Civil Engineering and the Van der Burghweg building, changes to the Architecture and the Built Environment and Electrical Engineering buildings, a quality impulse for the other buildings, and making the heating of the buildings more sustainable and creating a better connection between the buildings and the grounds, thereby contributing to a lively campus.

The essence of the Real Estate Strategy is: 1. The programme, 2. Sufficient flexibility and 3. Financial viability.

The programme is divided in three time frames: the short term (2013-2016), the medium term and the long term (up to 2022). Flexibility in both the projects and the planning is a precondition for the financial viability of the Real Estate Strategy. The Real Estate Strategy will be adjusted every year and submitted to the Executive Board in order to respond to the changes in the university and its environment.

5.2 New construction developments

New construction for Applied Sciences

Kluyverweg 4 and 6 will be demolished, because the buildings are no longer cost-effective according to the guidelines of the Real Estate Strategy. The new Applied Sciences faculty building is planned for this plot. The site was made ready for construction in 2013. The site is now being preloaded with a 2.5-metre-high sand layer. The car park of the RID, situated next to Kluyverweg 4, has also been closed. All of this has been done in preparation for the construction of the new Applied Sciences building. The waterway at the location has been diverted for this purpose.



QC laboratory

The new Quantum Computer Lab (QC lab) in the Applied Physics building was completed in August. The research groups of Leo Kouwenhoven, Lieven Vandersypen and Carlo Beenakker will conduct their quantum computer research in this ERC Synergy Quantum Computer Lab.

Bouwcampus

Knowledge institutions for technology related to construction, infrastructure and building services are combined in the Bouwcampus.

The initiators are the Directorate-General for Public Works and Water Management (Rijkswaterstaat), the Government Buildings Agency (Rijksgebouwendienst) and Bouwend Nederland.

The Bouwcampus will be located on the TU Delft campus. The connection to the faculties that are relevant to the construction sector (especially Architecture and the Built Environment and CEG) proved decisive in this regard. A national construction campus is a tool providing an essential boost to the renewal of the construction sector. The preparations for the accommodation of the Bouwcampus in the building on Van der Burghweg have been initiated.

Tram 19

The construction of the track section for tram line 19 is progressing steadily. Both in TU Noord and TU Midden, the work activities have been completed and the track has acquired its definitive form. Exceptions are the junction with the tunnel at Drebbelweg and the junction with the cycle path along Kruithuisweg. There is intensive collaboration with Haaglanden Urban District and the City of Delft on finding specific solutions to the risks of disruption to EEMCS laboratory research and the new Applied Sciences building. The terminal loop will be moved 150 metres in order to minimise the risk of vibration effects to the new construction for Applied Sciences.

5.3 Renovation and necessary maintenance

BK City STAY

In the summer of 2013, the renovations and relocations of the BK City STAY project started at the Faculty of Architecture and the Built Environment. BK City STAY is a two-year project with the following objectives: ensuring that the climate satisfies the legal requirements for permanent construction, implementing definitive safety and security measures, limiting the energy consumption and completing overdue maintenance to the building shell.

Relocation of the Process Technology and Fluid Dynamics Institute

The Process Technology and Fluid Dynamics Institute will mainly be housed in the buildings at Leeghwaterstraat 34a and 34b. At the end of 2013, the offices of the institute moved to the new location. For the relocation of the laboratories, the Schedule of Requirements has been finalised, the design phase has been completed and the call for tender has been initiated. The implementation will take place at the beginning of 2014.

3mE Relocation Project

The 3mE relocation project has led to the realisation of two teaching rooms with a capacity of 70 people per room. Tower B has been renovated and the Maritime and Transport Technology department has moved in. The last phase, which involves the realisation of the other five teaching rooms, has been initiated. The reason for this project is an accelerated demand for mid-sized study rooms for the Bachelor's programmes of 3mE.

Maintenance

Maintenance and painting work was carried out in July

and August. At the IDE faculty, the coating on the floor in the central hall and the awnings have been replaced. Sewer and road works have also been carried out.

5.4 TU Delft location for R&D companies

Applikon

On Wednesday 4 December, King Willem-Alexander presided over the official opening of Applikon Biotechnology in Delft. This new production and research unit houses state-of-the-art storage and production facilities, R&D laboratories and offices for approximately 100 employees.

3M

Technology company 3M will open its new main office for the Benelux region at Science Park Technopolis. The exterior structure has already been erected. 3M and TU Delft collaborate in many different areas, especially at the 3mE and Applied Sciences faculties.

5.5 Environment and sustainability

CORPORATE SOCIAL RESPONSIBILITY

A project group with, among others, Procurement, Legal Services, professors and other experts has worked on the translation of the CSR criteria of Agentschap NL and the OECD guidelines into requirements and conditions to be set later for (international) procurement and call to tender. As of 1 January 2013, the Sustainability policy function has been established at the Real Estate Development department of Facility Management & Real Estate.

SUSTAINABLE PURCHASING AND CHAIN RESPONSIBILITY

The Procurement department completely adheres to the VSNU covenant for sustainable procurement and applies the most up-to-date Agentschap NL sustainability criteria available. As soon as a long-term contract with a contract value above the European threshold value (€ 207,000) expires, the current Agentschap NL sustainability criteria are applied to the new contract. With regard to new products and services purchased through Procurement, sustainability criteria (if available) are applied in 100% of the cases. Furthermore, management staff and faculties also directly make purchases, without the involvement of the Procurement department. These purchases involve products and services with a procurement volume below the European threshold value. Personnel making independent purchases are made aware of the regulations concerning sustainability via the 'Procurement Toolkit'. For procurements and calls for tender, the management of Facility Management & Real Estate adheres to the guidelines and sustainability criteria for the various product groups of Agentschap NL. With regard to renovation and new construction, conditions for measures such as energy savings and the reduction of CO₂, waste materials and water consumption are included in the schedules of requirements and the specifications, achieving a link with, among other things, the BREEAM criteria for sustainable construction. The criteria of the 'Bewust Bouwen' (Conscious Construction) programme are applied to several projects as a pilot. The same applies to investments in the infrastructure and grounds of the campus. With regard to the facility services, attention is paid to the procurement of sustainable products, including fair trade and healthy catering products, as well as the reduction of waste materials by using biodegradable cleaning products. In 2013,

Energy consumption

Energy consumption in 2013	199.147MWh
Target for decrease in energy consumption in 2013 compared to 2012	2%
Decrease in energy consumption in 2013 compared to 2012	3%

Generated renewable energy (with CHP-generated electricity)

Renewable energy generated in 2013	14.232MWh
Increase in amount of renewable energy generated in 2013 compared to 2012	75%
Percentage of the total amount of renewable energy in 2013	7%

Waste

Volume of waste in 2013	1588,3 tonnes
Reduction of waste streams in % compared to 2012	17.5%

Drinking water consumption

Drinking water consumption in 2013	200399 m ³
Reduction of drinking water consumption in % compared to 2012	2.5%

the Executive Board signed the Responsible Market Behaviour Code for cleaning.

ENERGY

Agreements and objectives

The basic principles of the energy policy are based on the following agreements with the government and are laid down in the TU Delft 2020/2040 energy vision.

• WO/HBO Long-term Agreement

The Energy-efficiency Long-term Agreements are agreements between the government and companies, institutions and municipalities regarding the more effective and efficient use of energy. TU Delft has participated in the WO/HBO long-term agreement since 1999. Since 2008, the agreement has been called MJA3. Participants are obligated to formulate an Energy Efficiency Plan every four years and maintain an energy care system. The prevailing EEP of TU Delft is the EEP2013-2016. The energy care system is currently being updated. The overall objective of the MJA3 is to achieve energy savings of 30% in 2020 compared to the 2005 reference year (2% per year).

• Energy-neutral Delft in 2050

On 31 May 2013, TU Delft signed the 'E-deal Delft energy-neutral 2050' at the invitation of the City of Delft. By doing so, TU Delft declared that it endorses the objective of making Delft energy-neutral in 2050 and accepts its responsibility in reducing CO2 emissions by investing in energy conservation, sustainable production of energy and intelligent energy systems.

• Long-term energy vision

In 2013, TU Delft worked on formulating a long-term energy vision (2040), which extends the MJA objective of 2% savings per year and will also include an objective for 'sustainable generation'. The vision for the medium term (2020) has already been determined at the management level (FMRE). The 2040 long-term vision is expected to be ready at the end of March 2014.

Energy policy

In order to realise the above-mentioned objectives, TU Delft is committed to:

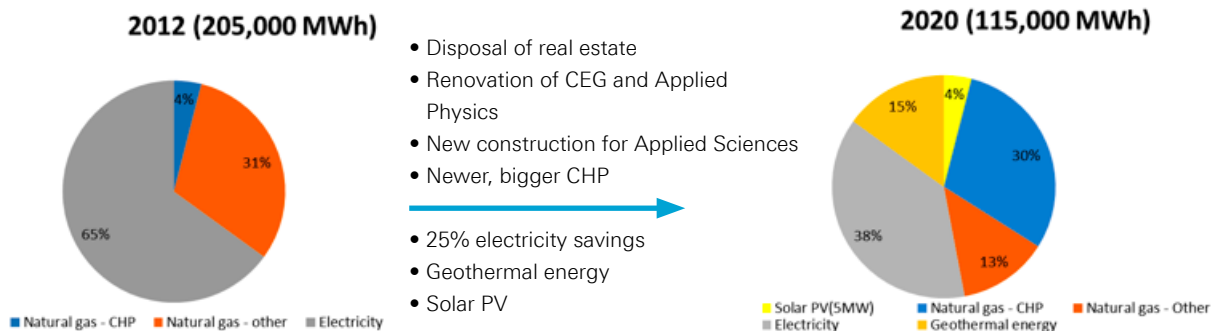
- energy saving by means of sustainable maintenance and improved power management
- sustainable generation by means of geothermal energy and heat and cold storage systems

Energy saving

In accordance with the campus vision and the real estate strategy, the most important components, which can generally be expected to have saving effects, are:

- Disposal of real estate
- Large-scale renovation projects: CEG and Applied Physics
- New construction for Applied Sciences
- use of the new combined heat and power generation units, delivered in 2013

Furthermore, 25% electricity saving is an objective that can be achieved through sustainable maintenance. In the coming 8 years, obsolete lighting and computers will be replaced by more sustainable components. Compared to 2005 (MJA reference year), the objective is 41% primary energy saving in 2020. Almost 15% of this saving arises from a heating requirement of a geothermal source of 70,000 GJ in 2020 to be realised in 2014-2015. This volume of geothermal energy is equal to 20% of the sustainable generation as of 2020. The target for sustainable generation in the 2020 energy vision is 25%. TU Delft is committed to using wind energy and solar panels to achieve the remaining 5%.



Primary Energy Consumption of TU Delft 2012 → 2020

Primary Energy Consumption of TU Delft 2012 → 2020

Energy and CO ₂ :	Savings in 2020 compared to 2005
Primary energy:	-41%
Primary energy per m ² :	-35%
CO ₂ :	-52%

Sustainable generation (% of building needs)	
Geothermal energy:	20%
Solar PV:	5%

In 2013, the 10 buildings with the highest energy consumption 'quick wins' were identified within the framework of the 'Improved Power Management' project. These are buildings where energy savings can be achieved in the near future using relatively minor adjustments. Funds have been included in the 2014 maintenance budget for this purpose. The second version of the TU Delft Energy Monitor also became available in 2013. This is a website of TU Delft, which shows the energy consumption per building and provides information on proposed and implemented energy saving programmes.

Sustainable generation using geothermal energy and a mid-temperature heating network

By making buildings suitable for heating at a temperature lower than at present, it becomes possible to 1) use the residual heat in the network (connecting to the return pipe) and 2) to lower the temperature level of the entire network. This also creates the possibility to connect a geothermal source alongside the current CHP units and peak boilers: cascading with the help of three different sources at three temperature levels. This will eventually result in a significant CO₂ reduction.

In the spring of 2013, TU Delft decided to initiate contractual negotiations with the intended operator. The necessary adjustments to buildings and the heating network have also been identified and included

in the real estate strategy. The implementation will occur in phases in the 2015-2020 period.

Sustainable generation using thermal energy storage (TES)

Science Park Technopolis has an environmental objective of 30% CO₂ reduction compared to a (conventional) reference situation. Of this, 17% can be achieved by means of sustainable generation using TES. When the land is allocated, project developers are obligated to buy cold and heat from Suenso B.V. (owned by and part of TU Delft), which creates and exploits TES systems. Three TES systems are currently being used (Exact, YES!Delft and Applikon). Applikon became operational in 2013. The system for 3M is currently being constructed and a joint TES is being prepared for the new construction for Applied Sciences and for HollandPTC. A first analysis of the results obtained with TES systems is also being prepared.

WASTE DISPOSAL

For waste disposal at TU Delft, a distinction is drawn between the waste streams of residual waste, paper, hazardous waste, glass, wood, metal, construction and demolition, rubble and industrial waste. The amounts of waste in the 2010-2013 period are shown below. The total amount of waste since 2010 shows a falling trend. This is caused by the decrease in residual waste and paper/cardboard, which is likely due to increases in digitalisation and working from home. The amount of hazardous waste mainly consists of laboratory waste. In 2013, a number of departments initiated a clean-up campaign for chemicals, resulting in a larger waste stream. The amounts of construction and demolition waste and rubble were the result of renovations and related activities. The amounts of waste therefore provide an irregular impression through the years.

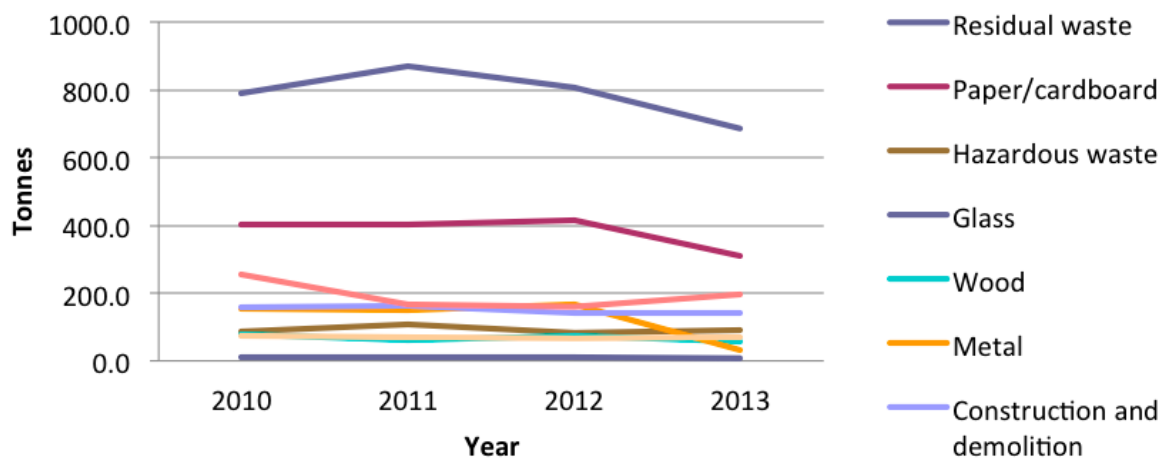
The collection of separated waste promotes reuse/ useful application. Separation is not only essential from an environmental and hygienic perspective; separated waste and paper generates money.

Waste for the TU Delft Environmental Report 2013

Waste stream	2010	2011	2012	2013
Residual waste	791.0	869.6	807.7	685.7
Paper/cardboard	401.0	404.3	413.6	309.8
Hazardous waste	87.0	107.7	82.9	91.6
Glass	12.5	11.0	11.6	7.9
Wood	76.6	60.6	73.9	55.2
Metal	152.8	147.8	167.9	30.8
Construction and demolition	157.5	160.9	139.9	142.8
Rubble	256.3	168.0	160.0	195.4
Industrial waste	73.4	68.0	66.8	69.1
total	2008.1	1997.9	1924.3	1588.3



Discharge per waste stream



Data for 2013 up to and including October

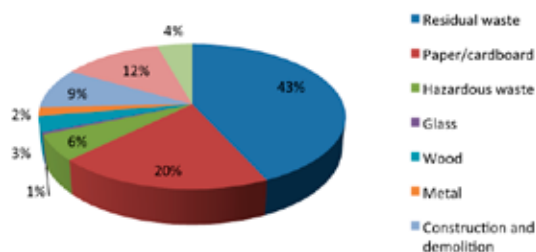
Together with the external waste processing company, TU Delft will ensure that waste separation at the source continues to be correctly performed. The diagrams below show the separation of the waste streams for 2012 and 2013. In 2013, underground containers were placed at the Aula Building to enable better waste separation and to prevent litter.

WATER CONSUMPTION

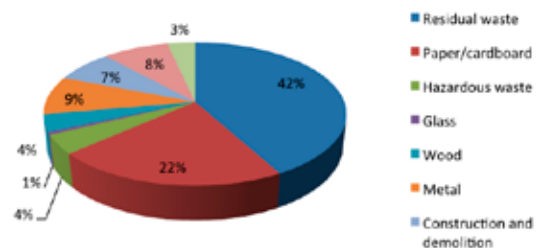
In addition to drinking water, TU Delft also uses spring water and water from the Schie.

Spring water is used by Physics, while Civil Engineering uses the water from the Schie in its research set-up. The fluctuation in the use of spring and Schie water is related to the number of studies with this set-up.

Distribution of waste streams 2013

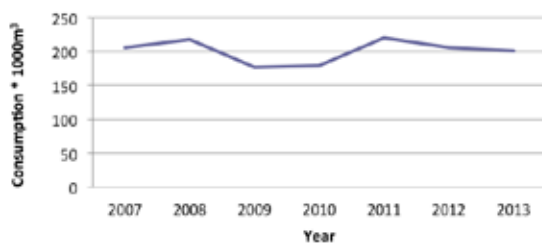


Distribution of waste streams 2012

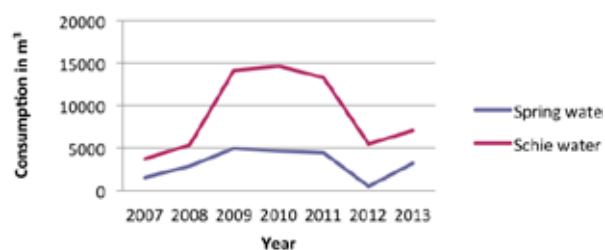




Drinking water



Miscellaneous water consumption



5.6 Student accommodation

Student accommodation

Planning permission for the construction of the student accommodations on Balthasar van der Polweg was requested in August 2013. TU Delft is collaborating with DUWO and the City of Delft on the renovation and improvement of the built environment and the surrounding area on the campus.

5.7 Facilities

Childcare facilities on the TU Delft campus

TU Delft has decided to establish an international childcare centre for children aged 0 to 4, in collaboration with the Stichting Rijswijkse Kinderopvang. The childcare centre should open its doors at the end of 2014. Childcare fits in with TU Delft's ambition to create a Living Campus, providing our national and international personnel with a home base, with all facilities within easy reach. In addition, TU Delft, the City of Delft and the Laurentius Stichting are discussing the establishment of an internationally oriented primary school on the campus. Together with the childcare facilities, this could grow to become an international childcare centre where children between the ages of 0 and 12 are provided with day care and primary school education.

5.8 ICT and information management

Open data/Hackathon

Since March 2013, SSC ICT has supplied certain data to its customers in accordance with the 'open data' principle. This means that students, staff and also third parties can use data made available by TU Delft in a controlled manner in applications. The launch of the website with open data was accompanied by a hackathon, during which a group of students and staff members spent an entire day following presentations and writing applications using the new interface.

ICT Cultural Change programmes

To support the implementation of the ICT vision, two Cultural Change programmes were launched in 2013. 'The language of ICT' programme challenges all staff members to think about their personal contribution to changing the present way of working from being technology oriented to customer oriented. The emphasis is on soft skills rather than technology. Furthermore, a three-year programme was launched comprising an EQ assessment and modules on entrepreneurship, change management and group dynamics.

Architecture principles

The Architecture principles, the underlying ICT basic principles at TU Delft dating from 2006, were modified and expanded in 2013. As part of the strategic alliance with Leiden University and the Erasmus University, the Shared Service Center ICT is working on coordinating the Architecture principles.

Cooperation between universities for shared data centres

In 2014, TU Delft and Leiden University agreed to create back-ups and send them to each other's data centres, so that the back-ups will be safe in the event of a calamity occurring at one of the universities.

Digital cooperation with SharePoint

More than 1600 users currently work with SharePoint, a software package that allows them to share information and work together on documents. Functions such as sharing action lists, placing agenda items and sharing documents (including version management) have proved particularly popular.

SEPA

The SEPA project of the University Corporate Office (UCO), headed by the Shared Service Centre Finance, has the task of ensuring that the payment transfers made through the UCO meet the SEPA requirements. The adjustments involve entering the IBAN in the systems instead of a bank account number, but also complying with the modified regulations and new technical standards. Furthermore, all websites and printed materials must state the IBAN and BIC of TU Delft, alongside the current bank account number. The deadline is 1 February 2014. Two of the three

main topics, paying creditors and paying salaries, have already been implemented. The last topic, the collection of tuition fees, has been fully tested.

Completion of Flexnet

In total, 95% of the campus network has been switched over to Flexnet. The Reactor Institute Delft has not been switched over due to legal requirements concerning the network implementation. The migration at EEMCS requires special attention due to specific preferences and needs. The implementation of Flexnet has made cross-campus migration possible without any further involvement of ICT, because the network itself recognises who or what wants to use the network and then acts accordingly. This concept also makes it possible to work flexibly using personal devices on the campus fixed network.

5.9 TU Delft Library

Cutbacks

In 2013, the TU Delft Library saw major organisational change, the withdrawal of the national task subsidy and substantial cutbacks. The required level of cutbacks to the Library is 15%. The cutbacks to the Library will be achieved along the following four lines: transferring the Library Management Service to the Cloud, making the business processes at the two desks more efficient and changing the organisation of the virtual customer service, examining the specific subject collections more selectively - it may be possible to finance a portion of these collections through the research projects - and, finally, downsizing the management.

Educational support

The workshop 'How to manage your research information' was given five times in 2013 to 100 PhD students within the framework of the Graduate School. The TU Delft Library also supported the Information Literacy 1 and 2 courses. The New Media Centre of the TU Delft Library contributed to the course design, production and publishing of the new MOOCs. Information specialists of the Education Support product group helped to answer the questions of the participating professors regarding copyright and plagiarism.

Digital student files

Student files with personal information and information about admission and enrolment can now be accessed digitally. The digital student files were created by the Library, in cooperation with the Central Student Administration, Account Groups and the International Office.

Automatic renewal of books

To make it even easier for readers to borrow books, on 12 February 2013 an automatic loan renewal system was introduced. From this date the official loan period is four weeks for everyone. Books are automatically



renewed every four weeks, provided they have not been reserved by someone else. This service has been provided to give the readers every opportunity to consult the borrowed book. After all, the books are there to be borrowed, not to fill the library shelves.

DRI pages delivery

In 2013, the publication pages for the Delft Energy Initiative and the Delft Infrastructures & Mobility Initiative were delivered. In addition, a search string for the Delft Urban Water Center was delivered to the TU Delft Repository in 2013 and included on the website of the Delft Urban Water Center.

Staff pages

In December, the staff pages were implemented. The staff pages provide an overview of the personal information of each staff member, with additional information from underlying systems. This creates a dynamic, complete overview of the staff member's personal information, biography, ancillary activities and academic publications, among other things.

3TU.Datacentrum developments

In January, the 3TU.Datacentrum was awarded the Data Seal of Approval quality hallmark. The 3TU.Datacentrum now also manages the OpenEarth data lab, in which monitoring data of the Zandmotor (Sand Engine) research project is centrally stored and made accessible. On 8 May, the Research Data Netherlands partnership, consisting of the 3TU.Datacentrum and Data Archiving and Network Services (DANS), was launched. With this coalition, the two data archives are joining forces in the area of sustainable data archiving. As of September, the data sets in the 3TU.Datacentrum can be found in the Thomson Reuters Data Citation Index and citations to the datasets are counted.

TU Delft Repositories developments

The TU Delft Repository, the showcase for the public academic publications of TU Delft, recorded the millionth user in 2013 and contribution number 35,000. The Research and Documentation Centre (WODC) of the Ministry of Security and Justice and TNO have each had their own repository at TU Delft Library since April and October respectively. In 2013, the official image bank of TU Delft was launched, containing 28,300 images.



6. People and Work

6.1 Management control

TU Delft has operated a university-wide planning and evaluation cycle since 2005, linking strategy to resources. This is done for the following reasons:

- To reinforce the coherence of strategy and policy at the institutional, faculty, departmental and support levels.
- To encourage management dialogue, as well as coordination and interaction between the above-mentioned organisation levels.
- To monitor and evaluate the implementation of proposed actions.

The adage is: “We, as TU Delft and as faculties, do the right things and we do them well.” As well as internal objectives to be met, there are also long-term and performance agreements with the Ministry of Education, Culture and Science to be fulfilled.

Faculty Long-Term Plan

All faculties compose a long-term faculty plan. The goal of this plan is for the faculties to formulate their own long-term strategy, with the institutional plan as an overarching framework. The faculty long-term plans follow the same format as the institutional plan. The faculty long-term plans cover a six-year period. They are updated every three years.

Administrative consultation rounds

Bilateral consultations take place between the Executive Board, the dean and the management team of the individual faculties every spring and autumn. Comparable meetings are also held with the Executive Board and the heads of the departments of the University Corporate Office. Since 2013, multi-annual agreements concerning the primary processes education, research and valorisation & management have been made with the faculties and the University Corporate Office.

The compilation and implementation of the faculty

and the University Corporate Office long-term plans are the subject of a critical dialogue. They are reviewed for their ambition and feasibility, their reflection of the institutional strategic objectives and their practicality. All of these items are the subject of specific administrative agreements, which include the realisation of educational, research, knowledge valorisation and management targets. Such agreements must be realistic given the immediate and longer-term financial resources available to a faculty or the University Corporate Office.

During the budget year, the member of the Executive Board with responsibility for management matters meets the dean and representatives of the management team every quarter to discuss administrative matters. Until 2013, these meetings concerned the monthly financial reports and the quarterly controller’s letter; the monitoring of the substantive goals, laid down in the administrative agreements, and a discussion on the strategic risks were added in 2013. In that same year, the administrative agenda-setting process was further refined by coordinating meetings about cross-domain policy, the further improvement of the Executive Board decision-making protocol and the implementation of the policy monitor for national developments in the field of education and research.

6.2 Human Resource Management

Strategy and policy

In 2010 TU Delft laid down the Human Resources (HR) strategy ‘Freedom to Excel’. This HR strategy is aimed at organisational development, talent management and leadership, and has the following goals: high(er) quality of the staff, strengthening the university’s reputation as the favourite employer, more diversity in a broad sense, high-quality coaching leadership, and more organisational flexibility. In 2013, these goals were



tackled with a plan-based approach. Furthermore, the necessary improvements to the service and organisational development were initiated.

HIGH(ER) QUALITY OF THE STAFF

Guidelines for sabbaticals

The HR Department has published the following guidelines for sabbaticals for the academic staff in agreement with the Executive Board and the deans. Sabbatical leaves relieve academic staff members of their usual university commitments to allow them to focus full-time on their (research) interests, enabling them to return with renewed vitality, perspective and insight. A sabbatical leave benefits both the quality and the employability of academic staff members. In addition, sabbaticals help strengthen the staff members' international network and, through their various contacts, also the institutional network of TU Delft.

PhD StartUP

The PhD StartUP is a three-day integral introduction programme for all new PhD students and is part of the Doctoral Education of the Graduate School. The aim of the programme is to support PhD students with their doctoral studies (with the emphasis on the requirements and the mutual expectations with regard to control and ownership), the development of competencies and skills (with the emphasis on networks, communication and personal leadership) and finally the development of knowledge about ethics and academic integrity. Furthermore, the programme contributes to the formation of an interfaculty peer group. In 2013, the PhD StartUP was organised twelve times for a total of 360 PhD students. They gave the programme an average score of 7.8.

New training programmes

Within the framework of the set Tenure Track policy of TU Delft, a Personal Development TT Programme was offered for the first time to 15 young and talented university professors in 2013 for the purpose of strengthening their academic career. The results of the Work-Related Psychosocial Stress survey led to a training programme being developed in 2013 to help employees deal with unwanted behaviour, such as aggression. Effective influencing is a new training programme that was developed in 2013 at the request of the Deputy Head of Department network, the TU Delft Library and the Traineeship.

STRENGTHENING OUR REPUTATION AS FAVOURITE EMPLOYER

Collective Labour Agreement

On 21 May 2013, the new text of the Collective Labour Agreement of Dutch Universities 2011-2013 was determined by the Collective Labour Agreement parties. The Collective Labour Agreement was renewed on 1 January 2014.

HR Excellence in Research logo

In July 2013, the European Commission awarded the 'HR Excellence in Research logo' to TU Delft. The logo is a European standard for research institutions that provide a favourable work environment. In order to qualify for the logo, an internal analysis was carried out and a plan of action was drawn up, based largely on the TU Delft Roadmap 2020.

Employment benefits animated video

A short animated video informing new employees about the TU Delft employment benefits was published online in 2013.



MORE DIVERSITY IN A BROAD SENSE

On 15 April 2013, the third female dean of TU Delft, Prof. Hester Bijl, was appointed at the Faculty of Aerospace Engineering.

Delft Technology Fellowship

In 2013, the recruitment for the second round of the Fellowship was initiated. The Executive Board established this Fellowship for excellent female scientists. In 2012, thirteen female scientists were appointed to a temporary assistant/associate or full professor position.

Pilot Dual Career Services

In order to be attractive as an employer, it is becoming increasingly important to pay attention to the partner of potential future staff members, especially if they are from abroad. For this reason, the pilot 'Dual Career Services' was launched at the end of 2013, aimed at helping 'accompanying' partners and providing them with information about jobs and social interaction in the Netherlands.

HIGH-QUALITY COACHING LEADERSHIP

Leadership

TU Delft invests in a good work climate, in which people can flourish, conduct excellent research and provide inspirational education. The supervisors need to be able to create such an environment. TU Delft therefore invests in the development of leadership skills, both for the academic staff and the support services, and provides various tools for this purpose. In the R&D Cycle, supervisors and employees discuss both the results obtained and the desired development direction of the employee, who is thereby explicitly the topic of this conversation. The skills that both the supervisor and the employee have for adequately

conducting such a conversation determine to a large extent if the conversation will actually contribute to the development of the employee. Furthermore, it is important within the framework of good leadership that supervisors are aware of the manner in which they are expected to lead, that they are capable of reflecting on their own conduct and that they also encourage their employees to show personal leadership.

Management Development Leadership Track

A Management Development Leadership Track has been initiated to facilitate the above, comprising the following four parts:

- A training programme 'Basic Skills for Supervisors' intended for new supervisors. In this training programme, participants from different universities learn about several aspects of leadership; they do this both on location and via e-learning (the blended learning concept).
- A 'Coaching Leadership' programme for more experienced supervisors. This programme provides supervisors with the opportunity to develop a leadership style that will help them to support employees as they develop personal leadership.
- Every year, a group of 18 full professors, associate professors and a number of support staff members are given the opportunity to take the 'HRM course in Academic Leadership'. In this course, the participants reflect on the development of their leadership skills and their (personal) growth as a leader in this academic setting for half a year. They do this by means of self-reflection, feedback, peer-to-peer learning and learning about organisation, strategy formulation and change management.
- A two-day workshop, the 'Introductory Workshop for New Professors', is organised twice a year for new full professors. This allows them to familiarise themselves with each other and with the university,

and enables them to focus on the goals that they wish to achieve as professors. In this way, they expand their network beyond the confines of their field and faculty, and learn how the university is organised and how the basic processes are shaped.

MORE FLEXIBILITY IN THE ORGANISATION

Social Innovation

Within the framework of the Social Innovation programme, 25 workshops with 452 participating employees were organised in the summer and a new vision and new regulations relating to flexible working hours were developed.

SERVICE AND ORGANISATIONAL DEVELOPMENT

Improvement of HR Services turnaround time

HR Services has shortened the turnaround time of the HR processes and cleared backlogs. This is the result of a change in the working method of the internal organisation.

Reimplementation of PeopleSoft 9.1

On 25 April 2013, the kick-off of the Reimplementation of the PeopleSoft 9.1 project took place. In this project, ICT & HR are organising a personnel system using a standard PeopleSoft environment. The shadowing phase started at the end of 2013. PeopleSoft 9.1 should make it possible for HR self-service to be expanded by staff and supervisors.

Collaboration between HR Services and the Central International Office

Together with Central International Office, HR Services has analysed the process of the appointment of foreign staff members and formulated an improvement plan for shortening the turnaround time.

Delft, Leiden and Rotterdam partnership

In 2013, Leiden University, TU Delft and Erasmus University agreed to cooperate in the field of HR with regard to the management trainee programme, knowledge-sharing and the sharing and development of study programmes. In 2013, a joint traineeship was developed and 12 trainees were appointed. With the framework of knowledge-sharing, the following themes have been determined: E-HRM, Mobility, R&D Cycle and Talent Management. The degree programmes of the three universities have been examined and a list has been compiled of degree and training programmes that can be opened to employees of the other universities.

Safety and Environment and a new policy was formulated with the aim of promoting responsibility in the line, promoting the checking and control possibilities in the Planning & Evaluation Cycle of TU Delft, reducing the administrative burden on the primary process, harmonising the policy for the services and faculties, and developing the department of Health, Safety and Environment into a centre of expertise.

WELFARE

Risk Inventory and Evaluation Methodology

In 2013, the dynamic Risk Inventory and Evaluation Methodology was further implemented, as described in the document *De dynamische RI&E bij de TU Delft: Kapstok met een maatpak*.

It was determined that the traditional way of assessing and evaluating risks was no longer adequate. This was due to among other things the unique and complex nature of the activities within the organisation and the different cultural backgrounds of the TU Delft staff members.

Working Conditions Catalogue of Dutch Universities

The Health, Safety and Environment department of TU Delft is responsible for the Working Conditions Catalogue of Dutch Universities. This tool for self-regulation replaces a large number of policy regulations for working conditions laid down by the government. The Working Conditions Catalogue also provides examples of good practices for adhering to these regulations.

Vitality Week and the Health Coach Programme

In 2013, the health policy was focused on sustainable employability, using the Health Coach Programme, among other things. The aim of the Health Coach programme is to achieve a long-term change in the lifestyle of employees, so that they feel healthier and fitter. Participants receive information about nutrition, exercise, stress management and active social support. In 2013, 7 new groups with a total of 115 employees were launched. Many positive results were again obtained this year in values such as weight, BMI, cholesterol and blood sugar levels. Employees who already completed the programme some time ago are shown to have achieved lasting benefits. Furthermore, 312 employees participated in workshops about nutrition, exercise and stress management in the second edition of the Vitality Week. A nurse gave 195 employees a health check focused on height, weight, BMI, blood pressure, cholesterol and blood sugar levels.

Absenteeism

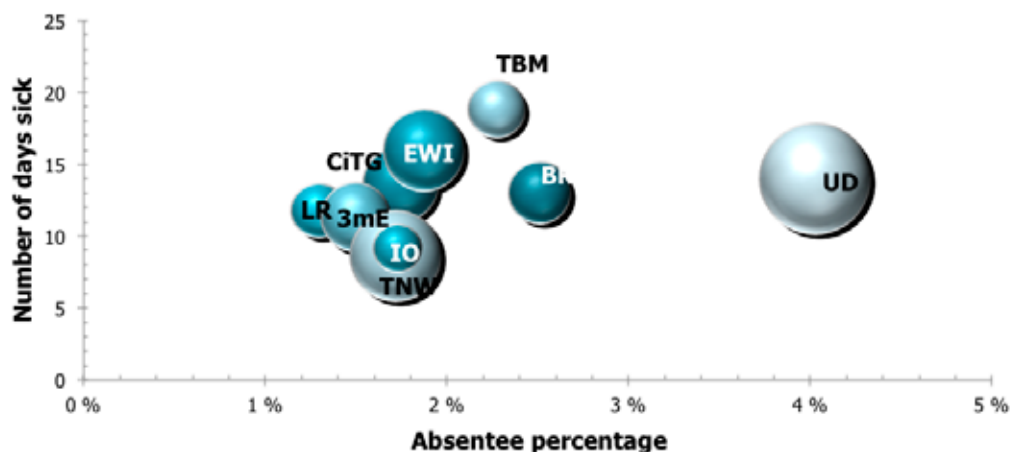
The absentee rate at TU Delft decreased from 2.5% to 2.4% in 2013. The absentee rate of the University Corporate Office especially decreased substantially from 4.5% to 4.0%. The sickness report frequency

6.3 Welfare and health

Health, Safety and Environment

In 2013, clusters were formed in the field of Health,

TU Delft absenteeism in 2013



(SRF), the average annual number of absentee reports per employee, remained the same at 0.8. The absence duration (AD) increased slightly from 12.4 to 12.9 days. The zero absentee percentage (ZAP) remained largely the same at 66.5%. This means that 3494 of the 5282 employees did not report sick in 2013. The absentee percentages decreased at the faculties of Architecture and the Built Environment, IDE, AE, 3mE, TPM and the University Corporate Office. At the faculties of CEG, EEMCS and Applied Sciences, the absentee figures increased slightly. The absentee rates of the FMRE and HR service departments, 5.8% and 5.2% respectively, are above the University Corporate Office average (4%).

University social services

The number of applications for university social services increased from 98 applications in 2012 to 116 in 2013. Many applications came from the departments of the University Corporate Office. There were also many applications from assistant professors (of the 117 files closed in 2013, 36 originated from the academic staff). In 2013, most applications came through university health services doctors, followed by the employees who came on their own initiative. The management and supervisors were also active in referring this year. The most important reasons to apply for university social services are stress and an impending burn-out. The other reasons are coping problems, the relationship with the direct superior and (impending) dismissal.

SAFETY

Updated university policy for hazardous materials

As a result of legal amendments, the new environmental licence for the campus and agreements with the labour inspectorate, the hazardous materials policy has been updated. This places higher demands on the logistics, the registration and the storage of hazardous materials. The decision has been made to form a university-wide gas team. The risk of exposure to greater amounts of volatile organic solvents has been investigated. Based on the available data, it is not possible to link the use of volatile organic

solvents to a user. However, the risk of exceeding the limits is small if the right facilities are used. It therefore remains important to provide information about these facilities and be alert to their use.

Promoting safety knowledge and awareness among employees

In order to promote safe working practices within TU Delft, assessable instruction of new personnel and the personnel of contractors is essential. The digital test was further implemented within TU Delft in 2013.

Integral Safety

Within the framework of integral safety, the TU Delft Integral Safety Pocket Book and the TU Delft Safety Profile 2013 have been created. These describe the different safety topics and the associated measures. The annual awareness campaign in 2013 was focused on traffic safety, theft and cyber security. Crisis training programmes were organised for the Executive Board and seven faculties. Students were provided with individual and group training on travel safety. In addition, coordination was given to internal studies on integral safety and the Higher Education Integral Safety project of the Ministry of Education, Culture and Science.

THE ENVIRONMENT

Working conditions/environment tools

The Working Conditions/Environment Toolkit Servant has been significantly expanded and now contains the following products

- Safety Instruction and Assessment
- Licenses Management System
- Space-Risk Classification
- Inspection labs
- Working conditions map, competition management, periodic inspection equipment, safe incident notification, emergency response team information system, radiation and radioactivity
- Gas information system
- System for ordering and registering chemicals
- System for registering biosafety



6.4 Legal affairs

Letters of objection and appeals

Any student or employee of TU Delft may file a complaint or an appeal against the university's decisions. The Executive Board makes a decision regarding the objection after receiving advice from the Objections Committee for employees and other matters or student affairs. Student appeals regarding examinations, credits, etc. are handled by the Examination Appeals Board (EAB). Students may submit letters of objection regarding rejections on the basis of the Graduation Support Scheme (RAS), as well as objections regarding enrolment, unenrolment or tuition fees. The letters of objection from employees concern legal status.

In the table below, the number of settled objections and appeals (136 and 83 respectively) in 2013 are shown according to category and decision type. The number of settled EAB appeals increased for the second year in a row. The number of student-related cases dealt with increased by 27; the majority of these were outstanding letters of objection from 2012 directed against the long-term study regulation (later repealed) which still had to be formally declared inadmissible.

Category	Founded	Unfounded	Inadmissible	Withdrawn	Total	
EAB (student)	2	8		4	69	83
Student	5	34		36	15	90
Dismissal (employee)	1	4		-	3	8
Job rating (employee)	-	-		-	-	0
Miscellaneous (employee)	2	9		7	15	33
Total	10	55		47	102	214

The number of settled letters of objection and appeal in 2012, according to category and decision type

The General Administrative Law Act (Awb) specifies an 18-week decision period within which objections must be dealt with. The decision period for student cases is 10 weeks. The average settlement period in 2013 at TU Delft was 10.1 weeks for student cases, 13.9 weeks for other matters and 16.3 weeks for dismissal cases.

Complaints

Scientific and Academic Integrity Regulations

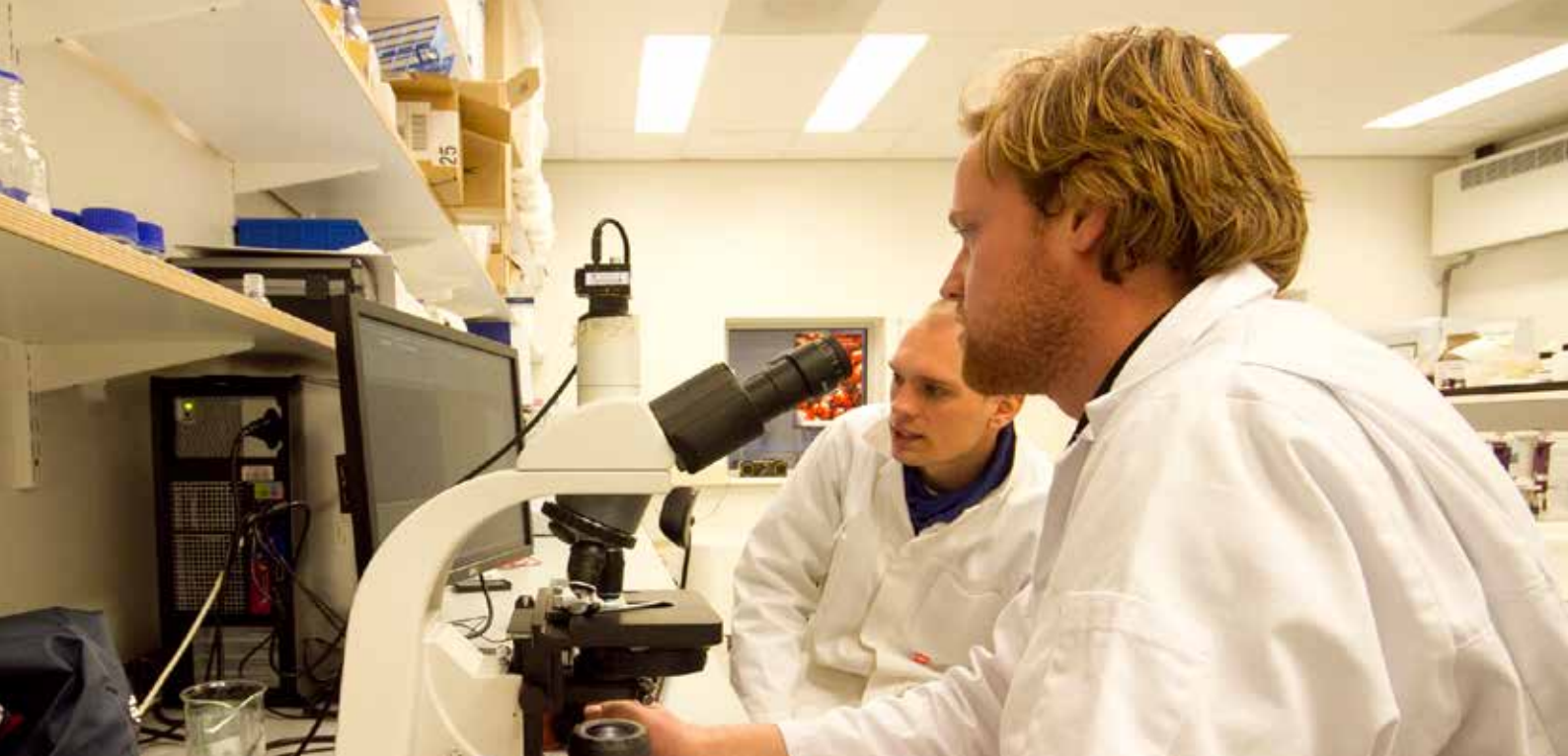
No complaints were lodged with the Scientific and Academic Integrity Committee this year. However, two matters were brought to the attention of the committee, along with the request to determine which action should be taken. They were not processed as complaints. Two cases from 2012 were settled, while one was still being dealt with.

Regulations for complaints about undesirable behaviour

A complaint was lodged with the Undesirable Behaviour Complaints Committee and is still being processed.

Conflict of Interest Committee

The Conflict of Interest Committee is a committee with external members that can issue recommendations on



dilemmas that may arise when science and the market come into contact with each other. Four cases were discussed in 2013

Regulations

Within the framework of the TU Delft-wide integrity programme, regulations have been established for the following three subjects: business trips, ancillary activities and academic integrity. Furthermore, the TU Delft Executive and Management Regulations have been modified to include the formalisation of the TU Delft Graduate School. The position of vice-rector has been included in these regulations and the lists of degree programmes and research schools have been updated.

Education law

The legislative proposal 'Quality in diversity' took effect on 1 September 2013. The consequences of this for TU Delft have been determined. An implementation plan has been formulated which will be used to draw up implementation regulations. Legal Services has collaborated with Education & Student Affairs on the submission of a plan based on a so-called experimental general administrative measure for PhD students. The student progress regulations for international students have been established based on the legislation for Modernisation of the Migration Policy. The Student Charter, which contains all regulations that are relevant to students, has been adopted.

Partnerships

In November 2013, a MoU was signed between the Chinese city of Changzhou and TU Delft for a joint research institute in the field of LED lighting. Joint Regulations were established for the strategic alliance of Leiden, Delft and Erasmus universities (LDE). Legal Services is responsible for handling the legal aspects of

the establishment of the proton clinic HollandPTC B.V., carried out in collaboration with the academic medical centres of Leiden and Erasmus. Finally, there has been collaboration on the MoU for the Amsterdam Institute for Advanced Metropolitan Solutions (AMS).

6.5 Integrity programme and Code of Ethics TU Delft

The integrity programme that was launched at the end of 2011 has two objectives: spreading awareness of the Code of Ethics TU Delft among employees and (PhD) students, and the revision and, where necessary, improvement of the regulations directly related to integrity. In 2012 and at the beginning of 2013, the TU Delft Code of Ethics and ethical dilemmas were discussed at the university in more than thirty meetings with scientists and support staff.

An important basic principle throughout these discussions is that 'trust' forms the basis of all conversations. By sharing our views on different issues related to (academic) integrity, we contribute to the creation of a culture in which we can openly discuss each other's opinions and judgements. By keeping (academic) integrity on the agenda in the meetings with academic staff, this subject will increasingly become a widely discussed topic.

The subjects 'open access' and 'open data' are also discussed in detail at these faculty meetings. Experiences and best practices with regard to how to handle research data, how something should be published and what the newest developments are in this area are shared. Obviously, these discussions also focus on the assessments and questions surrounding integrity relevant to open access and open data.

The working conference 'Science and Integrity in the Modern University' was held in March.

Confidential adviser on academic integrity and administrative integrity

In June 2013, Prof. Jack Pronk was appointed confidential adviser on Academic Integrity at TU Delft by the Executive Board. The confidential adviser is a confidential discussion partner for employees, students and guests of TU Delft who are confronted with issues concerning academic integrity and who feel the need to discuss those issues. Jack Pronk was also appointed to the position of whistle-blowers contact, i.e. confidential adviser on administrative integrity.

Action framework ('routing') for dealing with ethical issues within TU Delft

A memorandum was drafted for this, which outlined a solution-oriented action framework for dealing with ethical issues within the university. The memorandum was discussed in various bodies in 2013. In 2014, a definitive version will be adopted by the Executive Board.

New regulations

The following regulations were established in 2013 within the framework of the integrity programme:

- **TU Delft business travel expenses refund scheme**

At TU Delft, the costs of foreign and domestic business trips are refunded. There is now a single scheme for this. This modified scheme for business travel took effect on 1 January 2013.

- **TU Delft Ancillary Activities Regulations**

The performance of ancillary activities is often valuable to the professional development of employees and thus for TU Delft as well. Nevertheless, the university and its employees need to ensure that the interests of TU Delft are not harmed by such activities. The new regulations for ancillary activities took effect on 1 June 2013. A letter concerning the new regulations was sent to all TU Delft employees at their home address. Furthermore, a website has been created with information about these regulations and how to apply them. Current employees can report their ancillary activities via the procedure described on the website. All new employees will be given the 'reporting and registering of ancillary activities' form to complete.

- **TU Delft Academic Integrity complaints procedure**

The academic integrity complaints procedure took effect in June. The procedure has been brought into line with the national model regulations for complaints about academic integrity.

6.6 Review

The Review is a TU Delft-wide project that was aimed at achieving a cost reduction of € 45 million in the 2010-2013 period. The goal of this project was to balance the expenses and revenues, increase liquidity in order to deal with unforeseen financial difficulties, and to release funds for investment in strategic innovation. The Review also had substantive goals, for research and education as well as support services. At the end of 2013, the Review was completed as a programme. The Review has met the expectations of the institution. Efficiency measures within the faculties have led to improved service, such as the realisation of a single International Office. Interfaculty projects have led to greater transparency of our research. For example, climate, process technology, transport, robotics, wind energy and safety & security institutes have been established. The TU Delft-wide study success project contributes to the improvement of the educational performance.

Above all, TU Delft has its financial house in order again, so that it can invest in the future of the university and its campus, but also so that it can deal with financial difficulties when they arise. All of this was only made possible by the joint efforts of faculties, service departments, personnel, employee participation and management. In June 2013, the last review measure was submitted to the Executive Board and subsequently submitted to the employee representative body for a recommendation. With the completion of the decision-making track for this measure, the Review has also been completed as a programme. The measures themselves were not all completed in 2013, but no new Review projects will be started. Ensuring the progress on the financial objectives of the Review and on the projects that are still running is guaranteed within the P&E cycle. At the quarterly meetings with the faculties and the University Corporate Office, the open objectives will remain a topic of discussion and the financial monitoring will continue.

6.7 University Corporate Office shift

The Executive Board has asked the University Corporate Office to improve efficiency by 5% of the total lump sum of the University Corporate Office in a period of 2 years (2014-2015), corresponding to an amount of approximately five million euros. The University Corporate Office responded to this request by formulating savings proposals for all management teams. Some of the plans have consequences for personnel and a number of management teams will therefore reorganise. Other management teams, such as the management of Finance, have chosen to streamline processes, thereby improving efficiency. Most of the plans involve cuts to activities; cuts will be made to programme costs and/or certain activities will no longer be carried out.

Many management teams also include innovation in their plans. In these cases, prior investments are necessary. These management teams include HR, Finance and E&SA.

The total number of positions that are expected to be affected by this shift is 44 FTE. Most of these positions will no longer be filled through natural attrition. There are also positions that will be filled differently within the framework of the organisational development.

There will possibly be redundancies for more than 16 FTE. The reorganising management teams will submit sub-plans to the Executive Board in order to be able to discuss these in detail and submit them to the representative body.



7. Performance and profiling agreements

At the end of 2011, the State Secretary of the Ministry of Culture, Education and Science concluded an Outline Agreement with the Dutch universities concerning the implementation of the strategic agenda Quality in Diversity. The universities are therefore required to state in their own strategic plans what they intend to do to achieve the agreed targets with regard to quality and profiling.

To monitor progress to that end, in 2012 the State Secretary of the Ministry of Culture, Education and Science signed detailed individual profiling and performance agreements with each university, covering educational quality and success rates, educational and research profiles and valorisation. The performance and long-term agreements apply to the period 2013-2016.

The agreements that TU Delft made are embedded in TU Delft's profile. They are in line with the specific ambitions and priorities that TU Delft has set for itself. The performance and profiling agreements of TU Delft were qualified as 'very good' by the Higher Education and Research Review Committee.

The agreements with the government ensure that the national focus is on the subjects addressed in 2012. As a possible side effect, this may create a static picture of the performance and profiling activities of the university.

TU Delft therefore wishes to clearly emphasise here that it is continuously working on the national and international profiling of its activities and on the systematic strengthening of its qualities.

For example, TU Delft invested a great deal of effort in the following activities in 2013:

- Intensifying and speeding up open and online educational activities. TU Delft is developing an Extension School along the lines of the Harvard Extension School, in which all of TU Delft's open and online education can be offered to students across the world.
- Strengthening the research profile by establishing Joint Research Centres with its international partners.

TU Delft has Joint Research Centres in China, Brazil and Vietnam. In 2013, partnerships were established in Changzhou and Hanoi.

- The establishment of a proton clinic in cooperation with the university medical centres of Leiden University and Erasmus University Rotterdam. At the end of 2013, a license for this clinic was issued by the Ministry of Health, Welfare and Sport.
- The expansion of the education profile by developing a new Clinical Technology Bachelor's degree programme in cooperation with Leiden University, Erasmus University Rotterdam and their University Medical Centres.
- The development of 'The Amsterdam Institute of Advanced Metropolitan Solutions' in cooperation with Wageningen UR and MIT. This will be a leading institute for applied metropolitan technology, an active knowledge institution for urban planning and design, with Amsterdam as a testing ground for new concepts that may improve the quality of life in metropolises in the future.
- Strengthening of the strategic alliance with Leiden University and Erasmus University Rotterdam. This has led to, among other things, the establishment of eight multidisciplinary centres.

PERFORMANCE AGREEMENTS

TU Delft has concluded performance agreements with the Ministry of Education, Culture and Science concerning 7 aspects, namely: excellence, drop-out, programme switching, Bachelor pass rate, programme intensity, teaching quality and indirect costs.

Excellence

TU Delft's ambition level for excellence is 8% participation in honours programmes in 2015. TU Delft indicated in the proposal for the performance agreements that 'excellence' involves more than just the participation of students in the honours programme. TU Delft also offers excellent students interesting additional challenges outside of the study programme. This is done through the Dream Teams (the NUNA team being the most famous), for example. Furthermore, students who are awarded their Bachelor's degree with the distinction cum laude demonstrate an excellent performance in the regular study programme..

Drop-out

TU Delft's ambition level is a maximum drop-out of 22% in the first year of the Bachelor's degree programmes in 2015. In addition to drop-out in the first year of the Bachelor's programme, TU Delft also wants to prevent unnecessary drop-out for the entire programme duration.

Switching to another programme

TU Delft's ambition level is 8% programme switching in 2015. TU Delft emphasised in the proposal for performance agreements that the first year of the study has an orientational and selective function. As long as the switch occurs within TU Delft, the students will continue to follow their programme in the technology domain. TU Delft believes that, within certain limits, this is not a part of the programme switching problem.

Bachelor pass rate

The ambition to achieve a Bachelor pass rate of 55% in 2015 means that the pass rate must be doubled in comparison with 2010. This ambition level is achievable and consistent with the agreements in the 3TU.Sector Plan Technology 2011-2015, which were concluded with the Ministry of Education, Culture and Science.

Teaching quality

The UTQ policy of TU Delft is aimed at ensuring that all new academic staff members obtain a basic qualification. The didactic quality of the incumbent academic staff is guaranteed by means of a focused selection of courses, an interfaculty peer review system and tracks for didactic leadership. Furthermore, a large part of this group of teachers possesses a didactic qualification comparable to the UTQ/STQ qualification, such as a Post-Graduate Certificate in Education or a faculty didactic qualification. TU Delft will make these forms of teaching quality transparent.

Programme intensity

TU Delft's ambition level is 22 contact hours per week in 2015. The number of timetabled contact hours per week in the technical and scientific programmes remains relatively high due to the combination of classroom and practical sessions with lectures and seminars.

Indirect costs

TU Delft's ambition for the generic indirect costs in 2015 is to maintain the level of 19.3% from 2010. The indirect costs of TU Delft are therefore below the national average of 19.9%. In the past 10 years, TU Delft substantially improved the ratio of the direct and indirect costs by, for example, merging all support services, including those within the faculties, into a single University Corporate Office and by organising them according to the shared services principle. The model of shared services guarantees quality and efficiency and is in line with Berenschot's advice to the sector. With regard to the total overhead, TU Delft (just like the other technical universities), with its 30%, contrasts favourably with the sector, with its average of 33.4%.

PERFORMANCE AGREEMENTS PROGRESS

The performance agreements are fully in line with the strategy and policy that TU Delft had already implemented long before the agreements were made. In accordance with the performance agreements, TU Delft implemented specific measures in 2012 in order to realise the agreements and monitor the progress. TU Delft included this information in the 2012 annual report.

In 2013, university-wide policy measures were retained for all parts of the performance agreements. These policy measures are firmly anchored in the management control processes, both at the institutional level and at the faculty level. The progress on the performance indicators has been calculated in accordance with the definitions, methods and sources agreed on with the ministry. The queries and measurement results used for this have been recorded. TU Delft has ascertained that it is making progress in the realisation of its ambitions. The following progress has been made on the agreements for each indicator up to and including 2013:

As always, TU Delft made improving study success a high priority in 2013. Nearly all programmes have introduced new curricula based on modular education. These are aimed at further improving the study experience of the degree programmes.

In addition to the running policy for new academic staff members, TU Delft developed and adopted a new policy in 2012 in order to guarantee the teaching qualities of the existing academic staff. In the course of 2013, the assessment and determination of UTO deficiencies, as well as UTO equivalents that can lead to exemptions for current staff, was initiated. Because of this, a substantial part of the staff is in the process of obtaining a certification or an equivalent in 2014. The deans and the Executive Board will frequently discuss the progress as part of the planning and evaluation cycle.

In addition, specific attention was paid to study support, both with regard to the support offered by professors and the establishment of student mentoring groups. A new information programme has been organised in order to provide students with sufficient information before they make a study choice. At the Science Centre, a single contact point has been

Indicator	Baseline 2010	Realisation 2011	Realisation 2012	Realisation 2013	Target 2015
Excellence	2.2%	3%	7%	>=7%*	8%
Drop-out	19%	18%	17%	17%	22%
Programme switching	8%	8%	9%	9%	8%
BSc completion rate	27%	39%	47%	49%	55%
Teaching quality	7%			39%*	70%
Programme intensity					
Contact hours	25	24		23	22
Programmes with less than 12 contact hours	0	0		0	0
Indirect costs	19.3%	n/a	n/a	19.5%	19.3%

* The values for excellence and teaching quality are indicative, due to the renewal of the underlying systems. The report is based on progress indications provided by the faculties in the Planning & Evaluation Cycle.

The TU Delft policy of excellence aims to provide talented students with a fitting and challenging learning environment. TU Delft has various activities aimed at the best-performing students (top 10%) in the programmes, such as the Honours Programme Delft. This programme has offered excellent students additional challenges in their regular study programme since 2009.

The report year was distinguished by the further enlargement of the honours community. To this end, various events were organised for honours students and staff. In addition, the cooperation with the Honours Academy of Leiden University has been further expanded. This led to the Delft honour students now being able to participate in different honours classes in Leiden. Delft and Leiden honours students organised a joint educational trip to CERN in Switzerland last summer.

created for the VWO in order to further improve the preparatory activities.

External preconditions

The realisation of performance agreements is partly determined by external preconditions at the system level - especially in the area of regulations. These preconditions especially include situations that influence the Bachelor pass rate, the drop-out rate and study switching. Naturally, the ambition of TU Delft will continue to be the realisation of its agreements, even under external circumstances that turn out to be different than expected.

The Ministry of Education, Culture and Science and the universities have agreed that the latter will be given the opportunity during the midterm review in 2014 to indicate if the realisation of their ambitions is impeded by changed circumstances. TU Delft is also committed to reporting influential circumstances in the annual



reports during the interim period. This is done for two reasons: TU Delft wants to make the progress on the agreements transparent and account for it in the annual report, as agreed, and TU Delft believes that circumstances influencing its ambitions can also arise after the midterm review.

TU Delft wants to attract students who possess the talent needed to find success in the engineering sciences. Considering the expectations, it was TU Delft's intention to use the options for selective intake, which the government will expand, to prevent further unnecessary drop-out and study switching. As a result of the coalition agreement, however, an expansion of the options for intake have been more severely limited than was established in the Outline Agreement (Hoofdlijnenakkoord).

The coalition agreement also contained a number of cuts to higher education that were not laid down in the outline agreement. TU Delft therefore must realise its ambitions with less government funds than expected. With less funds available for the same task, the pace at which TU Delft can make progress can now be expected to come under pressure.

In its letter of 4 June 2012 to the Review Committee, TU Delft already indicated that the realisation of the target for the Bachelor pass rate is determined by the 2011 intake, which had already started, and that the measures for improving the study success rate, which are widely employed by TU Delft, can only have a limited effect on this intake.

However, at the end of 2012, the government decided to repeal the long-term study regulation. This meant one less study pace incentive for students. A shortening of the study turnaround time therefore became much more difficult. This

may have a negative impact on the realisation of TU Delft's ambition for the Bachelor pass rate.

TU Delft believes that Bachelor's students and the institution should determine if the right programme choice has been made in the first year of study. If a student only managed to achieve a few credits, this often indicates that they have not made the right choice. TU Delft has therefore employed a binding recommendation on the continuation of studies since September 2009; starting in the 2013-2014 academic year, the minimum number of credits will be 45 ECTS. The binding recommendation matches the legally prescribed orientational and selective nature of the first Bachelor's programme year. TU Delft has found that the drop-out rate has decreased somewhat since the introduction of the binding recommendation, while study switches have somewhat increased.

Drop-out and study switching are communicating vessels; TU Delft believes that they must therefore be assessed as a coherent performance indicator. TU Delft has already stated in its performance agreement proposal that it expects a slight increase in the number of students that will choose a different study at TU Delft after the first year. As long as the switch occurs within TU Delft, the students will continue to follow their programme in the technology domain. TU Delft believes that, within certain limits, this is not a part of the switch problem.

A review of the term 'switch' might therefore be in order.

PROFILING AGREEMENTS

TU Delft has entered into the following profiling agreements with the Ministry of Education, Culture and Science:

Graduate School

The TU Delft Graduate School raises the university's international profile and with that our appeal as a training centre for new generations of researchers. An accelerated strengthening of the Graduate School will enable us to adequately and promptly meet the demand of the business community for highly-qualified technical and scientific researchers.

TU Delft will employ additional investment measures to rapidly realise the necessary improvement of the PhD completion rate and to substantially shorten the PhD duration in the doctorate programmes.

TU Delft Institutes

TU Delft wants to further strengthen its national and international scientific image in a specific number of (emerging) fields by means of a virtual merging of research capacity in university-wide institutes: TU Delft Institutes.

TU Delft will appeal for additional means of intensification in order to rapidly improve the connection with consortia, which is also very important for its participation in the top sectors and in European programmes and projects.

Nanoscience

Nanoscience is an essential area of academic focus for the Dutch system of higher education and research. TU Delft has an excellent international academic reputation in this field. TU Delft will strengthen this area of research by creating a new, distinctive Bachelor's and Master's degree programme for Nanobiology.

TU Delft will appeal for additional means of intensification in order to rapidly expand its educational profile and also to strengthen its contribution to this research area in the Top Sectors and Horizon 2020.

Medical Technologies – Horizon 2020

TU Delft is expanding its presence in European partnerships with strategic partners in the themes of the 8th Framework Programme of the European Union - Horizon 2020. TU Delft, together with the IDEA League - Imperial College London, ETH Zürich, Paris Tech and RWTH Aachen - and in accordance with the European Grand Societal Challenges, wants to submit a proposal for a joint research programme within the Sustainable Healthy Ageing theme. TU Delft will apply for intensification funding to accelerate this progress.

PROFILING AGREEMENTS PROGRESS

In 2013, TU Delft once again gave priority to the acceleration and intensification of its education profiling and research priority forming. This allowed TU Delft to take major steps towards further improving a number of matters: the PhD track, focused expansion of the curriculum and a greater link with national and European research programmes and projects.

Graduate School

TU Delft has invested in the PhD programmes in order to rapidly realise the necessary improvement of the PhD pass rate and to substantially shorten the PhD duration. TU Delft has also further strengthened the PhD Development Chain, the Doctoral Education Programme, and the supervision and progress monitoring of PhD students.

TU Delft has defined a PhD development chain. This chain covers the entire PhD process, from the intake interview of the PhD candidate to the completion of the PhD programme. Other core components of the development plan are making a go/no go decision after one year and holding annual progress interviews and compiling reports during the rest of the intended PhD period.

TU Delft has paid a great deal of attention to the further development of a fully substantive Doctoral Education Programme, in which research skills, course-related skills and personal development are addressed.

The Doctoral Education Programme includes an obligatory introduction programme for all starting PhD students ('PhD Start Up') and a 'Transferable Skills' programme. The introduction programme took place twelve times, with 360 participants; in addition, 627 PhD students participated in courses in the 'Transferable Skills' programme. The PhD students rate these training programmes as good or very good. TU Delft has also further improved the guidance and supervision of PhD candidates. Mentors, who play an important role in the satisfactory guidance and integration of the PhD students, have been appointed at all faculties. In addition, a discussion was initiated on the quality of the supervision and the professionalisation of PhD supervisors.

The position of the Graduate School at TU Delft has been formalised to a greater extent; the Administrative and Management Regulations of TU Delft were modified for this purpose in 2013.

The progress of the PhD track is supported by a registration and monitoring system - the Doctoral Monitoring Application. This system has been further organised at an accelerated pace. Data of all PhD candidates that started in 2013 have been incorporated in the Doctoral Monitoring Application. With the help of this system, evaluations are taking place to further simplify and improve the PhD process in the coming years. For reasons of individual comparability and transparency, TU Delft has changed the internally used definition of the PhD pass rate indicator to match the VSNU's national definition.

TU Delft Institutes

TU Delft has further improved the chances of joining consortia by realising a virtual merging of the research groups in the faculties into university-wide institutes - the TU Delft Institutes. The implemented acceleration and intensification have improved the connection to consortia and the participation in national and European programmes and projects.

Five TU Delft Institutes were launched in 2012:

- The TU Delft Process Technology Institute
- The TU Delft Robotics Institute
- The TU Delft Transport Institute
- The TU Delft Climate Institute
- The TU Delft Wind Energy Institute

In addition to institutes that were previously launched, the TU Delft Safety & Security Institute was founded in 2013 and preparations were made for the launch of an institute in the field of Sports and Innovation in 2014.

The TU Delft Institutes receive an annual sum of 100K€ from the strategic resources of the Executive Board and 100K€ from the participating faculties to initiate activities.

Climate	Process Technology	Robotics	Transport	Wind Energy	Safety & Security
Focus					
Extreme weather and the city	Biochemical Process Engineering	Robots for diagnostics and supported living	Coordinated and cooperative traffic management	Unsteady aerodynamics	Safety & Security at home
Aerosols, radiation and clouds	Process Intensification	Collaborating satellites and UAVs for ship tracing, pollution and traffic monitoring	Transport policy	Smart structure rotors	Safety & Security in motion
Observation & validation of sea level rise and mass transport	Process Technology for Advanced Materials	Distributed interactive work support, e.g. for robot support in warehousing, green-houses and food production	Spatial Planning & Mobility	Design methods	Safety & Security in society
Climate information and policy			Logistics & Freight transport	Offshore components and design	
			Railways	Dutch wind energy in Europe	
Participation					
5 faculties	2 faculties	6 faculties	6 faculties	5 faculties	6 faculties
24 research groups	12 research groups	22 research groups	6 research groups	13 research groups	20 research groups

In 2013 the TU Delft Robotics Institute was appointed as the coordinator of the 'Factory in a day' EU project. This project is part of the European 'Factory of the future' FP7 programme. The aim of 'Factory in a Day' is the development of a robotics system for small and medium-sized enterprises that can become operational within 24 hours and is flexible, inexpensive and can be leased. This project receives € 11 million in four years. The project is carried out by an international consortium of sixteen partners.

In addition, two new robotics start-ups were launched in 2013: Fleet Cleaner - a robot for cleaning ships' hulls- supported by the Valorisation Phase 2 Grant, and Lerovis, a visual system for the field of robotics.

The TU Delft Process Technology Institute has been admitted to the prestigious SPIRE network, which is a public-private partnership of more than 60 European companies and institutes within the Horizon 2020 programme. The consortium is focused on developing innovations in energy and material efficiency for the processing industry.

NWO and the EU have granted three Veni Grants and three Vidi Grants, and three ERC Starting Grants respectively to researchers of the TU Delft Process Technology Institute.

Three NWO projects of the TU Delft Transport Institute were approved in 2013. These projects concern solutions to global urbanisation and are part of the China-Netherlands programme. They are being carried out jointly with Tsinghua University, Tongji University and Shanghai JiaoTong University.

The TU Delft Climate Institute is involved in the European Climate Knowledge & Innovation Community (KIC) of the European Institute of Technology. In 2013, 8 applications from TU Delft PhD candidates were approved by the Climate KIC.

Nanoscience

TU Delft has intensified and accelerated its research and educational activities in the field of nanoscience by developing and launching degree programmes in the field of nanobiology, as well as the realisation of the 'QuTech' Advanced Research Center.

TU Delft has expanded its educational profile with the launch of the NanoBiology Bachelor's degree programme. This programme is provided in collaboration with Erasmus University Rotterdam. The application for the NanoBiology Master's degree programme has already started. The goal is to offer this programme from the academic year 2015-2016. TU Delft is intensifying and accelerating its national and European research contribution in the field of nanoscience.

TU Delft is leading the Netherlands in building the next generation of computers: the quantum computer. In order to realise this, the 'QuTech' Advanced Research Center is being established. QuTech will form the bridge between research into the development of the quantum computer and the Dutch high-tech industry. The establishment of QuTech is one of the components of the Dutch Knowledge and Innovation Contract. TU Delft is contributing five million euros every year, while the Dutch government, together with TNO, is providing an annual contribution of four million euros. NWO, the Foundation for Fundamental Research on Matter, and early adopters from the business community are also contributing.

Scientists of TU Delft and Leiden University will work together in the NanoFront research programme in the coming decade. NanoFront is part of the Zwaartekracht programme of NWO and is the 'Champions League' used by the Netherlands to finance world-class research of the highest order. The investment of 51 million euros in NanoFront is one of the largest-ever Dutch investments in fundamental



science. The Ministry of Education, Culture and Science is contributing 36 million euros, while the two universities are also making 15 million euros available for NanoFront.

Medical Technologies – Horizon 2020

In 2013, TU Delft expanded its presence in European partnerships in the field of Health with new and existing strategic partners. Specific examples of this are the formation of the InnoLife consortium, the intensification of the activities in the Medical Delta consortium, the strengthening of the collaboration in the HealthTies network, the development of a Doctoral School on Ageing and Sustainability in collaboration with the IDEA League and the founding of Holland PTC, a centre for proton therapy.

In 2013, TU Delft formed a consortium in collaboration with leading European partners from knowledge institutions, companies and healthcare institutions: InnoLife. This consortium is in an excellent position to participate in the KIC Health of the European Institute of Innovation and Technology. The consortium will concentrate on the theme of Sustainable Healthy Ageing.

TU Delft, Leiden University and Erasmus University Rotterdam have further combined their expertise and experience in the field of life sciences and medical technology via the Medical Delta consortium. Together with healthcare institutions, knowledge institutions, businesses and governmental bodies in the region, the partners are developing new healthcare solutions, transferring their knowledge and experience, and ensuring the quicker and smoother implementation of innovations in healthcare. In April 2013, the European Innovation Partnership for Active and Healthy Ageing (EIP AHA) designated Medical Delta as a 'reference site', thereby recognising it as an important innovation cluster in Europe.

TU Delft is also making a leading contribution in Medical Delta to the European Innovation Partnership on Active and Healthy Ageing, thus intensifying the existing international contacts in the HealthTies network. Represented in the HealthTies network are government bodies, knowledge institutions and companies from the Medical Delta, Oxford, Zürich, Barcelona and Debrecen.

TU Delft and its international university partners in the IDEA League have developed a multidisciplinary Doctoral School on Ageing and Sustainability. The Doctoral School will focus on a sustainable approach to ageing by means of policy, technological innovations and research. This will be accomplished by providing joint doctoral education, conducting research and jointly participating in the European programmes and initiatives in this area. The pilot phase of the Doctoral School on Ageing and Sustainability was successfully completed in 2013.

8. Financial report

8.1 Developments in 2013

The financial policy of TU Delft is aimed at achieving a structural balance between income and expenses. The university's equity capital must be maintained in order to ensure that future risks can be absorbed and that innovation in education and research, as well as investments in and maintenance of facilities can be financed.

TU Delft achieved a positive result in 2013. The positive result for 2013 amounts to €31.2 million, compared with a budgeted positive result of €15 million. The positive result will be used to finance innovations in education and research as well as major investments on the basis of the real estate strategy. In the longer term, increased operating expenses must be taken into account as a result of the necessary investments, the maintenance of accommodation and the required loans.

The financial position expected in the longer term is discussed in more detail in the continuity paragraph. The financial results achieved by TU Delft in recent years were strongly influenced by exceptional events. The main exceptional events were:

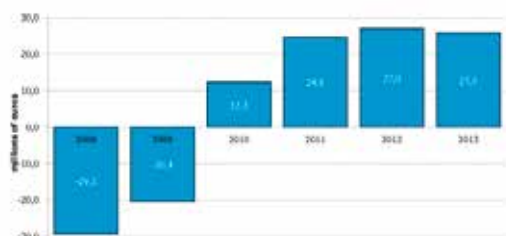
- The fire at the Faculty of Architecture and the Built Environment building and the ensuing insurance payment and funding received from the Ministry of Education, Culture and Science.
- The settlement of the 2002-2010 Bachelor/Master (BaMa) file as part of funding of the institution by the Ministry of Education, Culture and Science's in 2009;
- A provision formed in relation to the Review agenda in 2009.

Based on these considerations, the institution will examine the operating results (excluding exceptional items) when assessing the activities. These operating results have developed favourably in recent years and are showing recovery.

The result in 2013, including exceptional items, amounts to a positive result of €31.2 million. The positive financial development of TU Delft has clearly continued. This was achieved by strengthening financial control and by realising both the required improvement in the results and the academic innovation in accordance with the Review agenda. This has created scope for the necessary innovation in education and research, as well as for investments in facilities.

Legal proceedings concerning the €25 million fire at the faculty of Architecture

In 2008, TU Delft received a supplementary government grant of €25 million from the Ministry of Education, Culture and Science following the fire at the Faculty of Architecture and the Built Environment. This contribution was provided to enable TU Delft to realise a faculty building that would become an architectural icon and would hold a special position in terms of urban architecture. After investing in and renovating the old main building, TU Delft decided to permanently house the Faculty of Architecture and the Built Environment in the old main building on the Julianalaan. From 2010, the Ministry of Education, Culture and Science took the position that the requirements set in advance had not been met and made the decision to reclaim the incidental government grant of €25 million in its entirety. This amount was then deducted from the government grant received in 2011. TU Delft did not agree with the Ministry's decision and filed an objection in 2011. As a result of the ruling of the District Court of The Hague on 18 July 2012, the Ministry of Education, Culture and Science annulled its decision to reclaim the grant. The Ministry subsequently paid the €25 million government grant to TU Delft in 2012. In 2013, TU Delft and the Ministry of Education, Culture and Science entered into a settlement. The settlement allows the TU Delft to keep €15 million but requires the university to repay a sum of €10 million to the Ministry in 2014. As a result of this settlement in 2013, income of €15 million was included in the financial statements as a government grant.





Review

The negative operating results for 2008 and 2009 and the uncertain long-term prospects led to a number of significant measures which had their effects in 2010 and in later years. TU Delft is known as a fine university with a strong international reputation, thanks to the high quality of its graduates and its leading scientific research and design. The continued strengthening of this position is necessary, particularly in changing times where we can no longer take anything for granted. For this reason, the Review process was initiated within TU Delft at the end of 2009. This process has two focal points: firstly, a substantive orientation towards education and research resulting in a profile that maintains and improves the current position of TU Delft and secondly, the need for the university's expenditure to match the available financial resources. In order to realise this two-pronged process, it is essential to recalibrate the educational and research activities at TU Delft and to make the operational management more transparent and efficient. This process entails organisational changes, which led to difficult choices. The financial objective of the Review targets structural savings of €45 million. In 2013 decision-making on the final review measure took place, thereby completing the Review programme. The measures themselves are not yet fully completed. A number of projects are still in progress. Monitoring of the progress with the financial goals of the Review and of the ongoing projects is secured within the P & E cycle. At the end of 2013, in accordance with annual reporting requirements, the amount of the provision for the Review was reassessed in order to finance the financial consequences of the Review agenda. This analysis resulted in a release of € 0.5 million at year-end 2013. The Review provision at year-end 2013 amounted to €8.9 million.

Technology Sector Plan and Physics and Chemistry Sector Plan

On the basis of the Technology Sector Plan drawn up by the three Dutch universities of technology, the Ministry of Education, Culture and Science made an annual amount of €11 million available to these three universities for the 2011-2013 period.

For TU Delft, this meant an annual contribution of €5.3 million during this period. The amounts made available were used to invest heavily in the improvement of education during this period. This should lead to a substantial improvement in the study success rate. All amounts provided within this framework were spent by year-end 2013.

In addition to the Technology Sector Plan, the Ministry of Education, Culture and Science also provided a sum to the university within the framework of the Physics and Chemistry Sector Plan in 2013. As of 31 December 2013, €2.9 million of this government grant had not yet been spent.

Gravity programme (Zwaartekrachtprogramma)

At the end of 2012, the Ministry of Education, Culture and Science approved an application for the 'Frontiers of Nanoscience' (Nanofront) proposal as part of its 'Gravity' programme (Zwaartekrachtprogramma). A total sum of €35.9 million was awarded to the entire consortium for the 2012-2016 period. Within this framework, an amount of €4.5 million (2012: €5.5 million) was received in 2013 as a government grant to the entire consortium. Given the fact that the cash flow from the government grant is not equal to the expenditure, €8.9 million of the amount received was shown in the balance sheet at the end of 2013.

Financial security for the dismantlement of RID

Under the Nuclear Energy Act, TU Delft is the licensee of the Reactor Institute Delft (RID), as referred to



in Article 15b of the Act. As of 1 April 2011, an amendment to the Nuclear Energy Act came into effect, which (among other things) obliges licence holders of nuclear plants and reactors to provide financial security for the costs related to the shutdown and dismantlement of the nuclear plant or reactor by the licence holder. In 2012, an agreement was concluded with the Ministry of Economic Affairs, Agriculture and Innovation and the Ministry of Finance on the manner in which the required financial security must be provided in the case of a possible dismantlement. In order to provide this financial security, three university buildings of TU Delft have been secured by a mortgage. At the end of 2013, a provision of €6.8 million for the future dismantlement of the RID was included in the financial statements. An annual allocation will be added to this provision, proportional to the period of use. Furthermore, a provision of €3.8 million has been included in the financial statements for the transport and storage of fission materials in accordance with the system used in previous years.

Standardised administration of indirect and contract funding projects

TU Delft recognises the importance of uniform administration of the indirect and contract funding projects. In order to give this project form and content within the institution, the project was started in 2011 and a project group was formed, which has been assigned to develop and implement uniform valuation, work processes and reports for indirect and contract funding projects. In 2013, the project was given further shape and the first results were achieved. It was decided to use the direct costs method and a surcharge for faculty overhead costs as a uniform valuation method for the indirect and contract funding projects. In addition, all employees involved in indirect

and contract funding projects have been reminded of the need to digitally register their project hours in time, so that these hours can be financially registered in the reports in a timely and uniform manner. This contributes to improved insight into our financial situation and ultimately, therefore, to a financially healthy TU Delft.

Basware PM

Basware Purchase Management is a digital ordering system connected to the Basware Invoice Processing system, which is currently being used to process invoices from the moment that they are received. The introduction of Basware Purchase Management will allow the legitimacy of expenditure on the basis the European procurement regulations and the efficiency of the purchasing processes to be improved and maintained. This should also lead to a cost reduction for TU Delft. In 2013, a large number of secretaries were trained in the use of the new online ordering system Basware PM. In 2014, a further roll-out to other purchasers will take place at the university.

ERP LN

TU Delft has been working with ERP LN since the beginning of 2013. This application replaced Baan IV, which TU Delft had used since 1999 to support its financial business processes. ERP LN supports the aim of the management of the Finance department (and the entire TU Delft) to realise management control for the institution.

SEPA

Within TU Delft, a project group has been formed with the task of ensuring that payment transfers meet the SEPA requirements. The adjustments involve entering IBAN in the systems instead of a bank account number and also complying with the modified regulations and

new technical standards. Furthermore, all websites and printed materials must state the IBAN and BIC of TU Delft, alongside the current bank account number. Two of the three main topics, paying creditors and paying salaries, were implemented in 2013. The last topic, the collection of tuition fees, has been fully tested and will be implemented in 2014.

Treasury policy & Investment and Loan Regulations

TU Delft carries out its treasury activities in accordance with the TU Delft treasury charter, which was modified in 2012. The treasury charter complies with the Investment and Loan Regulations for educational and research institutions 2010 drawn up by the Ministry of Education, Culture and Science and even accentuates some aspects of it.

TU Delft has a temporary excess of liquidity resulting from the performance of its core activities, education, research and knowledge valorisation. These resources have both a public and a private origin. Due to the fact that transparent separation of these resources cannot be made uniform, TU Delft has chosen not to make any distinction between public and private resources in its financial administration. The resources that have been allocated to the affiliated and consolidated legal entities of TU Delft are an exception.

All temporary excess liquidity that stems from public funds is invested by TU Delft in savings products at various Dutch commercial banks with at least an A rating. The total balance of liquid assets is directly available and is therefore invested in the most risk-averse and flexible manner possible. Optimisation of interest income is pursued within this framework. Securities amounting to a total of €22.3 million are shown in the 2013 financial statements. Many of these securities consist of risk-averse obligations and guarantee agreements. The investments involve private resources belonging to the following consolidated legal entities included in the TU Delft financial statements: the Stichting Justus & Louise van Effen Fonds, Stichting Nanoscience TU Delft and Stichting Het Lammingafonds. These legal entities have their own financial administrations, receive no public funds and are therefore not subject to the Investment and Loan Regulations for educational and research institutions 2010.

In 2013, the remaining balance of the long-term loan was repaid early. The interest rate derivative connected with the loan was thereby redeemed; this occurred at the same time as the repayment of the long-term loan.

8.2 Liquidity position

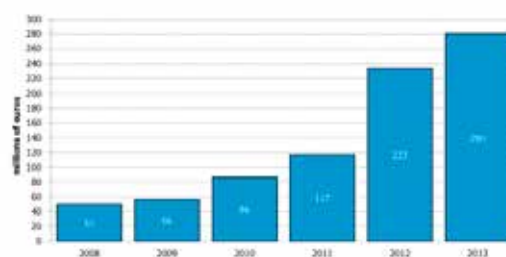
TU Delft's liquidity position at year-end 2013 amounted to €279.7 million, compared with €232.5 million at year-end 2012. In recent years, TU Delft has been forced to accumulate liquid assets in order to make the necessary investments in educational and research facilities. This cash position will therefore be reduced

again in the coming years.

It should be noted that a sum of €24.9 million was included in the liquidity position at year-end 2013 for prepaid amounts received for coordination activities. These amounts do not actually belong to TU Delft and must be passed on to other participants

The following factors had a significant impact on the strengthened liquidity position:

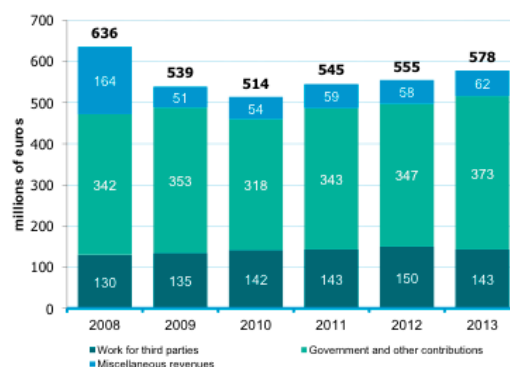
- the expenditure resulting from the investments in tangible fixed assets (- €29.6 million);
- the result in the fiscal year 2013 (+ €31.2 million);
- the depreciation costs (+ €34.7 million), which did not lead to expenses in 2013;
- the strengthened proportion of working capital (+ €14.2 million). This is mainly due to the increase in prepaid amounts received for the proceeds of work for third parties.



The surplus of liquid assets is temporary and necessary to fund the real estate strategy and innovation in education and research. The long-term financial estimates drawn up at year-end 2013 show that the liquidity position will diminish in the coming years and that external funding will be required as a result. TU Delft intends to obtain the necessary external funding by borrowing from the Ministry of Finance (treasury banking).

8.3 Income analysis

Total income (excluding financial income and the result of associates) in 2013 increased by €23.3 million to a level of €578.2 million. The development of the income level from 2008 onwards was strongly influenced by the fire at the Faculty of Architecture and the Built Environment, as shown in the accompanying diagram.



The diminution from 2008 to 2009 is mainly due to the high balance in 2008, being the result of an incidental government grant of €25 million from the Ministry of Education, Culture and Science following the fire at the Faculty of Architecture and the Built Environment and the insurance claim of €118.5 million shown for this fire. This insurance claim was shown as miscellaneous income in 2008.

The diminution from 2009 to 2010 was caused by the reclamation of the incidental government grant of €25 million by the Ministry of Education, Culture and Science. This amount was deducted from the 2010 government grant. The further diminution in the government grant in 2010 compared to 2009 is explained by the BaMa compensation of €29.1 million added in 2009.

In 2011, the government grant increased by €24.5 million compared to 2010. This was mainly due to the reclamation of the incidental government grant of €25 million in 2010, as described above. Irrespective of this item, the government grant in 2011 was lower than in 2010. The government grant in 2012 was in line with 2011.

The increased income in 2012 was mainly attributable to revenue from work for third parties. These revenues increased from €143.3 million in 2011 to €150 million in 2012. It should be noted that not only the revenue from the work for third parties, but also the costs are higher. In 2013, the increase in the revenue from work for third parties came to an end and after years of increasing, this item fell to €143.2 million. The further growth of revenue of work for third parties is a long-term goal, but at the same time a number of faculties have indicated that the growth in work for third parties has reached its limits, because the government grant available for matching might not be sufficient. Due to government cutbacks and the current economic situation, a downward trend has emerged in the supply of indirect and contract funding.

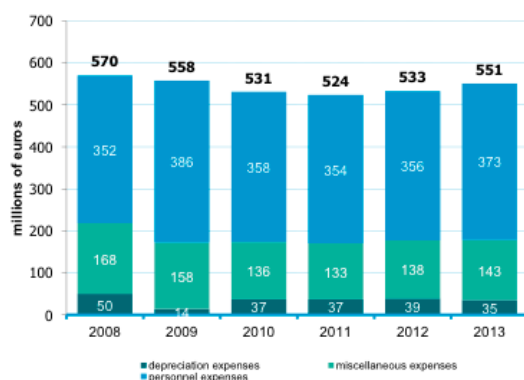
The increase in government and miscellaneous grants in 2013 compared to 2012 was mainly attributable to the contribution of the Ministry of Education, Culture and Science following the fire at the Faculty of Architecture and the Built Environment building. In 2013, TU Delft and the Ministry entered into a €15.0 million settlement. The remaining increase was due to wage and price adjustments.

Tuition and examination fees have been added to the other income. The realised amount in 2013 was €41.6 million, compared to €38.1 million in 2012. The increase is explained by the growth of the student population and the slight increase in the tuition fee rates.

8.4 Expenditure analysis

Total expenses, excluding financial income and expenses, increased by €18.1 million to €551.1 million in 2013. Personnel costs increased by €16.6 million, while depreciation was €4.3 million lower. Miscellaneous expenses (including accommodation

expenses) increased by €5.8 million to €143.4 million.



A breakdown of personnel expenses is presented in the table below:

in millions of euros	2012	2013
University personnel expenses	289.2	291.9
Third party personnel	47.4	53.8
Change in provisions	0.3	7.0
Miscellaneous personnel expenses	19.4	20.2
Total	356.3	372.9

University personnel expenses

The number of FTEs at year-end 2013 was 4,536, representing an increase of 96 FTEs compared to year-end 2012. Of these 4,536 FTEs, 2,579 are academic staff and 1,858 are support and administrative staff. The number of student assistants increased by 9 FTEs to 99 FTEs in comparison with 2012. The number of academic staff increased by 88 FTEs in 2013, while the number of support and administrative staff decreased by 1 FTE.

Partly as a consequence of the Review, the number of FTEs diminished in the 2010-2012 period. At the end of 2012, the number of FTEs was 251 lower than on 31 December 2009. In 2013, part of the savings realised through the Review were applied to realise improvements and innovations for education and research. The increase in FTEs in 2013 should be seen partly in that perspective.

Closer inspection of the increase in the number of academic staff compared to the end of 2012 reveals that this increase occurred mainly among the temporary academic staff, especially among researchers (+ 64 FTEs) and PhD candidates (+ 12 FTEs).

The increase in the total university personnel expenses from €289.2 million to €291.9 million is mainly due to the increased number of FTEs and the increase as a result of collective labour agreements (CLAs).

The change in personnel provisions is related to the allocation to the provision for unemployment pay and the provision for future reorganisation at the Faculty of IDE.



Third party personnel expenses

After years of diminution until year-end 2011, hiring of third party personnel in 2013 rose above the level of 2012. Further details are provided in the table below.

in millions of euros	2012	2013
Education (hiring of full professors & guest lecturers)	3.9	3.7
Temporary agency workers	5.2	7.1
Payment for services rendered by third parties	21.3	23.7
Travel and accommodation expenses of third parties	2.5	3.3
Government funding for personnel of third parties	32.9	37.8
Contract and indirect funding for personnel of third parties	14.5	16.0
Total	47.4	53.8

Miscellaneous personnel expenses

Starting in January 2013, a new holiday scheme was included in the CLA for Dutch Universities. One of the changes in the new holiday scheme involves the carry-over of holidays to the next calendar year. In the old scheme, each full-time employee could carry over a maximum of 120 hours to the next calendar year. This maximum was abandoned in the new scheme. Holiday hours not taken up at the end of the fiscal year can now be carried over to the next calendar year, but must be taken up in that calendar year. This new scheme affects the scope of the reserve for holidays in the financial statements for 2013 and as a consequence, the reserve for holidays was raised by €4.3 million at year-end 2013. This increase is shown in miscellaneous staff expenses.

Depreciations

Due to the decision made with regard to the new Applied Sciences building, the existing building at Kluyverweg will eventually be demolished. On the basis of a change in the estimate, the demolition will

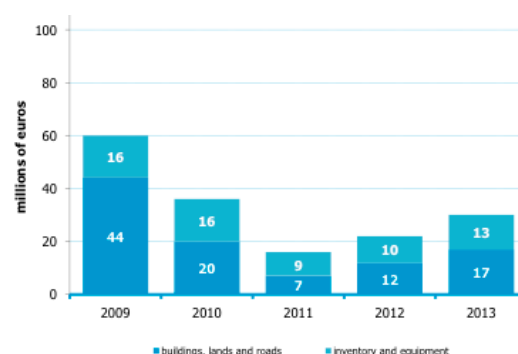
result in a higher depreciation charge. The effect of this amounted to €3.5 million in 2012 and €1.3 million in 2013. The difference between these depreciation costs largely explains the decrease in the depreciation costs between 2013 and 2012 (- € 4.4 million). This decrease is the result of the limited scope of the investments made in previous years in connection with the effect of the real estate strategy.

Miscellaneous expenses (including accommodation expenses)

The miscellaneous expenses (including accommodation expenses) of 2013 increased in comparison with 2012. In 2013, the total sum of miscellaneous expenses (including accommodation expenses) amounted to €143.4 million, while in 2012 the amount was €137.6 million. This increase is mainly due to purchases of equipment and inventory for indirect and contract funding projects.

8.5 Investments

Total investments in buildings, land, roads, equipment and inventory increased in 2013 compared to 2012. Investments in buildings, land and roads increased from €12.3 million to €17.1 million. Investments in equipment and inventory increased from €10 million to €12.5 million. The total investment level in 2013 therefore amounted to €29.6 million.



8.6 Provisions

in millions of euros	end of 2012	changes in 2013			end of 2013
		allocation	release	withdrawal	
Personnel provisions					
Review provision	14.6	0.0	0.5	5.2	8.9
IDE reorganisation	0.0	2.9	0.0	0.0	2.9
Tide-over allowance provision	5.8	4.0	0.0	2.8	7.0
Anniversary bonuses	4.7	0.0	0.0	0.0	4.7
Sabbatical	0.5	0.1	0.0	0.0	0.6
<i>Total personnel provisions</i>	<i>25.6</i>	<i>7.0</i>	<i>0.5</i>	<i>8.0</i>	<i>24.1</i>
Non-personnel provisions					
Student provisions	2.2	1.6	0.0	1.7	2.1
Fissionable materials provision	3.8	0.0	0.0	0.0	3.8
Asbestos provision	9.5	0.0	0.0	1.7	7.8
Sewer system provision	6.5	0.0	0.0	0.2	6.3
RID removal provision	4.1	2.7	0.0	0.0	6.8
Miscellaneous provisions	0.0	0.0	0.0	0.0	0.0
<i>Total non-personnel provisions</i>	<i>26.1</i>	<i>4.3</i>	<i>0.0</i>	<i>3.6</i>	<i>26.8</i>
Total	51.7	11.3	0.5	11.6	50.9

Total provisions decreased in 2013 by €0.8 million from €51.7 million at the start of the year to €50.9 million at the end of the year. The staff provisions diminished from €25.6 million to €24.1 million.

The Review provision was re-assessed in accordance with the reporting requirements, resulting in a release of €0.5 million. In addition, a provision was included for the upcoming reorganisation at the Faculty of IDE. The non-staff provisions showed a slight increase of €26.1 million to €26.8 million. This increase is mainly explained by the annual allocation to the provision for the €2.7 million future dismantlement of the RID in accordance with the reporting requirements.

Profiling Fund

The previously mentioned student provisions relate to the Profiling Fund. The table below shows the number of students who have used the Profiling Fund together with the corresponding amounts. In this table, a breakdown is made by EER students and non-EER students.

Profiling Fund					
	Number of EER students who have received a reimbursement from the Profiling Fund	Subtotal of the reimbursements provided to EER students from the Profiling Fund (in k€)	Number of non-EER students who have received a reimbursement from the Profiling Fund	Subtotal of the reimbursements provided to non-EER students from the Profiling Fund (in k€)	Grand total of the reimbursements provided to students from the Profiling Fund
2013	1,200	1,383	100	346	1,729
2012	1,197	1,535	106	324	1,859
2011	978	1,339	47	50	1,389

8.7 Capital position

In comparison to 2012, the university's equity capital increased by €31.2 million in 2013, to €345.8 million. The positive result of €31.2 million will be appropriated to the equity capital. €31.3 million of the equity capital will be added to the general reserve. In addition, an amount of €0.7 million will be added to the fund for special purposes and €0.8 million will be released from the special purpose reserve.

8.8 Financial key indicators

Amounts in millions of euros	2013	2012	2011	2010	2009
Income	578.2	555.0	544.8	513.5	538.5
Government and other funding	373.6	346.7	342.3	317.8	353.1
Work for third parties	143.2	150.0	143.4	142.2	135.4
Expenses	551.1	533.0	524.4	530.6	557.7
Financial income and expenses	4.4	2.6	0.5	1.9	0.0
Net profit	31.2	25.1	21.5	-15.0	-18.7
Depreciation on fixed assets	34.7	39.1	36.9	36.8	14.3
Investments in fixed assets	29.6	22.3	16.3	35.7	60.2
Net cash flow	47.1	115.5	30.9	29.6	6.7
Liquid assets	279.7	232.5	117.0	86.1	56.5
Fixed assets	313.5	318.6	331.7	354.3	356.1
Working capital	61.0	28.9	-0.3	-40.7	-20.6
Equity	345.8	314.6	289.5	267.5	282.7
Provisions	50.9	51.7	58.9	64.7	68.8
<i>Ratios</i>					
Total revenue growth	+4.2%	+1.9%	+6.1%	-4.6%	-15.4%
Work for third parties growth	-4.5%	+4.6%	+0.8%	+5.0%	+4.3%
Total expenses growth	+3.4%	+1.6%	-1.2%	-4.9%	-2.1%
Government funding/total revenues	64.6%	62.5%	62.8%	61.9%	65.6%
Work for third parties/total revenues	24.8%	27.0%	26.3%	27.7%	25.1%
Personnel expenses/total expenses	67.7%	66.9%	67.5%	67.1%	69.9%
Solvency ratio	47.2%	46.6%	48.1%	45.8%	48.8%
Current ratio	1.2	1.2	1.1	0.9	1.0

The solvency ratio (equity capital/total capital) and current ratio (current assets/current liabilities) meet the standards of the Ministry of Education, Culture and Science.

8.9 Summarized financial statements

Consolidated balance sheet as at 31 December 2013

Amounts in thousands of euros (after proposed appropriation of the result).

<i>Assets</i>	2013		2012	
	k€	%	k€	%
Fixed assets				
Intangible fixed assets	0	0	0	0
Tangible fixed assets	307,209	42	313,656	47
Financial fixed assets	6,266	1	4,905	1
	313,475	43	318,561	47
Current assets				
Inventories	504	0	483	0
Trade and other receivables	116,087	16	98,162	15
Securities	22,256	3	21,463	3
Liquid assets	279,660	38	232,519	34
	418,507	57	352,627	52
Total assets	731,982	100	671,188	100
<i>Liabilities</i>	2013		2012	
	k€	%	k€	%
Equity	345,829	47	314,608	47
Provisions	50,902	7	51,726	8
Long-term liabilities	0	0	2,587	0
Current liabilities	335,251	46	302,267	45
Total liabilities	731,982	100	671,188	100

Consolidated statement of income and expenditure 2013

Amounts in thousands of euros	2013	2012	Budget 2013
Revenues			
Government funding	364,197	338,278	338,943
Other government funding and subsidies	9,391	8,373	7,700
Tuition and examination fees	41,666	38,064	42,000
Revenues from work for third parties	143,158	149,972	133,244
Other income	19,866	20,300	24,522
Total revenues	578,278	554,987	546,409
Expenses			
Personnel expenses	372,947	356,280	359,100
Depreciation	34,729	39,070	35,683
Accommodation costs	52,203	56,503	54,239
Other expenses	91,231	81,096	84,063
Total expenses	551,110	532,949	533,085
Results from operating activities	27,168	22,038	13,324
Financial income and expenses	4,378	2,621	1,701
Result	31,546	24,659	15,025
Share of results of associates	-307	477	0
Result before tax	31,239	25,136	15,025
Tax	-18	12	0
Result after tax	31,221	25,148	15,025
Minority interests	-18	-68	0
Net profit	31,203	25,080	15,025

Consolidated cash flow statement 2013

Amounts in thousands of euros	2013	2012
Cash flow from operating activities		
Result	31,203	25,080
Adjustments for:		
Depreciation	34,729	39,070
Changes in provisions	-824	-7,222
	33,905	31,848
Changes in current assets		
Inventories	-21	105
Trade and other receivables	-17,925	30,297
Securities	-793	-1,381
Current liabilities	32,984	55,861
	14,245	84,882
	79,353	141,810
Cash flow from investment activities		
Investments in tangible fixed assets	-29,629	-22,343
Divestments of tangible fixed assets	1,347	-288
Other investments in financial fixed assets	-1,361	-3,307
	-29,643	-25,938
Cash flow from funding activities		
Third party interest in affiliated parties	18	68
Loans and borrowings	-2,587	-450
	-2,569	-382
Change in cash and cash equivalents	47,141	115,490
Liquid assets at the beginning of the year	232,519	117,029
Change in cash and cash equivalents	47,141	115,490
Liquid assets at the end of the year	279,660	232,519

8.10 Rights and duties not included in the balance sheet

Technopolis

Under the name Technopolis, the TU-South area will be transformed into an international Research & Development park, which also will accommodate knowledge-intensive companies and start-ups. The first phase of the real estate development for this project is expected to last 20 years. This project will not lead to financial obligations for TU Delft. The free availability of the land in this area (surface area of 125 hectares) is limited

Reactor Institute Delft

Under the Nuclear Energy Act, TU Delft is the licensee of the Reactor Institute Delft (RID), as referred to in Article 15b of the Act. As of 1 April 2011, an amendment to the Nuclear Energy Act took effect, which (among other things) obliges licence holders of nuclear plants and reactors to provide financial

security for the costs related to the shutdown and dismantlement of the nuclear plant or reactor by the licence holder. For the purpose of this financial security, three buildings of TU Delft have been secured by a mortgage. At the end of 2012, a provision of €6.8 million was formed for the future dismantlement of the RID, to which an annual allocation will be made, proportional to the period of use.

Legal proceedings concerning the €25 million fire at the faculty of Architecture

In 2008, TU Delft received a supplementary government grant of €25 million from the Ministry of Education, Culture and Science following the fire at the Faculty of Architecture and the Built Environment. This contribution was provided to enable TU Delft to realise a faculty building that would become an architectural icon and would hold a special position in terms of urban architecture. After investing in and renovating the old main building, TU Delft decided to permanently house the Faculty of Architecture and the Built Environment in the old main building on the Julianalaan. From 2010, the Ministry of



Education, Culture and Science took the position that the requirements set in advance had not been met and made the decision to reclaim the incidental government grant of €25 million in its entirety. This amount was then deducted from the government grant received in 2011. TU Delft did not agree with the Ministry's decision and filed an objection in 2011. As a result of the ruling of the District Court of The Hague on 18 July 2012, the Ministry of Education, Culture and Science annulled its decision to reclaim the grant. The Ministry subsequently paid the €25 million government grant to TU Delft in 2012. In 2013, TU Delft and the Ministry of Education, Culture and Science entered into a settlement. The settlement allows the TU Delft to keep €15 million but requires the university to repay a sum of €10 million to the Ministry in 2014. As a result of this settlement in 2013, income of €15 million was included in the financial statements as a government grant.

Investment obligation

At the end of the fiscal year 2013, TU Delft had outstanding investment obligations equivalent to €16.3 million.

BE-Basic

TU Delft participates in the Bio-based Ecologically Balanced Sustainable Industrial Chemistry (BE-Basic) consortium. TU Delft has pledged a maximum cash contribution of €5.0 million, of which €2.75 million has been transferred in connection with the investment in Bioprocess Pilot Facility B.V.

Lease obligations

At the end of 2013, the obligation arising from photocopying hardware amounted to €1 million. Of this amount, €0.5 million will expire within one year and €0.5 million within five years.

Mapper Lithography Holding B.V.

TU Delft has contracted a conversion agreement with Mapper Lithography Holding B.V. In accordance with this agreement, the services of TU Delft are converted into shares of Mapper Lithography Holding B.V.

8.11 General commentary

General

The financial statements have been prepared in accordance with the legal provisions of Title 9 Book 2 of the Dutch Civil Code and the authoritative statements of the Guidelines for Annual Reporting, which have been issued by the Dutch Council for Accounting Standards. The financial statements are denominated in euros.

Consolidation

The consolidation incorporates the financial data of the institution, its subsidiaries and other institutes over which it has control over or that it effectively manages. Subsidiaries are legal entities over which the institution can exercise ultimate control, directly or indirectly, due to the fact that it possesses a majority of the voting rights or can control the financial and operational activities in some other way. Potential voting rights that can be exercised directly on the balance sheet date are also taken into account. The subsidiaries and other legal entities over which the institution can exercise ultimate control or effective management responsibility are fully consolidated. Transactions between subsidiaries are eliminated in the consolidation.

Policy regulations for the application of the WNT

The Act on the Standardization of the Remuneration of Senior Executives in the Public and Semi-Public Sector (WNT) took effect on 1 January 2013.



8.12 Principles of valuation and determination of result

General

Assets and liabilities are generally stated at their acquisition price, manufacturing price or current value. If no specific basis of the valuation is given, valuation is based on the acquisition price. Unless stated otherwise, the amounts stated are in thousands of euros.

Intangible fixed assets

Intangible fixed assets are shown at cost less straight-line amortization starting in the year in which they become operational. Amortization is based on the expected economic life of the asset and is calculated on the basis of the acquisition value, taking into account the expected residual value. Software licences are amortized over a period of 5 years.

Tangible fixed assets

The component method is applied for the valuation of tangible fixed assets. The component method involves one asset entry in the balance sheet which is divided into components, depending on the different service lives, or the economic life of the assets. Depreciation is based on the expected life of the asset and is determined on basis of the acquisition value. This varies from 60 years for the structural component to 15 years for installations. Land is not depreciated. Depreciation expected on the balance sheet date is taken into account. The renovation and construction projects that will be carried over into next year are shown as buildings under construction for the investments made until the end of the year under review. Investments in equipment and inventory

amounting to €12,500 or more are depreciated over three, five or ten years. Investments in projects are capitalised in the year of purchase and are part of the cost of the project. The investments in equipment and inventory less than €12,500, as well as expenditure on books and artworks, are charged directly to the result. Maintenance costs of tangible fixed assets are shown directly in the statement of income and expenditure..

Financial fixed assets

The financial interest in unconsolidated entities is stated at the acquisition price, minus any potential depreciation losses. Loans are stated at face value. Where TU Delft does not formally act as a guarantor of any potential losses on holdings, these holdings are valued at the acquisition value with a maximum depreciation up to zero. If TU Delft can influence the business and financial policy of the holding in a meaningful way, valuation takes place on the basis of the net asset value method.

Supplies

Supplies, durables and consumer goods are valued at the manufacturing or cost price, less any provisions deemed necessary.

Receivables

Receivables are shown at face value, less a provision for non-recoverability. The first valuation is at true value. Later valuations will take place at the amortised cost which equals the face value, provided there are no premiums, discounts or transaction costs. The costs and income of projects commissioned by third parties that have not yet been completed are shown in the balance sheet. Projects of which the prepaid costs exceed the invoiced instalments are added to the receivables. Projects for which a larger advance payment has been received than can be justified by the costs are shown as liabilities.

Securities

The securities are valued at true value, unless otherwise specified.

Liquid assets

Liquid assets consist of cash, bank balances and call deposits with a term of less than twelve months and are shown at face value.

Provisions

Provisions are formed for legally enforceable or actual liabilities that exist at the balance sheet date, and for which an outflow of resources is likely to be necessary, the amount of which can be reliably estimated. Provisions are shown at the best estimate of the amounts necessary to settle the obligations at the balance sheet date. Provisions are valued at the face value of the expenditure expected to be required to settle the obligations, unless otherwise stated.

Pensions

TU Delft has a pension scheme with the ABP pension fund, which is qualified as a defined benefit pension scheme, whereby the pension allowance is based on the years of service and the average salary of the employee during the period of employment. On the basis of the implementation agreement with this fund and the pension agreement with the employees, TU Delft, in principle, has no obligation other than the payment of the annual pension premiums owed. In the event that the coverage becomes too low, the employer may be requested to pay a supplementary contribution. The actual coverage on the balance sheet date was 105.9%.

Long term and current liabilities

Long term and current liabilities are shown at the actual value on the initial valuation. Transaction costs that are directly attributable to the acquisition of the liabilities are included in the valuation on initial processing. After the first inclusion, liabilities are shown at the amortised cost, being the amount received taking into account premiums or discounts and less transaction costs.

TU Delft runs an interest rate risk on the long-term interest-bearing loans as a result of changes in the market rate of interest. To limit the interest rate risk, the institution has contracted an interest rate swap for which a fixed interest rate was obtained. TU Delft does not apply hedge accounting, which ensures that the interest rate derivative is shown in the balance sheets in the financial statements. The valuation is at true value. Movements in value are taken directly to the statement of income and expenditure.

8.13 Determination of results

The revenues and costs with a causal link to the achievements and activities in year under review are designated as income and expenditure.

Project revenues and project costs

For projects of which the result can be reliably specified, the project costs and revenues will be shown as net turnover and costs in the statement of income and expenditure, in proportion to the achievements as of the balance sheet date. The progress of the achievements is determined on the basis of the project costs up to the balance sheet date, in proportion to the estimated total project costs. If the result on the balance sheet date cannot be reliably estimated, the revenues will be shown as net turnover in the income statement, up to the amount of the project costs incurred. The result is determined as the difference between project revenues and project costs. Project revenues are the contractually agreed revenues and the revenues from additional and less work, claims and reimbursements, if and to the extent that it is probable that these will be realised and that these can be determined reliably. Project costs are the costs directly related to the project, the costs that are generally allocated to project activities and can be attributed to the project, and other costs contractually attributable to the commissioning party. If the total project costs are likely to exceed the total project revenues, the expected losses will immediately be included in the statement of income and expenditure.

Taxes

The taxes on the result are calculated over the result before tax in the statement of income and expenditure, taking into account fiscal possibilities.

Third party interests

If the interest in the fully consolidated participations is less than 100%, the third party interests will be stated separately in the equity capital and the result.

Foreign currency

Transactions in foreign currency carried out during the accounting period are translated in the financial statements at the exchange rate applying on the transaction date.

8.14 Cash flow statement

The cash flow statement is drawn up on the basis of the indirect method. The term 'cash' is defined as the balance of the liquid assets in accordance with the balance sheet and the debts to banks.



8.15 Remuneration of the Executive Board and Supervisory Board

The remuneration of the individual members of the Executive Board and the Supervisory Board was in line with the accountability obligation arising from the Annual Reporting Regulations for Education and was as follows:

	Employment date of commencement	Employment end date	Job	Remuneration	Taxable fixed and variable expenses remuneration	Provisions remuneration payable in the long term	Benefit due to termination of employment
Board of Directors			Fte	2013	2013	2013	2013
Mr D.J. van den Berg (President)	1/2/2008	*	1.0	187,340	6,059	34,589	-
Prof. K.Ch.A.M. Luyben (Rector Magnificus)	1/4/1983	*	1.0	185,045	-	34,139	-
Mr P.M.M. Rullmann (Vice President for Education & Operations) **	1/5/2002	31/3/2013	1.0	79,961	-	8,760	-
Ms J.L. Mulder (Vice President for Education & Operations) ***	1/5/2003	*	1.0	157,299	6,052	22,270	-

*: still employed at the end of 2013

**: Relatively speaking, Mr P.M.M. Rullmann received a salary above the WNT standard, which is due to the payment of a holiday bonus (for the period from 1 June 2012 up to and including 31 March 2013) and the payment of the gratuity over the past few years in accordance with his individual employment contract (signed in 2010)

***: Ms J.L. Mulder has occupied the position of Vice President for Education & Operations since 1 April 2013; the amounts stated pertain to the entire year 2013

	Employ- ment date of com- mencement	Employ- ment end date	Remunera- tion	Taxable fixed and variable expenses remunera- tion	Provisions remunera- tion payable in the long term	Benefit due to termina- tion of employ- ment
Supervisors			2013	2013	2013	2013
Ir. G-J. Kramer (President)	1/5/2005	1/7/2013	7,500	-	-	-
Drs. ir. J. van der Veer (President)	1/7/2013	1/7/2017	7,500	-	-	-
Prof. dr. D.D. Breimer	1/5/2007	1/5/2015	10,800	-	-	-
Mw. drs. K.M.H. Peijs	1/6/2007	1/6/2015	10,800	-	-	-
Drs. J.C.M. Schönfeld	1/4/2008	1/4/2016	10,800	-	-	-
Mw. ir. L. Smits van Oyen MBA	1/1/2013	1/1/2017	10,800	-	-	-

8.16 Declarations members of the Executive Board

The State Secretary defines declarations as 'Reimbursements for expenses incurred or services rendered' that the individual administrators have declared to the institution themselves. The individual administrators did not submit any declarations to the institution in 2013.

The table below presents an overview of all costs incurred by TU Delft on behalf of the members of the Executive Board in 2013.

Amounts in euros	2013
Mr D.J. van den Berg (President)	
Representation costs	522
Travel expenses within the Netherlands	237
Travel expenses outside the Netherlands	19,711
Miscellaneous costs	1,202
Total	21,672
Prof. K.Ch.A.M. Luyben (Rector Magnificus)	
Representation costs	820
Travel expenses within the Netherlands	-
Travel expenses outside the Netherlands	5,925
Miscellaneous costs	-
Total	6,745
Mr P.M.M. Rullmann (Vice President for Education & Operations) until 31 March 2013	
Representation costs	-
Travel expenses within the Netherlands	-
Travel expenses outside the Netherlands	5,470
Miscellaneous costs	110
Total	5,580
Ms J.L. Mulder (Vice President for Education & Operations) from 1 April 2013	
Representation costs	292
Travel expenses within the Netherlands	-
Travel expenses outside the Netherlands	7,394
Miscellaneous costs	-
Total	7,686
Joint costs	
Representation costs	-
Travel expenses within the Netherlands	2,802
Travel expenses outside the Netherlands	-
Miscellaneous costs	-
Total	2,802



8.17 Statement of the Executive Board

The Executive Board hereby confirms (in accordance with Article 31(1a) of the Annual Reporting Guideline for Higher Education and Scientific Research) that all known information important to the auditor's report on the annual statement and the funding data was made available to the auditor of the institution. The Executive Board also declares that it has not been involved in any irregularities as referred to in the aforementioned Article 31(1a).

8.18 Audit Report of the independent accountant

To: the Executive Board of Delft University of Technology

The accompanying summary annual statements, which comprise the consolidated balance sheet as at 31 December 2013, and the consolidated state for income and expenditure for the year then ended, and notes, comprising a summary of the significant accounting policies and other explanatory information, are derived from the audited consolidated annual statements of Technische Universiteit Delft for the year 2013. We expressed an unqualified audit opinion on those consolidated annual statements in our report dated 23 April 2014. Those consolidated annual statements, and the summary annual statements, do not reflect the effects of events that occurred subsequent to the date of our report of 23 April 2014.

The summary annual statements do not contain all the disclosures required by Part 9 of Book 2 of the Dutch Civil Code and the Annual Reporting Regulations for Education (Regeling jaarverslaggeving Onderwijs). Reading the summary annual statements, therefore, is

not a substitute for reading the audited consolidated financial statements of Technische Universiteit Delft.

Responsibility of the Executive Board

The Executive Board is responsible for the preparation of a summary of the audited consolidated annual statements in accordance with Part 9 of Book 2 of the Dutch Civil Code and the Annual Reporting Regulations for Education (Regeling jaarverslaggeving Onderwijs).

Auditor's responsibility

Our responsibility is to express an opinion on the consolidated summary annual statements and the related explanatory notes based on our procedures, which we conducted in accordance with the Annual Reporting Regulations for Education (Regeling jaarverslaggeving Onderwijs) and Dutch law, including the Dutch Standard 810 'Engagement to report on summary financial statements'.

Opinion

In our opinion, the summary annual statements derived from the audited consolidated annual statements of TU Delft for the year 2013 are consistent, in all material aspects, with those consolidated annual statements, in accordance with Part 9 of Book 2 of the Dutch Civil Code and the Annual Reporting Regulations for Education (Regeling jaarverslaggeving Onderwijs).

Rotterdam, 23 April 2014

PricewaterhouseCoopers Accountants N.V.

T.A.J.C. Snepvangers RA



9. Continuity section

9.1. Introduction

In accordance with the letter of the Ministry of Education, Culture and Science of 20 December 2013, a continuity section must be included in the annual report. The purpose of this section is to enable any stakeholder or interested party to examine how TU Delft handles the financial implications of the policy or proposed policy. The expected operating result in the coming years and the development of the capital position are thereby made transparent. This is discussed in part A of the continuity section. Part B of the continuity section discusses the manner in which the internal risk management system is organised and how this functions in practice. Furthermore, the description in part B also focuses on the risks and uncertainties that TU Delft will encounter in the coming years and the appropriate measures the university will take to deal with these risks and uncertainties.

9.2. Long-Term Budget (part A)

TU Delft scores highly in international university rankings and wants to continue to do so. The end of the lifespan of several buildings necessitates investments in facilities for education and research. TU Delft is therefore investing in the quality of the campus on a large scale with new construction and renovation. This will enable us to improve the standard of our accommodation so that it corresponds with the leading position of TU Delft. The magnitude of the intended investments in real estate will have a major impact on the financial management of TU Delft. Accommodation has a strategic nature, so the choices made have long-lasting effects. This makes a long-term framework for campus development both desirable and necessary. The Executive Board agreed to the campus vision and

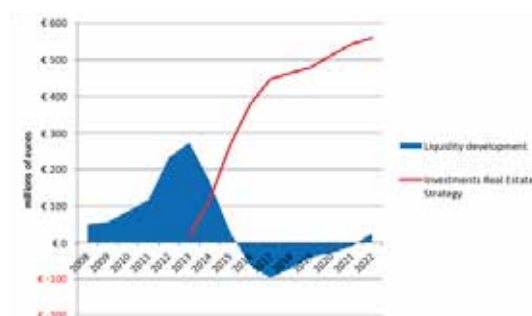
the real estate strategy in the year under review. The basis for the new campus vision is the concept of a 'Living Campus', which involves providing a living environment with the necessarily facilities required by an international university. The campus vision does not focus only on the development of the TU Delft area (including Technopolis), but also on the link with adjoining areas and infrastructures. TU Delft has sufficient accommodation, but it is not always the right kind. The goal for the coming years is to decrease the footprint, improve the quality of the accommodation and ensure that it is the right kind. Herein lies the essence of the multifunctional use of the buildings: on the one hand, optimal usage by accommodating multiple users in a building and on the other, to set the building up in such a flexible manner so it serves different purposes.

The Real Estate Strategy and the project list arising from this, with alterations to be made to the real estate, were based on the vision. These alterations include a new building for the Faculty of Applied Sciences (with the realisation of new laboratories for the departments of Chemistry and Biotechnology), alterations to the building for Civil Engineering and Van der Burghweg, alterations to the buildings of the Faculties of Architecture and the Built Environment and Electrical Engineering, a quality impulse for the other buildings, preserving the heating facilities of buildings and creating a better connection between buildings and the premises, thereby contributing to a lively campus. The core of the Real Estate Strategy can be broken down into the programme, sufficient flexibility and the financing possibilities. The Real Estate Strategy programme is divided into three time frames: the short term (2013-2016), the medium term and the long term. Flexibility in both the projects and the planning is a precondition for the financing of the Real Estate Strategy. The Real Estate Strategy will be adjusted each year in order to anticipate changes in the university and its environment and the availability of resources in order to finance the real estate strategy. A long-term financial estimate is used at TU Delft.



Important components incorporated in the long-term financial estimate include the external development of the funding by the Ministry of Education, Culture and Science, the internal execution of the Review agenda, the desired academic innovation in the field of education and research for the purpose of maintaining TU Delft's position as a world-class university and the issues related to real estate that TU Delft will address in the coming years. Twice a year, the long-term financial estimate is updated and different scenarios are calculated. The present real estate strategy or the postponement thereof can be adjusted accordingly. The current real estate strategy for the 2013-2022 period is based on an investment sum of €570 million. Based on the real estate strategy, the current long-term financial estimate will show the following expectations for the evolution of the liquid assets.

As of 2014, diminution of the net liquid assets becomes visible. This trend will continue beyond 2014 and will lead to the TU Delft being forced to borrow money from 2016 on. There will no longer be a surplus of financial resources. In accordance with the letter from the Ministry of Education, Culture and



Science of 20 December 2013, a number of tables with explanations must be included in the continuity section. These tables are presented below, with commentary on the items 'expected staff numbers', 'expected student numbers', 'Balance Sheet' and 'Statement of Income and Expenditure'.

Expected staff numbers

The table below shows the expected development in FTEs. A distinction has been made, according to the system normally used by TU Delft, by academic staff, administrative and support staff and student assistants job groups. The classifications in this system are different from the format prescribed in the letter from the Ministry of Education, Culture and Science. According to these numbers, a decrease in the workforce is foreseen to the expected number of 4,445 FTEs in 2016. The decrease in the academic staff is due to the implementation of the latest Review plans, while the decrease in the administrative and support staff is mainly due to the shift at the University Corporate Office.

FTE numbers	2013	2014	2015	2016
Academic staff	2,579	2,510	2,502	2,492
Administrative and support staff	1,858	1,903	1,885	1,863
Student assistants	99	89	90	90
	4,536	4,502	4,477	4,445

Expected student numbers

The number of students is expected to increase further from 2014 to year-end 2016.

	2013	2014	2015	2016
Number of students	18,781	19,200	19,500	19,800

Balance sheet

The balance sheet below shows the budget for 2014 up to and including 2017.

Through the implementation of the real estate strategy, a decrease in the net liquid assets becomes visible.

This trend will continue beyond 2014 and will lead to external financing as of 2016. There will no longer be the case of surplus financial resources. The diminution in the provisions is due to the releases from the provisions for the Review, asbestos and sewerage. The annual allocation to the RID decommissioning provision is also shown in the balance sheet.

Assets	actual 2013	budget 2014	budget 2015	budget 2016	budget 2017
	M€	M€	M€	M€	M€
Fixed assets					
Intangible fixed assets	0,0	0,0	0,0	0,0	0,0
Tangible fixed assets	307.2	385.6	515.5	609.3	653.2
Financial fixed assets	6.3	15.3	15.8	16.3	16.8
	313.5	400.9	531.3	625.6	670.0
Current assets					
Inventories	0.5	0.5	0.5	0.5	0.5
Trade and other receivables	116.1	95.3	95.9	112.0	119.7
Securities	22.3	21.5	21.5	21.5	21.5
Liquid assets	279.6	181.6	57.0	20.0	20.0
	418.5	298.9	174.9	154.0	161.7
Total assets	732.0	699.8	706.2	779.6	831.7
Liabilities					
	M€	M€	M€	M€	M€
Equity					
Provisions	50.9	38.2	34.4	33.1	35.8
Long-term liabilities	0,0	0,0	0,0	60.0	100.0
Current liabilities	335.3	312.0	312.0	312.0	312.0
Total liabilities	732.0	699.8	706.2	779.6	831.7

amounts in millions of euros	Actual 2013	Budget 2014	Budget 2015	Budget 2016	Budget 2017
Revenues					
Government funding	373.6	340.1	340.1	340.1	340.1
Tuition and examination fees	41.7	44.8	47.0	48.0	49.0
Revenues from work for third parties	143.2	140.0	138.9	140.7	141.4
Other income	19.8	22.9	22.7	23.2	23.3
Total revenues	578.3	547.8	548.7	552.0	553.8
Expenses					
Personnel expenses	372.9	365.4	362.5	359.9	359.5
Depreciation	34.7	33.3	33.7	35.0	38.5
Accommodation costs	52.3	57.5	54.7	54.7	54.7
Other expenses	91.2	88.7	87.0	86.6	86.7
Total expenses	551.1	544.9	537.9	536.2	539.4
Results from operating expenses	27.2	2.9	10.8	15.8	14.4
Financial income and expenses	4.3	1.4	-0.3	-1.2	-5.3
Result	31.5	4.3	10.5	14.6	9.1
Share of results of associates	-0.3	-0.5	0.3	0.1	0.3
Result before tax	31.2	3.8	10.8	14.7	9.4
Tax	0.0	0.0	0.0	0.0	0.0
Result after tax	31.2	3.8	10.8	14.7	9.4
Minority interests	0.0	0.0	0.0	0.0	0.0
Net profit	31.2	3.8	10.8	14.7	9.4
Exceptional items in net profit	5.4	0.0	0.0	0.0	0.0

Statement of Income and Expenditure

The following Statement of Income and Expenditure provides an overview of the long-term budget for the 2014-2017 period.

The aforementioned long-term budget was drawn up on the basis of the following principles:

- The development of the government grant funding (including other government grants and subsidies) is based on a stable income line of €340 million.
- The effects of wage and price adjustments are disregarded, so the 2014 price level has been used for the 2015-2017 period.

The long-term budget of the entire TU Delft presents a positive picture for the 2014-2017 period. The operating result in the first years shows a slight increase, which is mainly due to falling costs of the university's own staff as a result of the aforementioned decrease in FTEs. This decrease is caused by the implementation of a

number of review plans, as well as the reorganisation at the University Corporate Office, because TU Delft, with strict cost control, aims to save as much money as possible to finance the necessary real estate programme. In order to finance this, we need to build up savings now.

In 2017, the first effects of the implementation of the Real Estate Strategy will become visible in the Statement of Income and Expenditure. Due to the delivery of buildings (including the new building of the Faculty of Applied Sciences), the depreciation costs will increase by approximately €3.5 million. Furthermore, the financial income and expenditure shows that raising the first loans will lead to interest charges amounting to approximately €5.0 million.

It is also apparent that the management units foresee a stable line of income of approximately €140 million due to third party work.

9.3. Report on the presence and operation of the internal risk management and control system (part B1)

The internal risk management and control system at TU Delft is organised as follows.

Planning and Evaluation Cycle (P&E cycle)

The institution-wide Planning & Evaluation Cycle (P&E cycle) is the core process which systematically supports the strategic planning for TU Delft. The P&E cycle is an instrument consisting of processes and products, administrative dialogue and agreements that allow the administration and management of TU Delft (Executive Board, deans, Departmental Directors and managers) to find answers to the core questions: 'Are we doing the right things?' (strategy and planning) and 'Are we doing them well?' (monitoring & evaluation). This TU Delft umbrella cycle is an accepted working method within the academic community.

The P&E cycle forms the framework that enables the administration and management of the university to formulate objectives, identify risks, monitor processes and adjust them in time. The cycle however must fit within the character and culture of the university organisation.

Nature of university organisation

The university is an open network organisation. The academic staff are connected to global academic networks and thereby also to the social and economic environment. As a result of these complex networks the planning and decision-making processes at the university are complicated.

Furthermore, universities are publicly-financed organisations that are required to account adequately for their actions. To achieve this, it is essential that the many internal processes which keep the university in operation are strictly controlled.

Internal process management

The internal process management allows the administration and supervisors of the institution to aim for set objectives and to identify and control the risks to those objectives on time. It is a structured working method, supported by a system of instruments, systems and agreements, and driven by values, standards and regulations aimed at the realisation of the strategic objectives.

Four perspectives

The approach and the quality of the internal process management forms an important part of the administrative agenda. To this end, the control instruments are organised into four groups:

- Culture, behaviour and integrity. What core values are part of the culture of the organisation? For example delivering top academic quality in view of

academic integrity.

- Communication. What strategic plans, risks and uncertainties are discussed in various formal and informal meetings?
- Policy and regulations. What policy guidelines and regulations are in place to assess activities and to avoid risks?
- Monitoring and reporting. What quantitative and qualitative administrative information and information systems are used to monitor the progress of the strategic plans? Are we on the right track or are adjustments necessary?



Image: 4 perspectives for planning

This approach allows TU Delft to pay attention to both 'hard' management instruments, such as rules and monitoring reports, and to 'soft' aspects, such as values and dialogue. The strategic planning and internal process management can thereby be analysed and discussed from 4 different perspectives. The strategic planning and the (quality of the) internal process management constitutes the agenda of the administrative meetings in the P&E cycle.

COSO framework

The planning approach from 4 perspectives for control mainly addresses the best method for approaching the internal process management. It is TU Delft's ambition to convert the COSO framework to the university setting in 2014/15 in order to further shape and strengthen the management control. The COSO framework provides good starting points for the what question! The COSO framework can help TU Delft by providing a clear framework for the question of whether or not the institution is completely equipped at the system level (security), and which quality improvement strategy can be formulated to strengthen the internal process management and thereby remain in control.



¹COSO = Committee of Sponsoring Organizations of the Treadway Commission. COSO assumes that this framework allows organisations to effectively and efficiently develop and maintain their internal process management, thereby improving the feasibility of strategic objectives and quickly making adjustments in the case of internal changes or environmental influences.



9.4. Description of the most important risks and uncertainties (part B2) SWOT analysis

Own strengths

- International academic reputation
- Clear technical and scientific profile
- Perspectives: Science, Engineering, Design
- High-quality, broad engineering degree programmes
- Leading infrastructure
- Strong strategic partnerships
- Lively student culture

External threats

- Autonomy of universities under pressure
- Minor investments in knowledge system
- Increasing bureaucracy and regulatory burden
- Uncertainty regarding the stability of direct funding
- Decrease in NWO resources
- Competition for academic talent
- Rising costs of infrastructure and accommodation

Essential improvements

- Right student in the right place at the right time
- Substantial acceleration of the course duration
- Investment in the teaching qualities of the staff
- Keeping the infrastructure and accommodation vibrant
- Improving the pass rate and shortening the PhD programme duration
- Continuing the development of the valorisation activities
- Strengthening the entrepreneurial education

External opportunities

- Grand Challenges for Society
- Dominant role of the European Union: Horizon 2020
- Leiden & Erasmus strategic alliance
- Increased coordination in the 3TU.Federation
- Innovative top sectors
- Public-private partnerships
- Emerging knowledge economies
- Modern digital teaching methods

SWOT-ANALYSIS

The SWOT analysis below is partly based on the environmental analysis - Dynamic Context - as incorporated in the TU Delft Roadmap 2020; the strategic plan of TU Delft for the coming years. When this analysis was being compiled, the 'Profiling in perspective - trend report on universities 2000-2020' was used, which is drawn up by the VSNU (April 2012) and which describes the important developments in the field of university education and research.



TU Delft has the following strategic priorities:

Students & Education

- Delft Extension School
- Differentiation and breadth in BSc programmes
- Profiling of MSc programmes
- Professional Doctorate in Engineering
- Graduate School – Doctoral Education
- Postacademic courses
- Quality of student intake
- Success rates: graduating within the standard term is the norm.
- Excellence programmes
- Modern teaching methods, including digital forms
- Teaching abilities of academic staff
- Institutional accreditation, quality assurance and student satisfaction
- 3TU and Leiden-Delft-Erasmus partnerships

Research

- Scientific profile: science, design, engineering
- TU Delft research priority areas
- Focus and mass in research programming
- Interfaculty alliances – TU Delft Institutes
- ‘Grand Challenges for Society’ – four priority areas
- Strategic research cooperation
- International peer reviews and rankings
- Individual and group quality
- Top sectors and Horizon 2020
- Fundraising
- Need for state-of-the-art research infrastructure

Valorisation

- TU Delft valorisation profile 2012-2020
- Structural cooperation with businesses and government
- Cooperation with SMEs
- Delft Technological Innovation Campus
- Support organisation – TU Delft Valorisation Centre
- Entrepreneurship training and development of new

commercial activity

- Intellectual property
- Debate on ethical aspects of public-private partnerships

Ensuring the realisation of the strategic priorities listed above will be accomplished by using, among other things, the available management information and the results of the investigations conducted by the internal audit function. Furthermore, follow-up measures will be taken and the points of concern reported by the external auditors in the management letter and the auditors’ report will be monitored.

9.5. Report of the supervisory body (part B3)

Vision and strategy

The institutional plan developed in 2012, the ‘Roadmap TU Delft 2020’, will determine the university’s course until 2020. The Supervisory Board was closely involved in the development of this vision.

The Supervisory Board is actively involved in the further development of the strategic LDE partnership. To this end, the Board frequently communicates with the Supervisory Boards of Leiden University and Erasmus University Rotterdam. LDE Joint Regulations were drawn up at the end of 2013.

Each quarter, the real estate issues of TU Delft are discussed in the meeting of the Supervisory Board. In 2013, this mainly concerned the campus vision, the real estate strategy and the plans for the new construction of the Faculty of Applied Sciences. The Supervisory Board is also actively involved in the developments in the field of education. Matters such as new study programmes, whether or not to establish a numerus fixus for a study programme, stricter binding recommendations on the continuation

of studies, the quality assurance policy, and insight into the (re)accreditation processes of the programmes are regularly discussed with the Board. The developments and strategy of TU Delft in the area of online education are closely monitored by the Board.

Moreover, the Supervisory Board has been actively involved in the planning of the Holland Particle Therapy Centre (HollandPTC) and has taken note of the Amsterdam Institute for Advanced Metropolitan Solutions, an institute in the field of applied urban technology and design, established in cooperation with the municipality of Amsterdam, Wageningen University and Research Centre, MIT and various companies, such as Shell.

Administration and management

In 2013, the Supervisory Board held four regular meetings with the Executive Board and four meetings without the Executive Board. Furthermore, topical subjects were discussed during an informal evening meeting with the Executive Board.

Once again the Supervisory Board also visited a number of organisational units this year, including several faculties, the Library and the Science Centre. Moreover, the new president visited deans, directors and the president of the Works Council in order to get acquainted with them.

The Supervisory Board participated in the research conducted by the Education Inspectorate into 'Good Governance' in higher education.

To enable the Supervisory Board to perform its supervisory task well, subjects such as (anticipated) amendments to the law, activities in the field of scientific integrity, the code of ethics and Integral Safety will be discussed with the Board.

FINANCES AND OPERATIONAL MANAGEMENT

Audit Committee

The Audit Committee met four times in 2013.

Recurring agenda points were the further development of the management control system of TU Delft, the results of the activities of the Internal Audit Function and the financial results, including the 'review' project and the cash flow. Attention was also paid to the progress and follow-up of the points from the reports of the external accountant concerning 2012 and the 2013 TU Delft safety profile. Additionally, the discussion about the 2012 audit report and the resulting improvement measures were on the agenda in April. Partly with a view to the major future investments in real estate, the committee paid attention to both the real estate organisation and the important/major investment project Nieuwbouw TNW Zuid, including the financing of this new construction. The development of the HollandPTC project was also discussed.

During an additional meeting in November, the implementation of the governance and control vision of TU Delft was specifically discussed. This is based on a COSO framework (internal control) that is in line with the previously developed management control system.

The external accountant's 2013 management letter, the 2014 budget and other items were on the agenda in December.

The president of the Audit Committee meets with the director of Finance on a monthly basis. He also has ad-hoc meetings with the Audit Manager of the Internal Audit Function.

Supervisory Board

In its meeting on 25 April 2013 the Supervisory Board approved the 2012 Annual Report and the Financial Statements; in its meeting on 11 December 2013 the Board approved the Budget for 2014. During its meetings in 2013, the Board focused a great deal of its attention on the financial position of TU Delft, prepared by the Audit Committee. At each meeting, the Finance director presented a controller letter about the previous quarter.

The special subjects in this regard were: the organisation of the risk management of TU Delft, the long-term financing of necessary investments, strengthening the control of operational management in the broad sense and the completion of the review operation. The Supervisory Board concludes that the financial position of TU Delft is healthy and that the control of operational management has been further strengthened.