



Delft University of Technology

Annual Report 2014

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Key indicators

Indicator	Number/percentage	
Education		
Intake of new students:		
• Bachelor's degree programme	2,918	number
• Master's degree programme	1,187	number
• HBO bridging programme	140	number
Total	4,245	number
Student population:		
• Bachelor's degree programme	10,871	number
• Master's degree programme	8,384	number
• HBO bridging programme	358	number
Total	19,613	number
Positive binding recommendation on continuation of studies in first year	72%	%
Propedeuse obtained in one year	33.5%	%
Degree certificates:		
• Bachelor's degree programme	2,086	number
• Master's degree programme	2,251	number
• PDEng	26	number
Research		
PhD candidates	2,575	number
Doctorates	371	number
PhD pass rate within five years	46%	%
Academic staff:		
• Permanent academic staff	839	FTE
• Postdocs	325	FTE
• Other academic staff (lecturers and researchers)	742	FTE
Total	1,906	FTE
Finances		
Government funding	398.5	€ x 1,000,000
Indirect funding	47.7	€ x 1,000,000
Contract funding	127.7	€ x 1,000,000

Foreword

Without talent, there is no university. Academic talent forms the foundation of high-level research, the results of which benefit society and the economy. Quality indicators in 2014 included the awarding of a Spinoza Prize to environmental engineer Mark van Loosdrecht and the awarding of National Icon status to the university's research on quantum technology (QuTech). Attracting talented academics is naturally an important part of our personnel management, with diversity playing a clear role. After all, more diverse teams are more innovative and more creative. We therefore aim for a culture in which a diversity of talents with a varied backgrounds can excel. In 2014, for example, the second batch of successful candidates for the Delft Technology Fellowship for female talent was accepted.

Without talented students there can be no new generations of highly educated engineers. Talented students does not only refer to the students with the highest marks, but also to the right student in the right place; a principle that is put into practice starting with the informational activities. Nurturing talent is also a matter of providing sufficient opportunities for development, within the degree programme and alongside it. The above-average student is challenged with a variety of options, ranging from double degrees to an Honours programme. While all of this imposes demands on the quality of education, an institution that can count the best teacher in the Netherlands – Alexandru Iosup – among its faculty must be doing something right.

It is also our responsibility as a university to create the preconditions under which such talent can blossom. The facilities on our Delft campus form an important part of these preconditions. With more than 25,000 students and academic and support staff, the campus is a world in itself; a broad international community with a high level of knowledge. To ensure that our campus can fully accommodate this community, which is involved in world-class education and research, we have initiated a major redevelopment of our university premises. With this operation we aim to make the campus a lively, future-proof hub where top-quality education and research can take place in a sustainable environment, suitable for the latest teaching formats such as blended learning and flipped classrooms, and equipped with state-of-the-art facilities; a campus in which high-tech facilities go hand in hand with consideration for tradition. Because a university that will celebrate its 173rd anniversary in 2015 is well placed to preserve the good while discovering the new.

Of course the world doesn't stop with this campus. More than ever, we as a university are working to strengthen our ties with the outside world, both regionally, nationally and internationally. This involves many different interests. For some fields, such as biobased technology and LED technology, the best cooperation partners can be found on the other side of the world. At the same time, substantive, academic cooperation in countries like Brazil and China can form an excellent basis for Dutch business in the region. Cooperation across the boundaries of



fields of specialisation remains essential. A unique example of such cooperation in 2014 was the inauguration of 11 Medical Delta professors with a joint appointment at TU Delft, Leiden University and/or Erasmus University Rotterdam, with which they create a bridge between the medical world and the technology of TU Delft.

Within the region we remain committed to an economy in which high-quality knowledge leads to prominent activity, high-quality employment and sustainable development. We also hope to be of service to our own graduates and PhD candidates, so that they can find the right place in society once they have completed their time at university. An important development in this respect is the establishment of HollandPTC, the centre for proton therapy, which will open its doors in Delft in 2017. Important steps were again taken towards this in 2014. Once it opens, HollandPTC will be able to provide proton therapy to 600 cancer patients a year. Through research and education the centre will also further develop this therapy in order to improve recovery rates and further reduce the chance of side effects. This is one of the ways in which high-quality TU Delft research provides a direct contribution to the well-being of society, something we endeavour to achieve in all of our areas of knowledge.

The Executive Board of Delft University of Technology

Report of the Supervisory Board

In 2014, the Supervisory Board was made up of the following members:

- *Drs. ir. J. van der Veer*, president, former CEO of Shell (appointed until 1 July 2017, first term)
- *Prof. D.D. Breimer*, vice-president, former Rector Magnificus/President of the Leiden University Executive Board (appointed until 1 May 2017, third 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, director and/or majority shareholder of companies and organisations in the field of healthcare, ICT and tourism, and administrator of various civil society organisations (appointed until 1 January 2017, first term)

Vision and strategy

The strategic plan approved in 2012, the 'TU Delft Roadmap 2020', will determine the university's strategic course until 2020. The Supervisory Board performs its tasks on the basis of this Roadmap.

The Supervisory Board is actively involved in the further development of the strategic partnerships of TU Delft, both nationally and internationally.

Regionally, the partnership with Leiden University and Erasmus University Rotterdam, known as the LDE partnership, is of great importance to TU Delft. To this end, the Board frequently communicates with the Supervisory Boards of both universities. LDE Joint Regulations were drawn up at the end of 2013. At a national level, TU Delft has had a partnership for many years with Eindhoven University of Technology and the University of Twente, the 3TU.Federation.

Internationally, the Supervisory Board considered the establishment of Joint Research Centres (JRC) in countries like China and Brazil and participation in university network organisations such as IDEA League, CESEAR and EUA.

The Supervisory Board is also actively involved in the further planning process for the Holland Particle Therapy Centre (HollandPTC). The Erasmus MC and LUMC medical centres are working closely with TU Delft to establish the Netherlands' first treatment centre for proton therapy. HollandPTC will provide education and scope for ground-breaking scientific research at TU Delft.

The Supervisory Board has been informed in detail

on the development of the Amsterdam Institute for Advanced Metropolitan Solutions, an institute focusing on urban technology and design, in collaboration with the City of Amsterdam, Wageningen UR, Massachusetts Institute of Technology (MIT) and various businesses. The Supervisory Board was also regularly informed on the development of the QuTech Advanced Research Centre for the development of a quantum computer and quantum internet, in collaboration with TNO. In November, the Dutch government awarded National Icon status to the research into Quantum Technology.

The Supervisory Board is actively involved in the developments in the field of education. Matters such as new study programmes, whether or not to establish a numerus clausus for a study programme, stricter binding recommendations on the continuation of studies, the quality assurance policy (in 2014, the Supervisory Board was closely involved in the internal audit Institutional Assessment of Quality Assurance, performed by internal and external experts) and insight into the accreditation and re-accreditation processes of the programmes, are regularly discussed with the Board. The Supervisory Board closely follows the strategy and developments of TU Delft with regard to online education, in which TU Delft is leading the way internationally, and the Extension School.

Each quarter, the real-estate issues of TU Delft are discussed in the meeting of the Supervisory Board, and further decisions are made if necessary. In 2014, this primarily concerned an update of the real-estate strategy, the adoption of a new Campus Vision, including the Living Campus, and the plans for new construction of the Faculty of Applied Sciences and Yes!Delft2.

Administration and Management

In 2014, the Supervisory Board held four regular meetings with the Executive Board and five meetings without the Executive Board. In addition, a strategic meeting was held in which several strategic issues for TU Delft were examined in detail with the Executive Board.

To enable the Supervisory Board to properly perform its supervisory task, subjects such as (anticipated) amendments to the law, activities in the field of scientific integrity, the code of ethics and integral safety are discussed with the Board.

The Supervisory Board once again visited a number of faculties and service departments in 2014.

The national developments taking place with regard to the higher education system – such as the

Science Vision and Agenda, the government's Higher Education and Research Review Committee ("Van Vught Committee"), are being coordinated with the Supervisory Board.

The Supervisory Board has agreed to the use of the COSO model, which has been adapted to the academic environment, as a general framework for internal process management and control.

The Supervisory Board approved the updated Executive and Management Regulations in February 2014.

Personnel and internal affairs

In 2014, the Remuneration Committee conducted appraisal interviews with the individual members of the Executive Board.

In December 2014, the State Secretary of the Dutch Ministry of Education, Culture and Science re-appointed Professor D.D. Breimer as a member of the TU Delft Supervisory Board for a period of two years with effect from 1 May 2015.

In accordance with Article 4 of the TU Delft Supervisory Board Regulations, the Board is responsible for determining the quality of its own performance. To this end, the Supervisory Board discusses its own performance as well as that of the individual members, and the consequences that must be attached to this, at least once a year without the presence of the Executive Board.

This self-evaluation took place prior to the Supervisory Board meeting of 25 June 2014, on the basis of a structured questionnaire. The individual members of the Supervisory Board completed this questionnaire. The president of the Supervisory Board summarised the individual findings, and the Board then exchanged views against this background.

The Supervisory Board's most important findings are that the individual areas of expertise are perceived as complementary in the Board, and that the Board in its current composition considers itself capable of carrying out the tasks of the Board in accordance with its Regulations, namely supervising the Executive Board and the general course of the university's affairs as well as advising the Executive Board. With regard to new appointments to the Supervisory Board, it is important that these areas of expertise continue to complement one another.

The Supervisory Board also evaluated its president under the supervision of the vice-president.

In 2014, the Supervisory Board adopted amended Supervisory Board Regulations.

Finances and operational management

Audit Committee

The Audit Committee met six times in 2014. Important items on the agenda were the amendment of the Supervisory Board Regulations, major investment projects such as the new Applied Sciences South building (including accompanying risk scan), HollandPTC and the start-up complex/transitional building Yes!Delft2, including the financing of these investments. The further development of the COSO model was also addressed. Subjects covered included the updated audit charter, activity reports, annual audit plan and the (results of the) activities of the Internal Audit Function, the financial results and the long-term liquidity forecast. Also on the agenda were the discussion of the 2013 audit report, the 2014 management letter and the associated improvement initiatives, and the 2015 budget. The 2013 audit report and the 2014 management letter were discussed in the presence of the external auditor.

Supervisory Board

In its meeting of 23 April 2014, the Supervisory Board approved the 2013 Annual Report and the Financial Statements. During this meeting the external auditor also provided an explanation of the 2013 audit report. In its meeting of 17 December 2014, the Board approved the Budget for 2015.

During its meetings in 2014, the Board focused much of its attention on the financial position of TU Delft, prepared by the Audit Committee (see above). At each meeting, Finance presented a controller's 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 and strengthening the control of operational management in the broad sense. 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. To this end, one of the members of the Supervisory Board has

conducted informal discussions with the Confidential Committee of the Works Council and also with the Student Council on several occasions.

Finally

TU Delft's policy regarding the salary of the administrators and supervisors is in line with the Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT) and with the agreements made with the Ministry of Education, Culture and Science. From the start of the 2012 calendar year, reappointment contracts have been drawn up in accordance with the WNT. Under the current employment contracts, the TU Delft administrators do not receive any performance-related bonus.

In the opinion of the Supervisory Board, in 2014 the Board continued to perform its task in accordance with the governance code.

The Supervisory Board also honoured the principle of independence in 2014.

Finally, the Supervisory Board would like to thank TU Delft and its administrators for their constructive cooperation.



Chapter 1

TU Delft

in brief

1.1 Institutional profile

Vision

The increasing number of people on the planet and the struggle to achieve ever-higher levels of prosperity raises major issues for society. In order to address these issues, both technology and the underlying scientific knowledge generated and disseminated by universities are essential.

Today's university of technology is a source of new scientific insights and pioneering technologies. It also trains scientists and engineers, offering them a broad academic basis. 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. They are the people who develop the science-based technological solutions that help improve millions of people's lives.

As one of the world's leading training grounds for these engineers, TU Delft defines its role in society as supplying solutions that take us further along the road towards sustainability and a healthy economy. We position ourselves as an open academic community which, through its academic staff and graduates, is represented throughout the world and is deeply rooted in our own regional and national, social and economic environment.

Ambition

TU Delft aims to remain a university of technology with a leading global reputation. The University wishes to offer a full range of high-quality disciplines, courses and unique facilities in the engineering sciences. 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 be a breeding ground for cutting-edge scientific and technological developments in order to answer the great societal challenges of our age.

It is also TU Delft's 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 that fosters new activities and whose research and education have a significant impact on a 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 aim to be an inspiring, progressive and gender-aware institution, attracting the world's best scientists and most talented students who are confident they will be able to fulfil their potential here.

Mission

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 translating fundamental knowledge into innovations and activity with both economic and social value.

Nearly 100% of the engineers trained in Delft find employment within a year of completing their degree. TU Delft aims to maintain this position.

1.2 Outline

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. The balance sheet for 2014 clearly shows that TU Delft is on course in the realisation of its strategic priorities from the Roadmap 2020 and its performance and profiling agreements.

Education

In line with its ambition, TU Delft offers virtually the whole range of engineering disciplines in the Netherlands, supported by pioneering research. The

Core values

Much of what the university does is situated on the interface between the public and private sectors. The university is well aware of the value and influence of technology on society and ensures that it operates in a socially responsible manner.

Respect, integrity, expertise, commitment, transparency and avoiding conflicts of interest are therefore core values for everyone associated with TU Delft: staff members, students and guests.

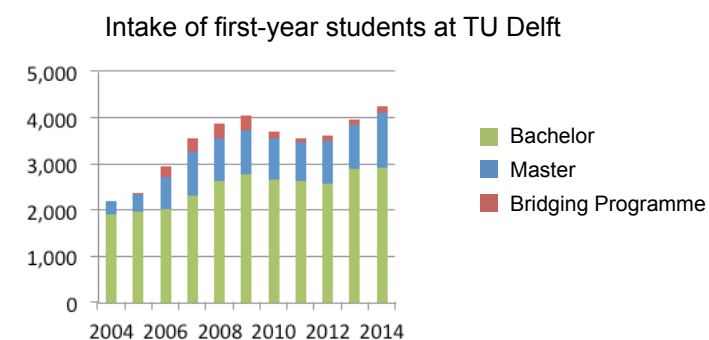
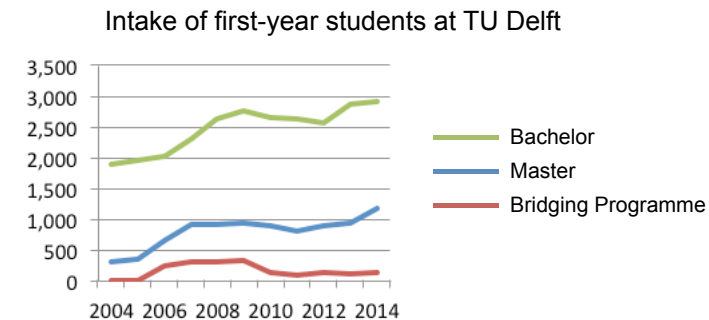
TU Delft is a learning organisation, with a culture in which drawing lessons from successes as well as from mistakes – in the TU Delft organisation and elsewhere – comes as second nature.



range of programmes on offer is compact, consisting of 16 Bachelor's degree programmes and over 30 Master's degree programmes. Some of these programmes are unique in the Netherlands. In terms of focus on content and critical mass, all programmes stand on their own merits. Cooperation with other universities of technology in the Netherlands as part of 3TU ensures good coordination on the efficiency of the range of programmes on offer.

The internationally recognised quality of our engineering programmes is a decisive element in the quality culture within TU Delft. We set the bar high because, as Delft engineers, our students and graduates must be able to measure up to the best of the competition in the international labour market. By Dutch standards, our students follow a relatively difficult and intensive curriculum. As a result, TU Delft students tend to take too long to complete their studies. In the last few years, TU Delft has therefore implemented a number of measures that should result in improvements in the coming years.

In 2014, 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 2014, 72% of the students received a positive binding recommendation on the continuation of their studies (BSA).

Research

The technical and scientific breadth at TU Delft forms the basis for its strong disciplinary specialisation profile. The research questions TU Delft tackles are mainly inspired by important future challenges facing society. The technical and scientific knowledge acquired through our research activities feeds naturally into the education we provide.

In research, TU Delft profiles itself through innovative multidisciplinary work on selected societal themes, by strengthening its knowledge base in its chosen disciplines and by investing constantly in focus and mass. Successful multidisciplinary and interdisciplinary collaborations on particular themes are based upon strong core disciplines and specific specialisations within them. In its choice of subject matter within themes, TU Delft aligns itself with the Dutch science and innovation agenda (Top Sectors) and European policy (Horizon 2020).

Building on our firm academic research base, we are forging close alliances with other leading institutions, such as Leiden University and Erasmus University Rotterdam within the framework of the 3TU.Federation,

at European level in the IDEA League with ETH Zürich, Chalmers University of Technology and RWTH Aachen, and worldwide with a large number of partners. 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. The ability to test the technical and scientific models is something no other Dutch university is able to do on such a large scale. This is a defining factor of TU Delft's profile in the international research landscape.

Knowledge valorisation

Knowledge valorisation is TU Delft's third core task. TU Delft regards knowledge valorisation as the process of creating value from knowledge by making knowledge suitable or available for economic or social purposes. Moreover, it reflects our public remit to contribute towards a sustainable and competitive economy. Multinationals, high-tech companies, SMEs and government agencies are all essential stakeholders for TU Delft. It is vital that we align ourselves more closely with the agendas of our strategic partners. TU Delft has a long tradition of intense interaction between the results of research and valorisation. To enable us to undertake knowledge valorisation activities in a more systematic way, the TU Delft Valorisation Programme was initiated a decade ago. This programme laid the foundation for the TU Delft valorisation profile, which will be developed further in the coming years. At the European, national and regional levels, TU Delft positions itself as a constructive knowledge partner in innovation clusters of businesses, governments and other universities. We regard this form of collaboration – what we call the 'triple helix' – as a crucial means of extending the process of knowledge valorisation in a systematic manner.

It is also essential to improve our chances of success in obtaining funding from European programmes. We wish to further enhance our position in these innovation clusters.

1.3 Strategic priorities

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.

Students & Education

- Differentiation and breadth in Bachelor's degree programmes
- Profiling of Master's degree programmes
- Professional Doctorate in Engineering
- Graduate School – Doctoral Education
- Postacademic courses
- Quality of student intake
- Success rates
- Development of 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

Scientific profile

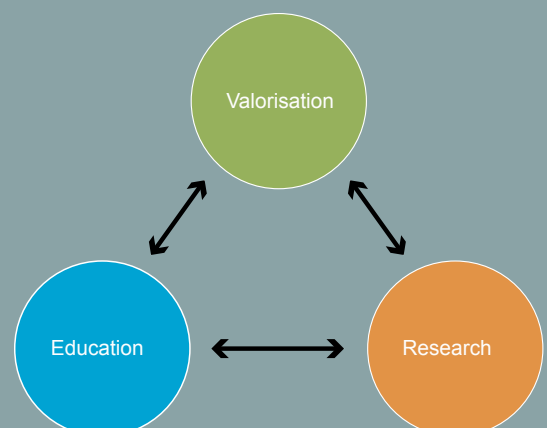
- science-design-engineering
- Interfaculty alliances (TU Delft Institutes)
- Grand Challenges for Society – four priority areas
- Strategic research cooperation
- International peer reviews and rankings
- Individual and group quality
- Top sectors and Horizon 2020
- Fundraising
- State-of-the-art research infrastructure

Valorisation

- TU Delft valorisation profile 2012-2020
- TU Delft Valorisation Agenda 2020
- Structural cooperation with businesses and government

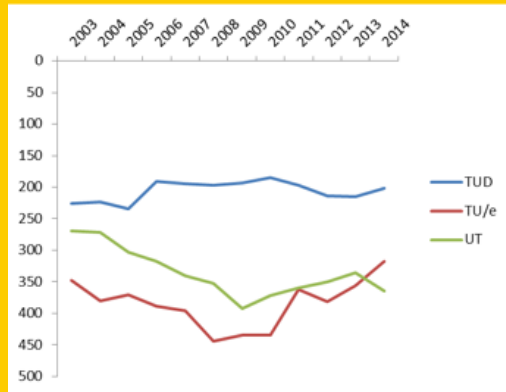
Knowledge triangle

At TU Delft, research, education and valorisation cannot be considered in isolation. On the contrary, these cornerstones enhance one another. The technical and scientific knowledge acquired through our 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.

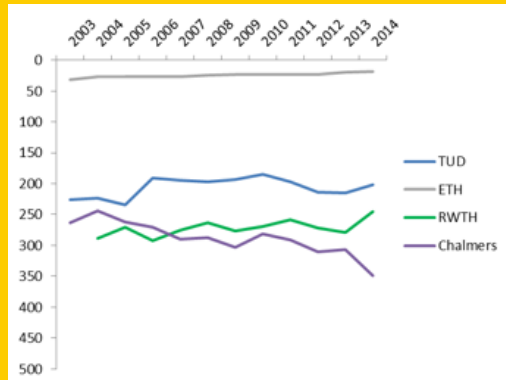


Rankings

International rankings provide an indication – although such indications must be used with caution – of the quality of TU Delft compared to other institutions throughout the world. A frequently used ranking is the Shanghai Ranking. The graphs on the right show the position of TU Delft in this ranking in a national (3TU) and international (IDEA League) context. The rankings are addressed in detail in Chapter 3.



Shanghai Ranking - national: TU Delft compared to the other two Dutch universities of technology



Shanghai Ranking - international: TU Delft compared to our partners in the IDEA League

- 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

1.4 Performance and profiling agreements

At the end of 2011, the State Secretary of the Ministry of Culture, Education and Science (OCW) concluded a Framework 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 (OCW) 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.

Performance agreements progress

In 2014, TU Delft again retained policy measures for all parts of the performance agreements. The measures are firmly anchored in the internal 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.

In 2014, TU Delft again 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 2014:

Indicator	Baseline 2010	Realised in 2011	Realised in 2012	Realised in 2013	Realised in 2014	Target value for 2015
Excellence	2.2%	3%	7%	>7%*	7%	8%
Drop-out	19%	18%	17%	17%	17%	22%
Programme switching	8%	8%	9%	9%	11%	8%
BSc completion rate	27%	39%	47%	49%	51%	55%
Teaching quality	7%			39%*	51%	70%
Programme intensity Contact hours	25	24		23	22.2	22
Programmes with less than 12 contact hours	0	0		0	0	0
Indirect costs	19.3%	n/a	n/a	19.5%	18.9%	19.3%

* The values for excellence and teaching quality in 2013 are indicative, due to the renewal of the underlying source systems.

TU Delft has extended the range of excellence education offered. In addition to the existing range, interdisciplinary honours modules are offered in cooperation with Leiden University and Erasmus University Rotterdam, in which students of all three institutions can participate. The drop-out rate is below the target, while the programme switching rate is slightly above the target. These indicators are communicating vessels. The combined drop-out and switching rates are below the target percentage.

The Bachelor completion rate again increased slightly in 2014 (2010 cohort) compared with last year. The group of students of the 2011 cohort, who are deemed capable of completing the Bachelor's programme within four years, were contacted by academic counsellors with regard to their study plans.

Academic staff with teaching duties were assessed for their teaching qualities. An exception was made for members with a small appointment (≤ 0.2 FTE). 51% currently have a University Teaching Qualification or an exemption on the basis of equivalence. Another 20% are expected to complete the University Teaching Qualification (UTQ) / Senior Teaching Qualification

(STQ) track in 2015. This is related to the number of newly appointed lecturers in 2015.

With regard to the performance agreement 'indirect costs' TU Delft has chosen to monitor and report the generic overhead percentage (in FTE) compared to the total number of FTE. The costs are calculated according to a method validated by Berenschot, which has been developed within the framework of the overhead benchmark applied in connection with the Association of Universities in the Netherlands (VSNU) in 2011. At 18.9%, the percentage of indirect costs at the end of the year was within the target formulated by TU Delft: that it should not increase compared to the situation in 2010 (19.3%).

Performance agreements

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

Excellence

TU Delft's ambition level for excellence is 8% participation in honours programmes in 2015. It should be noted that 'excellence' concerns more than participation in the honours programme alone. TU Delft offers excellent students double degree programmes, and interesting additional challenges are also offered outside of the study programme, for example through more than 25 Dream Teams (the NUNA team being the most famous).

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.

Programme switching

TU Delft's ambition level is 8%

programme switching in 2015. In the proposal for performance agreements, TU Delft emphasised that the first year of the degree programme has an orientational and a referral 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 switching problem.

BSc completion rate

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

Teaching quality

The teaching quality policy of TU Delft is aimed at ensuring that all new academic staff members obtain a University Teaching Qualification (UTQ). 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 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 more 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 sessions and laboratory courses as well as lectures and tutorials.

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%. With regard to the total overhead, at 30%, TU Delft contrasts favourably with the sector average of 33.4%.

More information can be found at
www.tudelft.nl/over-tu-delft/strategie/prestatieafspraken/

Profiling agreements

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

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 duration of the doctorate programme.

TU Delft Institutes

TU Delft wants to further strengthen its national and international visibility in a specific number of (emerging) scientific 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 is using 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 Horizon 2020. In a European context and in accordance with the European Grand Societal Challenges, TU Delft wants to submit a proposal for a joint research programme within the Sustainable Healthy Ageing theme.

Agreements on education profiling and research priority areas

In the autumn of 2014, the Higher Education and Research Review Committee conducted a midterm review. This review tests progress, with the question being whether the institution has made sufficient progress in commencing the implementation of plans with regard to profiling and development of research priority areas. The Review Committee assessed the reports of TU Delft and concluded that TU Delft has made sufficient progress with these plans. The Minister of Education, Culture and Science (OCW) adopted the recommendations of the Review Committee.

In 2014, TU Delft once again gave priority to the acceleration and intensification of its education profiling and definition of research priority areas. This allowed TU Delft to take steps towards further improving a number of matters: the Doctoral programme, the focused expansion of the curriculum and the link with national and European research programmes and projects.

Graduate School

With the revision of the Doctoral Regulations and the accompanying implementation regulations, TU Delft hopes to create more simplicity and transparency with regard to the completion and defence of the dissertation. In order to provide the best possible support to this process, the administration has been

centralised in 2014.

This year also focused on the further improvement of monitoring and the management information of PhD candidates and Doctoral programmes. Time and again in recent years, the recording of meticulous, precise and unambiguous data on Doctoral programmes has given rise to new points for improvement. In the final phase of this information provision process, a set of standard procedures will be provided from the Doctoral Monitoring Application, along with an initial set of customised reports for local monitoring of PhD candidates.

The Graduate School (GS, see also Chapter 2) conducts an intake interview with each new PhD candidate. In 2014, 500 interviews were conducted, including a catch-up process for PhD candidates who started before 2014. The intake interview serves three purposes:

1. Registering the PhD candidate in a correct and timely way (including a diploma and identity check)
2. The provision of information to the PhD candidate on the GS process, the Doctoral Regulations and the Doctoral Education requirements. This ensures that a PhD candidate is aware of his or her role and what the priorities and actions are
3. Activating the account in the Doctoral Monitoring Application

The Doctoral Education programme has been



subjects from the range offered by the Graduate School. The training courses organised by the Graduate School receive an average score of 8.2 (reference date: December 2014).

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.

In 2014, the Executive Board decided to establish two new institutes: the TU Delft Sports Engineering Institute, which celebrated its opening on 17 September 2014, and the TU Delft Space Institute, which is set to open on 1 January 2015. This brings the total number of TU Delft Institutes to eight.

expanded with a number of new training courses, including a few specialisation courses. The introduction programme for PhD candidates - the 'PhD StartUp' - took place 15 times, with some 400 participants. Furthermore, 1,283 PhD candidates took part in other

More information on the TU Delft Institutes can be found in Chapter 3.

TU Delft Institutes							
Climate	Process Technology	Robotics	Transport	Wind Energy	Safety & Security	Space	Sports Engineering
Focus							
Extreme weather and the city	Biochemical Process Engineering	Swarm Robots	Coordinated and cooperative traffic management	Unsteady aerodynamics	Safety & Security at home	Sensing from Space	Aero- and hydrodynamics
Aerosols, radiation and clouds	Process Intensification	Robots that work	Transport policy	Smart structure rotors	Safety & Security in motion	Space Robotics	Biomechanics, Materials and Human / Material Interaction
Observation & validation of sea level rise and mass transport	Process Technology for Advanced Materials	Interactive robots	Spatial Planning & Mobility	Design methods	Safety & Security in society	Distributed Space Systems	Measurement, Feedback and Simulation
Climate information and policy			Logistics & Freight transport	Offshore components and design			Motivation
Participation			Railways	Dutch wind energy in Europe			Sports Infrastructure and facilities
5 faculties	2 faculties	6 faculties	6 faculties	5 faculties	6 faculties	5 faculties	5 faculties

Nanoscience

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

Nanobiology programmes

TU Delft expanded its educational profile with the launch of the Nanobiology Bachelor's degree programme in September 2012. This programme is provided in collaboration with Erasmus University Rotterdam. The application for the two-year Master's degree programme in Nanobiology has already started. In 2014, the required applications were submitted to the Higher Education Efficiency Committee (*Commissie Doelmatigheid Hoger Onderwijs*, CDHO) for a macro-efficiency audit and to the Accreditation Organisation of the Netherlands and Flanders (*Nederlands-Vlaamse Accreditatieorganisatie*, NVAO) for initial accreditation. The goal is to offer this programme from the 2015-2016 academic year (see also Chapter 2).

QuTech

TU Delft is leading the Netherlands in building the next generation of computers: the quantum computer and

quantum internet. In order to realise this, the QuTech Advanced Research Centre has been established with the aim of forming a bridge between research in this area 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 5 million euros every year, while the Dutch government, together with TNO, is providing an annual contribution of 4 million euros. The Netherlands Organisation for Scientific Research (NWO), the Foundation for Fundamental Research on Matter (FOM), and early adopters from the business community are also contributing.

These efforts have already started to bear fruit. In November 2014, the Dutch government awarded National Icon status to the research into Quantum Technology led by Leo Kouwenhoven (see more information below).

NanoFront

Another important nanoscience initiative at TU Delft is NanoFront, a research programme in collaboration with Leiden University. NanoFront is part of the gravity programme of the 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 together.

NanoLabNL

TU Delft is also a member of the NanoLabNL consortium, with locations in Delft, Twente, Eindhoven and Groningen. The focus of this research is on discovering new materials or material structures with unique quantum characteristics, which could be interesting with regard to quantum computers. Based on the National Roadmap for large-scale research facilities, 17 million euros is being invested in this consortium (see also Chapter 3).

Medical technologies

In 2014, TU Delft further enhanced its presence in European partnerships in the field of Health with new and existing strategic partners. The activities extend to education, research and valorisation; more information can be found in the relevant chapters.

KIC Health

TU Delft has formed a consortium in collaboration with leading European partners such as knowledge institutions, companies and healthcare institutions: InnoLIFE. In December 2014, this consortium was appointed to form the Knowledge and Innovation Community (KIC) on Health (Healthy Living and Active Ageing) of the European Institute of Innovation and Technology. The consortium consists of a total of 144 businesses, research institutes and universities from 14 EU countries. Over the next seven years, the consortium will develop all kinds of innovative products, services and educational resources to deal with the consequences of the changing demographics in Europe, particularly ageing.

Medical Delta

TU Delft, Leiden University and Erasmus University Rotterdam, the University Medical Centres in Leiden and Rotterdam, as well as local government bodies in Leiden, Delft, Rotterdam and the Province of Zuid-Holland have further combined their expertise and experience in the field of life sciences and medical technology via the Medical Delta consortium. In addition, a partnership agreement was signed with regional investment company InnovationQuarter in June 2014.

The European Innovation Partnership for Active and Healthy Ageing (EIP AHA) has designated Medical

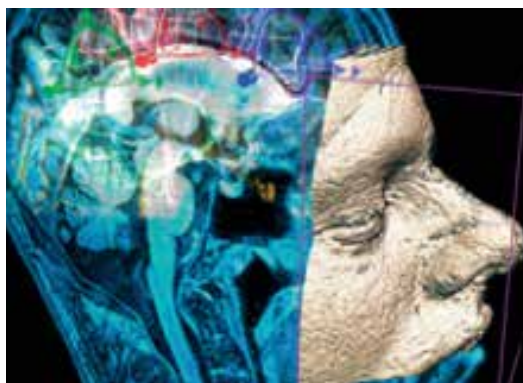
Delta as a 'reference site', thereby recognising it as an important innovation cluster in Europe. Through Medical Delta, the existing international contacts in the HealthTIES network of government bodies, knowledge institutions and businesses from the Medical Delta, Oxford, Zürich, Barcelona and Debrecen will be intensified.

The inauguration of 11 Medical Delta professors with a dual appointment at Leiden University, TU Delft and/or Erasmus University Rotterdam in May 2014 was a milestone in Dutch academic history (see also 'Highlights').

Clinical Technology degree programme

The first batch of students started the Clinical Technology Bachelor's degree programme at the start of the 2014/2015 academic year. This new programme at the interface between medicine and technology represents a unique collaborative partnership between TU Delft, Leiden University, and Erasmus University Rotterdam, and the University Medical Centres in Leiden and Rotterdam.

The new Bachelor's programme in Clinical Technology received official accreditation from the Accreditation Organisation of the Netherlands and Flanders (NVAO) in March 2014. Enrolment started in April. At the close of the enrolment period on 15 May, 269 prospective students had enrolled. Due to the requested Numerus Clausus (cap on student intake), a draw was held for the 100 available places in the first year of study.



1.5 Highlights

Many of the highlights of the past year at TU Delft were related to the agreements on education profiling and research priority areas. These are described in Section 1.4. Besides the realisation of these agreements, a number of successes are worthy of mention. In particular, there was attention for the following subjects in 2014.

Online education: the Delft Extension School

The development of various forms of online education at TU Delft really took off in 2014 with the opening of the Extension School. In this school, developed along the lines of the Harvard Extension School, all of TU Delft's open and online education can be offered to participants 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.

Supported by the Extension School, the range of Massive Open Online Courses (MOOCs) offered by TU Delft increased substantially. There were eight new MOOCs in 2014: *Credit Risk Management*; *Delft Design Approach*; *Introduction to Aeronautical Engineering*; *Next Generation Infrastructures*; *Problem Analysis*; *Responsible Innovation*; *Technology for Biobased Products*; and *Functional Programming*. Six faculties are now offering one or more MOOCs. Participants now have 13 MOOCs to choose from. The MOOCs have proven popular, with almost 300,000 enrolments in a two-year period. More information on digital teaching methods can be found in Chapter 2.

Nuffic Award

In 2014, TU Delft was awarded the Nuffic Orange Carpet Award for the second time for its innovative approach to digital education. With this award, Nuffic – the Netherlands Organization for International Cooperation in Higher Education – recognises unique initiatives that promote the internationalisation of Dutch higher education. According to the Orange Carpet jury, TU Delft received the award this year for the pioneering way in which it offers MOOCs, thus giving students all over the world access to its expertise, while strengthening its position in the international academic community and increasing the quality of its on-campus education.

Quantum Technologies: National Icon 2014

The Dutch government has awarded National Icon status to the QuTech Advanced Research Centre of TU Delft and TNO. The Dutch government expects

the research into the quantum computer, led by Leo Kouwenhoven, to potentially have a major social and economic impact. The government is helping the National Icons – four in total – to realise their ambitions and is giving them an international platform and a customised support programme. Minister Kamp of Economic Affairs will act as an ambassador for the QuTech programme and will provide access to a large network in exploring new opportunities in the Netherlands and abroad. The QuTech programme also puts into effect the profiling agreements in the field of nanoscience (see above).

HollandPTC

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), the Netherlands' first proton clinic for cancer treatment. TU Delft expects this to tie in nicely with both Horizon 2020 and the Top Sector policy in the fields of health and high-tech systems.

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 HollandPTC a licence to provide cancer treatment using proton therapy in accordance with the Special Medical Procedures Act. On 15 May 2014, the European Investment Bank (EIB) committed to a loan of 90 million euros to realise HollandPTC. HollandPTC is currently in talks with other funding agencies, health insurance companies, suppliers and other stakeholders, including the Dutch Healthcare Authority, in order to be able to treat the first patients in 2017.

Magnetic effect of the TU Delft Campus

Commissioned by the Ministry of Economic Affairs, Bucks Consultants International conducted an analysis of campuses in the Netherlands. The conclusion was that campuses in the Netherlands have a magnetic effect. Whereas employment has decreased by more than 1% both nationally and in the provinces, employment rates on the campuses are growing steadily, particularly on the TU Delft Campus.

In the last 2.5 years, the number of businesses on the TU Delft campus has increased by 6% (206 established businesses in 2012; 219 in 2014). The number of spin-offs on campus has even increased by 25%: from 145 spin-offs in 2012 to 192 in 2014. This has had an additional impact on employment trends, namely a 22% growth (4,750 jobs in 2012 compared to 5,574 in 2014). Read more in Chapter 4.

AMS opened

During the official opening of the Amsterdam Institute for Advanced Metropolitan Solutions (AMS) in June 2014, Renée Hoogendoorn was introduced as director and the new location was announced. The accession of the University of Amsterdam and VU University Amsterdam to the institute was also confirmed, see Chapter 4.

3TU. Technology Sector Plan

The 3TU.Federation of the three Dutch universities of technology aims to optimise the performances of and collaboration between the three universities in order to strengthen the position of the Netherlands in the international academic community. Current development and research activities in the 3TU partnership are:

- A comparison of the innovation in the Bachelor's programme curriculum and the impact thereof on education and students
 - The design of effective multidisciplinary education in applied scientific learning environments
 - The dissemination of innovations in education
- Each institution also makes its own specific contribution. The contributions of TU Delft concern:

- the development of future scenarios for on-campus engineering education
- the possibilities of computerised adaptive testing for technical problems
- support for the study success tender

A prominent joint project conducted in 2014 concerns the creation of the 3TU.Centre for Engineering Education (CEE). This centre, which was officially opened on 12 September 2014 by Minister Bussemaker of Education, Culture and Science, aims to promote the development of (1) the individual lecturer; and (2) engineering education. Digitisation, as a means of improving engineering and other education, is another area of attention for the new centre.

Although the CEE was created from the 3TU.Federation, the collaboration within the centre is not necessarily limited to the 3TU partnership. Cooperation is currently being sought with international partners. Several European universities, including the KTH Royal Institute of Technology in Stockholm, have expressed an interest.

In the subsequent phase of the 3TU Technology Sector Plan, the emphasis will be on the operationalisation of the CEE, the continued strengthening of the 3TU Master's degree programmes, increasing the intake and giving additional boosts to Professional Doctorates. For more information on sectoral cooperation, see Chapter 3.

Strategic regional cooperation

TU Delft, Leiden University and Erasmus University Rotterdam have further developed their strategic regional alliance.

A climax was reached in June of this year with the simultaneous inauguration of 11 professors with a dual appointment at TU Delft, the University of Leiden and/or the Erasmus University Rotterdam. These dual appointments have created a strong bridge between the field of medicine in Leiden and Rotterdam, and the field of technology in Delft.

More information can be found in Chapter 3.

Top Sector Policy

In terms of content, many of the activities of TU Delft fit into the Top Sectors and TU Delft is keen to play a prominent role in the Top Sectors. Our lines of action to this end over the next few years – knowledge development, internationalisation and implementation of the human capital agenda – are tailored to our focus as a university:

Since the introduction of the Top Sector Policy two years ago, TU Delft has remained active in the Top Sectors of Water, Chemistry, Energy, High-Tech Systems and Materials, Life Sciences & Health, Logistics and Creative Industry. In order to participate optimally in Top Sectors in the coming years, TU Delft has drawn up an action plan for:

1. Strengthening TU Delft's internal Top Sector network
2. Optimising consultancy activities on Top Sector funding
3. Making better use of the TKI surcharge arrangement

For detailed information on TU Delft's presence in the Top Sectors, refer to Chapter 3.

TU Delft among winners of competition on rebuilding US east coast

In June, American government administrator Shaun Donovan announced the six winning teams of the Rebuild by Design competition. 920 million dollars will be made available in order to carry out the plans, with the aim of rebuilding the areas of the eastern coast of the US that were hit by Hurricane Sandy. TU Delft professor Han Meyer is part of the team behind the winning plan Interboro, aimed at making Nassau County's South Shore more resistant to flooding.

Dutch terraced house as sustainable example

During the Solar Decathlon 2014 in July, a team of TU Delft students won first prize for Sustainability and for Communication & Social Awareness.

For the TU Delft entry, Prêt-à-Loger, a copy was made of the parental home of one of the participating students. The team preserved this 1960s terraced house by applying a 'second skin', including a glass structure on the side facing the sun. This structure provides the house with solar energy. Minister Stef Blok opened the house on campus on 25 August 2014.



Paulien Cornelisse, Cultural Professor 2014

Writer and comedian Paulien Cornelisse was a so-called Cultural Professor at TU Delft from March to June 2014. During this period, she and 24 students built an old-fashioned cabinet of curiosities. In a seven-session master class they went in search of animals that do not exist yet, animals that should have existed, animals that are intangible, talking animals and the animals they actually are themselves. The students presented their designs during the farewell lecture by Paulien Cornelisse on 5 June 2014.



Bolivian president visits TU Delft

An estimated 30% to 50% of the total global lithium reserves can be found in Bolivia, stored in salt crystals. TU Delft, the Dutch government and three companies would like to collaborate with Bolivia on a project to enable the country to produce its own lithium batteries. In April 2014, Bolivian President Evo Morales paid an unannounced visit to TU Delft to learn about the project in person.



Visit by Minister Bussemaker

On 26 November, Minister of Education, Culture and Science Jet Bussemaker visited the Student Research Conference 2014 organised at TU Delft, at which she presented the award for the best Bachelor's research project of the Netherlands and Flanders. On this occasion, she was also given a tour of the QuTech Centre by Leo Kouwenhoven.



1.6 TU Delft targets

Subject	Reference year 2010	Final position 2014	Target value for 2015	Target value for 2020
TU Delft student & education targets for 2015 and 2020				
Bachelor and Master intake	3,564	4,105	3,600	3,700
Bachelor's & Master's degrees	3,311	4,337	3,300	3,500
Positive Binding Recommendation on Continuation of Studies in first year	72%	72%	70%	73%
Average ECTS per student in first year	41.6	40.2	50	50
Propedeuse obtained in 1 year	18%	33.5%	25%	40%
BSc/MSc student population (incl. bridging programme)	16,893	19,613	17,000	17,000
Doctoral student population	2,208	2,575	2,300	2,400
PDEng degrees	17	26	25	40
BSc/MSc students / Permanent academic staff	20.7	23.4	20	20
BSc/MSc students / Teaching staff (FTE)	16	18	17	18
Foreign Bachelor's students / total number of Bachelor's students	6.4%	5.8%	10%	10%
Foreign Master's students / total number of Master's students	32.6%	29.9%	35%	40%
Research and knowledge valorisation: TU Delft targets for 2015 and 2020				
Permanent academic staff (FTE)	816.1	839	820	840
Postdocs (FTE)	-	325	100	200
Other academic staff (FTE)	693.2	742	550	450
Doctorates	333	371	380	450
PhD completion rate (5 years)	40%	46%	45%	65%
PhD students / Permanent academic staff	1.33	3	2	3
Percentage of women among top academic staff	8.7%	11%	15%	20%
ISI publications	2,118	2,257	2,250	2,500
Finances: TU Delft targets for 2015 and 2020				
Government funding	350.1	398.5	-	-
Indirect funding	30.1	47.7	-	-
Contract funding	117.1	127.7	-	-
Operating profits	-15.0	12.1	-	-
Cash flow	29.6	-39.6	-	-
Equity capital	267.5	357.9	-	-
Government funding/fixed expenditure	-	-	-	-
Indirect funding/government funding	7.16%	12.0%	-	-
Contract funding/government funding	33.4%	32.0%	-	-

1.7 Management and Organisation

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 Code of Good Governance for Universities 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 Executive and Management Regulations (BBR) were adjusted in view of the sector code and the government vision on good governance.

Under the current employment contracts, the TU Delft administrators do not receive any performance-related bonus. This is not permitted under the Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT).

Executive Board

The Executive Board is the highest administrative body of TU Delft, and it is charged with the governance 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).

Division of tasks and areas of interest

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.

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
- Education portfolio
- Student affairs portfolio
- Operations portfolio
- ICT portfolio
- Facility management portfolio



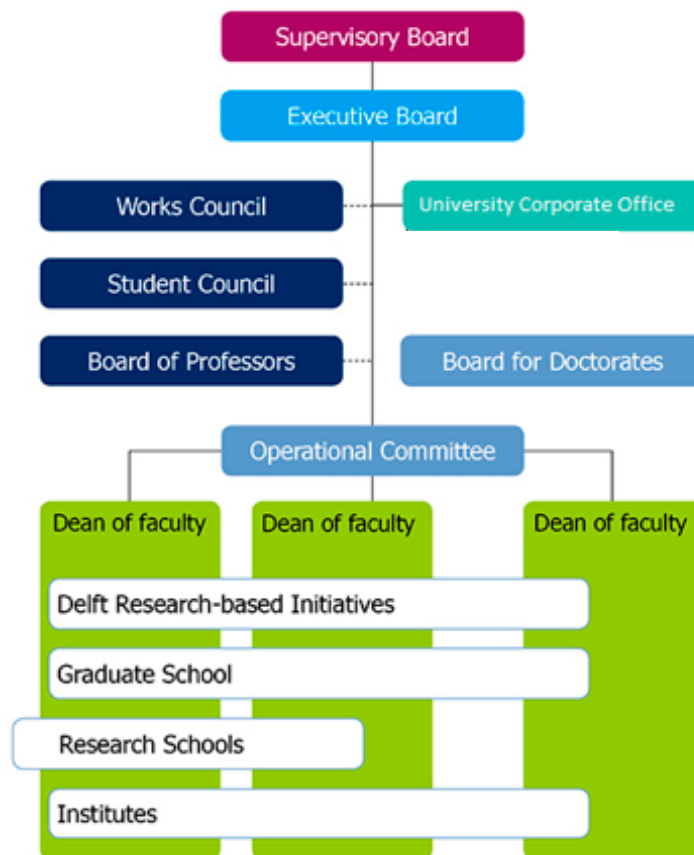
President of the Executive Board
Drs. D.J. van den Berg



Rector Magnificus
(also vice-president)
Prof. K.Ch. A.M. Luyben



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



Supervisory Board

The Executive Board is accountable to the Supervisory Board, which is appointed by the Minister of Education, Culture and Science. The Supervisory Board has a number of specific tasks as set out by law, including the approval of executive and management regulations, the strategic plan, decisions regarding the employee participation scheme, the budget and the annual report.

In 2014 the Supervisory Board was made up of the following members:

- Drs. ir. J. van der Veer
- Ms ir. L.C.Q.M. Smits van Oyen
- Ms drs. K.M.H. Peijs
- Prof. D.D. Breimer
- Drs. J.C.M. Schönfeld

Profiles of the members of the Supervisory Board can be found on the TU Delft website.

Deans by faculty

Architecture and the Built Environment

Prof. K. Laglas (until 2014); Prof. J.W.F. Wamelink (acting dean from August 2014)

Civil Engineering and Geosciences

Prof. Geerken

Electrical Engineering, Mathematics and Computer Science

Prof. R.H.J. Fastenau

Industrial Design Engineering

Prof. M.A. Voûte

Aerospace Engineering

Prof. H. Bijl

Technology, Policy and Management

Prof. T.A.J. Toonen

Applied Sciences

Prof. T.H.J.J. van der Hagen

Mechanical, Maritime and Materials Engineering

Prof. T.S. Baller

Operational Committee

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.

Board for Doctorates

The Board for Doctorates has the following tasks:

- the establishment of the Doctoral Regulations
- the appointment of promotor and the forming of doctoral committees
- the conferment of the doctorate
- the conferment of the honorary doctorate
- advising on the establishment of endowed chairs

Board of Professors

The Council of Professors is an advisory body of the Executive Board, consisting of a panel of experienced professors employed at TU Delft. The Council gives both solicited and unsolicited advice to the Executive Board about TU Delft as an 'academic company'.

University Corporate Office

The University Corporate Office is responsible for the provision of services to students, staff and other stakeholders.

The University Corporate Office supports TU Delft as a whole and facilitates and coordinates administrative processes. The service has an important task related to initiating and implementing the administrative agenda of TU Delft. This is done in close cooperation with the decentralised University Corporate Office organisation.

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. The Executive Board and Works Council signed a covenant in 1998, containing 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 department, 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.

Since the 2011/2012 academic year, the Student Council has consisted of two parties: Lijst Bèta and ORAS.

General Assembly of Councils (GV)

The Works Council and the Student Council together form the General Assembly of Councils. This is the representative body referred to in Section 9.30a, subsection 1 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 subsection. These subjects include the strategic plan, the system of quality assurance and the Executive and Management Regulations.

Personnel Committees (OdC)

The Works Council of TU Delft has established personnel committees at the faculties and the University Corporate Office. This decision is based on Section 15, subsection 3, of the Works Councils Act. In accordance with the institutional decision of the Works Council, Personnel Committees have the authority to consult with the individual in charge of the relevant faculty or service department.

Faculty Student Councils (FSR)

The Faculty Student Council 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, depending on the size of the faculty, the faculty student councils are made up of between 5 and 15 members with a term of office of one year. The faculty student councils make an active contribution to the formulation of the faculty's education and student policy. For example, the councils have advisory powers over the faculty budget and the right of approval with regard to the Teaching and Examination Regulations and the implementation regulations.

Chapter 2

Education

As indicated in Chapter 1, interest from students in our degree programmes is increasing. With some 4,200 new students, the number of campus students exceeded 20,000 in 2014. This is very encouraging, also because the demand for well-trained engineers remains high. TU Delft graduates were quick to find jobs in their fields in 2014.

At the same time, this requires a strategy in which maintaining the high quality of our education is paramount, while having to be implemented with the same or increasingly scarce funds. We do this by optimising the intake of students (the right student in the right place), promoting mobility (study success rates and performance agreements) and concentrating on educational innovation.

Major investments have been made in the development of online education, which, when used in on-campus education (referred to as blended learning), helps to increase the quality of the education and the pass rates. It offers students more flexibility and possibilities for studying the material, frees up time for lecturers to provide more personal supervision to students during contact hours, and encourages lecturers to further improve their preparations and presentations.

All initiatives in the area of open and online education have been brought together in the TU Delft Extension School Programme. The objective is to make the knowledge and expertise for which TU Delft is internationally renowned accessible worldwide and to improve the quality of on-campus education even further.

2.1 BSc and MSc: students

Student intake

With more than 4,200 new students, the intake was six percent higher than last year. The intake of new first-year students in the Bachelor's degree programmes shows that the increase of the external intake (+2% in 2012; +13% in 2013) consolidated this year. Compared to the 2013/2014 academic year, approximately the same number of new Bachelor's students enrolled (+1%).

The external intake in the Master's degree programmes and the bridging programmes increased by about 20% compared to the previous academic year. The intake in the Master's degree programmes was more than 1,100 students (more than 900 students in 2013).

More than 140 external students enrolled in the bridging programmes. The students from the bridging programme entering the Architecture and the Built Environment degree programme have not been

included in this figure; these enter the Bachelor's programme in February, approximately 50 students enrol each year.

Population

The population continues to grow. Whereas last year the number of students as of 1 December 2013 was around 18,500, this figure has now increased to approximately 20,000.

Over a ten-year period, the total student population has increased by more than 13,000 to almost 20,000 students. However, there are differences between the faculties, with 3mE, CEG, EEMCS and Applied Sciences growing by more than 10%, while the number of students in the Faculty of Architecture and the Built Environment decreased.

Degree certificates

A total of 4,337 degree certificates were awarded in the 2013/2014 academic year: 2,086 Bachelor's degrees and 2,251 Master's degree certificates. This is an increase of 3.5% and 7%, respectively, compared to the previous year. This continues the rising trend of the past ten years.

Proportion of female students

The number and proportion of female students increased, from more than 4,300 in 2013 to around 4,900 in 2014, an increase from 23% to 24%.

Proportion of foreign students

The proportion of foreign students increased from more than 2,900 in 2013 (15.6% of all students) to more than 3,200 (16.3%) in 2014. Approximately one-third of these students are enrolled in a Master's degree programme.

Mobility

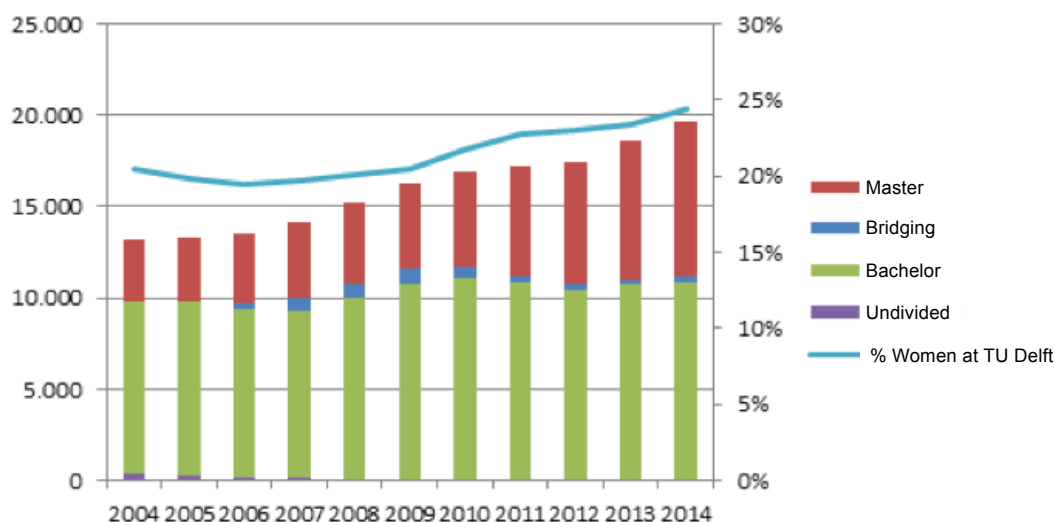
TU Delft students are showing an increased interest in gaining international experience during their degree programmes. Approximately 1,500 students registered to spend a longer period of time abroad – for a project, an internship, a student exchange or even graduation work. The precise figure may be higher, because centralised registration is not required.

2.2 BSc and MSc: degree programmes

New degree programmes

The Bachelor's degree programme in Clinical Technology, a collaboration between TU Delft, Leiden University and Erasmus University Rotterdam, was

TU Delft population per study phase



granted NVAO accreditation at the beginning of 2014. Interest in the degree programme is high. When the programme commenced in September 2014, all 100 available places had been filled through a limited enrolment programme (numerus clausus). As part of the profiling agreements (see Chapter 1), an application has been submitted for an English-language Master's degree programme in Nanobiology, which would be a logical next step after the Bachelor's degree programme in Nanobiology. The Higher Education Efficiency Committee announced that the macro-efficiency audit led to a positive assessment. The intention is for the programme to be launched in September 2015 for students holding a Bachelor's degree in Nanobiology who earned their BSc in three years, and from 2016 for external intake.

Overview of degree programmes

All degree programmes are included in the TU Delft Register of Degree Programmes, which can be found on the website.

Admissions policy

Bachelor's degree programme

Admission to the BSc degree programmes is laid down by law. See also paragraph 2.7 concerning numerus clausus.

Master's degree programme

For enrolment in a Bachelor's degree programme, Dutch students must hold a Bachelor's degree certificate in a relevant field from TU Delft or from another Dutch university.

Intake from higher professional education

Higher professional education (HBO) students are selected on the basis of a relevant HBO diploma from a Dutch university of applied sciences. They are admitted after completing a bridging programme, which can sometimes be taken as a bridging minor during the HBO programme, which is supplemented with tests in mathematics and English. If the student has earned a pre-university (VWO) certificate as a previous qualification, the English test is not required. If the student has passed Mathematics B and/or D as an examination subject, the mathematics test is not required either.

Foreign degrees

Students holding a foreign degree certificate must hold a relevant Bachelor's degree of a sufficiently high quality and level. A Cumulative Grade Point Average on the Bachelor's certificate of at least 75% of the maximum number of obtainable points is required. Students with a native language other than English must have a TOEFL score of at least 90, an IELTS test score of at least 6.5, or hold a 'Certificate of Proficiency in English' or a 'Certificate in Advanced English' from the University of Cambridge. The student must also submit an essay (2,000–3,000 words) in English, explaining his or her interest and motivation, as well as a summary of the Bachelor's degree programme he or she has completed. Furthermore, two letters of recommendation in English, French, German or Dutch must be provided (one from an employee of the faculty where the student obtained his or her Bachelor's degree, and one from the student's employer or other person in a position of authority such as his or her

thesis supervisor), along with a detailed curriculum vitae in English and proof of identity.

2.3 Other degree programmes

Post-initial education

The responsibility for the range of post-initial education offered was transferred from Delft TopTech to the faculties in 2013, as a result of which the education has become more firmly embedded in the faculties. A new organisation of the post-initial education offered that is based on the Advanced Studies model of the University of Zurich (Certificate, Diploma of Master of Advanced Studies) should improve recognisability. The establishment of the Delft Extension School has created new possibilities for offering flexible education to employed persons. The development of a number of online courses aimed specifically at professionals started in 2014. These Professional Education courses will be offered via the EdX platform, among others, from 2015.

PDEng

At the 3TU.School for Technological Design, the Stan Ackermans Institute, the three universities of technology train engineers to be technical designers.

The programmes for designers were established in response to the demand from the business community for broadly oriented knowledge workers with a strong science or technology background. The Netherlands' 3,500th Professional Doctorate in Engineering (PDEng) diploma was awarded in 2014.

TU Delft has established five PDEng programmes at the Stan Ackermans Institute:

- Process and Equipment Design
- Bioprocess Engineering
- Bioproduct Engineering
- Chemical Product Engineering
- Comprehensive Design in Civil Engineering

These two-year post-Master's programmes are offered in close collaboration with SMEs and larger enterprises. Participants spend one year taking courses to broaden their knowledge, for example in design methods.

They then spend a year at a company where they work on a specific design assignment. Scientists and universities of technology, along with company experts, assess whether the design assignment is worthy of the Professional Doctor in Engineering (PDEng) degree.

Graduate School

In its third year of the Graduate School's existence, the Doctoral Education programme was further expanded and the new doctoral practices were continued. The



administrative support related to the submission and defence of dissertations and the Board for Doctorates is now provided by the University Graduate School. The Doctoral Regulations have been completely revised and adapted to the doctoral practices in the Graduate School.

In a survey on the doctoral climate, PhD candidates gave the doctoral climate an average score of 7.3. This is a slight increase compared to the baseline measurement taken shortly before the introduction of the Graduate School in 2012.

The Graduate School is an important element in the profiling agreements which TU Delft has made with the Ministry of Education, Culture and Science, see Chapter 1.

2.4 Digital Teaching Methods

The development of various forms of digital teaching methods really took off in 2014 with the innovation programme for the Extension School. The use of online teaching methods in on-campus education has already led to more blended modules in the regular Bachelor's and Master's degree programmes.

Extension School

TU Delft officially launched its Extension School in 2014. This innovation programme is aimed at offering all open and online courses, such as OpenCourseWare and Massive Open Online Courses (MOOCs) together to students from all over the world. Supported by the Extension School, new online courses for working professionals will be developed on an ongoing basis. The range of courses for online students was expanded significantly in 2014. There were two rounds in which faculties could submit proposals for new modules, series or complete programmes; the emphasis is on individual modules.

Massive Open Online Courses (MOOCs)

The range of MOOCs offered by TU Delft was increased significantly in the past year. Students can now choose from 13 MOOCs on a wide variety of subjects. The MOOCs have proven popular, with almost 300,000 enrolments from all over the world in a two-year period. The main locations of these students are shown in the figure on the following page.

TU Delft is one of the first members of the EdX Consortium. Executive Board member Anka Mulder (VPEO) represents TU Delft in the EdX University Advisory Board, in which 10 of the 55 participating universities hold seats.

OpenCourseWare

The number of modules on the TU Delft OpenCourseWare website continues to increase. The aim is to publish 30 new modules a year. Material from 150 modules can already be found on this website. All of the material from our MOOCs is also made available through OCW.

The website attracts 1,500 visitors a day from all over the world.

Professional Education

As part of the Extension School, from 2015, TU Delft will also offer courses aimed at people who already have several years of work experience and wish to continue their education alongside their jobs. Instead of ECTS participants earn Continuing Education Units (CEUs), which are customary in the international post-initial education circuit, including the American circuit. The first of these Professional Education courses to be offered via the EdX platform is Economics of Cybersecurity.

Blended Learning

Blended learning is an optimal mix of face-to-face education and online learning, which leads to more varied and more effective education. Almost all faculties now have projects to apply blended learning to parts of programmes. These projects mainly concern stimulating the embedding of the range of open and online education, including MOOCs, in regular on-campus education. This is an efficient way of creating blended education. The initial results as well as experiences of students and lecturers with this form of education are very positive.

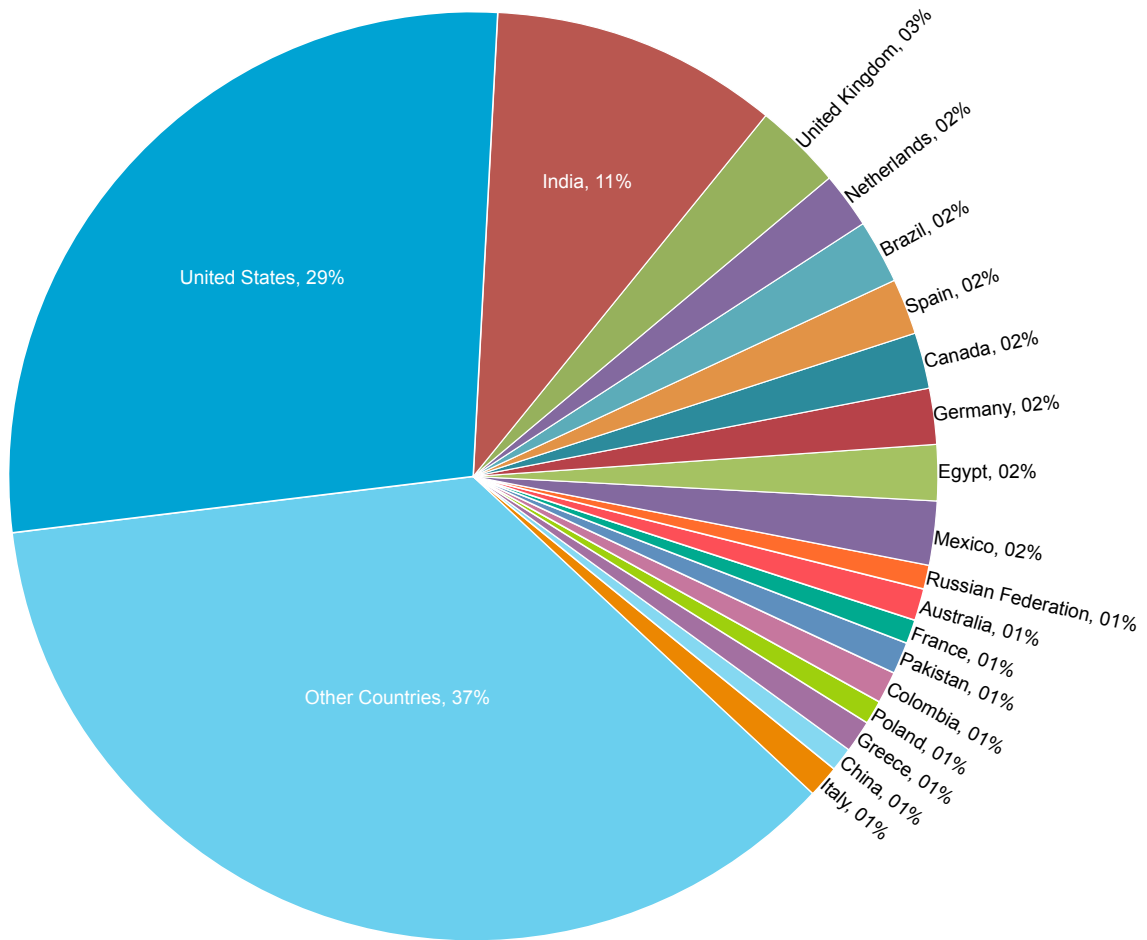


2.5 Cooperation

3TU. Federation

The 3TU.Federation makes an important contribution to the development of technology education programmes and to technology research in the Netherlands. In terms of education, Delft University of Technology, Eindhoven University of Technology and Twente University offer

Where are the DelftX users coming from?



5 Master's degree programmes and 20 Professional Doctorates in Engineering (PDEng).

Ongoing 3TU activities include:

- A comparison of the innovation in the Bachelor's programme curriculum and the impact thereof on education and students
- The design of effective multidisciplinary education in applied scientific learning environments
- The exchange of experiences concerning educational renewal

3TU. Technology Sector Plan

The report on the 2011-2013 period was submitted to the minister in July.

The completion of this phase and the further realisation of the launched initiatives are monitored by the Science and Technology Platform. To this end, the review committee of the platform visited the three institutions in November.

For TU Delft, the review of the Bachelor's programmes and the development of the 3TU.Centre for Engineering Education (CEE) were on the agenda. This involved examining how the best cooperation with fellow academic institutions can be achieved under TU

Delft's own strategic policy and how the CEE can contribute to the quality of education and lecturers. In the subsequent phase of the 3TU Technology Sector Plan the emphasis will be on the operationalisation of the CEE, the continued strengthening of the 3TU Master's degree programmes, increasing the intake and stimulating the PDEng programmes.

The 3TU.Federation also established two new Research Centres in 2014, in the fields of Humans & Technology and High-Tech Materials.

3TU.Centre for Engineering Education

The 3TU.Centre for Engineering Education (CEE) was launched with a kick-off day on 22 September 2014.

The theme of the day was 'Innovating Engineering Education for Tomorrow's Engineer'. The CEE's mission is:

'To jointly inspire, stimulate, support and disseminate effective and high-quality Engineering Education through research and application of evidence-based innovations within the Engineering Education domain.'

See also Chapter 1.5, Highlights.

Leiden – Delft – Erasmus Strategic Alliance:

Cooperation in education with the universities in Leiden

and Rotterdam was expanded in the past year with :

- the LDE joint Bachelor's degree programme in Clinical Technology
- the LDE minor in Responsible Research and Innovation
- the post-initial Master's degree programme in Cybersecurity, an initiative of Leiden University, TU Delft, The Hague University of Applied Sciences and the Municipality of The Hague

LDE Centre for Education and Learning

The LDE Centre for Education and Learning (CEL) was launched in May 2014. The CEL aims to be a centre of expertise in the field of online and blended university education, and focuses on :

- Community building
- Research into university education
- Educational innovation
- Professional training

The research programme 'Student engagement and achievement in open online higher education' has been established, for which multiple doctoral projects have been developed. The possibilities of cooperating in the area of teacher training for online teaching and instruction were investigated during an international conference in June. Various projects with international partners were initiated during that conference.

With regard to training, modules were developed on (1) motivational teaching, (2) effective use of video in online and blended learning, and (3) online testing. A programme leading to a Senior Teaching Qualification is also being offered, along with a Didactic Leadership Course.

2.6 Quality

The quality of the education, in terms of content, teaching and organisation, is extremely important. Fortunately, TU Delft is doing well in this area.

Ahead of the institutional accreditation in 2017, TU Delft organised a midterm review, the Institutional Assessment of Quality Assurance. The review committee had a lot of praise for the deeply rooted quality culture at TU Delft and encouraged the university to maintain this focus.

Excellence

The TU Delft policy of excellence aims to provide students with above-average talent with a challenging learning environment. TU Delft has traditionally offered the best-performing students various options in the degree programmes, such as double degree

programmes, MSc scholarships and, more recently, the Honours Programme Delft (see below).

There are also students who focus on a cum laude or who excel in extracurricular activities. The latter group includes students who are involved in administrative activities or projects of the Dream Teams, such as the NUON Solar Team (NUNA) and the Delft University of Technology Racing Formula Student Team. A total of 10% of the student population is involved in supplementary activities such as these.

Honours Programme

In the 2014/2015 academic year, 148 students started the Bachelor Honours Programme.

Cooperation with other institutions with regard to excellence has been reinforced. For example, there is an exchange programme with Leiden University between Bachelor's students in the honours programmes. In addition, four Master's student are taking a leadership programme at Leiden University. At the European level there is also cooperation with regard to excellence between lecturers and students. In July, an intensive two-week programme entitled 'Successful Leadership, Innovation and Entrepreneurship within the Energy Sector' was organised at the Como campus of the Politecnico di Milano. Excellent students from TU Delft, Politecnico di Milano, Copenhagen Business School and the Technical University of Denmark came together during this programme, which received a grant from the Erasmus Lifelong Learning Programme.

Programme evaluations

The most recent round of accreditations for all degree programmes was completed in 2014. All regular Bachelor's and Master's degree programmes were re-accredited. The request for accreditation of the post-initial Berlage Master's in Architecture and Urban Design was honoured.

Midterm review

In 2011, the Accreditation Organisation of the Netherlands and Flanders (NVAO) awarded TU Delft a positive assessment on the institutional quality assurance audit, which is valid until November 2017. As part of TU Delft's internal quality assurance system, a midterm review was conducted in 2014 to determine where TU Delft stands with regard to educational quality, in order to provide direction for the coming years.

As part of the review, an audit was conducted to examine the themes educational quality assurance system, assessment policy, studying with a disability

and study success in greater depth.

The general impression of the audit committee is that TU Delft is an education institution with an excellent reputation internationally, and that the description of the type of engineer TU Delft wishes to train does justice to this reputation. Students also confirm this impression: they chose TU Delft for the classical disciplinary, technical nature of the degree programmes. A deeply rooted awareness of quality prevails at TU Delft. The committee recommends further prioritising the strategic ambitions in the area of quality improvement, reduction of study duration, and growth in the number of students, with quality improvement being the highest priority. The Board shares the Committee's view that educational quality is the highest priority. "You don't become a Delft Engineer just like that" – an assertion that was true in the past and certainly remains so today. The aim of the Study Success Rate Project is to decrease the duration of study insofar as this is in line with the quality policy. Our students must be able to start a successful career in the Netherlands and internationally, and a duration of study that is in line with international standards is important in this respect. The Board considers the growth in the number of students in engineering programmes to be a positive development. However, it is sometimes necessary to apply a numerical cap (cap on student intake) in order to ensure the quality of the programmes.

As far as the assessment policy theme is concerned, the audit committee indicated that it is confident that this will be in order by the 2017 Institutional Assessment of Quality Assurance. The Board has already implemented a number of measures in response to the different recommendations and will monitor their progress.

Teaching quality

This year, the faculties again kept a close eye on scanning the quality of the current academic staff. This provided a better impression of the quality of lecturers and helped to improve quality. The results of this scan are part of the explanation of the OCW performance indicator Teaching Quality.

Lecturers were also prepared for the provision of online and blended education. This was done through training courses, workshops, project supervision and advice on teaching. Many activities were developed with regard to student assessment: for example, members of Boards of Examiners were prepared for their new role and lecturers were trained in assessment skills.

Complaints Desk / Ombudsman

A joint annual report, based on a calendar year, for the complaints desk and the ombudsman was provided for

the first time at the beginning of this year. A total of 36 complaints were received in 2014, 35 of which were settled by the complaints desk, and one of which was forwarded to the ombudsman. Following registration by the central complaints desk, most complaints are forwarded to the faculty for settlement. The complaints desk monitors the progress of the settlement. If the complaint is not settled to the student's satisfaction, the student can turn to the ombudsman. Sensitive or more complicated complaints can also be forwarded directly to the student ombudsman.

Complaints received in 2014 concerned a variety of issues, such as the publication of examination results and matters related to enrolment and termination of enrolment.

2.7 Study success

Information

A properly prepared student is more likely to make the right programme choice. In 2014, the informational activities were therefore better adapted to the prospective student's phase in the decision process. A distinction is made between orientation, deepening and a 'last question day'. Approximately 90% of those surveyed gave a positive rating for these events.

Open days

The open days in May are aimed at students in years 4 and 5 of pre-university education (VWO) who are orienting themselves. The May open days attracted 3,860 students in 2014. The open days in October are for students wishing to obtain more in-depth knowledge. In addition, there is a specific programme for international students. A total of almost 5,000 students in years 5 and 6 of VWO attended these open days.

Last Question Day

Last Question Day takes place in March. This is an opportunity for students in year 6 of VWO to ask their final questions; 250 students attended Last Question Day in 2014.

The link with pre-university education (VWO)

A voluntary Programme Choice Check (*Studiekeuzecheck*, SKC) has been introduced for all Bachelor's degree programmes. The aim of the SKC is to give prospective students realistic information as much as possible, so that they can make a well-informed programme choice. Students who had registered for a Bachelor's degree programme for the first time received an online questionnaire in May. Among other things, the questionnaire was used to



assess the applicant's impression of the programme and to ask knowledge-based questions. Students who completed the questionnaire received feedback from the degree programmes as well as a programme choice recommendation. Naturally, the influence of the SKC on the study success rate is not yet known. However, when asked, half of the first-year students indicated that they found the feedback useful.

Numerus Clausus

Five Bachelor's degree programmes employed a numerus clausus (cap on student intake). Architecture and the Built Environment, Mechanical Engineering and Clinical Technology participated fully in the central selection by lottery. The Industrial Design Engineering and Aerospace Engineering programmes opted for decentralised selection for some of the students.

Bachelor's degree programme	Numerus clausus (cap on student intake)	Enrolled* as of 1 October 2014
Architecture	440	283
Industrial Design Engineering	330	317
Clinical Technology	100	101
Aerospace Engineering	500	403
Mechanical Engineering	600	521

* First-year students

The decision was made to no longer request a numerus clausus for the Bachelor's degree programmes in Architecture and the Built Environment and Mechanical Engineering for the 2015–2016 academic year.

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 contributes to 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. More than 1,500 new international students were welcomed this way in 2014.

Binding recommendation on the continuation of studies (BSA) and Switchers

The BSA standard of 45 ECTS for first-year students was applied for the second time in 2014. Students who do not achieve the standard are unable to enrol in the same degree programme in the next four years. This year, TU Delft issued 72% positive BSA recommendations, continuing the slightly decreasing trend seen in recent years.

Raising the BSA standard has contributed to an increase in the number of students who complete the propedeuse in the first year.

We have also observed a slight increase in the

	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
Positive	72%	76%	77%	74%	72%
Negative	24%	20%	21%	22%	23%
Postponed	4%	4%	2%	4%	5%

percentage of students deciding before 1 February to terminate the programme: from 14% to 16%. It appears that the aim of the BSA, i.e. to get students in the right place as soon as possible, is being achieved through the introduction of the BSA.

Some students who have received a negative BSA enrol in a different degree programme at TU Delft for the second year of study, expecting to earn a positive BSA in the first year of the newly selected programme. This group increased from 265 students (9.3%) in 2013 to 307 students (12%) in 2014.

NB: this group of switchers is registered as drop-outs at the TU Delft programme level, but the group remains registered as TU Delft students at the institutional level. This explains why the percentages above are not directly comparable to the results of the performance agreements regarding drop-out and switching rates, as described in Chapter 1. Another reason for possible differences between these figures is the fact that a student (following two degree programmes) may receive two different recommendations.

Bachelor's Review

The review of the Bachelor's programme curricula is an important measure in the Study Success package. The programmes that have already been reviewed were closely followed and evaluated this year. In September, the Electrical Engineering programme was the last of the degree programmes to introduce a renewed Bachelor's curriculum.

The implementation of a new Bachelor's programme takes several years. Activities that can support the transition process are organised in order to support the faculties. For example, lunchtime lectures for lecturers were organised on subjects such as formative assessment and gamification. In addition, Best Practices of several degree programmes were shared, and funding is being provided to 38 projects that contribute to the following goals:

1. Introducing or improving active teaching methods
2. Changing assessment with the aim of using fewer summative assessments and more formative assessments

3. Effective use of contact time
4. Improving integration of disciplines in a subject
5. Introducing or improving blended learning

Top-level sports

In the 2014/2015 academic year, approximately 60 students who compete in their respective sports internationally have been designated TU Delft top-level athletes. Additional facilities are provided for students who have an official Netherlands Olympic Committee (NOC*NSF) status or who are registered with an Olympic network, to enable them to combine their studies with top-level sports. The Executive Board adopted the new Top-level Sports policy framework in December. The aim of this policy framework is to prevent unnecessary delays for students participating in top-level sports, by offering them a clear individual study plan and taking measures early on if necessary.

2.8 After graduation

Link to the labour market / WO Monitor

Every two years, recent graduates of TU Delft are surveyed using the so-called WO Monitor. The survey was conducted in 2013. The WO Monitor survey completed by graduates from the 2011/2012 academic year reveals that TU Delft alumni are very satisfied with their Master's degree programme: Given the choice, 84% would follow the same programme at TU Delft. Unemployment among our alumni seems to be decreasing further - 3% of the respondents stated they were unemployed, compared to 4% in 2011. Furthermore, the alumni regard their degree programme as intellectually challenging (an average score of 7.8, compared to a nationwide score of 7.6) 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 the accessibility of professors is comparable to the national average: a score of 7.1 compared to a nationwide score of 7.4, and a score of 7.8 compared to nationwide score of 7.6, respectively.

Career Centre

The Career Centre helps students with their questions on choosing a degree programme or switching to a different programme, choosing a Master's programme or career advice. In the 2013-2014 academic year, almost 4,000 students and PhD candidates took part in the 168 group activities or received individual support concerning switching to a different programme or career counselling.

Students and businesses are informed on activities through social media, the website and Blackboard.

There is increasing cooperation with businesses, for example through the joint organisation of events.

This has also led to a larger number of vacancies, both in the Netherlands and abroad. Furthermore, the Engineering Honours Academy was established with the aim of promoting cooperation between businesses and students in the TU Delft Honours Programme.

The national project of the Ministry of Education, Culture and Science, entitled 'Make it in the Netherlands', aims to work together (e.g. Netherlands Organization for International Cooperation in Higher Education (Nuffic), education institutions, employers and student organisations) on an action plan to encourage international students to stay in the Netherlands. Within the framework of the project, the Career Centre has developed a workshop to familiarise businesses with the advantages of hiring international talent. This workshop is aimed at companies that carry out projects with the Municipalities of Rotterdam and Delft.

TU Delft also collaborated with the Municipality of Delft on the second edition of the Night of the Enterprises, an event with the aim of keeping graduates in Delft by introducing them to knowledge-intensive businesses in the Delft region during their studies.

Alumni

TU Delft is proud of its graduates, many of whom make unique contributions to the fields of science, technology, innovation and entrepreneurship, and serve as a source of inspiration to others. The university maintains close ties with its alumni, many of whom are willing to share their knowledge, time and networks with new generations of engineers. TU Delft tries to keep alumni informed and involve them in research and education in many different ways (e.g. newsletters, events, social media and master classes).

Six central alumni meetings were held in the Netherlands in 2014, the largest of which was the annual Alumni Event on 6 June. Other events included a lecture in Eindhoven for the alumni of the three Dutch

universities of technology and a Good Friends Dinner.

A total of 520 alumni attended the activities in the Netherlands.

Roughly the same number of alumni attended activities abroad, enabling ties to be strengthened with alumni in Aruba (3TU), Boston, Brussels, Greece, India, Indonesia, London, Mexico, Moscow, Paris, San Diego and Zurich (IDEA League). There was a large Dutch Engineering Alumni tour – USA in November, with events held in five cities.

With over 22,700 members, the TU Delft alumni community on LinkedIn is very active. Everyone whose LinkedIn profile shows that he or she studied at TU Delft automatically becomes a member of TU Delft LinkedIn University. With almost 84,000 members that is an excellent way of making contact with alumni throughout the world.

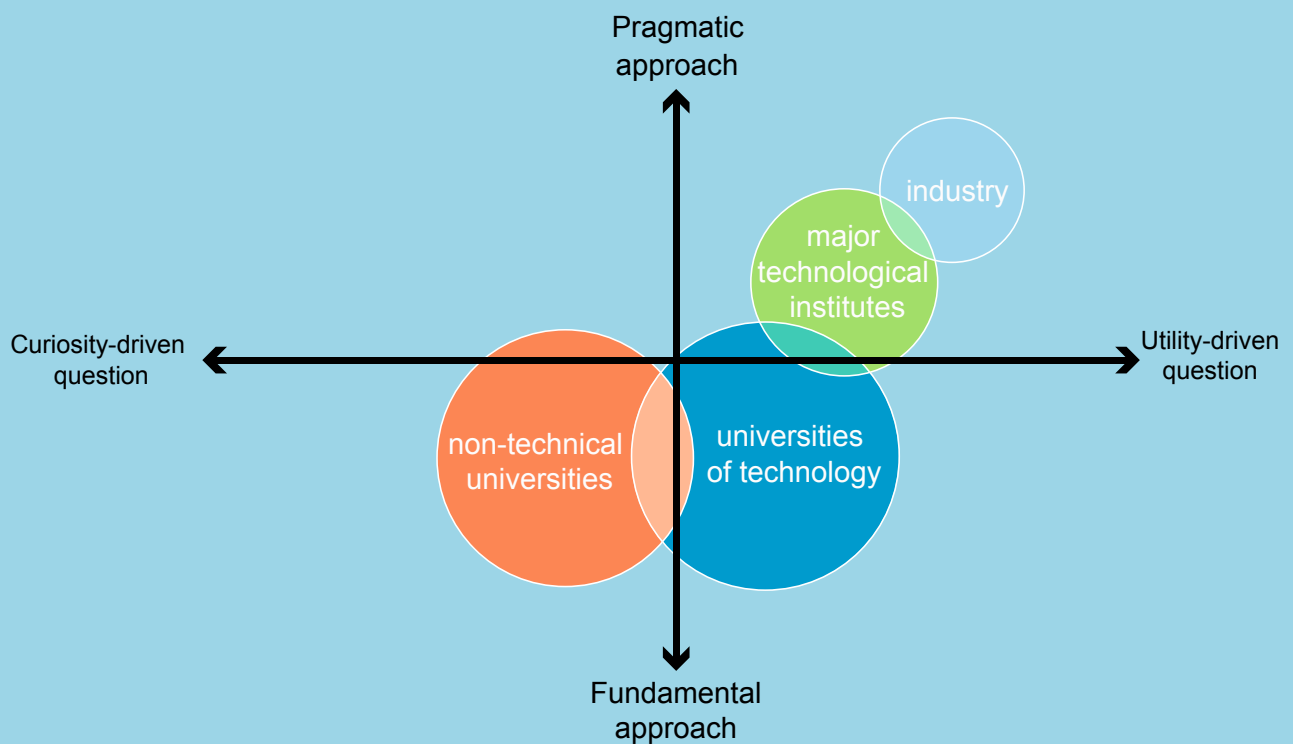
Career Services for Young Alumni (who graduated a maximum of five years ago) were provided in cooperation with the Career Centre. The Young Alumni Career Week, during which assistance was provided to graduates with doubts about their jobs, was held in March. There was also a 'Meet your role model' event, during which alumni help Master's students to gain a clear idea of their interests and opportunities in an informal setting.

Chapter 3

Research

The research conducted in the eight TU Delft faculties covers virtually the entire spectrum of engineering sciences. The range of disciplinary specialisations is spread across 38 departments and covers the full breadth of the engineering sciences. The great strength of the research comes from the combination of those specialisations and the strategic cooperation with other research organisations in the Netherlands and abroad. World-class research also demands an excellent

infrastructure. On its campus, TU Delft has a wide range of high-quality research facilities. A number of these facilities are unique in the Netherlands, including wind tunnels, a nano lab, fermentation facilities, robotics labs, the research reactor, and labs for serious gaming and product evaluation.



Fundamental & utility-driven research

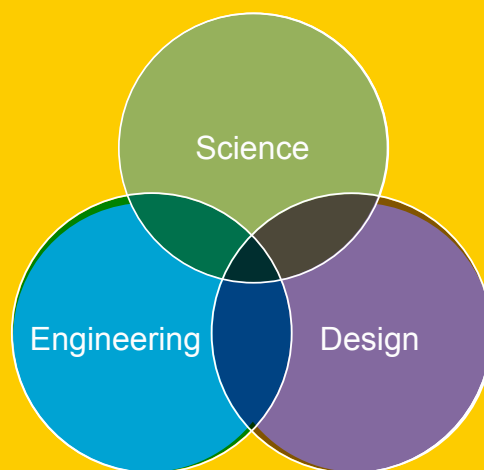
The strategic position of the research at TU Delft is determined by the source of the research question and the way in which that question is approached. In the figure above, the spectrum of possible research questions is shown on the horizontal axis, ranging from purely curiosity-driven (extreme left) 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

Research can be approached from multiple angles. Research at TU Delft is characterised by a balance between three angles of approach: Science, Engineering and Design. Roughly speaking, these angles of approach are connected to a more deterministic approach for Science, a constructive dimension for Engineering, and an integrating approach for Design. These three approaches do not in any way exclude one another. As indicated in the figure opposite, multiple approaches can be used within a research programme.



3.1 Academic profile

The 8 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. As such, they and other academic staff are the front-line representatives of our scientific position: the driving force behind the groundbreaking research for which we are responsible.

3.2 Research facilities

Naturally, research facilities are extremely important for a university of technology such as TU Delft, not only in order to carry out excellent research, but also to train the next generation of engineers and scientists. State-of-the-art laboratories and equipment also make the campus – and the region – attractive to talented researchers from the Netherlands and abroad.

Large-scale research facilities

TU Delft is directly involved with 8 of the 28 large-scale facilities from the Dutch Roadmap of Large-scale Research Facilities released in 2012. In 2014, NanoLabNL received 17 million euros in funding within the context of this roadmap. NanoLabNL is the partnership of research institutions in the area of infrastructure for nanotechnology. With locations in Twente, Delft, Groningen and Eindhoven, NanoLabNL makes complex sensors and detectors that can detect tiny forces, for example. NanolabNL received funding for several projects in 2014, including the Quantum

Electrical Engineering (QuEEN) project. Participation in NanoLabNL also puts into effect the profiling agreements in the field of nanoscience (see above). In 2015, the Netherlands Organisation for Scientific Research (NWO) will call for investments in research infrastructure for which the investment costs amount to more than 1.5 million euros (NWO Large). In 2014, TU Delft established an internal preliminary registration procedure to increase the quality and chances of success of its applications.

OYSTER

With the OYSTER (Optimized Yield - for Science, Technology & Education - of Radiation) programme, the research reactor of the Reactor Institute Delft (RID) will become significantly more precise and more broadly applicable in research. The Cold Source, a device that slows down neutrons, making them easier to direct and improving the quality of measurements, is central to the programme. In 2014, following a public tendering procedure, a consortium of the Korea Atomic Energy Research Institute (KAERI) and Hyundai Engineering & Construction was selected for the programme. Work was also carried out on the development of the first OYSTER measuring instrument: the PEARL neutron diffractometer. Both the Cold Source and the new instruments and facilities are expected to make the RID better equipped for medical and energy research from science and industry.

Open Science

TU Delft aims to share scientific output as openly and transparently as possible with society as part of its objective to deliver science to society. Open Science, making scientific information freely accessible in digital form where possible, is the designated means for achieving this. The university has been making

Faculties	Research priority areas	
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

HollandPTC

On 2 December 2013, the 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 – yet to be

built – Delft centre for treatment and research to perform proton therapy cancer treatments. On 15 May 2014, the European Investment Bank (EIB) committed to a loan of 90 million euros to realise HollandPTC. HollandPTC is in continuous talks with health

insurance companies, suppliers and other stakeholders, including the Dutch Healthcare Authority, in order to complete the centre in 2017.

publications and data available for years via the 3TU. Datacenterum and the TU Delft Repository. This ties in with the importance attached to Open Access by the Ministry of Education, Culture and Science, the European Union and the Netherlands Organisation for Scientific Research. In 2014, the Association of Universities in the Netherlands (VSNU) entered into negotiations with major scientific publishers such as Elsevier, Springer and Wiley, with Open Access playing an important role. VSNU chairman Karl Dittrich hopes that individual members of the academic community will also urge publishers to make the transition to an Open Access model. An open letter to scientists calling on them to do this was distributed among the academic staff by the Executive Board.

3.3 Thematic cooperation

For its research TU Delft takes inspiration from major challenges in society. The resulting research subjects are often so complex that the only way of responding to them is to adopt a thematic approach in which various disciplines cooperate in multidisciplinary and interdisciplinary alliances. Such cooperation takes place at all levels: thematic, regional, national and international. In its choice of subject matter within themes, TU Delft aligns itself with the Dutch agenda concerning science and innovation policy. The Netherlands Organisation for Scientific Research and the Top Sectors Policy are important drivers in this respect. 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 is working on its national and international visibility in a number of specific emerging fields by virtually bundling research capacity in university-wide institutes. The TU Delft Sports Engineering Institute and the TU Delft Space Institute were added to the existing institutes in 2014. The TU Delft Institutes are also part of the profiling agreements with the Ministry of Education, Culture and Science, see Chapter 1.

TU Delft Space Institute

The TU Delft Space Institute was founded in November

2014. The three research themes of the institute are: Sensing from Space, Distributed Space Systems and Space Robotics. Five faculties work together in the institute. Objectives include building laboratories, developing online education and launching satellites.



TU Delft Safety & Security Institute

The TU Delft Safety & Security Institute distinguishes between safety & security for private purposes, in the public domain and in the movement between the two. The institute combines different scientific methodologies such as data analysis, risk management and the 'system of systems' concept. There are currently 30 chairs and 60 doctoral programmes associated with the institute.

In August, the Delft Safety & Security Institute organised a seminar on research in the area of public safety. This coincided with the visit of a delegation from the Institute of Public Safety Research to Tsinghua University, Beijing. Possibilities for joint research themes and cooperation with the Institute of Public Safety were also examined.

TU Delft Wind Energy Institute

The TU Delft Wind Energy Institute (known as DU-WIND) conducts research and provides education at three levels: the individual wind turbine and its components, the onshore or offshore wind farm, and the overarching renewable energy system. A promising new field is that of network integration and asset management, based on far-reaching integration of technical and social sciences.

The first students in the Erasmus Mundus European Wind Energy Master's (EWEM) programme graduated this summer. EWEM students follow a double degree



programme with two or more partners in the network, which consists of TU Delft, the Technical University of Denmark (DTU), the Norwegian University of Science and Technology (NTNU) and the University of Oldenburg (Germany).

In 2014, the institute successfully secured indirect funding, including funding for a Marie Skłodowska-Curie Innovative Training Network, Airborne Wind Energy amounting to 3 million euros.

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.

In 2014, the institute developed several new initiatives, including the Cyberzoo (a research and testing laboratory for flying and crawling robots) and the KorolevLab in cooperation with the students of Delft Aerospace Rocket Engineering. In the run-up to Horizon 2020, the institute reinforced its relationship with BMW, the German Aerospace Center (DLR) and Technische Universität München. The TU Delft Robotics Institute had two applications honoured in the NWO's Natural Artificial Intelligence programme.

The TU Delft Robotics Institute was involved in two of the ten proposed Field Labs in the Smart Industry Agenda presented to Minister Henk Kamp. The institute also participates in information events. Furthermore, this year, the institute was involved in the European 'Factory in a Day' consortium coordinated by TU Delft and was a prominent participant in the TU Delft Research Exhibition in November.

TU Delft Process Technology Institute

In Chemical Engineering, TU Delft's position in the QS Rankings rose to 8th place, compared to 18th place two years ago; a clear indication of the institute's increased visibility in the field. From a European perspective, Chemical Engineering at TU Delft ranks third on the list. Professor Mark van Loosdrecht was awarded the 2014 NWO Spinoza Prize for his work on water purification. The DPTI team participating in the Bill & Melinda Gates Foundation's 'Reinvent the Toilet Challenge' in Delhi presented its system of plasma gasification which feeds a fuel cell.

TU Delft Transport Institute

At the Transport Institute, TU Delft scientists and students with different backgrounds carry out research on subjects varying from the technology of vehicle design to the psychology of driving. By combining knowledge from all these fields, they can develop solutions that result in safer, cleaner and more efficient transport and improved accessibility.

The Tracks in Transport conference, focusing on promising multidisciplinary research themes for collaboration between TU Delft and practice, took place in 2014. This year there was a lot of interest in automated driving. Another unique initiative launched this year is the Urban Mobility Lab. This is a unique laboratory at the Amsterdam Institute for Advanced Metropolitan Solutions with which municipal authorities, businesses and residents can work together towards new, cleaner and more reliable mobility for everyone.

TU Delft Sports Engineering Institute

The TU Delft Sports Engineering Institute was founded in 2014. Besides carrying out research to improve top-level sporting performances, the new institute will focus on grassroots sport aimed at creating a healthier society. Sport is also an excellent way of showcasing TU Delft research to the wider public.

In 2014, the Sports Engineering Institute and InnoSportLab presented a sustainable multifunctional sports field, which can be used for various sports as well as for functions such as energy generation or air purification. In collaboration with playground equipment manufacturer YALP, an interactive play system was developed for children and elderly people. RISE dream team's spectacular hydrofoil rowing boat was presented at the World Rowing Championships. YES!Delft start-up Volans Rowing received the National Sports Innovation Prize for the innovative design of the Volans KIDS, a rowing boat for children aged eight years and older. Administrative and substantive coordination took place with the Faculty of Human Movement Sciences of VU University Amsterdam in the autumn of 2014, in order to determine how the current cooperation can be further improved.

TU Delft Climate Institute

Since 2012, the TU Delft Climate Institute has brought together research capacities of TU Delft in interfaculty research on climate, climate policy and the effects of mitigating and adaptive measures. The institute coordinates participation in Dutch and international climate monitoring programmes, participates in the Amsterdam Institute for Advanced Metropolitan Solutions and has a pioneering role in the cooperation with the Indian Institute of Technology Delhi. Together with the Royal Netherlands Meteorological Institute (KNMI), the institute is the driving force behind the Experimental Site for Atmospheric Research in Cabauw.

The institute also participates in Rain Sense, one of the three kick-off projects of the Amsterdam Institute for Advanced Metropolitan Solutions. Rain Sense uses weather stations on lampposts, mobile measuring umbrellas and the smartphones of Amsterdam residents to accurately record the rainfall in Amsterdam.

TU Delft Research-based Initiatives

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 DRIs aim to make important scientific contributions to solving issues facing society that relate to these four

themes. They 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 Dutch and international research funding agendas, the initiatives also have a strong inspirational effect on students and education.

Midterm review





Five years after they started, the Delft Research-based Initiatives conducted self-evaluations, which showed that they had developed sufficiently in light of the social profiling of the university. However, the great diversity and overlap of themes within the wider field of 'the Environment' has led to some internal ambiguity in the positioning of the Delft Environment Initiative. The increase in the number of themes, initiatives and organisations at Delft has also contributed. The decision was therefore made to terminate the Delft Environment Initiative as of 1 January 2015 and to simultaneously establish the Delft Global Initiative, Science and Technology for Global Development (in short, Delft Global). However, the environment theme will remain relevant in education and research. A number of successful projects, such as TAHMO, will continue to exist.

TAHMO Kick-off Pilot Project in Ghana

The TAHMO initiative launched its pilot project in Ghana in November. In this two-year pilot programme, financed by the Netherlands Organisation for Scientific Research, water and weather will be monitored better in Ghana's cocoa-growing regions. Together with local technology firm Farmerline and Kwame Nkrumah University of Science and Technology, TAHMO will install 40 weather stations in secondary schools in Ghana. Farmerline will then convert the weather data into information for farmers, by means of SMS and voice messages in local languages.

Establishment of Delft Global

There is a growing global need for scientific research and technology aimed at solving issues relevant to developing nations. TU Delft has a wealth of expertise on worldwide social challenges in such fields as water, health, energy, raw materials and mobility. It was therefore decided in 2014 to set up the Delft Global Initiative, Science and Technology for Global Development (in short, Delft Global). A solid core of scientists are already focussing on global development research, and Science & Technology for Global Development is now set to become one of TU Delft's research priorities.

	Energy	Infrastructures & Mobility	Health	Global
Research fields	 <ul style="list-style-type: none"> • wind energy • solar energy • energy networks • (chemical) storage • energy efficiency in design • energy efficiency in industry • energy in the built environment • geo-energy • biomass • nuclear 	 <ul style="list-style-type: none"> • sustainable efficient transport logistics & mainports • resilient durable infrastructures • safe sustainable deltas and metro-poles 	 <ul style="list-style-type: none"> • medical imaging & image guided medicine • interventions & care • targeted molecular technology • vitality 	 <ul style="list-style-type: none"> • accessible technological healthcare • drinking water, sanitation, water safety • decentralized, reliable and renewable energy • built environment • disaster resilience • ICT as enabling technology
Top Sectors	energy, water, high tech, chemicals	logistics, water, high tech	life sciences & health, high tech	agri-food, chemicals, creative industry, energy, high tech, life sciences and health, logistics, water

Delft Energy Initiative

The Delft Energy Initiative is the access portal to the energy research, education and innovation at TU Delft. This initiative serves as a catalyst for collaboration and debate between scientists and students and between TU Delft and businesses, government agencies and politicians. In this way, TU Delft contributes to energy innovation and aims to ensure that the issue of energy is made an urgent priority for society as a whole.

Paulien Herder joins Top Team for Energy

Paulien Herder, Professor of Engineering Systems Design and chair of the Delft Energy Initiative, joined the Top Team for Energy on 1 November 2014. She represents the Dutch knowledge institutions in the Top Team, which is made up of a figurehead from the sector, a representative from the world of science, a leading civil servant and an innovative entrepreneur representing SMEs. She succeeds Tim van der Hagen, who was a member of the Top Team from 2011.

STW awards grants to TU Delft research

Technology Foundation STW has provided the EUROS (Excellence in Uncertainty Reduction of Offshore wind Systems) programme with a budget of 3.4 million euros. TU Delft is also part of the Perspective Programme 'Smart Energy Systems in the Built Environment'. Both proposals were supported by the Delft Energy Initiative.

Energy Master Class for Members of Parliament

Spokespersons from the Dutch House of Representatives and policy officers of various political parties were given a master class by TU Delft scientists on 13 January 2014. They were briefed on subjects such as CO₂ policy, shale gas, geothermal energy and 'off-shore wind'. A joint decision was made to turn this into an annual event.

All Energy Day 2014

There was once again an All Energy Day this year. This national energy day with over 400 participants is organised by TU Delft students and features workshops by businesses, debates and a trading floor. The Delft

Energy Initiative organised the third annual VIP event attended by the most important private and public partners of the Delft Energy Initiative, such as Shell, Siemens, Eneco, the Energy Research Centre of the Netherlands (ECN), the Netherlands Organisation for Applied Scientific Research (TNO), the Foundation for Fundamental Research on Matter (FOM), and the Ministry of Economic Affairs.

Delft Infrastructures & Mobility Initiative

In 2014, the Delft Infrastructures & Mobility Initiative (DIMI) launched the new programme 'Vital Infrastructures for Water Safety and Smart Mobility'. In the coming years, the focus will be on stimulating innovations for a more sustainable and resilient society in order to tackle the effects of climate change and urbanisation. The aim is to develop an integrated approach to specific social issues, with the involvement of scientists and students from various faculties and disciplines. This vision and strategy are described in detail in the 'Strategic Perspective 2014-2020', which was adopted by the Executive Board in June.

Cooperation agreement with the Ministry of Infrastructure and the Environment

In February 2014, the cooperation agreement between TU Delft and the Ministry of Infrastructure and the Environment was renewed for the 2014-2017 period. It was agreed that the Delft Infrastructures & Mobility Initiative will provide the coordination on behalf of the university. In September, a working visit to TU Delft by a broad delegation from the Ministry was devoted to this renewed agreement. The agenda featured a wide range of subjects: from the recycling economy and automated driving to open/big data.

Honours Programme

In cooperation with the Delft Environment Initiative and the TU Delft Transport Institute, the Delft Infrastructures & Mobility Initiative developed an interfaculty Honours programme at Master's level for the infrastructure and environment domains. The central theme of this programme is sustainable urbanisation. Students can enrol from the 2014/2015 academic year. International Master's students with a TU Delft Excellence Scholarship relating to transport or infrastructure & mobility will be required to follow this Honours programme from the beginning of the 2015/2016 academic year.

Support for multidisciplinary student projects

In 2014, the Delft Infrastructures & Mobility Initiative supported ten multidisciplinary research projects of

Master's students abroad. Groups of students carried out research in countries such as Chili, Argentina, Mexico and Myanmar. The focus of the projects varied from harbour development to the impact of the tsunamis. Support was also given to a number of other student initiatives, such as the Urbanism Week 2014, a project within the framework of the OEROL festival on the island of Terschelling, as well as an educational trip for a number of students from the 'Delta Interventions' graduation studio to the Houston/Galveston Bay area of the US.

Delft Health Initiative

Health is an important subject, which is part of the profiling agreements (see Chapter 1). The Delft Health Initiative (DHI) tackles the following themes within education, research and valorisation: Medical Imaging & Image Guided Medicine, Interventions & Care, Targeted Molecular Technology, and Vitality. Strengthening and profiling research related to personalised health care is an important subject. There is close collaboration between the university medical centres (UMCs), universities, local/regional government bodies and companies.

Clinical Technology

The first batch of students started the Clinical Technology Bachelor's degree programme in the 2014/2015 academic year.

This new programme, which focuses on the interface between medicine and technology, is a unique collaborative partnership between TU Delft, Leiden University, Erasmus University Rotterdam, and the UMCs in Leiden and Rotterdam. The Delft Health Initiative aims to facilitate the development of both the degree programme and the professional domain of Clinical Technology in general. This is done by helping to ensure an optimum range of admission possibilities from the Bachelor's programme to Master's programmes as well as by embedding the profession of Clinical Technologist in the sector.

Implementation of care innovation

During the MedTechWest event in June, the Innovative Medical Devices Initiative (IMDI) Centres of Research Excellence (IMDI CoREs) presented their innovations in image-guided medicine, neurorehabilitation and minimally invasive techniques. In 2014, the three IMDI CoREs were very successful in obtaining additional research funding from the LSH Top Sector and from the STW Technology Foundation. Together with the regional development company InnovationQuarter founded in 2014, Medical Delta is contributing to the

development of the Delft-Leiden-Rotterdam region, both regionally and on a Dutch and international level in the area of Life Sciences, Health & Technology.

Medical Delta Professors

The MedTechWest on 11 June 2014 was the stage of a first in Dutch academic history: the inauguration of eleven Medical Delta professors with a dual appointment at TU Delft, Leiden University and/or Erasmus University Rotterdam. These dual appointments will create a bridge between the fields of medicine and technology. In their marathon of inaugural speeches, the professors explained how they hope to contribute to innovation in medical technology, each working from their own specialist field, and how technology can be used to make medicine better and more affordable.

Research schools

In November 2013, the VSNU and SODOLA formulated a guideline for the financial compensation for research schools. In 2014, this prompted TU Delft to more closely consider the financial situation of the research schools for which it is the coordinating university. In the first six months of 2014, a dialogue was initiated with these research schools to address the ambitions of the schools in the coming years and the adequacy of the means available.

The resulting overall picture is that the research

schools have been able to perform well on the basis of the available means in recent years, but that a certain degree of financial peace of mind is desirable. The schools also indicated that they wish to further professionalise and deepen their activities. They recognise that the fee system proposed by the VSNU and SODOLA provides scope for this.

In response to this, the Executive Board and the deans indicated that they consider the research schools to have a useful role in the future, particularly with regard to the provision of part of the programmes for PhD candidates. The Executive Board wishes to translate the VSNU/SODOLA 'guideline' into practice of the relevant research school as much as possible, and it wishes to make individual agreements with each research school on how their financial contribution will be provided for the next four years (2015-2018). The aim is to provide clarity and stability in this respect in the coming years.

De long-term agreements proposed by the Executive Board concern the 2015-2018 period and, besides the proposed fee system, are based on a) the amount of the current financial contribution, b) the explicit ambition of the school, and c) the conclusion of the Operational Committee and the Executive Board. The financial agreements on this with the directors of the different research schools and the deans of the coordinating faculties are expected to be completed at the beginning of 2015.

TU Delft was the coordinating university of six research schools in 2014

	A+BE	CEG	EEMCS	IDE	AE	TPM	Applied Sciences	3mE
Advanced School for Computing & Imaging (ASCI)			X = coordinating university					
Centre for Technical Geoscience (CTG)		X = coordinating university						
Delft Institute for Micro-systems and Nanoelectronics (DIMES)			X = coordinating university					
Dutch Institute of Systems and Control (DISC)								X = coordinating university
J.M. Burgerscentrum – Research School for Fluid Dynamics (JMBC)								X = coordinating university
Transport Infrastructure and Logistics (TRAIL)		X = coordinating university						

In addition, TU Delft is a participant in 12 research schools:

	A+BE	CEG	EEMCS	IDE	AE	TPM	Applied Sciences	3mE
CASIMIR							X	
EM		X			X			X
NIOK/catalysis							X	
OSPT							X	X
IPA			X					
SIKS			X			X		
WONDER			X					
BOUW	X	X						
NETHUR	X							
NIG/NOB						X		
Philosophy						X		
WTMC							X	

3.4 Regional, sectoral and international cooperation

Regional alliances

Leiden-Delft-Erasmus

Leiden University, TU Delft and Erasmus University Rotterdam have a strategic alliance in which they collaborate in the areas of education, research and valorisation. The aim of this alliance is to create and maximise added value for the institutions as well as the economic internationally operating region in which they are embedded.

Eight multidisciplinary centres were established in 2013, in addition to the existing Medical Delta. These virtual alliances focus their research and education activities on the international challenges of today and tomorrow. Regionally the centres actively contribute to the circulation of knowledge in fields such as sustainability, economics, safety, urbanisation and accessibility.

In 2014, the centres further specified and implemented their plans. Project proposals were submitted in Dutch and European programmes.

Medical Delta and the Centre for Sustainability played an important role in the establishment of European Knowledge Innovation Communities (KICs) in the fields of Health (InnoLife) and Raw Materials. At the 6th Innovation Summit, organised by the European Parliament, academics and administrators of the three institutions explained the public interest and the crucial

role of the three universities and their medical centres in the fields of Innovation in Health and Big Data.

In terms of education, a lot of work was done to make the minor programmes of the three universities mutually accessible. In addition, new joint minor programmes and honours programmes were developed. The joint Bachelor's degree programme in Clinical Technology was launched on 1 September 2014 with 100 students. In a regional context the alliance is involved in drawing up the ambition document 'Course 2020' (*Koers 2020*) of the Economic Programme Council of the South Wing (*Zuidvleugel*) and collaborates with the regional development company InnovationQuarter and the Metropolitan Region of The Hague and Rotterdam. As part of the strategy discussion in the VSNU, the three universities organised a regional conference on 2 April 2014 on the theme 'Knowledge circulation in an internationally operating region'.

Hague Security Delta

An initiative in the Hague Security Delta is the post-initial Master's degree programme in Cybersecurity of Leiden University, TU Delft and The Hague University of Applied Sciences.

Innovation Quarter

InnovationQuarter, the regional development company for the Province of Zuid-Holland, finances innovative and rapidly growing businesses, assists foreign companies in establishing offices in Zuid-Holland and

organises partnerships between innovative entrepreneurs, knowledge institutions and the government. Business Developers of InnovationQuarter participate in the Valorisation Programme VPdelta headed by TU Delft. Along with Leiden University and Erasmus University Rotterdam, TU Delft and InnovationQuarter are exploring the establishment of a Proof of Concept fund. Through the planning office, the Municipality of Delft, InnovationQuarter and TU Delft are working together on acquisition for the establishment of new businesses at the TU Delft Science Park.

Sectoral alliances - 3TU.Federation

As the 3TU.Federation, the three Dutch universities of technology work to strengthen and cluster technological knowledge. The alliance has led to the establishment of five 3TU degree programmes, nine 3TU.Research Centres and a shared vision on knowledge valorisation. Three new Research Centres were launched this year: Engineering Education, Humans & Technology and High-Tech Materials. The Centre for Engineering Education is a joining of forces and pooling of knowledge in the field of innovations in engineering education. The interaction between humans and technology is the focus in the Humans & Technology Research Centre. High-tech materials are the key to new and sustainable technology, and thus form the basis of the Research Centre of the same name. The Applied Mathematics Institute has signed a collaboration agreement with the Johann Bernoulli Institute for Mathematics and Computer Science of the University of Groningen. Proper filing and publication of data is growing increasingly important, with the European framework programme Horizon 2020 even requiring scientists to

dedicate a paragraph in their grant requests to their plans for data management. The 3TU.Datacentrum facilitates this development and has brought this to the attention of researchers and policy makers through various symposiums.

International cooperation - Joint Research Centres

Science is becoming an increasingly global venture, and TU Delft enters into cooperation with the most suitable partners all over the world. Such cooperation can concern the combination of specific expertise, attracting foreign talent or foreign funding, or making use of state-of-the-art laboratories and research environments that are not available in the Netherlands and Europe. This cooperation takes shape through the establishment of Joint Research Centres.

TU Delft – Beijing Research Centre on Solid State Lighting (BRC)

In 2014, a new 3D-integration technology for smart lighting was developed in cooperation with Unilumin. The BRC also expanded its research on wearable electronics by appointing three PhD candidates. The BRC published 17 papers in scientific journals and at international conferences in 2014, and 15 patent applications were submitted together with partners. Also in 2014, work was carried out on the development of an LED lighting research institute in Changzhou.

Wuhan University – TU Delft Joint Research Centre on Spatial Information

Cooperation with Wuhan University is focused on geo-information, which is currently in high demand in



China. Wuhan University is one of the world leaders in this field. TU Delft students conducted a project for the development of a 3D indoor navigation system for the Provincial Museum of Hubei. The research proposal 'Integrated Urban Intelligent Management Technology and its Applications based on 3D GeoInformatics' submitted to the Chinese Ministry of Science & Technology was approved.

SCUT – TU Delft Joint Research Centre on Urban Systems & Environment

Cooperation with South China University of Technology (SCUT) in Guangzhou is focused on the development of sustainable and smart urban systems. In 2014, SCUT and TU Delft signed agreements concerning a double PhD. Three research projects in which SCUT and TU Delft cooperate were awarded State Key Lab funding in 2014.

Hohai – TU Delft Water Research Centre

China is facing major challenges in the water sector. Hohai University is a renowned university in the field of hydraulic engineering. In 2014, an application by Maurits Ertsen was approved by the NWO's Cooperation China - Joint Scientific Thematic Research Programme (JSTP). Possibilities for research on drought will now be explored together.

TU Delft Brazil on Biobased Economy

In 2014, TU Delft launched four new R&D projects with Brazilian partners with a total scope of approximately 2 million euros, financed by BE-Basic, NWO and FAPESP. The first PhD candidates have started in a joint programme with the University of Campinas (UNICAMP). With financial support from the BE-Basic programme, four MSc/PhD courses were provided in cooperation with UNICAMP in 2014. TU Delft and BE-Basic together developed the first Massive Open Online Course on the biobased economy for the EdX platform.

The course, which attracted 8,000 participants, contains several modules from UNICAMP.

Vietnam Netherlands Centre for Water and Environment

TU Delft and the Water Resources University (WRU) in Hanoi started the joint venture VINWATER, the Vietnam Netherlands Centre for Water and Environment, in 2013. VINWATER is a Science and Technology Centre located in Hanoi. In 2014, the first projects were conducted on Hydraulic Modelling, Remote Sensing and Transboundary Water Management.

3.5 National programmes

In the years ahead, TU Delft aims to stabilise the income it receives from indirect and contract funding projects at around 150 million euros a year. This concerns both European and Dutch grants as well as contract research and donations. For the 2016-2020 period, TU Delft aims to generate twenty percent of this income from indirect funding via NWO, STW and ZonMW, and around ten percent from other Dutch government programmes.

In order to achieve this, TU Delft is focusing mainly on active participation in the top sectors and top-sector-related calls, the innovation incentive and the free competition / open technology programme of NWO and STW.

TU Delft also intends to reinforce its efforts with regard to the NWO calls for upgrading and acquiring research equipment and research infrastructure. The intended objective is to ensure that at least one project is funded per call. There were no calls in this respect in 2014. The next call will close in May 2015. To prepare for this, an internal preliminary registration procedure was used to select promising proposals to be given support in their further development.

Customised healthcare

The research project 'Customised healthcare with customer profiles' received an NWO subsidy as a strategic project in the Creative Industry top sector. Marijke Melles of the Faculty of Industrial Design Engineering will head the project, which is a collaboration between TU Delft, Biomet, the Reinier

de Graaf Hospital, Panton and VanBerlo. Patients deal with recovery and rehabilitation in their own ways. Patient profiles can contribute to the design of personalised, and thus effective, recovery support facilities. The creative industry requires validated profiles for this purpose, which could be developed in the project. Furthermore, products

will be developed, including a bio-coach who gives feedback during rehabilitation exercises following hip surgery, and an app to stimulate communication between the patient and the orthopaedic surgeon.



Top Sectors

TU Delft has remained active in the Top Sectors of Water, Chemistry, Energy, High-Tech Systems and Materials, Life Sciences & Health, Logistics and the Creative Industry. In 2014, Paulien Herder took over the position of Tim van der Hagen in the Top Team of the Energy Top Sector. Rector Magnificus Karel Luyben is a member of the Top Team for Water. Furthermore, many scientists, including Fred van Keulen, Marcel Stive and Daan van Eijk, actively contribute to the creation of the innovation road maps within the various leading consortia for knowledge and innovation.

Within the Top Sectors in which TU Delft operates, funding was awarded to various TU Delft projects via NWO, STW, ZonMW and RVO. In the Creative Industry Top Sector, Maarten Wijntjes (Faculty of Industrial Design Engineering) received a contribution from NWO for research with G-star on the visualisation of the tactile sensation of jeans. NWO approved two research proposals from the Faculty of Technology, Policy and Management in the research programme ISCOM (Innovation in Supply Chain Compliance and Border Management) of the Logistics Top Sector. Marijn Jansen received a contribution from NWO for his JUST project on information sharing between Customs and transport companies. Yao-Hua Tan's SatIN project on control mechanisms in international supply chains also received funding. In STW's WATER 2014 programme, six of the eight grants were approved for projects with TU Delft as the main applicant, including a study by Pepijn de Jong (Faculty of Mechanical, Maritime and Materials Engineering) on manoeuvring fast ships through waves.

STW, the HTSM Top Sector and the business

community are together investing 15 million euros in research on High-Tech Systems and Materials (HTSM). In this call, four grants were approved for TU Delft.

Personal grants

Spinoza Prize for Mark van Loosdrecht

Environmental biotechnologist Mark van Loosdrecht (Applied Sciences) received the NWO Spinoza Prize from NWO on Friday, 6 June 2014. The Spinoza Prize is the highest scientific distinction in the Netherlands

VIDI grants

Gary Steele (Applied Sciences)	Listening to quantum sound
Akira Endo (Applied Sciences)	Experimental cosmology with superconducting nanocircuits
Birma van Riemsdijk (EEMCS)	Software understands our norms and values
Mark Veraar (EEMCS)	Analysing equations with noise
Caroline Katsman (CEG)	Spiralling into the deep sea

VENI grants

Daniele Cavallo (EEMCS)	Generating terahertz waves with microchips
Atilla Geresdi (Applied Sciences)	Whispers of the Majorana particles

and is awarded by NWO to researchers working in the Netherlands who according to international standards are at the pinnacle of science. With this award, Mark van Loosdrecht received 2.5 million euros for his scientific research on the properties of microorganisms and microbial communities in technical systems. His

STW

Examples of projects awarded to TU Delft by STW in 2014:

- Henny Zandbergen (Applied Sciences) received an STW Perspective Grant for his research on the development of nanoreactors with new functionalities. Gijs van Kuik (AE) received an STW Perspective Grant for his research on uncertainty reduction of offshore wind farms.
- Architecture and the Built Environment had two projects approved in the STW programme Maps4society: Jantien Stoter for 'Implementation of a 3D GII for integrated 3D modelling' and Sisi Zlatanova for 'Smart 3D indoor models for optimized routing and navigation'.
- TU Delft had five projects approved in the open technology programme of STW:
 - Antonia Denkova (Applied Sciences) for 'Nano-carriers for customized cancer therapy'
 - Bart van Arem (CEG) for his research on 'Lane specific Motorway Traffic Control using GNSS Single Frequency Precise Point Positioning'
 - Riender Happee (3mE) for the project 'From Individual Automated Vehicles to Cooperative Traffic Management'
 - Urs Staufer and Murali Krishna Ghateskar (3mE) for their research on the manipulation and harvesting of cellular organelles for Cryo-EM
 - Arjan van Timmeren (A+BE) for his project 'Acoustics by parametric Design and Additive Manufacturing'

NWO

Examples of projects awarded to TU Delft by NWO in 2014:

- NWO Chemical Sciences awarded a 2 million euros TOP-PUNT grant to a project by Cees Dekker (Applied Sciences) in cooperation with Radboud University Nijmegen and the University of Groningen on complex enzymatic networks for bottom-up construction of the synthetic cell.
- Pieter van Gelder (TPM) received a contribution from the NWO long-term research programme Cyber Security for his research on cyber security for flood management.

research into the behaviour of bacteria under dynamic conditions enables the development of new methods for water treatment and the creation of useful substances from waste material.

3.6 European programmes

Europe is an important partner for TU Delft when it comes to education and research. From this perspective TU Delft maintains close ties with Brussels. More than 340 project applications were submitted in 2014 (together amounting to 246 million euros), of which around 30 projects have been approved thus far. The final number of granted applications is expected to increase. Based on spot checks by the European Commission, the chance of success is 1 in 8. In the final year of the Seventh Framework Programme (FP7), the chance of success for applications submitted by TU Delft was significantly higher: 1 in 5.5.

KIC applications

TU Delft will take part in two Knowledge & Innovation

Communities (KICs). This concerns the KICs Raw Materials and Health. TU Delft is a core partner in the KIC Raw Materials, which will be launched in the first half of 2015. More information on the KIC Health can be found in Chapter 1 under profiling agreements.

Prestigious Climate-KIC Flagship awarded

The proposal for the Building Technology Accelerator (BTA) was approved by the Climate-KIC executive board. The BTA aims to accelerate the potential of products and services that help reduce CO₂ emissions in the built environment. As one of the lead partners in the Flagship, the Faculty of Industrial Design Engineering (IDE) will work in the areas of smart sensing, field methodologies, user involvement and energy management interfaces. Architecture and the Built Environment and IDE will work together on smart façades and user interaction for large-scale innovations. The Climate-KIC was launched under FP7.

Marie Curie Initial Training Networks

Seven Marie Curie ITN were awarded in 2014. Roland Schmehl succeeded in having an ITN application

approved for the KITE power research project. It concerns a kite that can generate wind energy at high altitude and transfer this energy back to earth, where it can be used. Alberto Bacchelli and Arie van Deursen received an ITN European Industrial Doctorates (EID) grant. EID is one of the Marie Curie grants for innovative training networks that aim to train highly skilled researchers and encourage entrepreneurship, creativity and innovation in Europe. The Software Engineering group will receive €250,000 for two PhD candidates who will carry out half of their programme at TU Delft.

Research & Innovation Actions

In the Faculty of Industrial Design Engineering, the project application PASSME by Peter Vink was approved. This project was submitted under the Horizon 2020 Societal Challenge: Transport and concerns research

into 'Personalised Airport Systems for Seamless Mobility and Experience'. There is cooperation with Amsterdam's Schiphol Airport as well as the German Aerospace Center (DLR).

The Faculty of Civil Engineering and Geosciences (CEG) had four projects approved, including the project 'Holistic Innovative Solutions for an Efficient Recycling and Recovery of Valuable Raw Materials from Complex Construction and Demolition Waste'. The Faculty of Technology, Policy and Management received a grant for the ENviSION project, aimed at innovating SME business models.

Personal grants

ERC Starting Grants

Anton Akhmerov (Applied Sciences)	Theory of statistical topological insulators
Nuria Llombart Juan (EEMCS)	Lens Antenna Arrays for Coherent THz Cameras

ERC Consolidator Grants

Bernd Rieger (Applied Sciences)	Optical nanoscopy Optical nanoscopy at 1 nm resolution: far-field fluorescence control at cryogenic temperatures
Ferdinand Grozema (Applied Sciences)	Molecular crystals In Control of Exciton and Charge Dynamics in Molecular Crystals
Jochem Baselmans (EEMCS and SRON)	Multi Object Spectrometer with an Array of superconducting Integrated Circuits
Frank Hollmann (Applied Sciences)	Water as a cosubstrate for biocatalytic redox reactions
Pascale Daran-Lapujade (Applied Sciences)	Synthetic platforms for ad libitum remodelling of yeast central metabolism

Proof of Concept Grants

Val Zwiller (Applied Sciences)	Integrated quantum correlation counter
Fulvio Scarano (AE)	Flow Visualization Based Pressure

3.7 Quality and productivity

Research results

Research scope

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 558.4 million euros in 2013 to 573.9 million euros in 2014. Government funding increased by 4% to 398.5 million euros. Indirect funding increased by 12% to 47.7 million euros. Contract funding increased by 26.1% to 127.7 million euros. Relatively speaking, the scope of government funding decreased in 2014 compared to 2013. Last year, government funding accounted for 74% of the total scope of the three sources of funding, but in 2014 it was 69%.

Research effort

The research effort for TU Delft is determined on the basis of effort percentages per function category. As is customary, the research data for a particular year do not become known until later in the following year. Therefore, the annual data for 2013 are included in the 2014 reporting year.

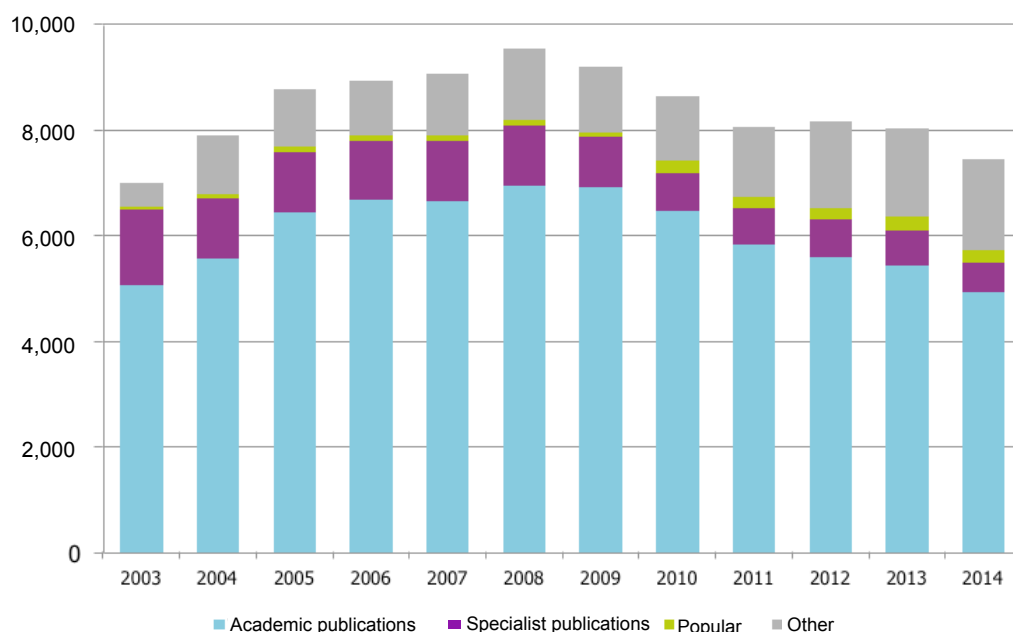
The total research efforts of the academic staff increased in 2013 (from 1,513 FTE in 2012 to 1,613 FTE). The proportion of the effort for indirect and contract funding increased to 0.61 and 1.38 respectively

from 2009 to 2013 compared with direct funding (referred to as the 'social and scientific ability to acquire funds' by the Rathenau Institute).

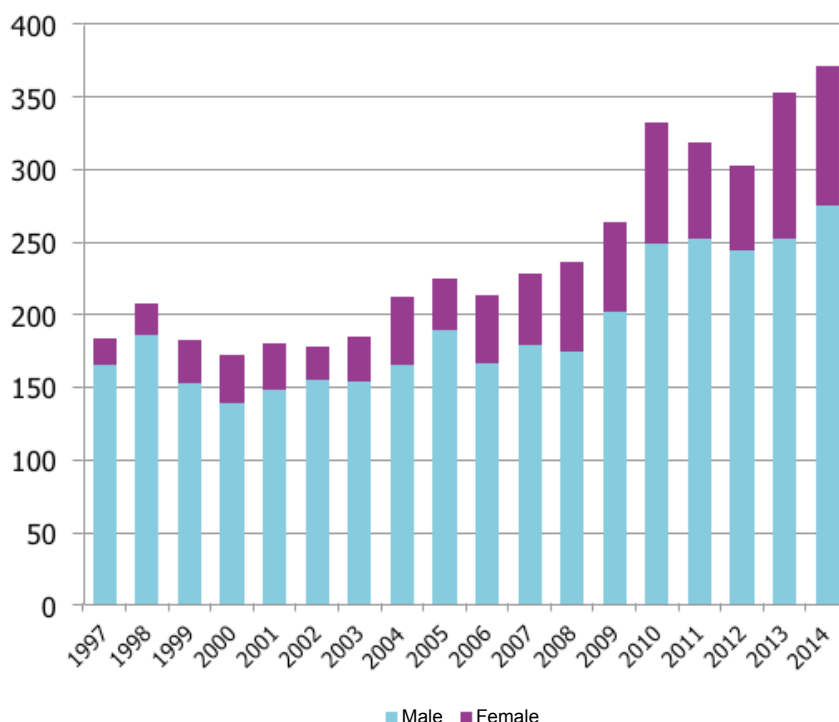
Research productivity

The numbers of publications as shown in the figure below are in accordance with the VSNU definitions of 2010 and in line with the Standard Evaluation Protocol. The number of scientific publications – refereed and non-refereed journals, books, book volumes, etc. – after decreasing for years, rose again for the first time since 2010, by 6%; from 5,139 in 2013 to 5,432 in 2014. With 618 specialist publications in 2014, these types of publications decreased in comparison with 2013. The number of popular publications also decreased, from 256 in 2013 to 241 in 2014 (5.9%). Finally, the miscellaneous research output (with editorships, book reviews, abstracts, interviews, etc.) increased substantially in 2014 compared with 2013: 2,030 versus 1,667. The increase is mainly attributable to the rise in the number in the 'miscellaneous research products' category, i.e. internal reports, lectures, posters and datasets.

Publications



Doctorates



Doctorates

The number of doctorates conferred increased from 353 in 2013 to 371 in 2014. The composition of PhD candidates who obtained their doctor's degree in 2014 shows that in 2014 the proportion of foreign PhD candidates remained virtually unchanged from 2013. Historically speaking, the proportion of foreign PhD candidates who obtained a doctor's degree increased from 23% in 1997 to 72% in 2014.

Number of PhD candidates

In absolute terms, the number of PhD candidates increased by 3 percent in 2014, to 2,575. Of these PhD students, 1,244 are non-salaried. They are paid by external parties. The number and proportion of non-salaried PhD candidates remained virtually unchanged compared to last year. The top ten countries of origin of these foreign PhD students at TU Delft are: China, Iran, India, Italy, Germany, Turkey, Greece, Spain, Portugal and Belgium.

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, for the purpose of optimal compatibility. All Dutch universities have agreed on this definition. The total completion rate of the new employee-PhD candidates (standard PhD candidate) is approximately 74% (2005-2008 intake totalised). The percentage of

these new PhD candidates that obtain their doctorate within five years is approximately 45%.

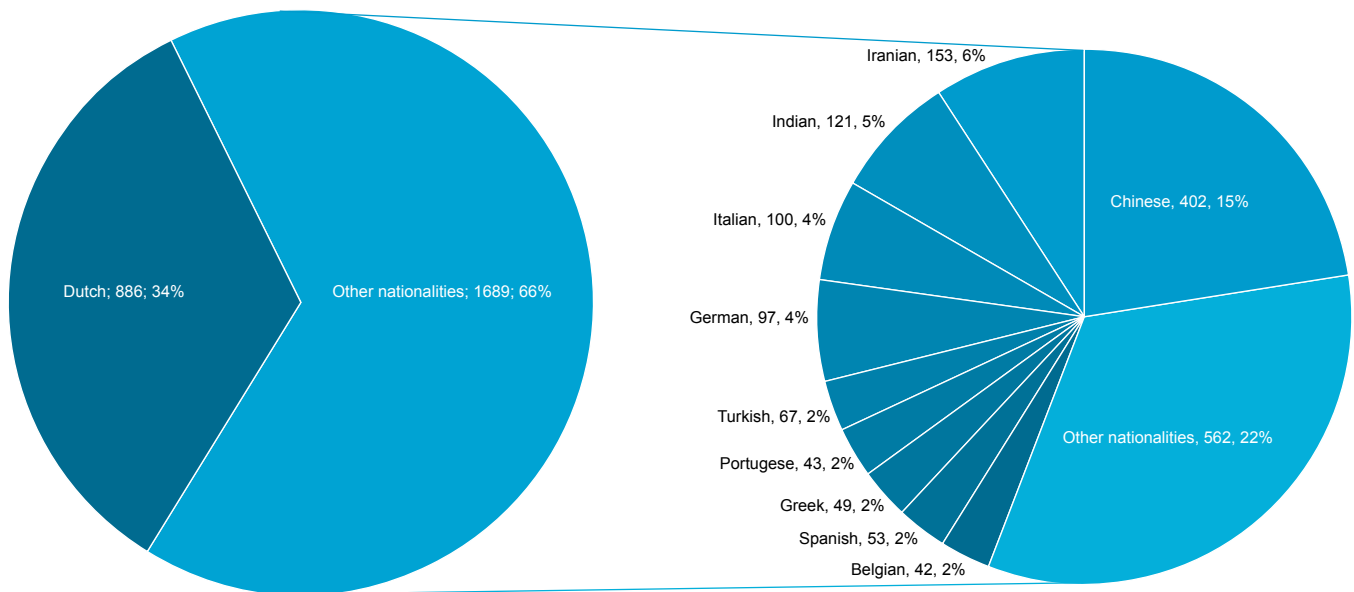
Research impact

Several organisations use international rankings to provide insight into the relative quality of universities. Such rankings do not provide an objective picture of the performance of universities, because they are based on subjective choices for indicators, definitions and weighting factors and are subject to methodological shortcomings. Nevertheless, these rankings provide a rough indication of the relative performance of TU Delft as a whole or with regard to a specific discipline. Based on the position in the various rankings, especially those in the field of Engineering and Technology, it can be concluded that TU Delft is among the top universities in the world. International students in particular seem to be interested in the relative position of TU Delft compared with other universities of technology. TU Delft uses international rankings in its recruitment and internationalisation policy appropriately. The results of the rankings listed below are particularly important to the international positioning of TU Delft.

Academic Ranking of World Universities 2014 (Shanghai Ranking)

In the 2014 Shanghai Ranking, TU Delft occupied a shared position of 201-300, just as it did last year, thus making TU Delft the highest ranking university of

Number of PhD candidates according to nationality



technology in the Netherlands for more than a decade. Universities are ranked methodologically based on the number of Nobel Prizes and Fields Medals won by staff and alumni, the highly cited researchers, and the number of articles published in the scientific journals *Nature* and *Science*. The position of TU Delft was also consolidated in two derivative rankings: TU Delft occupies a shared position of 101-150 in both the 'Engineering & Computer Science' Field Ranking and the 'Computer Science' Subject Ranking.

QS World University Ranking 2014/2015

In 2014, TU Delft rose in the QS World University Ranking for the fourth year in a row and currently occupies 86th place (95th in 2013). TU Delft occupies 16th place in the 'Engineering & Technology' sub-list (15th in 2013) and 79th place in 'Natural Sciences'. Compared with other Dutch universities, TU Delft occupies 4th place (5th in 2013). In four subject rankings, TU Delft occupies a position in the Top 20:

- Engineering & Technology – Chemical Engineering (8)
- Engineering & Technology – Civil & Structural Engineering (14)
- Natural Sciences – Environmental Sciences (19)
- Engineering & Technology – Mechanical, Aeronautical & Manufacturing Engineering (19)

Times Higher Education World University Ranking 2014-2015 (THE Ranking)

TU Delft has risen to 42nd place in the global reputation

rankings of universities, the World Reputation Rankings of *Times Higher Education magazine*. Last year, the university stood at a shared 51st-60th place. As in the previous three years, this makes TU Delft the highest-ranking university in the Netherlands. TU Delft is also the third-ranking university of technology in Europe. TU Delft occupies 71st place in the THE ranking (69th in 2013). In the more specialised THE Top 100 Engineering & Technology ranking, TU Delft rose to 23rd place compared to 19th in 2013.

Leiden Ranking 2014

The Leiden Ranking 2014 describes the performance of 750 (formerly 500) important universities around the world. In terms of impact, TU Delft came in 141th place. With 12.3% of TU Delft publications in the most quoted 10% of publications in a field, TU Delft also occupies 148th place in the PP(top 10%).

University-Industry Research Cooperation Scoreboard

With a score of 13.4% TU Delft is one of the world's best universities in terms of the percentage of publications published in collaboration with the business community. TU Delft occupies fourth place on this University-Industry Research Cooperation Scoreboard of the CWTS.

International Rankings

	ARWU Ranking			THE Ranking			QS Ranking			Leiden Ranking		
	World	Field Engineering & Technology	Subject Computer Science	World	Engineering & Technology	Reputation Ranking	World	Engineering & Technology	Natural Sciences	PP top 10%	MNCS	UI
2014	201-300	101-150	101-150	71	19	42	86	16	79	148	141	4
2013	201-300	101-150	101-150	69	23	51-60	95	15	63*	164	168	2
2012	201-300	76-100	101-150	77	32	51-60	103	18	91	-	-	
2011	151-200	76-100		104	22	49	104	18	79	115	99	
2010	151-200	76-100		151	33		108	18	84			
2009	152-200	78-100					83	15	73			
2008	152-200	76-107					78	17	72			
2007	151-202	77-106					63	17	83			
2006	151-200						86	13	56			
2005	203-300						53	15	70			
2004	202-301						78	24	84			
2003	201-250											

* The website states an incorrect value. The Strategic Development service department has e-mail correspondence on this matter.

Quality assurance and organisation

In 2014, the Royal Netherlands Academy of Arts and Sciences (KNAW), the Netherlands Organization for Scientific Research (NWO) and the Association of Universities in the Netherlands (VSNU) published their Standard Evaluation Protocol 2015-2021. Where possible, TU Delft already used this new protocol for its current research evaluations in 2014. It mainly concerns the use of the three new assessment criteria (research quality, relevance to society and viability), the new assessment categories, providing more insight into the social relevance of the research and performing an international benchmark. In accordance with the standards of the Standard Evaluation Protocol 2015-2021, TU Delft aims to achieve a score of 1 or 2 ('world leading/excellent' – 'very good').

The long-term planning of the TU Delft faculties pays attention to quality assurance for the research portfolio and its link to the faculty research portfolio and the chair strategy. TU Delft aims to have its own research evaluated together with similar research of other Dutch and foreign universities.

After a research evaluation has taken 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 it 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 2014

Midterm reviews

Within the framework of its midterm review, the Faculty of **Architecture and the Built Environment** organised a research week with peers from UCL Bartlett, ETH Zürich, TU München and TU Lisbon, among others, in November. In a joint workshop on doctoral education it became clear that TU Delft leads the way in the structuring of the Doctoral Programme. To conclude the review, the deans presented a detailed SWOT analysis for each of their faculties to pave the way towards a shared agenda. The ambition is to continue the consultation between the deans with a view to an international comparison.

The Faculty of **Technology, Policy and Management** completed its midterm review at the beginning of 2014. The faculty used this mainly to obtain international feedback on the new approach and interdisciplinary themes. Various research groups/institutes from the United

States and the United Kingdom, where similar research is conducted, were involved in this process. The resulting report includes recommendations concerning the Graduate School and streamlining of the research programmes.

Plans of action

In the Faculty of **Civil Engineering and Geosciences** a plan of action was drawn up for the research evaluation of the Geoscience & Engineering and Geoscience & Remote Sensing departments. The Faculty of **Applied Sciences** drew up a plan of action for the research evaluation of the Chemical Engineering department.

The Faculty of **Electrical Engineering, Mathematics and Computer Science** drew up plans of action for the research evaluations of Computer Science and Applied Mathematics. A plan of action was also drawn up for the midterm review of Electrical Engineering.

All of these evaluations will take place in the course of 2015.

Evaluations

The research conducted in the Faculties of **Industrial Design Engineering** and **Aerospace Engineering** was evaluated by a peer review committee.

Prior to the committee's visit, the faculty drew up a self-study describing its vision, strategy and results.

The visits took place in November 2014, and the committees are expected to report their findings at the beginning of 2015.

The research conducted in the of **Mechanical, Maritime and Materials Engineering** (3mE) was also evaluated in 2014. The evaluation committee confirmed the internationally recognised high quality of the research at 3mE and noted that this research is highly relevant to a wide range of important social challenges. In addition, several recommendations were made, which will be incorporated in an improvement plan.

Chapter 4

Valorisation

The transfer and application of knowledge for the benefit of the economy and society are playing an increasingly important role in innovation policy.

In recent years, valorisation has developed into a fully fledged third core activity of our university, in addition to education and research. Entrepreneurship education and the facilitation of start-ups, as well as collaboration with the business community for the purpose of joint participation in large research consortia and the conclusion of leading contract research, are examples of valorisation activities that will be strengthened further in the coming years.

Valorisation is about creating value for society using knowledge funded with public money. The delivery of new generations of highly educated engineers is itself a valorisation task. Externally oriented activities, such as lectures, opinion pieces and interviews on radio and television, also enable TU Delft to share its knowledge with society. The university encourages entrepreneurship in many different ways. Students have the opportunity to enrol in entrepreneurship education. The YES!Delft centre for entrepreneurship helps young

entrepreneurs get started. There is also support with regard to intellectual property, and TU Delft Holding facilitates and invests in entrepreneurship.

TU Delft wishes to develop an attractive, innovative region together with other knowledge institutions, businesses and government bodies. This is being done through a number of means, such as the TU Delft innovation campus, which includes Science Park Technopolis. Marketing knowledge isn't doing the university any harm either: TU Delft generates additional income by selling inventions or the Intellectual Property thereof, conducting contract research for the business community and successfully submitting international research proposals. Strengthening the collaboration with the business community and other partners at international, European and national levels is crucial in this regard. Naturally, valorisation is closely linked to education and research. Many subjects that could have been included in this chapter are therefore already addressed elsewhere in this annual report.





4.1 Entrepreneurship

TU Delft stimulates and facilitates entrepreneurship within YES!Delft and TU Delft Holding and provides support with regard to Intellectual Property (IP) and the TU Delft Holding. In 2014, the TU Delft Research Exhibition provided a clear overview of all of the promising ideas on which TU Delft researchers are working.

YES!Delft

TU Delft wants to make its students and employees aware of the opportunities offered by entrepreneurship and offer them 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, close to 200 high-tech start-ups have started under the umbrella of this incubator. These companies have an impact on different technical sectors such as medical technology, cleantech, ICT, industrial applications and consumer products.

In 2014, 18 new companies were admitted to YES!Delft. In 2014, YES!Delft entered the top 30 of the UBI Index, which screens over 300 incubators in more than 60 countries worldwide.

YES!Delft expands

To meet the demand for more space to accommodate new businesses and to facilitate the growth of other start-ups, a second building is being developed for YES!Delft. The new building will be located west of the YES!Delft building. The building will accommodate not only the growing number of new entrepreneurs that wish to take part in the YES!Delft scheme, but also, for

example, foreign technology companies that – possibly in anticipation of opening a larger office – wish to open an office in Delft. The building will house 1,250 m² of laboratory space, plus shared laboratory facilities, thereby meeting the regional demand for laboratory space.

The tendering process on the basis of a Design & Build procedure was completed at the end of 2014. A building consortium headed by Cordeel (contractor) and cepezed (architect) will construct the building in 2015. It is scheduled for completion in March 2016. The total investment amounts to 12.1 million euros.

Intellectual Property (IP)

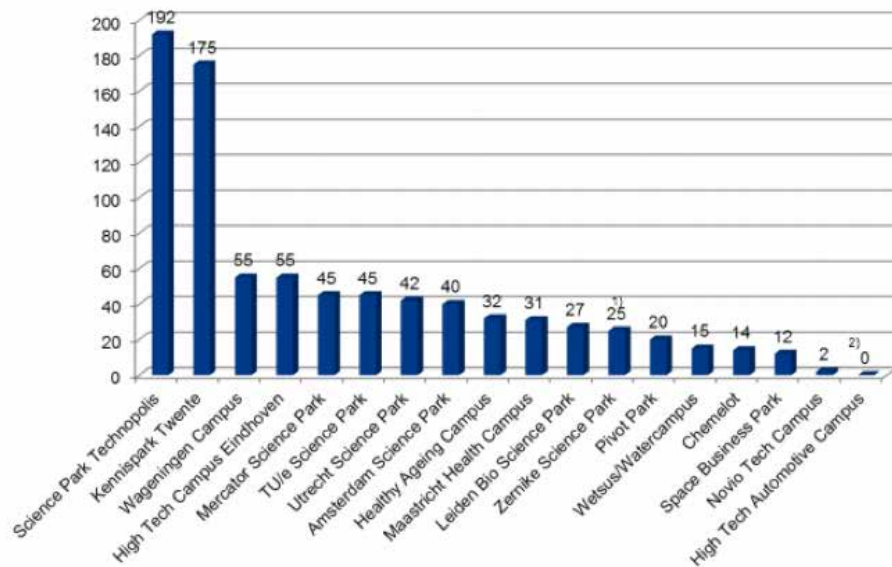
Patent protection of developed technologies makes it attractive for companies or investors to exploit inventions. In addition to selling IP and providing licences to market parties, the aim is to create spin-outs arising from the knowledge developed at TU Delft. TU Delft participates in a number of these starting companies through the TU Delft Holding (see below). The added value of the patents not only benefits the university itself, but also others, in the form of (regional) business activity. The TU Delft Valorisation Centre offers scientists and students support in protecting their intellectual property and applying for patents. There is also a digital showcase on the TU Delft website with a selection of patented technologies that may be of interest to investors.

In 2014, 90 invention disclosures and 49 new patent applications were submitted. In addition, 18 contracts were concluded on the basis of one or more patents from the TU Delft patent portfolio.

TU Delft Holding

TU Delft Holding has two subholdings: Delft Enterprises and TDH Services.

Growth in the number of spin-offs on the 18 campuses as of 2014



1) 2012 data; no data available for 2014
2) No spin-offs

Source: Buck Consultants International

© Buck Consultants International, 2014

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Equity participations in innovative companies that have arisen from the expertise of TU Delft are incorporated in **Delft Enterprises**. These companies have grown from an innovation developed at TU Delft.

In 2014, equity participations were acquired in seven new companies:

- Green-Basilisk B.V. (self-healing concrete)
- Delft Robotic Enterprises B.V. (robotics for SME)
- VSParticle B.V. (nanoparticle-based product integration)
- DitiQ B.V. (microprocessors)
- Delft IMP B.V. (atomic layer deposition)
- QdepQ Systems B.V. (2D to 3D conversion)
- CarbonX B.V. (carbon nanotubes)

TDH Services includes service companies that perform work in the field of valorisation and/or are an extension of the activities of TU Delft.

In addition, the Green Village Foundation was established in 2014. The mission of this initiative is: 'creating a sustainable, lively and entrepreneurial environment where we discover, learn and show how to solve society's urgent challenges'. The business plan was developed in close cooperation with scientists, students, university service departments and external partners.

Delft Research Exhibition

The first Delft Research Exhibition, an event at which more than 80 research projects were presented, was held in November 2014. Over 1,000

visitors and more than 150 businesses became acquainted with innovative ideas from TU Delft.

The research exhibition was also covered by media channels such as RTL Nieuws, NOS and BNR Nieuwsradio. Three ideas have since been co-financed via contacts made during the event. A special award was presented to Dr Zaid Al-Ars for his research into faster DNA analysis for cancer diagnostics. The intention is to hold a second edition in 2016.

4.2 Innovative region

TU Delft is committed to being an attractive partner and location for regional knowledge institutions, companies and governmental bodies. The focus is on strengthening regional innovation clusters in the area of public-private partnerships, such as Medical Delta.

Science Park Technopolis

As stated in Chapter 1, our campus is attractive for businesses. This is evidenced by an analysis of campuses and science parks in the Netherlands conducted by Bucks Consultants International on behalf of the Ministry of Economic Affairs. The conclusions were that Science Park Technopolis is in a mature development phase and offers a high-quality business environment and facilities. It is also characterised by active, open innovation and there are clear knowledge bearers in the form of TU Delft, TNO and Deltares.

Because it concerned an update of a previous analysis, the developments noted by Bucks for Science Park Technopolis are listed below:

Total number of established companies		Number of spin-offs		Volume of employment	
2012	2014	2012	2014	2012	2014
206	219	144	192	4,750	5,574

TIC Delft

Delft Technological Innovation Campus (TIC) aspires to provide optimum conditions for the establishment of technological companies and knowledge institutions, where the exchange of technological knowledge and talent takes centre stage. Key elements are: accessibility for the outside world, visibility, decisiveness and administrative controllability. In 2014, TU Delft and its partners organised the TIC symposia ‘Investing in a talented region’ and ‘Smart Cases from a talented region’.

Planning office and TU Delft Science Park

In mid-2014, TU Delft and the Municipality of Delft decided to set up a joint planning office to reinforce the TIC programme in terms of project realisation, the organisation of network meetings, PR, marketing and monitoring. The planning office with six representatives of TU Delft and the Municipality of Delft has three mutually reinforcing core activities: attracting new businesses, facilitating and connecting businesses and (knowledge) institutions, and marketing Delft as a city of innovation.

A one-stop-shop is being developed for all innovative technical entrepreneurs based in Delft, with the aim of offering assistance regarding matters such as accommodation and permits. The planning office will support shared business ideas and get projects off the ground that are important for all parties.

The first steps towards more effectively marketing the

TU Delft Science Park were also taken in 2014, for example, by drawing more attention to Technopolis as a location for international technology companies, knowledge institutes, R&D departments and start-ups. The programme office is also the first point of contact for InnovationQuarter with regard to acquisition leads and other marketing information.



Medical Delta

TU Delft is the initiator of the Medical Delta, a knowledge-driven Life Science Health & Technology cluster in the Zuid-Holland region (see also Chapters 1 and 3). This region has a unique concentration of parties: Leiden University, TU Delft, and Erasmus University Rotterdam, the University Medical Centres (UMCs), 300 innovative businesses, numerous training institutes, government bodies, incubators and healthcare professionals. Together these parties develop new, often technology-driven ideas for products and services for sustainable, personal care. The Medical Delta Development Organisation was established with stakeholders in 2014. This organisation will be embedded in the TU Delft Valorisation Centre and managed and financed in cooperation with external parties. An alliance with InnovationQuarter and the Chamber of Commerce was also launched in 2014: the Medical Delta Business Partnership for innovative companies.

The national IMDI Centres of Research Excellence

InnoLife & Raw Materials

TU Delft is a partner in the two new European Knowledge and Innovation Communities (KICs): the consortia InnoLife (@EIT_Health) and Raw Materials (@EIT_RawMaterials). These new KICs

chosen by the European Institute of Innovation and Technology will support strategic partnerships within Europe, thereby boosting innovation in the areas of healthcare and raw materials. The two

KICs bring together 150 partners from 20 European countries.

Medical Imaging Institute	1. Imaging Dementia
	2. 4D flow for cardio
	3. ADAPTNOW: High-Precision Cancer Treatment by Online Adaptive Proton Therapy
Neurocontrol	4. PROFITS - Precision profiling to improve long-term outcome after stroke
	5. Move On: a novel balance-testing device to improve mobility after stroke
NIMIT	6. NAVIGATE: smart Needles And Image Guidance for percutAneous INTErventions.

(CoREs) supported by Medical Delta approved many projects in national (Top Sector) calls. This included six public-private projects with a joint scope of more than 6 million euros. The partners involved are other Dutch and international knowledge institutions and public and private parties.

4.3 Cooperation with businesses

Since 2012, TU Delft has made substantial efforts to improve cooperation with businesses, with the main objective being the realisation of more contract research with the Dutch and international business community.

The majority of the contract research concluded with TU Delft is conducted by Dutch companies or Dutch branches of foreign multinationals, often in the Top Sectors HTSM and Chemistry and a number of sector organisations. The business community and faculties with a clear market/industry profile or with many alumni also find one another in the market. In addition to this, TU Delft is working with nearly all large R&D parties in the Netherlands.

TU Delft wishes to continue this regular contract research and expand it to strategic contract research around the Offshore and Nanoengineering themes. This involves intensive cooperation with market shapers (technology shapers and disruptive innovators).

These are often innovative, internationally operating companies or knowledge-driven creative start-up companies.

The realisation of more contract research requires the showcasing of research and the building of strategic contract relationships and consortia. In 2014, showcasing took place through the Research Exhibition event with 150 businesses, 2 side events and a programme for 11 Chief Technology Officers, as well as TEDxAmsterdam 2014, where Gerben Stouten of Environmental Biotechnology won the TEDx Amsterdam Award with his 'Candy becomes plastic' presentation.

Some of the striking initiatives in 2014 concerning the

building or expansion of new or existing strategic relationships and contract consortia:

- On 12 March, TU Delft celebrated its cooperation with Shell by holding a mini-conference, which was attended by Rector Magnificus Karel Luyben. Discussions have commenced on the establishment of a Shell Lab within CEG.
- Unilever has ambitions to conduct more joint structural research projects. To this end, the Faculty of Industrial Design Engineering and six departments of Applied Sciences and 3mE presented themselves to Unilever on 24 November.
- During the TU Delft Research Exhibition, there was a day-long side event for CEOs and Business Developers of five subsidiaries of GDF Suez and Suez Environment. GDF Suez and Suez Environment will appoint an account manager for each subsidiary to optimise cooperation with TU Delft.
- In the context of the opening of the new 3M office on 5 November, a 3M delegation (including two SVPs of the VS) was given a guided tour of the campus. 3M would like to cooperate with TU Delft on innovative projects in megatrends such as raw materials & water shortages, energy, climate change, and care for the elderly.

4.4 Valorisation indicators

The Dutch universities formulated their valorisation objectives in their performance agreements with the Ministry of Education, Culture and Science in 2012. Following on from this each university is developing its own valorisation indicators to measure performance. In 2016, this process must result in a tested and validated set of indicators for making university efforts in the complex context of valorisation transparent.

TU Delft compiled a toolbox of valorisation indicators within the scope of 3TU. Work was carried out in 2014 to put these indicators into operation. Sources were established for the different indicators and work was done on the definitions used.

Flood Proof Holland

The creation of more experimental sites where companies can test, demonstrate and improve solutions together with government bodies and knowledge and education institutions is crucial for an economically strong and innovative region. An example of this is the Flood Proof Holland experimental site, optimised in 2014.

TU Delft developed this polder through its regional Valorisation Programme for Delta Technology & Water (VPdelta). On the experimental site, companies experiment with concrete innovative concepts for temporary flood defences in cooperation with local, regional and national government bodies, and students and researchers of TU Delft.

Since it was opened in 2014, this experimental site has been visited by more than 500 water professionals from over 40 countries. In addition, millions of people were introduced to this experimental site through television broadcasts of NOS news, BBC, Discovery Channel and Al Jazeera.

4.5 Valorisation agenda

TU Delft defined the main points of its valorisation policy in its TU Delft Roadmap 2020 Strategic Plan. This was finalised in the outline document 'Towards a Valorisation Agenda' in 2013. Subjects such as the alliance with businesses, the IP policy, fundraising and personal subsidies were subsequently discussed at a number of meetings. Along with European and Dutch research funding, the outline document was also on the agenda at the bilateral spring meetings of the Executive Board with the management teams of the faculties. TU Delft's valorisation agenda was adopted by the Executive Board and the Supervisory Board in the first quarter of 2014.

business activities. The Valorisation Grant enables researchers to construct a prototype. In the spring of 2014, nine Valorisation Grants were awarded to researchers of TU Delft.



4.6 Valorisation Grants

Until the spring of 2014, Technology Foundation STW awarded Valorisation Grants to entrepreneurial researchers for the development of innovative high-tech

Awarded STW Phase 1 Valorisation Grants (maximum of €25,000 per project)

Prof. A. Schmidt-Ott	Clean and Flexible Nanoparticle Production by Spark Ablation Valorising a Spin-Off
Prof. M. Zeman	Fourier Optical Measurement System
Ir. H.R. Schipper	Kine-Mould: Manufacturing architectural elements with complex geometry
Dr M. Wisse	Robotics in SME
Dr E. van der Kolk	PowerWindow

Awarded STW Phase 2 Valorisation Grants (maximum of €200,000 per project)

Prof. F.M. Mulder	Long life battery for on-grid/off-grid storage
Prof. R. Nijssse	Glass structures for the 21 st century
Dr L.C. Rietveld	Renewable energy driven desalination: an opportunity to lower costs of desalinated water
Prof. W.S.J. Uijttewaai	Market Introduction of Hydro-Powered Pumps

Amsterdam Institute for Advanced Metropolitan Solutions (AMS)

The Amsterdam Institute for Advanced Metropolitan Solutions (AMS), a partnership between the City of Amsterdam, TU Delft, Wageningen University and Massachusetts Institute of Technology (MIT), was established in 2013. Other partners include Accenture, Alliander, Cisco, IBM, KPN, Shell and Waternet, Amsterdam Smart City, ESA, TNO, Waag Society and the city of Boston.

Across the world, people are increasingly moving into cities, with around 70% of the world's population expected to be living in metropolises by 2030. This produces some major challenges for society. With the Amsterdam metropolitan region as a Living Lab, the institute applies a multidisciplinary approach to research on metropolitan issues in the areas of traffic, water, energy, waste and health. This is done using data obtained from smart systems, known as 'sensing the city'. Following the launch of AMS on 20 June 2014, the institute moved into the building of the Royal Tropical Institute (KIT). The first three projects are already under way, directed at resilience to sudden flooding, sustainable use of the 'city metabolism' and the smart management of mobility in the city. Rain Sense, Urban Pulse and Urban Mobility Lab

Rain Sense is focused on increasing Amsterdam's resilience against flooding and damage resulting from severe weather

conditions, such as that experienced on several occasions this summer, with the low point being the torrential downpour of 28 July. Thanks to innovative methods such as weather stations on lampposts, a mobile umbrella for measuring and an app that residents can install on their phones, the researchers can accurately assess the rainfall in Amsterdam down to street level. Residents who have installed the app can report flooding by uploading a photo, see where it is raining in Amsterdam and remotely monitor whether their home is still dry. Partners like Waternet are able to visualise possible problems early and to take appropriate measures during downpours so that damage can be limited.

Urban Pulse provides the knowledge necessary for the sustainable use of energy, water, food and raw materials in the city. By managing this 'city metabolism' differently, Amsterdam can ensure that there will be no shortage of energy, water, food and raw materials in the future and that the pressure of Amsterdam on the environment decreases. This requires an accurate understanding of the routes these products take in the city and a visualisation of them on the city map. Here too, the researchers use a combination of available technology, models and information from residents, as well as collaborating with partners in the city.

Urban Mobility Lab is concerned with

understanding and predicting traffic flows. In a metropolitan city like Amsterdam, this is a complex issue, because traffic and transport are the result of millions of small and big decisions. Will you use the car, the tram or will you walk? Where are you going to live and work? How will businesses be supplied? Where will that new station be located? Everything is interlinked. AMS is planning to build a unique laboratory for this so that these types of questions can be researched integrally and in connection with each other. This Urban Mobility Lab will enable the municipality, businesses and residents to work on new, cleaner and more reliable mobility for everyone.

In accordance with the agreements made with the city of Amsterdam in the Final Contract, the Amsterdam Institute for Advanced Metropolitan Solutions (AMS) has drawn up an Annual Plan for 2015 as well as a budget.



Chapter 5

Organisation

Students and scientists; education, research and valorisation: that's what it's all about at TU Delft. But all of this doesn't happen automatically. The university is the sum of its people, facilities and services. In order to maintain education and research at the highest level, the surrounding organisation has to run like clockwork. Not only that; the organisation must also be able to respond to ever-changing preconditions. These conditions include requirements related to financial accounting and transparency, supporting temporary yet substantial research projects, and the changing expectations of staff and students, for example concerning ICT facilities.

Visions for the future and the ensuing policy must ensure that TU Delft keeps ahead of the field in these developments. To this end, a campus vision was developed in 2013, with an accompanying real estate strategy that is updated periodically.

5.1 Organisational developments

Developments in the organisation are always for the benefit of the research and education at the university. Naturally, this applies to the support staff, and the (often sizeable) investments in real estate are also always focused on improving the quality of research and education.

Thanks in part to the success of the existing TU Delft Institutes and Delft Research-based Initiatives, a number of virtual, cross-faculty, thematic research

clusters were once again launched in 2014. The aim of these research clusters is to bring together researchers and lines of research from the whole institution on a particular theme, and to make this clustered research capacity more visible, also to the outside world. More information on this can be found in Chapter 3, Research.

University Corporate Office shift

In 2013, it was announced that funding of the 'national role' of TU Delft Library amounting to 7.9 million euros per year would be terminated, as part of the cuts to education subsidies. To absorb some of the reduction in funding, the Executive Board asked the University Corporate Office to improve efficiency by 5% of the total lump sum of the University Corporate Office in a period of two years (2014-2015), corresponding to an amount of approximately 5 million euros. The University Corporate Office responded to this request by formulating savings proposals for all service departments. Some of the plans have consequences for personnel and a number of service departments will therefore reorganise. Other service departments, such as Finance, have chosen to streamline processes, thereby improving efficiency. Many service departments also include innovation in their plans. In these cases, prior investments are necessary. These service departments include HR, Finance and E&SA. The necessary reorganisation provisions were created in the 2014 financial statements.



Restructuring of Finance

The Executive Board reached a final decision on the plans for restructuring the Finance service department. The department would like to improve the basic processes as well as its financial advisory service. Computerisation, uniformisation and central control will make the basic processes more robust reducing the workload for personnel, resulting in scope for investment in the advisory service. To support the achievement of both ambitions, besides administration, the activities will be categorised in the general standard fields of Financial Control and Business Control. In addition, the emphasis will be placed on Finance-wide competence development. This restructuring will also have repercussions in terms of staffing. Certain positions will be discontinued and new ones added; the net figure for job losses is 5 FTE as of 1 April 2016. The restructuring target is expected to be met without or with only limited redundancy.

Restructuring of TU Delft Library

The Executive Board has made a final decision on the reorganisation at TU Delft Library as part of the retrenchment in the University Corporate Office. These cost-cutting measures were necessitated in part by the termination of funding for TU Delft Library's national activities. As a result, a cut of €800,000 has been imposed on the acquisition of scientific collections. Furthermore, 14 staff members (12.23 FTE) set to retire in the coming six years will not be replaced. Consequences for staff are thus mitigated to a large extent.

HR reorganisation

The Executive Board also reached a final decision on another part of the retrenchment of the University Corporate Office: the reorganisation of HR. As well as cutting costs, the restructuring plan is intended to help increase the quality of HR services. Management hopes to achieve this by streamlining and computerising operations as much as possible and increasing the competencies of staff. For this reason, a development programme will be part of the plan. This reorganisation will also have repercussions in terms of staffing. Certain positions will be discontinued and new ones added; the net figure for job losses is 11.3 FTE. The new organisation will start on 1 April 2015.

Policy aimed at controlling expenditure related to severance pay

A member of the HR staff specialised in supervising people out of work has been charged by the HR department with supervising all former TU Delft

employees who currently receive benefits under the Unemployment Insurance Act (WW). She maintains regular contact with them and supports them in finding a new job. In 2014, TU Delft entered into discussions with external parties to determine whether this supervision could be further improved. An option is to outsource some or all of the supervision, with the aim of leading more rapidly to the job market. Naturally, this would bring about additional costs. A cost-benefit analysis should show whether outsourcing would be useful. At the end of 2014, two agencies were asked to submit proposals for this.

Evaluation of Support Services

The Evaluation of Support Services study measures satisfaction with the services provided by the support services. The study has been conducted four times since 2008. The average rating improved from 6.7 out of 10 in 2008 to 7.4 in 2014. The measurement in 2008 served as the baseline measurement following the reorganisation of the support services, which included the establishment of the current University Corporate Office. Since then, as well as an improvement programme (Opmaat 2010-2011), a university-wide reorganisation (Review 2011-2014) and a supplementary University Corporate Office shift (2014) have taken place. The upward trend in the rating is a measure of the unfailing professional efforts and commitment of the support staff. However, this is no reason to sit back complacently. In 2014, a vision document was being prepared for the University Corporate Office, which should form the basis for further innovation of services in the period 2015-2020.

New ICT Director

In October 2014, the Executive Board appointed Paul Hillman as the new ICT Director, effective from 1 January 2015. Paul, who is currently Chief Information Officer at University of Applied Sciences Utrecht, succeeds Peter van Schaik, who left TU Delft on 1 June 2014.

Review Process: Reorganisation of DIMES (DTC)

The Review Agenda includes a proposal to reduce the central infrastructure contribution to the Delft Institute of Microsystems and Nanoelectronics (DIMES) from 4 million euros a year to zero over a five-year period. Based on the midterm evaluation that took place in the autumn of 2013, the Executive Board decided to change the complete phasing out of the central infrastructure contribution to a structural contribution of 2 million euros a year. Now that the substantive and

financial context is clear, the organisation of the new DIMES Technology Center (DTC) will be restructured with the following objectives:

- Facilitating excellent research
- Fulfilling a bridging role between scientific research and industrial innovation
- Carrying out development work and small-scale production for industrial partners

In October 2014, the Executive Board made a provisional decision concerning this reorganisation. This plan has been presented to the Works Council for its recommendations.

Reorganisation of Design Engineering department

The Faculty of Industrial Design Engineering has proposed a reorganisation of the Design Engineering (DE) department in order to make this department future-proof.

Research into and with new technologies for production processes and design is central to the Design Engineering department. This knowledge is indispensable for education and research in the Faculty of Industrial Design Engineering. However, it is essential that the department performs well financially. In consultation with the Executive Board, the Faculty Personnel Committee, and professors and associate professors in the department, a two-track policy has been devised to give the Design Engineering department a quality boost, consisting of a) reorganisation, and b) recruitment of new professors. In view of the rapid developments in society, the faculty has chosen to concentrate on 'responsive technologies' – technologies that make the design process and the end result more open and more flexible – and on new production methods that are gathering momentum thanks to developments in ICT, robotics, rapid prototyping and 3D printing.

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

TU Delft Vision on Management Control

With the consent of the Supervisory Board, the Executive Board adopted the vision on management control for TU Delft. The vision is based on the COSO framework (an internationally accepted model for assessment of governance, control and risk management) and was developed along the four angles and values, rules, communication and monitoring that help to achieve a balance between the hard and soft controls. This forms a system of checks and balances which the management of an organisation can use to assess the quality and completeness of the tools for internal process control.

In the autumn of 2014, the vision was shared with a number of target groups (including deans, directors and PWC) and it was concluded that the vision provides sufficient points of reference to reinforce TU Delft's internal process control.

Standardisation of (financial) accounting of indirect and contract funding projects

On the instructions of the Executive Board, in 2014 all faculties converted the financial accounting of their indirect and contract funding projects to the new valuation method adopted within the framework of the UP project. This means that the financial accounting and valuation of these projects is now uniform for the whole of TU Delft.

This uniform accounting will improve insight into project costs and will result in better support for project managers. UP will give departmental directors and deans insight into matching at faculty level in the same way. Performance then becomes clearer and more transparent for the organisation itself and for the outside world, while project risks can be better managed. This has laid an important foundation for the further optimisation of the support provided by Finance.

TU Delft Library to switch to OCLC WorldShare Management Services

As described in Chapter 3, TU Delft aims to share scientific output as openly and transparently as possible with society by making it freely accessible in digital form where possible.

In collaboration with ICT and Procurement, TU Delft Library successfully procured services for Discovery & Library Management Cloud in 2014. The new services are expected to be operational by 1 July 2015. The winner was Leiden-based company OCLC with its WorldShare Management Services (WMS). After Tilburg, TU Delft Library is the second university library in the Netherlands to choose WMS. This will give TU Delft Library a new environment for the management

of digital and physical publications, including the management of client access licences on e-journals and e-books. The options for making publications available to end users are also being improved. Wilma van Wezenbeek (Director of TU Delft Library and acting as the authorised representative for the Director of ICT in this matter) and Dorien Hooman (Legal Director and Secretary of OCLC EMEA) signed the contract on 28 October 2014.



5.3 Diversity

TU Delft wants to be an employer that enables people from a variety of backgrounds to excel. The HR policy aims to stimulate diversity in all relevant aspects, such as age, culture and gender, and also social background and sexual orientation.

TU Delft is actively working on improving the integration of international students. This is illustrated by the global lunches organised as part of the Global Mind programme. During the lunches, TU Delft staff and students, from the Netherlands and abroad, discuss and consider what we can do together to promote the global mindset. One of the outcomes of these discussions is the establishment of ISAD as an umbrella organisation for internationally oriented student associations at TU Delft. ISAD is an important discussion partner for TU Delft in the field of internationalisation and integration. One of its aims is to enhance the cooperation of the student associations during the introduction period.

Thanks in part to the growth in the number of international students, more and more English is spoken on the TU Delft campus. As well as the MOOCs and other online teaching methods, other more traditional teaching formats such as lectures and laboratory courses are also increasingly offered

in English. The Opening of the Academic Year was in English this year as well, with international students in particular being invited.

Because TU Delft is convinced that the presence of more women on campus promotes diversity in the broad sense of the word, we devote a lot of attention to improving the male-female ratio of the university's academic staff in favour of women. Women are particularly underrepresented in senior positions at TU Delft. We view attracting more female academic talent as an important contribution to making better use of the full range of available scientific skills. Female role models are also an inspiration to current and prospective female students; this is another way of unlocking new potential for academic excellence.

Delft Technology Fellowship

The Delft Technology Fellowship was created in 2011 with the aim of substantially increasing the number of leading female scientists at TU Delft. As a result of this initiative, thirteen female scientists were appointed to assistant, associate or full professor positions in 2012 (ten fellows were appointed from the programme and three fellows were appointed by the faculties themselves). Recruitment for the second round of the Fellowship started in 2013, with ten candidates being selected this year. Ultimately nine candidates took up TU Delft's offer. The Executive Board decided this year to hold two new rounds, with one starting in 2015 and one in 2017.

Academic Leadership Course

Managing academics requires a variety of qualities. Therefore eighteen managers – full professors, associate professors and top support officers – spent over six months focusing on how they can show good leadership in the academic setting. Outstanding lecturers addressed a range of subjects related to leadership and contributed in the form of presentations and discussions. Coaching leadership also creates more diversity, because coaching leaders are better able to make use of the advantages of diversity.

5.4 Integrity

TU Delft expects everyone, whether staff, student or guest, to act responsibly with regard to the ethical aspects of their work or studies. However, situations can always arise which are not clear-cut. Especially in modern-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. The integrity policy of TU Delft provides points of reference to support all those involved in these sometimes difficult situations. Information on the integrity policy can be found at www.integriteit.tudelft.nl.

Practical framework for ethical dilemmas

At the end of 2011, an integrity project was launched across the whole of TU Delft. This project was completed at the beginning of 2014 and led to the development of a solution-based action framework for dealing with ethical issues within the university. A compact flowchart has been developed to help staff and students deal with ethical dilemmas. In addition, a coordination group has been formed to monitor and where necessary adjust the integrity policy and activities relating to integrity.

Code of Honour

One of the actions concerning integrity in 2014 was the establishment of a Code of Honour. The aim of this code is to increase awareness on integrity issues and the integrity policy among students, and also to give students a greater sense of being part of the academic community. The Code of Honour was finalised and introduced during the opening of the academic year.

5.5 Real Estate Strategy

High-quality facilities are crucial for top-quality education and research. For many top scientists and

talented students, the research facilities, many of which are unique in the Netherlands (see also Chapter 3), are the deciding factor in the decision to come to Delft. In its real estate policy TU Delft therefore seeks to maintain a balance between investing in infrastructure and limiting expenditure on older buildings that are no longer cost-effective.

Last year, the Executive Board approved the new campus vision and the real estate strategy for the 2014-2022 period. 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. In this way, TU Delft aims to raise and maintain the quality of its research and educational facilities at a high international level.

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.

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 Geosciences and the Van der Burghweg building, changes to the Architecture and the Built Environment and Electrical Engineering, Computer Science and Mathematics 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 programme is divided in three time frames: the short term (2013-2016), the medium term and the long term (up to 2022). The implementation of the first projects started in the reporting year.

Demolition of Buildings 17, 44, 54, 65, 96

The long-term real estate strategy includes the demolition of a number of buildings as they become available. In 2014, the Executive Board agreed to the demolition of these buildings. The buildings concerned are the iWEB (building 17), Rotterdamseweg 145 (building 44), a dwelling on Watermanweg 8 (building 54), Kluyverweg 4-6 (building 65) and Stevin IV (building 96). TU Delft is demolishing these buildings because they are outdated and the (fire) safety and functionality of the buildings cannot be guaranteed, and no new use has been found for the buildings. The demolition of these properties in phase 1 (29,000 m²) will also contribute to the desired reduction of the number of m² (170,000 m²) as stated in the Real Estate Strategy.

PULSE Teaching Building

It was decided at the end of 2014 to further develop the plans for the PULSE teaching building. The plans include intensive cooperation between faculties (deans, teaching boards and lecturers), the Student Council, experts of FMRE and central E&SA. PULSE stands for Practise, Unite, Learn, Share and Explore; this name was chosen in consultation with students. The project proposal comprises a 4,500 m² building that supports new teaching formats such as the flipped classroom and interactive tutorials. PULSE will mainly feature flat classrooms (contrary to the traditional sloped lecture halls) in which lecturers can work with groups of students interactively. The building, which will be

used as a teaching space for the whole of TU Delft, is scheduled for completion around the second quarter of 2017. The PULSE building will be located between the faculty buildings of 3mE and IDE.

More space for digital assessment

It is no longer possible to imagine modern education without digital assessment. Although it currently only accounts for 8% of all assessments, this figure is bound to increase. It is expected that around 800 digital assessment places will be required on campus by 2016. To meet the increasing demand for space to conduct digital assessments, the decision was made in 2014 to establish a digital assessment area with 350 places in teaching room 1 on Drebbelweg. A further 250 assessment places will be created in teaching room 2 in 2015. These places will be in addition to the more than 200 places already available in the IDE faculty.

Start of construction phase for new Applied Sciences building

In April, TU Delft, the building consortium Hurks-Kuijpers/ULC and Waldner (lab furniture) signed the necessary contracts for the construction of the new building for the Faculty of Applied Sciences. The main challenge for the design team was to comply with the architectural and installation requirements for innovative research and quality education within the Applied Sciences departments of Chemical Engineering, Biotechnology and Bionanoscience, which will be relocating to the new building. Future users will have the use of low-vibration laboratories, labs with very high ventilation rates and very stable temperatures. The new building is expected to open its doors on the south of the TU Delft Campus to staff, students and visitors in 2016.

Renovation of Applied Sciences building

The renovation of the E3 wing of the Applied Physics building commenced in September. This renovation is a joint project of TU Delft (landlord) and TNO (tenant). The renovation of the rest of the building for accommodation of other parts of Applied Sciences is in preparation.

Renovation of 3mE

A number of medium-sized projects were completed within the 3mE faculty in 2014. In the spring, new teaching rooms were created with space for 425 students. New accommodation has been developed for the M&TT department, which formerly had offices in this building. Thanks to further renovations and functional modifications, another 3,500 m² renovated workspaces

Living Campus

The first experiences with the Living Campus concept were gained in 2014. The first visible elements are the tackling of the Aula building and the Freezones. In the Aula building multifunctional study spaces have been designed, creating a bustling area where students can study, eat and meet at any time of day. The Freezones are places in public areas where electricity, running water and drainage have been used to create a 'stage' for plug-and-play programming. Six Freezones have been in constant use since 1 September.



were completed before the start of the new academic year, along with the Skills Lab where hospital-related research can be conducted.

Among other things, this renovation will make it possible to offer the Clinical Technology degree programme, a new programme on the interface between medicine and technology. More information can be found on page 19.

Work on Stevin III completed

The Waterlab in the Stevin III building reopened in September 2013. Following a phased internal renovation, an environment was created in which the Water Management and Hydraulic Engineering departments can carry out their cutting-edge research and provide online and offline education. As well as an upgrade of the laboratory (e.g. a new certified microbiology laboratory) the renovation includes improved office workspaces, flexible workspaces and a presentation space.

ESP investment

The Electrical Sustainable Power Lab is equipped with modern infrastructure for experiments involving solar cells, high voltage, power electronics, power systems and electric machines. The EEMCS faculty's vision for the future is to accommodate all lab and teaching facilities in a single location, in line with the faculty's housing plan. The Executive Board has made a provisional decision to make 11.8 million euros available for this project. The user costs – which will be borne by the faculty – are estimated at 3.7 million euros, bringing the total scope of this project to 15.5

million euros. The Executive Board will put this decision to the employee participation body for advice.

GREX TU Middle-West

TU Delft and the Municipality of Delft intend to increase the number of student houses substantially over the next ten years. There is already ample student accommodation in TU Middle-West and another 1,100 houses are in the pipeline for this area. The realisation of 138 student houses on Balthasar van der Polweg and redevelopment of the immediate surroundings commenced in mid-2014. The preparatory budget was adjusted to 0.8 million euros and the Executive Board made available an implementation budget of 1.7 million euros.

Tram 19 EMC

The operation of an electric tram through the TU Delft area creates electromagnetic (EM) fields, which can affect laboratories. TU Delft has developed and patented an EM-compensation (EMC) system. An important starting point is the fact that the Haaglanden urban region (*Stadsgewest Haaglanden*) bought out the development, construction and maintenance of the EMC system in the 2006 Cooperation Agreement. This puts the development, construction and maintenance fully at the risk and expense of TU Delft. The Executive Board has agreed to the call for tenders, with the maximum costs set at 6.83 million euros (including VAT).

5.6 Sustainability

Sustainability is a high priority for TU Delft, as a theme in education and research as well as in the university's operations. To more closely link scientific sustainability developments with the operational organisational components, the position of Campus Sustainability Coordinator was filled in the Strategic Development department in 2014.

Corporate Social Responsibility

Ethical issues also play a role in relation to sustainable procurement and chain responsibility. A task force consisting of Procurement and Legal Services staff studied how TU Delft should deal with this. Within the framework of this study, the Procurement department investigated the legal consequences and obtained information from the Ministry of Foreign Affairs on declaring the OECD guidelines applicable. This resulted in the inclusion of the following statement in the tender documents and on the TU Delft website:

"TU Delft attaches great importance to Corporate Social Responsibility (CSR) and hence supports the OECD Guidelines for Multinational Enterprises (2011 Edition). These are guidelines for companies to deal with matters such as: supply chain responsibility, human rights, child labour, the environment and corruption. TU Delft expects its suppliers to respect these guidelines."

The Procurement department completely adheres to the VSNU covenant for sustainable procurement and applies the most up-to-date sustainability criteria of the Netherlands Enterprise Agency if available for the product or service concerned. Furthermore, service departments 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', which is available online to all staff members.

The Procurement department provides solicited and unsolicited advice on the formulation of sustainability requirements in calls for tenders and requests for quotations. The focus is mainly on efficiency (the expected effectiveness during the contract period), proportionality (do the sustainability requirements fit with the product or service to be procured?) and the discrimination principle (are potential suppliers erroneously excluded by the sustainability requirements?).

On the instructions of the Executive Board, Procure-

ment investigated how risks related to contracted suppliers can be identified. In 2014, this led to the establishment of a Suppliers Board (*Leveranciersboard*) consisting of the directors of ICT and FMRE, the deans of 3mE and Applied Sciences as well as the Procurement Manager.

In consultation with the Suppliers Board, Procurement selected approximately 50 suppliers for which monitoring is advisable with respect to risks. A process has been developed and is now used for this monitoring. This should ensure that TU Delft can intervene promptly in the event of a high risk of contract agreements and deliveries being endangered.

Energy and the Environment

Agreements and objectives

The basic principles of the energy policy are based on the following agreements with the government and laid down in the TU Delft 2020/2040 energy vision by an Executive Board decision on 24 June 2014.

Long-term Agreement for Institutes of Higher Education

The Long-term Agreements on Energy Efficiency are agreements between the Dutch government on the one hand and companies, institutions and municipalities on the other, regarding the more effective and efficient use of energy. TU Delft has participated in the Long-term Agreement for Institutes of Higher Education (*Meerjarenspraak wo/hbo*) since 1999. Since 2008, this concerns the agreement MJA3. Participants are obligated to formulate an Energy Efficiency Plan (EEP) every four years and maintain an energy care system. The prevailing EEP of TU Delft is the EEP2013-2016. The overall objective of the MJA3 is to achieve energy savings of 30% in 2020 compared to the 2005 reference year (2% per year).

"TU Delft attaches great importance to Corporate Social Responsibility (CSR) and hence supports the OECD Guidelines for Multinational Enterprises (2011 Edition). These are guidelines for companies to deal with matters such as: supply chain responsibility, human rights, child labour, the environment and corruption. TU Delft expects its suppliers to respect these guidelines."



Delft energy-neutral by 2050

In 2013, TU Delft signed the 'E-deal Delft energy-neutral 2050' at the invitation of the Municipality of Delft. By doing so, TU Delft declared that it endorses the objective of making Delft energy-neutral by 2050 and accepts its responsibility in reducing CO₂ emissions by investing in energy conservation, sustainable production of energy and intelligent energy systems. TU Delft's objectives with regard to energy correspond with the objectives of 'Delft 2050'.

Long-term energy vision

In 2014, TU Delft continued working on formulating a long-term energy vision (2040), which extends the Long-term Agreement (MJA) objective of 2% savings per year and also includes an objective for sustainable generation. The Executive Board adopted the 2020/2040 vision on 24 June 2014:

- 2020: 30% saving on primary energy
- 2020: 25% renewable energy
- 2020: 100% renewable electricity
- 2020: 25% reduction in CO₂ emissions
- 2040: no use of natural gas on campus for heating purposes (from 2035)
- 2040: totally energy-neutral campus in terms of the energy supply

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.

One of the energy management projects is the IPIN project, which aims to create an 'Intelligent heating network for the TU Delft Campus'.

- sustainable generation.

For heating and cooling by means of geothermal

energy and thermal energy storage. For electricity generation with solar panels and, if possible, wind energy.

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
- The 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 seven years, obsolete lighting and computers will be replaced by more sustainable units. Compared to 2005 (MJA reference year), the objective is 40% primary energy saving in 2020. Almost 15% of this saving arises from a forecast heat consumption from a geothermal source of 70,000 GJ by 2020. 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%. In 2014, the tendering process was initiated for 1.2 MW in solar panels on the roofs of the TU Delft buildings. Installation is expected to take place in mid-2015.

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 2013, TU Delft decided to initiate contractual negotiations with the intended operator. The necessary adjustments to buildings and the heating network were also identified and included in the real estate strategy in 2014. 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 operates TES systems. Four TES systems are currently being used (at Exact, YES!Delft, Applikon and 3M). 3M became operational in 2014. A large, joint TES system is currently being prepared for the new construction for Applied Sciences and for HollandPTC.

New construction work

The sustainability requirements in the construction preparation for the new PULSE Learning Centre are so stringent that as well as achieving a BREEAM Excellent

qualification, it may also be possible to achieve energy neutrality on a seasonal basis.

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.

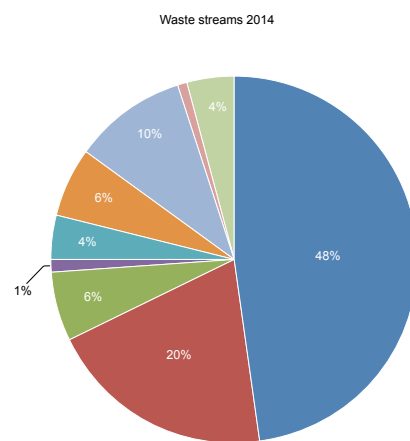
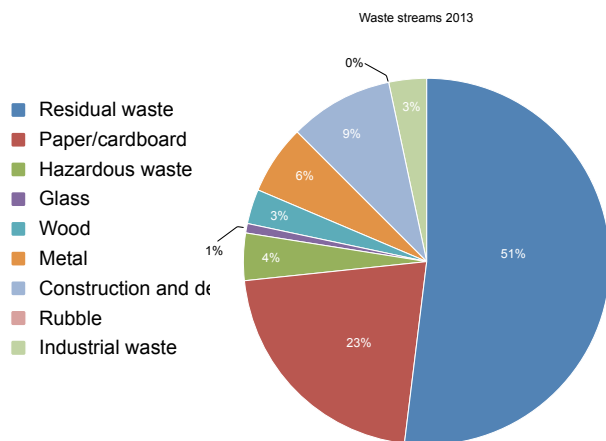
Separate collection of plastic / foil as well as the organic waste from the restaurants commenced in 2014. The intention is to include these separate waste streams in the new waste contract in mid-2015 so that further separation of waste can take place. The amounts of waste in the 2010-2014 period are shown on the following page.

The total amount of waste since 2010 shows a slight falling trend. The amount of hazardous waste mainly consists of laboratory waste. The amounts of construction and demolition waste and rubble were the result of renovations and related activities. The amounts of waste therefore show an irregular pattern over the years.

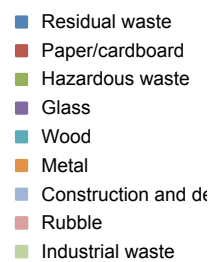
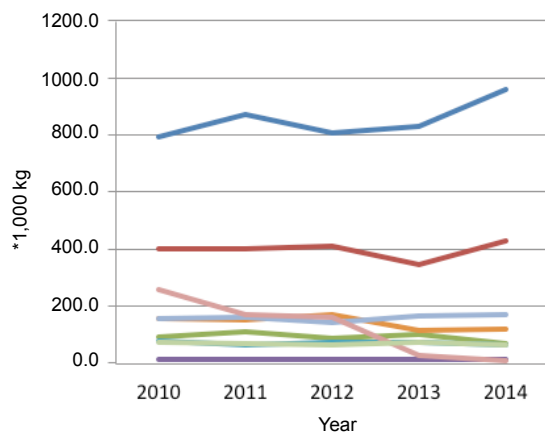
The collection of separated waste promotes reuse. Separation is not only essential from an environmental and hygienic perspective; separated waste and paper also generates money. Together with the external waste processing company, TU Delft will ensure that waste separation at the source continues to be correctly performed. The diagrams below show the separation of the waste streams for 2014 and 2013.

Waste at TU Delft in 2014 (in tonnes)

Waste stream	2010	2011	2012	2013	2014* (to Q3)
Residual waste	791.0	869.6	807.7	830.5	705.5
Paper/cardboard	401.0	404.3	413.6	345.4	318.4
Hazardous waste	87.0	107.7	82.9	96.7	52.8
Glass	12.5	11.0	11.6	13.9	11.4
Wood	76.6	60.6	73.9	73.0	48.0
Metal	152.8	147.8	167.9	113.8	114.9
Construction and demolition	157.5	160.9	139.9	167.2	127.3
Rubble	256.3	168.0	160.0	23.9	7.4
Industrial waste	73.4	68.0	66.8	73.9	60.9
Total	2,008.1	1,997.9	1,924.3	1,738.3	1,446.6



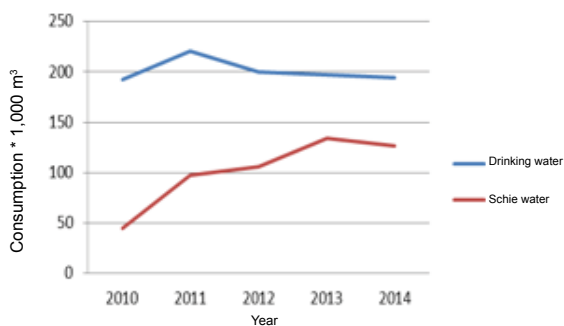
Waste per waste stream



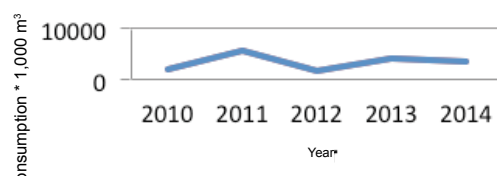
Water consumption

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.

Water consumption



Spring water (discharged to sewage system)



Transport

In the context of relieving the campus of motorised traffic in the interest of air quality and safety, the bus route between Delft and Mekel Park was substantially improved in 2014 with the opening of the dedicated bus lane through Mekel Park. This has been done in anticipation of the tram track which is set to open in the coming years.

Academic Heritage

Since the closure of the Delft Technical Museum as a showcase for academic heritage (2008), the historical collections of TU Delft have hardly been visible. Meanwhile, there have been requests and initiatives in various places to make this heritage more visible, while at the same time generating more interest in the history of the institution. There is a need for a central policy and coordination in this respect. The Executive Board has decided to have TU Delft Library draw up a plan for structurally ensuring the management of and access to the academic heritage of TU Delft, and for keeping and updating its history.

(12 modules) by December 2014. Implementation will commence in 2015. Lab Servant is an important tool for complying with legislation and regulations. The system has attracted a great deal of interest from other universities in the Netherlands and abroad.

5.7 Safety

Safety Profile 2014

The TU Delft Safety Profile was drawn up for the first time in 2013. That profile, which can be viewed as a baseline measurement, provided a complete overview of the different safety topics at TU Delft along with an assessment of the risks and an overview of the existing and future measures. To maintain an up-to-date picture of the safety situation at TU Delft, a new analysis is performed each year. Therefore, the safety risks were once again identified and analysed in 2014, resulting in the TU Delft Safety Profile 2014. In order to monitor the situation, an interim inventory is made of the progress of the measures carried out and yet to be implemented. In 2014, this resulted in the Progress Report (*Voortgang*) 2013. The Progress Report 2014 will be issued in 2015. This ensures a continuous assurance process with regard to the safety risks and the accompanying measures, enabling TU Delft to also focus on the opportunities brought about by this risk management system.

Implementation of Lab Servant

From April 2013, work was done on the development of the online safety toolkit Lab Servant, which supports researchers in safely conducting laboratory experiments and provides insight into the safety risks at management level. Lab Servant was fully developed

Chapter 6

Financial Report

6.1 Developments in 2014

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 innovations in education and research, as well as investments in and maintenance of educational and research facilities, can be financed.

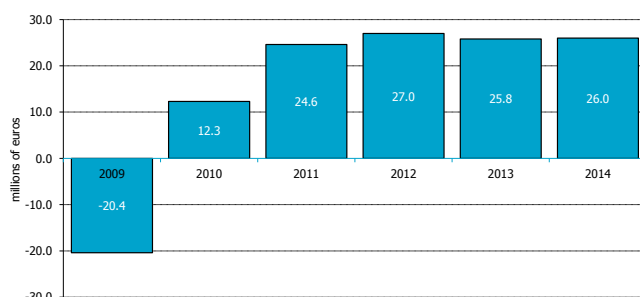
TU Delft achieved a positive result in 2014. The positive result in 2014 amounts to 12.1 million euros, compared with a budgeted positive result of 3.8 million euros.

The positive result will be used to finance innovations in education and research, to attract outstanding talent, and for major investments based on 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 the campus and required loans. The financial position expected in the longer term is discussed in more detail in the continuity section.

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 as part of the funding of the institution by the Ministry of Education, Culture and Science 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 operational results have developed favourably in recent years and are showing recovery.



Uniform accounting of indirect and contract funding projects

In 2014, TU Delft succeeded in making a uniform

university-wide valuation of indirect and contract funding projects. Among other things, the project concerning the uniform accounting of indirect and contract funded projects (UP) aims to provide insight into the actual project results, to improve the predictability and analysis of the faculty results and with that the results of TU Delft as a whole. UP also aims to provide better insight into the matching with government funds, increasing cost awareness, improving the actual financial result of the projects and improving the provision of information. The financial implications of UP consist of effects on the Balance Sheet and on the Statement of Income and Expenditure. The effect on the Statement of Income and Expenditure for the year 2014 amounts to a one-off addition of 13.8 million euros and has no impact on liquidity.

3TU Technology Sector Plan and Physics and Chemistry Sector Plan

In 2014, TU Delft received a government contribution for the 3TU Technology Sector Plan 2014-2017. Given the fact that the cash flow from the contribution is not equal to the expenditure, 4.6 million euros of the amount received was shown in the balance sheet at the end of 2014.

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 2014. For this sector plan too the cash flow is not equal to the expenditure. As of 31 December 2014, 2.8 million euros of this government contribution (2013: 2.9 million euros) had not yet been spent.

Gravity programme

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' (Zwaartekracht) programme. A total sum of 35.9 million euros was awarded to the entire consortium for the 2012-2016 period. Given the fact that the cash flow from the government contribution is not equal to the expenditure, 9.8 million euros (2013: 8.9 million euros) of the amount received was showed in the balance sheet for 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. Due to the fact that transparent separation of these resources cannot be uniformly made, TU Delft has chosen not to make any distinction between public and private resources in its financial accounting. The private resources that have been allocated to the specific affiliated and consolidated legal entities of TU Delft are an exception.

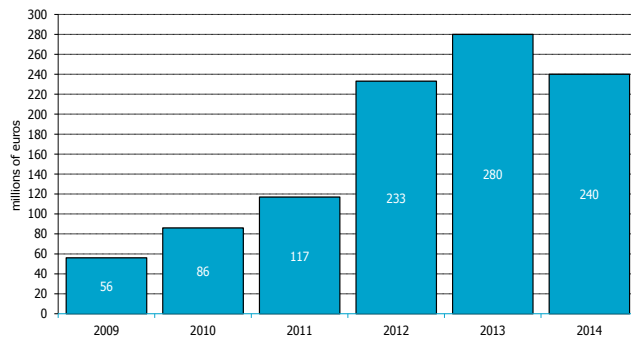
All temporary excess liquidity that stems from public funds is invested by TU Delft in savings products at various Dutch commercial banks with at least an A rating. The total balance of liquid assets is directly available and is invested in the most risk-averse and flexible manner possible. Optimisation of interest income is pursued within this framework.

Securities amounting to a total of 23 million euros are shown in the 2014 financial statements. Many of these securities consist of bonds and risk-averse guarantee products. 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 accounts, receive no public funds and are therefore not subject to the *Investment and Loan Regulations for educational and research institutions 2010*.

6.2 Liquidity position

TU Delft's liquidity position at the end of 2014 amounted to 240 million euros, compared with 279.7 million euros at year-end 2013. In recent years, TU Delft has saved substantially in order to make the necessary investments in educational innovation and the renovation of research facilities. A reduction in the liquidity position was therefore visible in 2014. It should be noted that a sum of 19.6 million euros was included in the liquidity position at year-end 2014 for amounts received in advance for coordination activities. These amounts do not actually belong to TU Delft and must be passed on to other project participants. The following factors had a significant impact on the liquidity position in 2014:

- the expenditure resulting from the investments in tangible fixed assets (- 67.5 million euros);

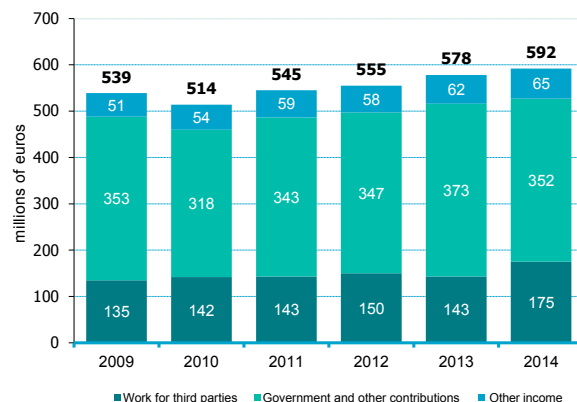


- the result in the 2014 fiscal year (+ 12.1 million euros);
- the depreciation costs (+ 38.7 million euros), which did not lead to expenses in 2014;
- the proportion of the weakened working capital (+ 33.3 million euros). This is mainly due to the increase in the amounts received in advance arising from the proceeds of work for third parties (19.5 million euros). For example, the BE-Basic funding amounting to 11 million euros was transferred to the BE-Basic Foundation.

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 estimate drawn up at year-end 2014 shows 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).

6.3 Income analysis

Total income (excluding financial income and the result from participating interests) in 2014 increased by 13.3 million euros to a level of 591.6 million euros. The attached chart shows the development of income for the 2009-2014 period.

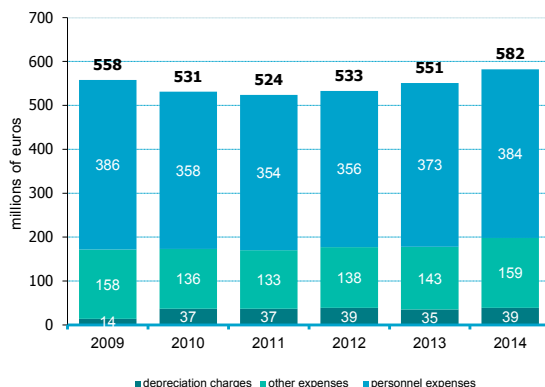


Government and other contributions decreased by 21.3 million to 352.3 million euros in 2014. This decrease is attributable partly to the contribution of 15 million euros from the Ministry of Education, Culture and Science in 2013 in connection with the fire in the Architecture and the Built Environment faculty building. Furthermore, the subsidy for the national role of the library was cut in 2014. In 2013, this contribution amounted to 7.7 million euros.

Income from work for third parties rose substantially in 2014 compared to 2013. Following the decrease in 2013, there was an increase from 143.2 million to 175.4 million euros in 2014. As indicated, uniform valuation of indirect and contract funding projects was introduced in 2014. This resulted in a revaluation of projects, which affected the revenue from work for third parties in 2014. Tuition fees have been added to the other income. The realised amount in 2014 was 46.2 million euros, compared to 41.6 million euros in 2013. The increase can be explained by the growth of the student population and the slight increase in the tuition fee rates.

6.4 Expenditure analysis

Total expenses, excluding financial income and expenses, increased by 30.9 million to 582 million euros in 2014. Personnel costs increased by 11.5 million, while depreciation charges increased by 4 million euros. Other expenses (including accommodation expenses)



increased by 15.4 million to 158.9 million euros.

A breakdown of personnel expenses results in the following picture:

<i>in millions of euros</i>	2013	2014
University personnel expenses	291.9	309.5
Third-party personnel	53.8	53.2
Change in provisions	7.0	9.4
Other personnel expenses	20.2	12.3
Total	372.9	384.4

University personnel expenses

The number of FTEs at year-end 2014 was 4,652, representing an increase of 116 FTEs compared to year-end 2013. Of these 4,652 FTEs, 2,668 are academic staff and 1,898 are support and administrative staff. The number of student assistants decreased by 13 FTEs to 86 FTEs in comparison with 2013. The number of academic staff increased by 89 FTEs in 2014, while the number of support and administrative staff increased by 40 FTEs.

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 and 2014, part of the savings realised through the Review were applied to accomplish improvements and innovations in education and research. The increase in FTEs should be seen partly in this perspective.

Closer inspection of the increase in the number of academic staff compared to the end of 2013 reveals that this increase occurred mainly among temporary academic staff, especially among researchers (+ 64 FTEs) and PhD candidates (+ 16 FTEs).

The increase in the total university personnel expenses from 291.9 million to 309.5 million euros is mainly due to the increased number of FTEs and the increasing employer's contributions.

The change in staff benefits in 2014 is related mainly to the allocation to the provision for redundancy pay and the reorganisation provision for the University Corporate Office Shift.

Third-party personnel expenses

<i>in millions of euros</i>	2013	2014
Education (hiring of full professors & guest lecturers)	3.7	3.6
Temporary agency workers	7.1	5.0
Payment for services rendered by third parties	23.7	25.5
Travel and accommodation expenses of third parties	3.3	3.0
Government funding for personnel of third parties	37.8	37.1
Contract and indirect funding for personnel of third parties	16.0	16.1
Total	53.8	53.2

Following the increase in hiring of third-party personnel in 2013, the picture is now relatively stable. Further details are provided in the table below.

Other personnel expenses

Other personnel expenses decreased by 7.9 million

to 12.3 million euros. This is attributable mainly to the one-off high balance in 2013. Starting in January 2013, a new holiday scheme was included in the Collective Labour Agreement for Dutch Universities. One of the changes in the new holiday scheme involves the carry-over of holiday entitlements to the next calendar year. Starting in 2013, the maximum for unused holiday hours has been abandoned, and holiday hours not taken up at the end of the fiscal year are carried over to the next calendar year. This new scheme affected 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 euros at year-end 2013. This no longer applied in 2014, and it is the main reason for the decrease in 2014.

Depreciations

Depreciations increased by 4 million to 38.7 million euros. As indicated, TU Delft is embarking on an extensive investment programme for upgrading of the educational and research facilities. A decision to sell off or demolish a building has consequences for the valuation of these buildings. As a result the estimated depreciation periods for a number of buildings were shortened. The impact of these revised depreciation periods in connection with the renovation amounted to 6.8 million euros in 2014.

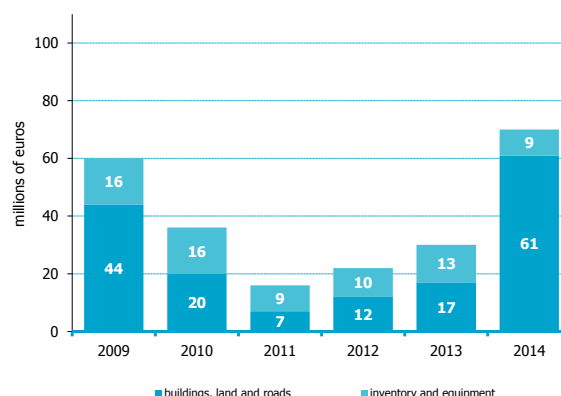
Other expenses (including accommodation expenses)

Other expenses (including accommodation expenses) in 2014 increased in comparison with 2013. In 2014, the total sum of other expenses (including accommodation

expenses) amounted to 158.9 million, compared to 143.4 million euros in 2013. This increase is attributable mainly to higher maintenance costs due to the ageing of the campus and the purchase of equipment and inventory for indirect and contract funding projects.

6.5 Investments

Total investments in buildings, land, roads, equipment and inventory increased in 2014 compared to 2013, thus making the implementation of the Long-term Real Estate Strategy visible. Investments in buildings, land and roads increased from 17.1 million to 61 million euros. A large proportion of these investments is related to the new Applied Sciences building (26.3 million euros). Investments were also made in the BK City SLIM project (7 million euros) to permanently house the Faculty of Architecture and the Built Environment in the building on Julianalaan. Investments in equipment and inventory decreased from 12.5 million to 9.2 million



<i>in millions of euros</i>	year-end 2013	changes in 2014			year-end 2014
Staff benefits		<i>allocation</i>	<i>release</i>	<i>withdrawal</i>	
Review provision	8.9	0.0	0.6	2.9	5.4
Reorganisation provision	2.9	3.5	0.0	0.0	6.4
Transition provision	0.0	1.1	0.0	0.0	1.1
Redundancy pay provision	7.0	5.2	0.4	3.3	8.5
Anniversary bonuses	4.7	0.6	0.0	0.5	4.8
Sabbatical	0.6	0.1	0.1	0.0	0.6
Total staff benefits	24.1	10.5	1.1	6.7	26.8
Non-staff provisions					
Student provisions	2.1	1.4	0.0	1.9	1.6
Fissionable materials provision	3.8	0.0	0.0	0.0	3.8
Asbestos provision	7.8	0.0	0.0	4.2	3.6
Sewer system provision	6.3	2.5	0.0	1.1	7.7
RID removal provision	6.8	2.7	0.0	0.0	9.5
Total non-staff provisions	26.8	6.5	0.0	7.2	26.1
Total	50.9	17.0	1.1	13.9	52.9

euros. The total investment level in 2014 therefore amounted to 70.2 million euros.

6.6 Provisions

Total provisions increased in 2014 by 2 million, from 50.9 million at the start of the year to 52.9 million euros at the end of the year. Staff benefits increased from 24.1 million to 26.8 million euros. This increase is attributable mainly to the increase in the provision for redundancy pay, the allocation to the reorganisation provision and the provision for transition payments. The Senate enacted the Work and Security Act on 10 June 2014. Under this Act, an employer must pay a transition payment for employees whose employment is terminated on or after 1 July 2015. The transition payment is intended to cover the costs incurred by TU Delft to prevent or shorten the period of unemployment of the former employee. At the end of 2014, TU Delft created a provision of 1.1 million

euros for accrued transition payment rights.

The non-staff provisions decreased slightly from 26.8 million to 26.1 million euros. This decrease was partly due to the work carried out to remove asbestos from the buildings on campus. In addition, there was the 2.7 million euros annual allocation to the provision for the future dismantlement of the RID and a 2.5 million euros allocation to the sewer system provision.

Profiling Fund

The student provisions mentioned above 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 EEA students and non-EEA students.

6.7 Capital position

In comparison to 2013, thanks to the positive result the university's equity capital increased by 12.1 million in

Profiling Fund

	Number of EEA students who have received a reimbursement from the Profiling Fund	Subtotal of the reimbursements provided to EEA students from the Profiling Fund (in € x 1,000)	Number of non-EEA students who have received a reimbursement from the Profiling Fund	Subtotal of the reimbursements provided to non-EEA students from the Profiling Fund (in € x 1,000)	Grand total of the reimbursements provided to students from the Profiling Fund
2014	1,673	1,777	53	136	1,913
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

2014, to 357.9 million euros. 13.4 million euros of the equity capital will be added to the general reserve. In addition, an amount of 1.2 million euros will be added to the fund for special purposes and 2.5 million euros will be released from the special-purpose reserve.

6.8 Financial key indicators

<i>Amounts in millions of euros</i>	2014	2013	2012	2011	2010
Revenues	591.6	578.2	555.0	544.8	513.5
Government and other contributions	352.3	373.6	346.7	342.3	317.8
Work for third parties	175.4	143.2	150.0	143.4	142.2
Expenditure	582.0	551.1	533.0	524.4	530.6
Financial income and expenditure	3.7	4.4	2.6	0.5	1.9
Result	12.1	31.2	25.1	21.5	-15.0
Depreciation on fixed assets	38.7	34.7	39.1	36.9	36.8
Investments in fixed assets	70.2	29.6	22.3	16.3	35.7
Net cash flow	-39.6	47.1	115.5	30.9	29.6
Liquidity position	240.0	279.7	232.5	117.0	86.1
Fixed assets	334.0	313.5	318.6	331.7	354.3
Working capital	53.8	61.0	28.9	-0.3	-40.7
Equity capital	357.9	345.8	314.6	289.5	267.5
Provisions	52.9	50.9	51.7	58.9	64.7
Ratios					
Total revenue growth	+2.3%	+4.2%	+1.9%	+6.1%	-4.6%
Work for third parties growth	+22.5%	-4.5%	+4.6%	+0.8%	+5.0%
Total expenditure growth	+5.6%	+3.4%	+1.6%	-1.2%	-4.9%
Government contribution/total revenues	59.6%	64.6%	62.5%	62.8%	61.9%
Work for third parties/total revenues	29.6%	24.8%	27.0%	26.3%	27.7%
Personnel expenses/total expenses	66.1%	67.7%	66.9%	67.5%	67.1%
Solvency ratio	49.4%	47.2%	46.6%	48.1%	45.8%
Current ratio	1.2	1.2	1.2	1.1	0.9

6.9 Summarised financial statements

Consolidated balance sheet as at 31 December 2014

amounts in thousands of euros (after processing the result appropriation proposal)

Assets	2014		2013	
	€ x 1,000	%	€ x 1,000	%
Fixed assets				
Intangible fixed assets	0	0	0	0
Tangible fixed assets	327,675	45	307,209	42
Financial fixed assets	6,300	1	6,266	1
	333,975	46	313,475	43
Current assets				
Supplies	663	0	504	0
Receivables	126,742	17	116,087	16
Securities	22,957	3	22,256	3
Liquid assets	240,026	34	279,660	38
	390,388	54	418,507	57
Total assets	724,363	100	731,982	100

Liabilities	2014		2013	
	€ x 1,000	%	€ x 1,000	%
Equity capital	357,931	49	345,829	47
Provisions	52,907	7	50,902	7
Long-term liabilities	0	0	0	0
Current liabilities	313,525	44	335,251	46
Total liabilities	724,363	100	731,982	100

The solvency ratio (equity capital / total capital) meets the standards of the Ministry of Education, Culture and Science (30%).



Consolidated statement of income and expenditure 2014

<i>amounts in thousands of euros</i>	2014	2013	2014 Budget
Revenues			
Government contribution	351,576	364,197	338,900
Other government contributions and subsidies	731	9,391	0
Tuition and examination fees	46,153	41,666	44,800
Revenues from work for third parties	175,396	143,158	139,966
Other income	17,704	19,866	23,593
Total revenues	591,560	578,278	547,259
Expenditure			
Personnel expenses	384,442	372,947	365,450
Depreciations	38,677	34,729	33,297
Accommodation costs	63,257	52,203	57,515
Other expenses	95,595	91,231	88,683
Total expenses	581,971	551,110	544,945
Balance of income and expenditure	9,589	27,168	2,314
Financial income and expenditure	3,650	4,378	1,484
Result	13,239	31,546	3,798
Result from participating interests and value adjustments to financial fixed assets	-1,136	-307	0
Result before taxes	12,103	31,239	3,798
Taxes	-1	-18	10
Result after taxes	12,102	31,221	3,808
Third-party interest in consolidated parties	0	-18	29
Net result	12,102	31,203	3,837

Consolidated cash flow statement 2014

<i>amounts in thousands of euros</i>	2014	2013
Cash flow from operational activities		
Result	12,102	31,203
Adjustments for:		
Depreciations	38,677	34,729
Changes in provisions	2,005	-824
	40,682	33,905
Changes in current assets		
Supplies	-159	-21
Receivables	-10,655	-17,925
Securities	-701	-793
Current liabilities	-21,726	32,984
	-33,241	14,245
	19,543	79,353
Cash flow from investment activities		
Investments in tangible fixed assets	-70,193	-29,629
Divestments in tangible fixed assets	11,050	1,347
Other investments in financial fixed assets	-34	-1,361
	-59,177	-29,643
Cash flow from funding activities		
Third-party interest in affiliated parties	0	18
Long-term liabilities	0	-2,587
	0	-2,569
Change in liquid assets	-39,634	47,141
Liquid assets at the beginning of the year	279,660	232,519
Change in liquid assets	-39,634	47,141
Liquid assets at the end of the year	240,026	279,660



6.10 Rights and obligations not included in the balance sheet

Technopolis

Under the name Technopolis, the TU-Zuid area will be transformed into an international Research & Development park, which will also 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 for the time being.

Reactor Institute Delft

TU Delft is the licence holder of the Reactor Institute Delft (RID), in accordance with Section 15b of the Nuclear Energy 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 2014, a provision of 9.5 million euros for the future dismantlement of the RID was included in the financial statements, to which an annual allocation will be made, proportional to the period of use.

An extended lifespan of the RID as a result of the Oyster investment project will lead to new quantities of radioactive waste, for which TU Delft will have to make new agreements with the Central Organisation for Radioactive Waste (COVRA) concerning the processing and storage of this radioactive waste, because this new, extra, quantity cannot be covered by the current agreement. In cooperation with several other parties including EPZ (Borsele nuclear power plant), TU Delft is currently in consultation with COVRA about a new basic customer agreement. This will contain agreements on TU Delft's share in the funding of the necessary expansion of the storage capacity at COVRA.

Investment obligation

At the end of the fiscal year, TU Delft had outstanding investment obligations equivalent to 75.7 million euros.

BE-Basic

TU Delft is a participant in the Bio-based Ecologically Balanced Sustainable Industrial Chemistry (BE-Basic) consortium. TU Delft has pledged a maximum cash contribution of 5 million, of which 3.25 million euros has been transferred in connection with the investment in Bioprocess Pilot Facility B.V.

Mapper Lithography Holding B.V.

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

Lease obligations

At the end of 2014, the obligation arising from photocopying hardware amounted to 1 million euros. Of this amount, 0.5 million will expire within one year and 1 million in full within five years.

YES!Delft 2 building

A tender procedure for the construction of a second start-up building with laboratory facilities was completed in 2014. In addition, Opportunities for West (*Kansen voor West*), the Province of Zuid-Holland and the Municipality of Delft have pledged subsidies amounting to 3.1 million euros. The remaining amount required after deducting the subsidy will be made available by TU Delft.

6.11 Explanatory notes to the consolidated balance sheet and statement of income and expenditure

Activities

On the basis of Section 1.2 of Book 2 of the Dutch Civil Code and Section 1.8 of the Higher Education and Research Act (WHW), Delft University of Technology has been granted legal personality.

The statutory duty of the university is described in Section 1.3.1 of the WHW: Universities are responsible for providing university education and conducting scientific research. In any case they provide initial degree programmes in university education, conduct scientific research, train scientific researchers and technical designers and transfer knowledge for the benefit of society.

Continuity

The accounting policies and determination of profit/loss used in these financial statements are based on the assumption of continuity of the institution.

Consolidation

The consolidation incorporates the financial data of the institution, its group companies and other institutes of which it has dominant control or which are under its central management. Group companies are legal entities over which the institution can exercise dominant

control, directly or indirectly, due to the fact that it holds the majority of the voting rights or can control the financial and operational activities in any other way. Potential voting rights that can directly be exercised on the balance sheet date are also taken into account. The group is headed by TU Delft in Delft. The financial statements of the institute are included in the consolidated financial statements of TU Delft in Delft. The group companies and other legal entities over which the institution can exercise dominant control or which are under its central management are fully consolidated. The third-party interest in the group equity and the group result is stated separately. Participating interests over which no ultimate control can be exercised (associates) are not included in the consolidation.

In the event of an interest in a joint venture, the relevant interest is proportionally consolidated. A joint venture is deemed to exist if, as a result of a cooperation agreement, the control is exercised jointly by the participants.

Intercompany transactions, intercompany profits and mutual claims and debts between group companies and other consolidated legal entities are eliminated, insofar as the results have not been realised through transactions with third parties outside the group. Unrealised losses on intercompany transactions are also eliminated unless there is an impairment. Accounting policies of group companies and other consolidated legal entities have, where needed, been amended in order to conform with the current accounting policies for the group.

As the statement of income and expenditure of the institution for the reporting year has been incorporated in the consolidated financial statements, the abbreviated statement of income and expenditure

suffices in the individual financial statements in accordance with Book 2, Section 402 of the Dutch Civil Code. Along with associates, several participating interests which are individually and jointly of immaterial significance are not included in the consolidation.

Affiliated parties

All legal entities over which dominant control, joint control or significant influence can be exercised are considered affiliated parties. Legal entities which can exercise dominant control are also considered as affiliated parties. The members of Board under the articles of association, other key officials in the institution's management and close relatives are also affiliated parties.

Significant transactions with affiliated parties are clarified insofar as they have not been concluded under normal market conditions. In this respect the nature and size of the transaction are clarified, as well as other information that is needed to provide insight.

Cash flow statement

The cash flow statement has been drawn up according to the indirect method. The cash in the cash flow statement consists of the liquid assets, with the exception of deposits with a term of less than 12 months. Cash flows in foreign currency have been converted at the exchange rate on the transaction date. Receipts and expenses on account of interest and received dividends have been included in the cash flow from operational activities. The acquired financial interests have been included in the cash flow from investment activities.

Estimates

In order to be able to apply the policies and rules for



preparing the financial statements, the management of the institution must form an opinion on various matters, and the management must make estimates which are essential for the amounts included in the financial statements. If necessary; for providing the insight as required in Book 2, Section 362, paragraph 1 of the Dutch Civil Code, the nature of these opinions and estimates, including the corresponding assumptions, has been included in the notes to the relevant items of the financial statements.

The method used for the valuation of balance sheet projects and the associated revenue recognition has been further refined. This change in accounting estimates is due to the altered accrual method of the implementation costs to subsidy projects. The precise impact of the change in accounting estimates cannot be calculated. The altered accrual method involves the use of hourly rates based on absorption costing as well as the full allocation of the time spent. The revenue from the subsidy projects is allocated to the years in line with the development of the implementation costs. This altered method therefore influences the revenue recognition of the subsidy projects.

TU Delft is embarking on an extensive investment programme for renewal of its educational and research facilities. A decision to sell off or demolish a building has consequences for the valuation of these existing buildings. As a result, the estimated depreciation periods for a number of buildings were shortened. The impact of these revised depreciation periods in connection with the renovation amounted to 6.8 million euros in 2014.

6.12 Accounting policies for the valuation of assets and liabilities

General

The consolidated financial statements have been drawn up in accordance with the provisions of the Annual Reporting Regulations for Education, Part 9, Book 2 of the Dutch Civil Code, and Section 660 of the Annual Reporting Guidelines and the authoritative statements in the other sections of the Annual Reporting Guidelines, issued by the Council for Annual Reporting, and with the provisions of the Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT).

Assets and liabilities are generally stated at their acquisition or manufacturing price or current value. If no specific accounting policy is given, valuation is based on the acquisition price. References are included in the balance sheet, the statement of income

and expenditure and the cash flow statement. These references refer to the explanatory notes.

The financial statements are presented in euros and in thousands unless stated otherwise.

Comparison with the previous financial year

The accounting policies and determination of profit/loss have not changed compared to the previous reporting year.

Intangible fixed assets

Intangible fixed assets are stated at their acquisition price including directly allocatable costs, less straight-line depreciation throughout the expected useful life. Impairments expected at the balance sheet date have been taken into account. For an explanation on how to determine whether an intangible fixed asset concerns an impairment, refer to the paragraph below: Impairments of fixed assets.

Tangible fixed assets

Buildings and land are stated at their acquisition price, including additional costs or the manufacturing price less straight-line depreciation throughout the estimated useful life. Land is not depreciated. Impairments expected at the balance sheet date have been taken into account. For an explanation on how to determine whether a tangible fixed asset concerns an impairment, refer to the paragraph below: Impairments of fixed assets.

Other fixed assets are stated at their acquisition or manufacturing price including directly allocatable costs, less straight-line depreciation throughout the expected useful life. Impairments expected at the balance sheet date have been taken into account. For an explanation on how to determine whether a tangible fixed asset concerns an impairment, refer to the paragraph below: Impairments of fixed assets.

The manufacturing price consists of the acquisition price of raw materials and consumables including additional (installation) costs which can be attributed directly to the manufacture. If a considerable amount of time is needed to prepare for manufacture, the interest costs are also included in the manufacturing price. The subsidy received in advance with regard to the Yes!Delft1 building has been deducted from the assets. Investments in projects are capitalised in the year of purchase and are directly and fully part of the cost of the project.

Investments in equipment and inventory of less than €12,500, as well as expenditure on books and artworks, are directly accounted for in the statement of income and expenditure.



Financial fixed assets

Participating interests

Participating interests in which significant influence can be exercised are valued according to the equity accounting method (net asset value method). When 20% or more of the voting rights can be exercised, it may be assumed that there is significant influence. The net asset value is calculated according to the accounting policies that apply for these financial statements; for participating interests about which insufficient details are available for adjustment to these policies, the accounting policies of the participating interest concerned are used.

If, according to the net asset value, the valuation of a participating interest is negative, it is set at zero. If and to the extent that the institution guarantees in whole or in part the liabilities of the participating interest, or has the firm intention of enabling the participating interest to settle its debts, a provision is created for this. The initial valuation of purchased participating interests is based on the fair value of the identifiable assets and liabilities at the time of acquisition. For the subsequent valuation, the accounting policies that apply for these financial statements are applied, based on the values of the initial valuation. The result is recorded as the amount by which the book value of the participating interest has changed since the previous financial statements as a consequence of the result achieved by the participating interest.

Participating interests in which no significant influence can be exercised are stated at their acquisition price. If there is a permanent impairment, valuation takes place at the realisable value; downward valuation changes are charged to the statement of income and expenditure.

The participations of Delft Enterprises B.V. are stated at cost or lower market value. An exit strategy is maintained for the participations. The policy is that the participation will be disposed of in due course (the aim is a period between five and ten years).

Securities

Securities are initially stated at fair value. The participations of Delft Enterprises B.V. are stated at cost or lower market value.

Other receivables

The other receivables entered under financial fixed assets include loans granted and other receivables. These receivables are initially stated at fair value. These loans and bonds are stated at amortised cost. Impairments are deducted from the amortised cost and directly accounted for in the statement of income and expenditure.

Impairments of fixed assets

At every balance sheet date, the institution assesses whether there are indications that a fixed asset is subject to an impairment. If such indications exist, the realisable value of the asset is determined. If it is not possible to determine the realisable value for the individual asset, the realisable value of the cash-flow generating unit to which the asset belongs is determined. An impairment exists if the book value of an asset is higher than the realisable value; the realisable value is the higher of the net realisable value and the value in use. An impairment loss is recorded directly as an expense in the statement of income and expenditure while reducing the book value of the asset concerned.

If it is established that a previously recorded impairment no longer exists or has decreased, the increased book value of the asset concerned is set no higher than the book value that would have been determined if no impairment had been recorded for the asset.

Receivables

Receivables are initially stated at the fair value of the consideration. Trade receivables are subsequently stated at amortised cost. Provisions for bad debts are deducted from the book value of the receivable. The balance from projects arising from work for third

parties leads to a receivable or a debt on the balance sheet. Projects with prepaid expenses that exceed the instalments invoiced in advance are included under receivables. Projects with instalments invoiced in advance that exceed the prepaid expenses are included under liabilities. Any provision deemed necessary for a project arising from work for third parties is deducted from the receivable.

The method used for valuation of balance sheet projects and the matching of revenues and costs has been further refined in 2014.

Securities

Securities that are part of the trading book are stated at fair value. Changes in value are directly accounted for in the statement of income and expenditure. Securities that are part of the current assets have a term of less than one year.

Liquid assets

Liquid assets consist of cash, bank balances and deposits with a term of less than twelve months. Current account debts with banks are included under current liabilities. Liquid assets are stated at face value.

Equity capital

The equity capital consists of general reserves and special-purpose reserves and/or funds for special purposes.

The special-purpose reserves are reserves with a more restricted disbursement of funds, with the restriction imposed by the Board. The funds for special purposes are reserves with a more restricted disbursement of funds, with the restriction imposed by third parties.

Third-party interests

Third-party interests as part of the group equity are stated at the amount of the net interest in the net assets of the group companies concerned.

Where the group company concerned has a negative net asset value, the negative value together with any further losses is not charged to third-party interests, unless the third-party shareholders have a constructive obligation and are able to bear the losses. As soon as the net asset value of the group companies becomes positive once again, results are allocated to third-party interests.

Provisions

General

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 stated at the best estimate of the amounts necessary to settle the liabilities at the balance sheet date. Other provisions are stated at the nominal value of the expenditure expected to be required to settle the liabilities, unless otherwise stated.

If a third party is expected to pay the liabilities and if it is highly likely that this payment will be received upon settlement of the liability, this payment will be included as an asset on the balance sheet.

Provision for long-service awards

The provision for long-service awards is included at the cash value of the expected payments in the course of the employment. The expected salary increases and the likelihood to stay are taken into account in the calculation of the provision. In calculating the current value, a discount rate of 3% has been applied.

Other provisions

Other provisions are stated at face value of the expenditure deemed necessary for the settlement of the provision.

Current liabilities

Current liabilities are initially stated at fair value.

Current liabilities are subsequently stated at amortised cost, being the amount received taking into account premiums or discounts and after deduction of transaction costs. This is usually the face value.

Financial instruments

Financial instruments comprise investments in shares and bonds, trade and other receivables, cash, loans and other financing obligations, trade and other payables.

Financial instruments are initially stated at fair value.

Financial instruments that are not part of the trading book are stated at amortised cost on the basis of the effective interest method, less impairment losses.

6.13 Accounting policies for determination of the result

General

Income and expenditure are allocated to the year to which they apply. Profits are only included insofar as they have been realised at the balance sheet date.

Losses and risks originating before the end of the reporting year are observed, provided that they have become known before the financial statements are adopted.

Government contributions

Government contributions are recognised as revenue in the statement of income and expenditure in the year to which the allocation applies.

Other government contributions and subsidies

Operating subsidies are recognised as revenue in the statement of income and expenditure in the year in which the subsidised costs were incurred or revenue was lost, or when a subsidised operating deficit occurred. The revenue is recognised if it is likely to be received and the institution can demonstrate the conditions for receipt.

Subsidies related to investments in tangible fixed assets are deducted from the asset concerned and included as part of the depreciation in the statement of income and expenditure or deferred as amounts received in advance.

Project revenues and project costs

For projects of which the result can be reliably determined, the project costs and the project revenues will be recorded 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 recorded as net turnover in the statement of income and expenditure up to the amount of the incurred project costs. The result is determined as the difference between project revenues and project costs. Project revenues are the contractually agreed revenues and the revenues from contract variations, claims and reimbursements, if and to the extent that these are likely to be realised and can be reliably determined. Project costs are the costs directly related to the project, the costs that are generally attributed 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 be immediately included in the statement of income and expenditure. This method of matching revenues and costs was further refined in 2014.

Revenue recognition

Provision of services

Revenues from the provision of services are accrued in proportion to the services delivered, based on the services rendered up to the balance sheet date in proportion to the total services to be rendered.

Gifts

Income received in the form of goods or services is stated at fair value.



Other income

Other income comprises income from rental, sale, secondment, contribution by third parties and other income.

Depreciation of intangible and tangible fixed assets

Intangible and tangible fixed assets are depreciated from the month following the date of first use over the expected future useful life of the asset. Land is not depreciated. If there is a change in the estimate of the future useful life, the future depreciations are adjusted accordingly. Book profits and losses from the non-recurring sale of material fixed assets are included in the statement of income and expenditure.

Employee benefits

Periodic remuneration

Wages, salaries and social security contributions are included in the statement of income and expenditure on the basis of employment conditions insofar as they are payable to employees or the tax authorities.

Pensions

The institution has a pension scheme with ABP Pension Fund. This pension scheme is subject to the provisions of the Dutch Pensions Act, and contributions are paid by the institution on a compulsory or contractual basis. ABP bases the pensionable salary on the average wages during an employee's working career. ABP tries to raise the pensions each year by the average wage increase in the government and education sectors. If the coverage ratio is less than 105%, no indexation takes place. The contributions are stated as personnel costs when they become payable. Prepaid contributions are included as prepayments if these result in a repayment or a reduction in future payments. Contributions that have not yet been paid are included in the balance sheet as current liabilities.

As of 31 December 2014, the coverage ratio of the ABP Pension Fund was 104.7%.

ABP was hit hard by the crisis in the financial markets in 2008 and therefore prepared a recovery plan stating what ABP will do to improve the financial situation within five years. This plan was approved by De Nederlandsche Bank, the Dutch pension fund regulator. The most important aspects of the recovery plan are:

- While the coverage ratio is lower than 105%, the pensions will not be adjusted to wage developments.
- The contribution must at least cover costs and, in the event of a low coverage ratio (coverage deficit), must contribute to the recovery of the fund. To improve the

financial position, a temporary recovery surcharge on the contribution for old-age pension and surviving dependants' pension applies.

- The investment policy has been adjusted, resulting in a lower investment risk.
- The recovery plan provides scope to absorb setbacks. If recovery proceeds more slowly than expected, ABP may reduce the pensions.

Exceptional items

Exceptional items are income or expenditure arising from events or transactions that are part of the ordinary operations but which, for the purpose of comparison, are explained separately on the basis of the nature, scope or non-recurring nature of the item.

Financial income and expenditure

Interest income and interest expenses

Interest income and interest expenses are included on a time-proportionate basis, taking into account the effective interest rate of the respective assets and liabilities.

Exchange differences

Exchange differences arising in connection with the settlement or translation of monetary items are recorded in the statement of income and expenditure in the period in which they arise. Transactions in foreign currency carried out during the reporting period are included in the financial statements at the exchange rate applying on the transaction date.

Taxes

Tax on the result is calculated on the result before tax in the statement of income and expenditure, taking into account the available, tax-offsettable losses from previous financial years (unless these are included in deferred tax assets) and exempt profit components and after the addition of non-deductible expenses. Due account is also taken of changes that occur in the deferred tax assets and deferred tax liabilities in respect of changes in the applicable tax rate.

Result from participating interests

The result from participating interests is the amount by which the book value of the participating interest has changed since the previous financial statements as a consequence of the result achieved by the participating interest, insofar as this is attributed to the institution.



TU Delft

6.14 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:

	Commencement date of employment	Final date of employment	Scope of task	Remuneration	Taxable fixed and variable expenses	Provisions for remuneration payable in the long term	Payment due to termination of employment
			FTE	2014	2014	2014	2014
Administrators							
<i>Drs. D.J. van den Berg</i> (President)	01/02/2008	*	1.0	187,340	8,263	32,769	-
<i>Prof. K.Ch.A.M. Luyben</i> (Rector Magnificus) **	01/04/1983	*	1.0	206,847	8,263	32,345	-
<i>Ms drs. J.L. Mulder</i> (Vice President for Education & Operations)	01/05/2003	*	1.0	162,545	8,263	29,658	-
Former administrators							
<i>Drs. P.M.M. Rullmann</i> (Vice President for Education & Operations)	01/05/2002	31/03/2013	1.0	18,260	-	-	-

*: still employed at year-end 2014							
**: The remuneration received by Prof. K.Ch.A.M. Luyben in 2014 exceeded the maximum amount stated in the Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT). This is due to an additional payment of €20,000, namely €10,000 for good performance in the 2013 calendar year and €10,000 for good performance in the 2010 calendar year (this had mistakenly not been paid previously). These payments were agreed contractually in 2009 and therefore fit within the transitory provision of the WNT.							
***: <i>Drs. P.M.M. Rullmann</i> was a member of the Executive Board of TU Delft until 31 March 2013. The remuneration in 2014 relates to project activities carried out on a reimbursement basis.							
	Commencement date of employment	Final date of employment		Remuneration	Payment of taxable fixed and variable expenses	Provisions for remuneration payable in the long term	Payment due to termination of employment
				2014	2014	2014	2014
Supervisors							
<i>Drs. J. van der Veer</i> (President)	01/07/2013	01/07/2017		15,000	-	-	-
<i>Prof. D.D. Breimer</i>	01/05/2007	01/05/2015		10,800	-	-	-
<i>Ms drs. K.M.H. Peijs</i>	01/06/2007	01/06/2015		10,800	-	-	-
<i>Drs. J.C.M. Schönfeld</i>	01/04/2008	01/04/2016		10,800	-	-	-
<i>Ms ir. L.C.Q.M. Smits van Oyen, MBA</i>	01/01/2013	01/01/2017		10,800	-	-	-

6.15 Expense claims of Executive Board members

The table below shows the expenses claimed by the Executive Board members in 2014, in accordance with the format prescribed by the State Secretary. The State Secretary defines expense claims as 'Reimbursements for expenses incurred or services rendered' for which the individual administrators submitted expense claims to the institution themselves. The individual administrators submitted the expense claims shown in the table below to the institution in 2014.

<i>amounts in euros</i>	2014	<i>amounts in euros</i>	2014
<i>Drs. D.J. van den Berg (President)</i>		<i>Drs. D.J. van den Berg (President)</i>	
Representation expenses	-	Representation expenses	1,150
Travel expenses outside the Netherlands	209	Travel expenses outside the Netherlands	30,557
Travel expenses within the Netherlands	-	Travel expenses within the Netherlands	-
Other expenses	-	Other expenses	-
<i>Total</i>	<i>209</i>	<i>Total</i>	<i>31,707</i>
<i>Prof. K.Ch.A.M. Luyben (Rector Magnificus)</i>		<i>Prof. K.Ch.A.M. Luyben (Rector Magnificus)</i>	
Representation expenses	-	Representation expenses	624
Travel expenses outside the Netherlands	-	Travel expenses outside the Netherlands	3,061
Travel expenses within the Netherlands	-	Travel expenses within the Netherlands	95
Other expenses	-	Other expenses	-
<i>Total</i>	<i>-</i>	<i>Total</i>	<i>3,780</i>
<i>Ms drs. J.L. Mulder (Vice President for Education & Operations)</i>		<i>Ms drs. J.L. Mulder (Vice President for Education & Operations)</i>	
Representation expenses	41	Representation expenses	147
Travel expenses outside the Netherlands	2,332	Travel expenses outside the Netherlands	7,582
Travel expenses within the Netherlands	-	Travel expenses within the Netherlands	-
Other expenses	-	Other expenses	-
<i>Total</i>	<i>2,373</i>	<i>Total</i>	<i>7,729</i>
		<i>Joint expenses</i>	
		Representation expenses	-
		Travel expenses outside the Netherlands	-
		Travel expenses within the Netherlands	999
		Other expenses	-
		<i>Total</i>	<i>999</i>

The amounts stated above include several items from 2013.

6.16 Board statement

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

6.17 Audit report of the independent accountant

To: the Executive Board of
Delft University of Technology

The summarised financial statements incorporated in this report, consisting of the summarised consolidated balance sheet as at 31 December 2014 and the summarised consolidated statement of income and expenditure for 2014, and explanatory notes, are derived from the audited consolidated financial statements of Delft University of Technology for the year 2014. We expressed an unqualified auditor's opinion on these financial statements in our audit report dated 22 April 2015. Those financial statements, and this summary thereof, do not reflect the effects of events that occurred subsequent to the date of our report of 22 April 2015.

The summary financial 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 financial statements, therefore, is not a substitute for reading the audited financial statements of Delft University of Technology.

Responsibility of the Executive Board

The Executive Board of Delft University of Technology is responsible for the preparation of a summary of the audited financial statements in accordance with Part 9 of Book 2 of the Dutch Civil Code and the Annual Reporting Regulations for Education.

Responsibility of the auditor

Our responsibility is to express an opinion on the summary financial statements and the related explanatory notes based on our procedures, which we conducted in accordance with the Annual Reporting

Regulations for Education and Dutch Law, including the Dutch Standard 810 'Engagement to report on summary financial statements'.

Opinion

In our opinion, the summary financial statements are consistent, in all material aspects, with the consolidated financial statements of Delft University of Technology as at 31 December 2014, in accordance with Part 9 of Book 2 of the Dutch Civil Code and the Annual Reporting Regulations for Education.

Rotterdam, 22 April 2015

PricewaterhouseCoopers Accountants N.V.

drs. Th.A.J.C. Snepvangers RA

Chapter 7

Continuity

section

7.1 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.

7.2 Long-term budget (part A)

TU Delft scores highly in international university rankings and wants to continue to do so. To this end, facilities (buildings and infrastructure) for scientists and students must be of a high standard. The end of the lifespan of several buildings necessitates large-scale investments by TU Delft in new construction and renovation to improve the quality of the campus and the facilities for education and research. In this way we aim to attract and further develop scientific talent. Continuing to use the existing buildings is not an option, because permits for the use of these buildings will be jeopardised.

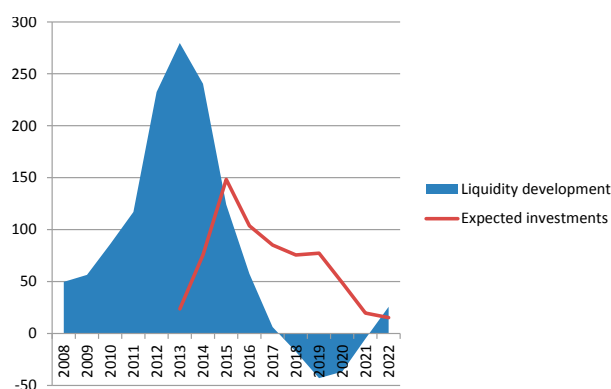
The scope of the intended investments in property and the accompanying outfitting costs for users and laboratories will have a major impact on the financial management of TU Delft. The financial policy of TU Delft is aimed at achieving a structural balance between income and expenses. The university's 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 educational and research facilities, can be financed. In addition, there must be room for TU Delft to respond to external developments in a flexible manner.

In 2013, the Executive Board approved the Campus Vision and the Real Estate Strategy in consultation with the Works Council and the Student Council. The basis for the new Campus Vision is the Living Campus concept, which involves providing a living environment with the facilities required by an international

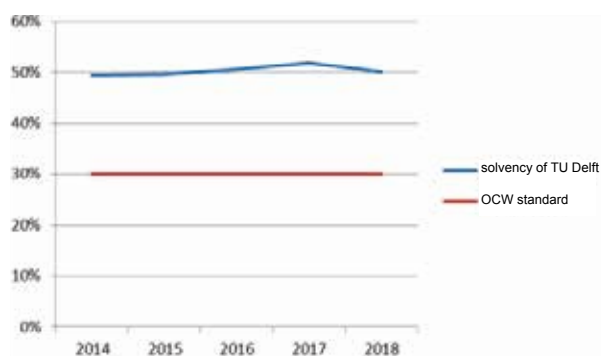
university. The Campus Vision not only focuses on the development of the TU Delft area (including Technopolis), but also on the link with adjoining areas and infrastructures. TU Delft has sufficient accommodation, but it is not always the right kind. The goals for the coming years are to decrease the footprint, improve the quality of the accommodation and ensure it is the right type. On the one hand, a building can be optimally used by accommodating multiple users in it, while 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 project list of real estate investments arising from it are based on this vision. These investments include a new building for the Faculty of Applied Sciences (with the realisation of new laboratories for the departments of Chemistry and Biotechnology) and renovation of the buildings of the Faculties of Civil Engineering and Geosciences, and Applied Sciences (Lorentzweg) and the multi-purpose building (Van der Burghweg). Alterations will also be made to the buildings of the Faculties of Architecture and the Built Environment, and Electrical Engineering, Mathematics and Computer Science, while other buildings will be given a quality boost and the heating facilities of buildings will be made more sustainable. Links between buildings and the grounds will be improved in order to contribute to a more lively campus. The core of the Real Estate Strategy can be broken down into: programme, sufficient flexibility and financing possibilities. Flexibility in both the projects and the planning is a precondition for the possibility of funding the Real Estate Strategy. The Real Estate Strategy will be adjusted each year as necessary in order to adapt to the changes in the university and its environment and to the availability of resources for funding the Real Estate Strategy. The Real Estate Strategy was once again updated in 2014, including a quality boost for teaching facilities in light of the forthcoming available resources on the basis of the Student Loan Act (Wet Studievoorschot Hoger Onderwijs). Additional lecture rooms were realised in the former Royal Dutch Army Museum on short notice and the PULSE teaching building is being built. Decisions were also made with regard to the accommodation of QuTech laboratories and plans for the disposal of spaces.

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 development of student numbers, 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. The financial long-term estimate was updated once again in 2014 and different scenarios are being calculated. The present Real Estate Strategy or the postponement thereof can be adjusted accordingly. The current Real Estate Strategy for the 2014-2022 period is based on an investment sum of 675 million euros, of which approximately 585 million euros will be capitalised. Insight into the planning for this period is given in the table below. Based on the Real Estate Strategy, the current long-term financial estimate (December 2014) shows the following expectations for the evolution of the liquid assets.



There will be a visible decrease in the balance of liquid assets in 2014. This trend will continue beyond 2014 and will lead to TU Delft needing to borrow money as from 2018 onwards. There will then no longer be a surplus of financial resources. Looking specifically at the development of solvency up to and including 2018 reveals the following picture:



In spite of the falling liquidity surplus solvency will remain solid and above the standard of 30% set by the Ministry of Education, Culture and Science. This gives TU Delft scope to respond flexibly to external developments.

In accordance with the letter from the Ministry of Education, Culture and Science of 20 December 2013, a number of tables with explanatory notes 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 of the FTE numbers. A distinction has been made, in accordance with 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, but they are in line with the system generally used at TU Delft. The FTE numbers are based on the numbers realised for 2014 and the estimate at the time of the budget approved by the Supervisory Board in December 2014 for the following years.

According to these numbers, the workforce can be expected to decrease to 4,551 FTE in 2017. Due to the uncertainty with regard to project financing, a decrease in the number of researchers and PhD candidates is anticipated. This causes a decrease in temporary academic staff; the size of the faculty is expected to remain stable or grow slightly. The decrease in the number of administrative and support staff is due to the shift at the University Corporate Office.

Continuity section - statement of paid FTE development (permanent and temporary)

FTE development	2014	2015	2016	2017
Academic staff (WP)	2,668	2,589	2,572	2,576
of which temporary WP	1,610	1,539	1,512	1,514
of which permanent WP (or prospect of permanent)	1,058	1,050	1,060	1,062
Administrative and support staff (OBP)	1,898	1,888	1,884	1,882
SA	86	87	93	93
	4,652	4,564	4,549	4,551

Expected student numbers

The number of students is expected to increase further from 2015 to year-end 2017. The student numbers are based on the estimate that was made when the budget was approved by the Supervisory Board in December 2014. The management units indicated in their budgets that the increase in the current workforce can be absorbed, but this will put further strain on the budget.

	2014	2015	2016	2017
student numbers	19,619	19,954	20,353	20,760

Balance sheet

The balance sheet below shows the budget for 2015 up to and including 2017.

Assets				
<i>amounts in millions of euros</i>	<i>realised in 2014</i>	<i>2015 budget</i>	<i>2016 budget</i>	<i>2017 budget</i>
Fixed assets				
Intangible fixed assets	0	0	0	0
Tangible fixed assets	328	461	528	584
Financial fixed assets	6	16	16	17
	334	477	544	601
Current assets				
Supplies	0	0	0	0
Receivables	127	134	138	134
Securities	23	22	22	22
Liquid assets	240	124	58	6
	390	280	218	162
Total assets	724	757	762	763
Liabilities				
<i>amounts in millions of euros</i>	<i>realised in 2014</i>	<i>2015 budget</i>	<i>2016 budget</i>	<i>2017 budget</i>
Equity capital				
General reserve	336	354	365	375
Special-purpose reserve public	-2	-2	-1	-1
Special-purpose reserve private	0	0	0	0
Fund for special purposes public	0	0	0	0
Fund for special purposes private	24	23	22	21
	358	375	386	395
Provisions	52	42	41	37
Long-term liabilities	0	0	0	0
Current liabilities	314	340	335	331
Total liabilities	724	757	762	763

Up to and including 2013, tangible fixed assets decreased for several years due to postponement of investments in connection with the preparation of the Campus Vision. From 2014, an increase in capital invested in tangible fixed assets is visible thanks to the implementation of the Real Estate Strategy. As a result, there is also a visible decrease in the balance of liquid assets. This trend will continue after 2014 and will lead to external funding from 2018 onwards. There will then no longer be a surplus of financial resources. Based on the long-term estimate, solvency will remain solid.

Statement of Income and Expenditure

The Statement of Income and Expenditure below provides an overview of the long-term budget for the 2015-2017 period.
amounts in millions of euros

	realised in 2014	2015 budget	2016 budget	2017 budget
Revenues				
Government contribution (incl. other government contributions and subsidies)	352	351	351	351
Tuition and examination fees	46	49	51	53
Revenues from work for third parties	175	156	155	153
Other income	19	22	22	22
Total revenues	592	578	579	579
Expenditure				
Personnel expenses	384	379	380	380
Depreciations	39	36	40	41
Accommodation costs	63	54	55	55
Other expenses	97	93	95	95
Total expenses	583	562	570	571
Revenues and expenditure balance	9	16	9	8
Financial income and expenditure	4	1	2	1
Result	13	17	11	9
Result from participating interests	-1	0	0	0
Result before taxes	12	17	11	9
Taxes	0	0	0	0
Result after taxes	12	17	11	9
Thirdparty interest in consolidated parties	0	0	0	0
Net result	12	17	11	9

The long-term budget for the 2015-2017 period shows a decrease after 2015. The decrease in the budgetary outcome is the result of an increase in accommodation expenses caused by:

- the reduction in the number of m² and the accompanying clean-up costs;
- the maintenance quality boost;
- the completion of buildings (new construction and renovation) resulting in an increase in depreciation charges.

Other reasons for the development are:

- the temporary effect of the uniformisation of project accounting, through which valuations have been aligned, which will gradually decrease to zero over the next few years;
- the increasing tuition fees as a result of the increase in the number of students and the tuition fee rates.

In the long-term budget, a stable revenue line of 351 million euros was taken into account in the development of the government contribution. Possible future adjustments to the government contribution as a result of the introduction of the Student Loan Act have not yet been incorporated in the budget figures. The introduction of this Act could result in a phased increase in government contributions from 2017-2018. These funds accruing as a result of the Student Loan Act are conditional and concern a reservation from the Ministry of Education, Culture and Science for the government contributions to universities and universities of applied sciences. Discussions concerning the public transport scheme for students and possibly other government plans in the coming years may result in a decrease in the conditionally available resources.

A failure to achieve the performance agreements (performance-related funding) with the Ministry of

Education, Culture and Science may result in a decrease in the government contribution to TU Delft in 2017. This possible decrease in the government contribution is not taken into account in the long-term budget. The effects of wage and price adjustments are disregarded, and the 2014 price level has therefore been used for the 2015-2017 period.

7.3 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 systematically supporting 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 & planning) and 'Are we doing them well?' (monitoring & evaluation). This overarching cycle of TU Delft 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 promptly.

However, the cycle must be in keeping with the nature 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. Because of these complex networks, coordination and decision-making processes within 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 control

Internal process control enables the institution's administration and management to aim for set objectives and to identify and manage risks to those objectives in 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.

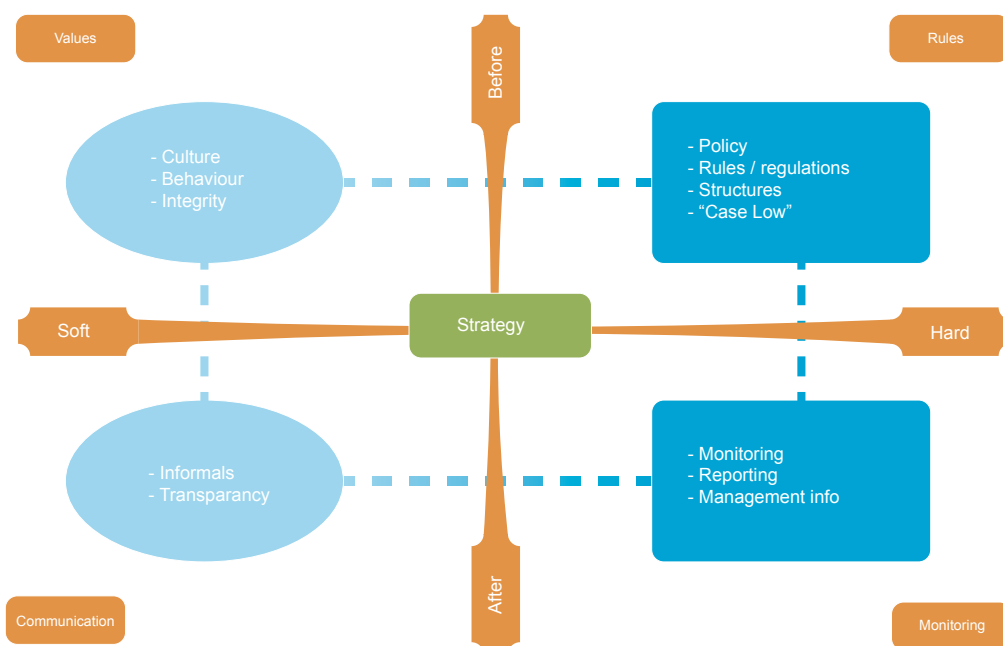


Image: four perspectives for control

Four perspectives

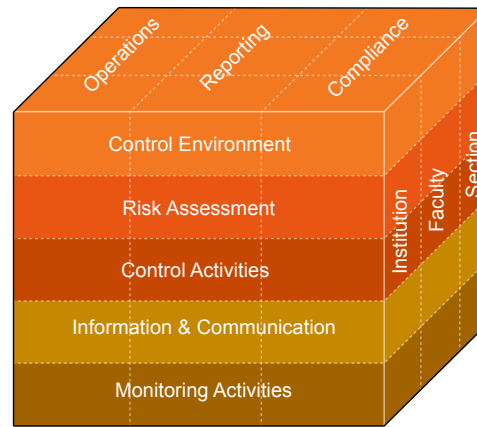
The approach to and quality of the internal process control forms an important part of the administrative agenda. To this end, the control instruments are organised into four groups:

- 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, 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?

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 control can thereby be analysed and discussed from four different perspectives. The strategic planning and the (quality of the) internal process control dominates the agenda of the administrative meetings in the P&E cycle.

COSO framework¹

The planning approach from four perspectives for control mainly addresses the best method for approaching the internal process control. In 2014, TU Delft translated the COSO framework to the university setting in order to further shape and strengthen the management control. By using the COSO as a framework linked to the four approach perspectives as described in the previous paragraph, TU Delft is using a control philosophy that fits well in a university organisation. The Executive Board has decided to adopt this vision and approach with the consent of the Supervisory Board. The control philosophy will help the Executive Board to answer the question of whether or not the institution is fully equipped at the system level (guarantee) to achieve its goals, and which quality improvement strategy can be formulated to strengthen the internal process control and thereby remain in control.



1. Demonstrates commitment to integrity and ethical values
2. Exercises oversight responsibility
3. Establishes structure, authority and responsibility
4. Demonstrates commitment to competence
5. Enforces accountability

6. Specifies suitable objectives
7. Identifies and analyzes risk
8. Assesses fraud risk
9. Identifies and analyzes significant change

10. Selects and develops control activities
11. Selects and develops general controls over technology
12. Deploys through policies and procedures

13. Uses relevant information
14. Communicates internally
15. Communicates externally

16. Conducts ongoing and/or separate evaluations
17. Evaluate and communicates deficiencies

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 control, thereby improving the feasibility of strategic objectives and quickly making adjustments in the case of internal changes or environmental influences.

7.4 Description of the most important risks and uncertainties (part B2)

TU Delft has the following strategic priorities:

Students & Education

- Differentiation and breadth in Bachelor's degree programmes
- Profiling of Master's degree programme programmes
- Professional Doctorate in Engineering
- Graduate School – Doctoral Education
- Postgraduate courses
- Quality of student intake
- Study success
- Development of 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

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 government 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 study duration
- Investment in the teaching qualities of staff
- Keeping the infrastructure and accommodation vibrant
- Improving the pass rate and shortening the PhD programme duration

- Continuing the development of the valorisation activities
- Improving entrepreneurship training

External opportunities

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

SWOT analysis

The SWOT analysis above is based partly on the environmental analysis - Dynamic Context - as included 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, as drawn up by the VSNU (April 2012), which describes the important developments in the field of university education and research.

Research

- Scientific profile: science, design, engineering
- 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
- State-of-the-art research infrastructure

Valorisation

- TU Delft valorisation profile, 2012-2020
- TU Delft Valorisation Agenda 2020
- Structural cooperation with business and government
- Cooperation with SMEs
- Delft Technological Innovation Campus
- Support organisation for valorisation: 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 based on the points of concern reported by the external auditor in the management letter and the auditor's report, which will be monitored.

7.5 Report of the supervisory body (part B3)

In 2014, the Supervisory Board was made up of the following members:

- *Drs. ir. J. van der Veer*, president, former CEO of Shell (appointed to 1 July 2017, first term)
- *Prof. D.D. Breimer*, vice-president, former Rector Magnificus/President of the Leiden University Executive Board (appointed until 1 May 2017, third 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, director and/or majority shareholder of companies and organisations in the field of healthcare, ICT and tourism, and administrator of various civil society organisations (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 partnerships of TU Delft, both nationally and internationally. Regionally, the partnership with Leiden University and Erasmus University Rotterdam, known as the LDE partnership, is of great importance to TU Delft. To this end, the Board regularly communicates with the Supervisory Boards of both universities. LDE Joint Regulations were drawn up at the end of 2013. At a national level, TU Delft has had a partnership for many years with the two other Dutch universities of technology, the 3TU.Federation.

Internationally, the Supervisory Board considered the establishment of Joint Research Centres (JRC) in countries like China and Brazil and participation in international consortia such as IDEA League, the Conference of European Schools for Advanced Engineering Education and Research (CESAER) and the European Universities Association (EUA). Moreover, the Supervisory Board has been actively involved in the planning of the Holland Particle Therapy Centre (HollandPTC) and has taken note of the development 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. The Supervisory Board was also regularly informed on the development of the QuTech Advanced Research Centre for the development of a quantum computer and quantum internet in collaboration with TNO. In November, the Dutch government awarded National Icon status to the research into Quantum Technology.

The Supervisory Board is 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 accreditation and re-accreditation processes of the programmes are regularly discussed with the Board. The strategy and developments of TU Delft in the area of online education and the Extension School are closely monitored by the Board.

Each quarter, the real estate issues of TU Delft are discussed and, if necessary, approved in the meeting of the Supervisory Board. In 2014, this mainly concerned an update of the Real Estate Strategy and the plans for

the new construction of the Faculty of Applied Sciences and Yes!Delft2.

Personnel and internal affairs

The Remuneration Committee conducted evaluation interviews with individual board members in 2014. In December 2014, the State Secretary of the Dutch Ministry of Education, Culture and Science re-appointed Professor D.D. Breimer as a member of the TU Delft Supervisory Board for a period of two years with effect from 1 May 2015.

In accordance with Article 4 of the TU Delft Supervisory Board Regulations, the Board is responsible for determining the quality of its own performance. To this end, the Supervisory Board discusses its own performance as well as that of the individual members, and the consequences that must be attached to this, at least once a year without the presence of the Executive Board.

This self-evaluation took place prior to the Supervisory Board meeting of 25 June 2014, on the basis of a structured questionnaire. The individual members of the Supervisory Board completed this questionnaire. The Chairman of the Supervisory Board summarised the individual findings, and the Board then exchanged views against this background.

The Supervisory Board's most important findings are that the individual areas of expertise are perceived as complementary in the Board, and that the Board in its current composition considers itself capable of carrying out the tasks of the Board in accordance with its Regulations, namely supervising the Executive Board and the general course of the university's affairs as well as advising the Executive Board. With regard to new appointments to the Supervisory Board, it is important that these areas of expertise continue to complement one another.

In 2014, the Supervisory Board adopted amended Supervisory Board Regulations.

Administration and Management

In 2014, the Supervisory Board held four regular meetings with the Executive Board and five meetings without the Executive Board. In addition, a strategic meeting was held in which several strategic issues for TU Delft were examined thoroughly with the Executive Board.

To enable the Supervisory Board to properly perform its supervisory task, subjects such as (anticipated) amendments to the law, activities in the field of scientific integrity, the code of ethics and integral safety are also discussed with the Board.

The Supervisory Board once again visited a number of



organisational units this year.

National developments by the ministries which affect the universities, such as the Vision for Science, the Science Agenda and the Review Committee for Performance Agreements (Van Vught Committee), are also coordinated with the Supervisory Board. The Supervisory Board adopted new Executive and Management Regulations in February 2014.

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In 2014, the Supervisory Board adopted amended Supervisory Board Regulations.

Finances and operational management

Audit Committee

The Audit Committee met six times in 2014. Important items on the agenda were the amendment of the Supervisory Board Regulations, major investment projects such as the new Applied Sciences South building (including accompanying risk scan), HollandPTC and the start-up complex/transitional building Yes!Delft2, including the financing of these investments. The further development of the management control system in relation to the governance and control vision of TU Delft was also discussed. This vision is based partly on the COSO framework (internal control).

Other subjects addressed included the updated audit



charter, activity report, annual audit plan and the (results of the) activities of the Internal Audit Function, the financial results and the long-term liquidity forecast. Also on the agenda were the discussion of the 2013 audit report, the 2014 management letter and the associated improvement initiatives, and the 2015 budget.

Supervisory Board

In its meeting on 23 April 2014 the Supervisory Board approved the 2013 Annual Report and the Financial Statements; in its meeting on 17 December 2014 the Board approved the Budget for 2015. During its meetings in 2014, the Board focused much of its attention on the financial position of TU Delft, prepared by the Audit Committee (see above). At each meeting, Finance 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 and strengthening the control of operational management in the broad sense. 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 conducted informal discussions with the Confidential Committee of the Works Council, and the Student Council on several occasions.

In conclusion

TU Delft's policy regarding the salary of the administrators and supervisors is in line with the Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT) and with the agreements made with the Ministry of Education, Culture and Science. From the start of the 2012 calendar year, reappointment contracts have been drawn up in accordance with the WNT. Under the current employment contracts, the TU Delft administrators do not receive any performance-related bonus.

In the opinion of the Supervisory Board, in 2014 the Board continued to perform its task in accordance with the governance code.

The Supervisory Board also honored the principle of independence in 2014.

Appendix 1

Faculties and departments (as at 31 December 2014)

Faculty of Architecture and the Built Environment

Department

Architecture
Real Estate & Housing
Architectural Engineering + Technology
Urbanism
OTB

Chair

Prof. D.E. (Dick) van Gameren
Prof. J.W.F. (Hans) Wamelink
Prof. A.A.J.F. (Andy) van den Dobbelsteen
Dr M.J. (Machiel) van Dorst
Prof. P.J. (Peter) Boelhouwer

Faculty of Civil Engineering and Geosciences

Department

Structural Engineering
Transport & Planning
Geoscience & Engineering
Geoscience & Remote Sensing
Hydraulic Engineering
Water Management

Chair

Prof. J.G. (Jan) Rots
Prof. B. (Bart) van Arem
Prof. J.D. (Jan Dirk) Jansen
Prof. R.F. (Ramon) Hanssen
Prof. M.J.F. (Marcel) Stive
Prof. N.C. (Nick) van de Giesen

Faculty of Electrical Engineering, Mathematics and Computer Science

Department

Software and Computer Technology
Microelectronics
Electrical Sustainable Energy
Intelligent Systems
Applied Mathematics

Chair

Prof. H.J. (Henk) Sips
Prof. P.M. (Lina) Sarro
Prof. M. (Miro) Zeman
Prof. R. (Inald) Lagendijk
Prof. B. (Ben) de Pagter

Faculty of Industrial Design Engineering

Department

Design Engineering
Industrial Design
Product Innovation Management

Chair

Prof. C.M. (Catholijn) Jonker
Prof. P.P.M. (Paul) Hekkert
Prof. H.J. (Erik Jan) Hultink

Faculty of Aerospace Engineering

Department

Aerodynamics, Wind Energy, Flight
Performance and Propulsion
Control and Operations
Aerospace Structures & Materials
Space Engineering

Chair

Prof. F. (Fulvio) Scarano

Prof. M. (Max) Mulder
Prof. R. (Rinze) Benedictus
Prof. E.K.A. (Eberhard) Gill

Faculty of Technology, Policy and Management

Department

Multi-Actor Systems
Engineering Systems and Services
Values, Technology and Innovation

Chair

Prof. J.A. (Hans) de Bruijn
Prof. P.M. (Paulien) Herder
Prof. M.J. (Jeroen) van den Hoven

Faculty of Applied Sciences

Department

Bionanoscience
Biotechnology
Chemical Engineering
Imaging Physics
Quantum Nanoscience
Radiation Science & Technology

Chair

Prof. M. (Marileen) Dogterom
Prof. I.W.C.E. (Isabel) Arends
Prof. M.T. (Michiel) Kreutzer
Prof. L.J. (Lucas) van Vliet
Prof. H.S.J. (Herre) van der Zant
Prof. H.T. (Bert) Wolterbeek

Faculty of Mechanical, Maritime and Materials Engineering

Department

Process and Energy
Biomechanical Engineering
Maritime and Transport Technology
Materials Science and Engineering
Precision and Microsystems Engineering
Delft Center for Systems and Control

Chair

Prof. B.J. (Bendiks Jan) Boersma
Prof. H.E.J. (Dirk Jan) Veeger
Prof. G. (Gabriel) Lodewijks
Prof. I.M. (Ian) Richardson
Prof. U. (Urs) Staufer
Prof. J. (Hans) Hellendoorn

Appendix 2

Definitions of indicators and Glossary

External indicators

Key indicator	Unit	Definition
Excellence	%	Participation of students in honours programmes, Dream Teams or other indicators that provide insight into the participation of students in excellence programmes.
Drop-out rate	%	The percentage of full-time Bachelor's students (first-year students in higher education) who are no longer enrolled at the institution after one year. Optional: programme drop-out in the second and third year of the Bachelor's programme.
Programme switching	%	The percentage of the total full-time Bachelor's students (first-year students in higher education) who switch to a different programme at the same institution after one year.
BSc completion rate	%	The percentage of re-enrollers of the full-time Bachelor's students (first-year students in higher education) who have earned a Bachelor's degree after four years at that institution.
Teaching quality	%	The percentage of lecturers with a University Teaching Qualification certificate. (Both lecturers and academic staff).
Programme intensity	hours	The number of timetabled contact hours and other structured hours in the first year of the Bachelor's programme.
Indirect costs	%	According to Berenschot method: Overhead information (in euros) expressed as a percentage of the total permanent staff (in euros).

Internal indicators

Key indicator	Unit	Definition
Government funding	€ x 1,000	Allocation of government funding, based on the internal budget allocation system, with additional chargeable amounts for strategic projects.
Indirect funding	€ x 1,000	Income from education and/or research contracts commissioned by NWO and its foundations, such as FOM, STW and SRON.
Contract funding	€ x 1,000	Income from education and/or research contracts other than from government and indirect funding. These include M2i funds.
Bachelor and Master intake	Number	Students who enrol in a TU Delft Bachelor's or Master's degree programme for the first time and pay the tuition fee with the aim of obtaining a degree certificate.
Bachelor's and Master's degrees	Number	The Bachelor's and Master's degree certificates awarded by the Boards of Examiners of the programmes and registered with the central Education and Student Administration.
Operating result	€ x 1,000	Annual operating result based on the financial statements.
Cash flow	€ x 1,000	Movement of the total liquid assets in and out of TU Delft between 1 January and 31 December of a calendar year.
Equity capital		Assets less liabilities at a particular time.
Average ECTS per student in 1st year	ECTS/students	The average number of ECTS credits obtained by first-year students in the Bachelor's degree programmes at TU Delft.
ISI publications	Number	Number of publications in ISI journals.
Teaching staff	FTE	Permanent and temporary paid full professors + associate professors + assistant professors + other academic staff - teaching staff.
Other academic staff	FTE	Researchers and lecturers.
P-in-one (Propedeuse in 1 year)	%	The percentage of students – out of the total number of first-year students of the programme – who succeed in completing the propedeuse in one year.
PDEng degrees	Number	Number of design degree certificates accredited by the KIVI.
BSc/MSc student population	Number	Students who followed a Bachelor's or Master's programme at TU Delft, paid the tuition fees (as of the reference date) and intend to complete this programme and obtain a certificate. This includes bridging students.
Doctoral student population	Number	Number of PhDs and PDENGs, as registered by HR in Peoplesoft.
Positive binding recommendation on continuation of studies (BSA)	%	Percentage of first-year students who have obtained a set minimum number of credits in their first year.
Postdoc	FTE	A staff member holding a doctor's degree with a minimum appointment of two years aimed at preparing for an academic career. (provisional definition)
PhD completion rate (5 years)	%	The number of people holding a doctor's degree as a percentage of the PhD student intake from reference year 5.
Doctorates	Number	The number of PhD conferrals as reported to the beadle.
PhD candidates	Number	Number of standard PhDs + FOM + M2i.
Permanent academic staff	FTE	Paid permanent academic staff (including tenure trackers).
Proportion of women in senior academic positions	%	Percentage of women employed by TU Delft in University Job Classification (UFO) scale 15 and higher.
Indirect funding / government funding	%	The indicator is implemented on the basis of the definitions given earlier in this document.
Contract funding / government funding	%	The indicator is implemented on the basis of the definitions given earlier in this document.
BSc/Msc students / Permanent academic staff	Number / FTE	The indicator is implemented on the basis of the definitions given earlier in this document.
BSc/MSc / Teaching staff	Number / FTE	The indicator is implemented on the basis of the definitions given earlier in this document.

Glossary

Term	Definition / Description
Bachelor's degree	A Bachelor's degree is a degree certificate awarded as a result of the successful completion of the Bachelor's degree programme.
Binding recommendation on the continuation of studies (BSA)	If a student does not meet the BSA requirements of a minimum of 45 ECTS (European Credits) in the first year of enrolment, he/she may not re-enrol in this TU Delft programme for three years. The following recommendations are given in the course of the academic year (in March and August): Positive, Doubtful, Negative or Postponed (= special circumstances preventing the student from meeting the requirements). In addition, the number and percentage of students who discontinue their studies before 1 February of the current academic year is shown. The definitive binding recommendation (in September) does not contain the Doubtful category.
Foreign student	A student who does not possess Dutch citizenship.
First-year student at the institution	A person who is enrolled at TU Delft as a student for the first time in the academic year in question.
Re-enrolment students	Students who enrol for the second academic year of the same programme/faculty/institution as the one in which they started.
Master's degree	A Master's (or <i>Doctoraal</i>) degree is a degree certificate awarded as a result of the successful completion of the final examination of a Master's or <i>Doctoraal</i> degree programme.
Degree programme	A degree programme is a Bachelor's or Master's degree programme accredited by the Ministry of Education, Culture and Science. All programmes are registered in the Central Register Higher Education Degree Programmes (CROHO). This register also indicates whether the programme is funded by the government.
Reference date	The date on which the selection is made during a count. <ul style="list-style-type: none"> • The reference date for intake and population is 1 December of the academic year in question. That means that only the students who are enrolled on 1 December will be included in the count. • The reference date for degree certificates, drop-out and pass rates is 31 August of the academic year in question. All degree certificates awarded up to and including that date will be counted. (Note: not to be confused with the count date , the date on which the count is actually performed).
Propedeuse	This consists of the stipulated 60 ECTS of the first year of the Bachelor's degree programme.
Pass rate	The percentage of students who have successfully completed the programme* (obtained a degree certificate). This can be broken down into different groups (such as foreign citizens, women and joiners from pre-university education). * or institution, faculty
Bridging class	A bridging class student does not have sufficient qualifications to directly enter a Master's programme.

Bridging programme	<p>The bridging programme yields approximately 30 ECTS (depending on the Master's programme and the prior education) and ensures that the student is admitted to the selected Master's programme. Bridging programme students are often HBO students lacking a sufficient background in mathematics, but in the past few years they have also included several Bachelor's students.</p> <p>Note: these are not Bachelor's or Master's students (even though they were enrolled in the Bachelor's degree programme up to and including 2005 and in the Master's programme from 2006 to 2010). As of 2011, bridging programme students are no longer allowed to enrol in a Master's programme.</p>
Student	<p>A student is a person who is enrolled 'as a student' at TU Delft in accordance with the Higher Education and Research Act. The following students are included in the education statistics of TU Delft (on the reference date of 1 December):</p> <ul style="list-style-type: none"> • those who are enrolled as full-time or external students • those who intend to complete a TU Delft programme and obtain a degree certificate • those who paid tuition or examination fees to TU Delft² • Only their main study programme counts (a student can be enrolled in multiple study programmes, but will only be counted once). <p>During student counts, the following people are not counted, unless specified otherwise:</p> <ul style="list-style-type: none"> • exchange students • freemover students • minor students • guest students • contract students <p>These exceptions concern students who do study at TU Delft, but who do not intend to take a degree audit here.</p>
Duration of study	<p>The time that elapses (in years) between the first-time enrolment and the time at which the relevant diploma has been achieved. The first-time enrolment is taken to be 1 September of the academic year in question. The time of graduation occurs when the student has met the final requirement for obtaining the diploma in question.</p>
Study switcher	<p>A student who chooses to enrol in a programme that is different to the programme in which he/she was originally enrolled (at TU Delft).</p>
Drop-out rate	<p>Students who leave the programme, either to discontinue their studies or to study somewhere else. There are three different types of drop-out: at the programme level, at the faculty level and at the institutional level (TU Delft-wide)</p>
Joiner from pre-university education	<p>A student who earned the VWO diploma in the same academic year as the one in which he or she enrolled at TU Delft as a first-year student.</p>

² The condition 'Has paid the tuition fee to TU Delft' means that some of the students active in the so-called shared programmes are NOT included in these indicators! (Shared programmes are organised in collaboration with another university, such as the B-LST, B-MST and M-IE programmes, organised by Applied Sciences in collaboration with Leiden University.) In the case of the Applied Sciences faculty, this means a total of more than 450 students.

Appendix 3

8.1 TU Delft personnel and initial degree programmes

Data on the enrolment of personnel in initial degree programmes is not aggregated. If this does occur, it only involves a very small number.

8.2 Outsourcing to private organisations

The degree programmes registered in the CROHO are provided by the institution itself, where a number of programmes are entirely or partly provided in collaboration with partner universities. There is no outsourcing to private organisations. TU Delft does not use public funds for private educational activities.

8.3 Expenditure of public funds on private activities

TU Delft spends public funds on such private activities as providing facilities for students (housing or other facilities). The scope of these activities, permitted by the relevant laws and regulations, is extremely limited and makes a positive contribution to improving the quality of the education and/or research.

8.4 Tailored tracks

There are no paid tailored tracks for external organisations and/or companies within the existing degree programmes.

8.5 Modules

Students occasionally take programme modules without actually intending to obtain the degree certificate. These students belong to the HBO bridging student group (140 students, excluding the Architecture and the Built Environment intake in February) and are enrolled in a Bachelor's degree programme in order to follow a bridging programme in accordance with an agreement with the Ministry. In addition, there is a group of about ten

freemovers each year; these are international students who take several courses at TU Delft. The freemovers are not specified for funding.

8.6 Emergency Fund

An emergency fund exists for students with financial problems. The emergency fund is only used in exceptional cases, always involves a loan and always involves costs other than tuition fees, such as hospital costs. Tuition fees are never reimbursed.

8.7 Following a different degree programme than the one in which the student is enrolled

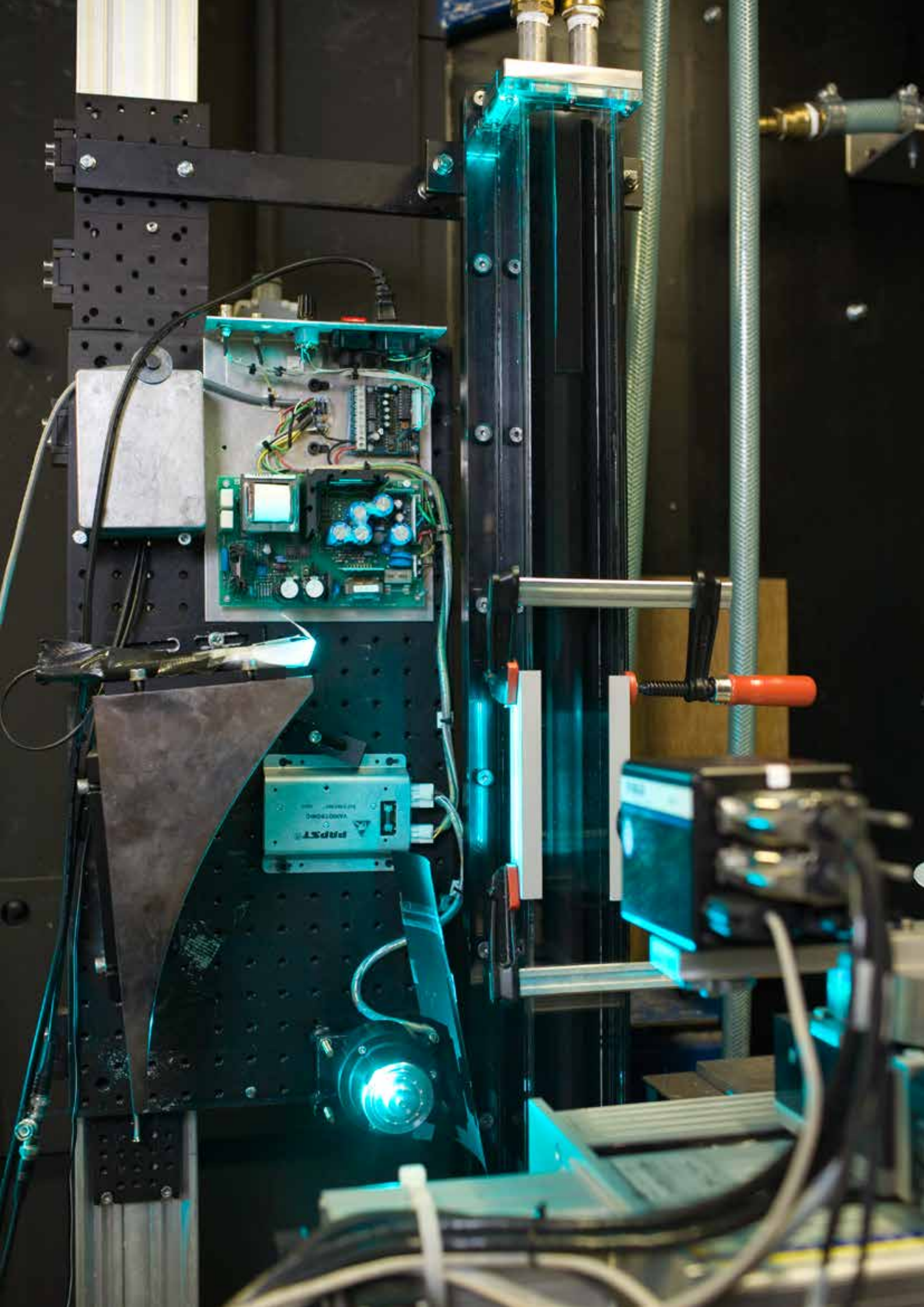
This is not an issue at TU Delft.

8.8 Exchange Agreements

TU Delft has an exchange agreement with 276 knowledge institutions. In the 2013-2014 academic year, 429 foreign students participated in an exchange programme at TU Delft and there was an equivalent number of outgoing exchange students. There were no applications for funding for any of these students. More than 1,500 Dutch students gained international experience during the course of their degree programme this year. An overview of the knowledge institutions with which TU Delft has an exchange agreement can be found on the TU Delft website.

8.9 Awarding exemptions

Students must follow a substantial part of the study programme at TU Delft in order to obtain a degree, as detailed by TU Delft in a policy approved by the Executive Board. Exemptions are assessed at individual level and, if approved, granted by the Board of Examiners. TU Delft has arranged this procedurally in the Rules and Guidelines of the Board of Examiners.



Appendix 4

Full professor appointments in 2014

Name	M/F	chair/field	faculty	date of decision	FTE	duration
Prof. C. Hein	F	History of Architecture and Urban Planning	A+BE	28 January	1.0	5 years
Prof. R. Willumeit	F	Biomaterials Technology	3mE	11 February	1	indefinite
Dr M. Delbeke	M	Architecture Theory	A+BE	11 February	1	5 years
Prof. C. Hein	F	History of Architecture and Urban Planning	A+BE	11 March	1	indefinite
Prof. K. Tuyls	M	Bio-Inspired Robotics and Autonomous Systems	3mE	11 March	0	3 years
Dr C.G. Chorus	M	Antoni van Leeuwenhoek Professor	TPM	1 April	1	indefinite
Dr J. Gascon	M	Antoni van Leeuwenhoek Professor	Applied Sciences	20 May	1	indefinite
Dr P. Palensky	M	Intelligent Electrical Power Grids	EEMCS	17 June	1	indefinite
Prof. J. Klein	M	Patient Safety Engineering	3mE	17 June	0.2	3 years
Prof. E. Deleersnijder	M	Mathematical Modelling of Transport Processes in Geophysical and Environmental Flows	EEMCS	1 July	0.2	5 years
Dr G. Vdovin	M	Integrated Design of High Resolution Imaging Systems	3mE	1 July	0.2	3 years
Dr P.N.A.M. Visser	M	Astrodynamics & Space Missions	AE	1 July	1	indefinite
Dr H. van der Graaf	M	Radiation Technology	Applied Sciences	1 July	0.2	approx. 2.5 years until state pension age
Dr M.P. Hagenzieker	F	Traffic Safety	CEG	1 July	0.2	4 years
Dr H.P. Hofstee	M	Big Data Computer Systems	EEMCS	16 September	0.2	5 years
Dr W. Lacarbonara	M	Engineering Dynamics	3mE	16 September	1	indefinite
Dr C. Bisagni	F	Aerospace Structures	AE	16 September	1	indefinite
Dr C. Giardina	M	Mathematical Statistical Physics	EEMCS	16 September	0.2	5 years
Dr R.C.H.J. van Ham	M	Computational Plant Biotechnology	EEMCS	30 September	0.2	5 years
Prof. K. Blok	M	Energy Systems Analysis	TPM	30 September	0.2	5 years
Dr L.L.A. Vermeersen	M	Planetary Exploration + AE	CEG	14 October	0.8	(0.7 AE and 0.1 CEG) indefinite
Prof. J.W. van der Meer	M	Hydraulic Structures and Flood Risk	CEG	11 November	0	5 years
Dr W. van de Water	M	Turbulence Under Extreme Conditions	3mE	11 November	0.2	3 years
Prof. E. Meijer	M	Big Data Engineering	EEMCS	9 December	0.8	indefinite

Reappointments

Name	M/F	chair/field	faculty	date of decision	FTE	duration
Prof. A. Gisolf	M	Imaging Physics	Applied Sciences	11 February	0	2 years
Prof. T.M. Klapwijk	M	Molecular Electronic Devices	Applied Sciences	11 February	0.6	5 years
Prof. W. van Vierssen September 2017	M	Science System Assessment	CEG	11 February	0	January 2014 until
Prof. A.J.P. Theuwsen	M	CMOS Imaging Sensors	EEMCS	11 March	0.4	6 years
Prof. M.J.G. van Eeten Prof. A.A.J.F.	M	Governance of Infrastructure	TPM	11 March	1	indefinite
van den Dobbelsteen	M	Climate Design & Sustainability	A+BE	25 March	1	indefinite
Prof. H.A.P. Blom	M	Air Traffic Management Safety	AE	15 April	0.2	3 years
Prof. P.H. Meurs	M	Restoration & Transformation	A+BE	15 April	0.4	3 years
Prof. L.C. Rietveld	M	Drinking Water and Urban Water Cycle Technology	CEG	13 May	1	indefinite
Prof. H.L.M. Bakker	M	Management of Engineering Projects	CEG	13 May	0.3	3 years
Prof. R. Marissen	M	Fibre-reinforced Plastics	AE	17 June	0.2	2 years
Prof. J.M.P. Geraedts	M	Mechatronic Design	IDE	24 June	0.5	4 years
Prof. D.M. van Solingen	M	Global Software Engineering	EEMCS	1 July	0.2	4 years
Prof. C.W. Oosterlee	M	Hierarchical Numerical Methods	EEMCS	1 July	0.4	indefinite
Prof. K. Oosterhuis	M	Hyperbody	A+BE	1 July	0.4	approx. 2 years, until state pension age
Prof. J.G. Kuenen	M	General and Applied Microbiology	Applied Sciences	no decision	0.2	1 year
Prof. J.J. Jakimowicz	M	Safety in Healthcare	IDE	25 September	0.2	1 year
Prof. T.J.C. van Terwisga	M	Propulsion & Resistance	3mE	30 September	0.3	5 years
Prof. W.J. Niessen	M	Biomedical Imaging	Applied Sciences	28 October	0.2	5 years
Prof. S. Uhlenbrook, PhD, MSc, habil	M	Experimental; Hydrology	CEG	11 November	0	5 years
Prof. G.J. Medema	M	Water and Health	CEG	11 November	0.2	5 years
Prof. J. de Haan	M	Statistical Methods in the Housing Market	A+BE	25 November	0.2	4 years
Prof. E.P.A.M. Bakkers	M	Nanomaterials	Applied Sciences	9 December	0.4	5 years

Appendix 5

Administrative positions of Executive Board members as at 31 December 2014

Dirk-Jan van den Berg

- President of the Executive Board of TU Delft
- Member of the Supervisory Board, Non-executive Director of Ziggo
- Member of the International Advisory Council of the City of Wuhan (China)
- Member of the International Advisory Board of PolyU Hong Kong
- Member of the International Visitor's Program Advisory Board of the Ministry of Foreign Affairs
- President of the Netherlands Atlantic Association
- Member of the Advisory Committee on International Affairs to the Minister of Foreign Affairs, Working Group on European Affairs
- Member of the International Advisory Board of the Moscow Institute of Physics and Technology
- Member of the Foundation Board of the Unesco-IHE
- Member of the Supervisory Board of Gasunie

Karel Luyben

- Rector Magnificus of TU Delft
- Vice-president of the Executive Board of TU Delft
- President of the Conference of European Schools for Advanced Engineering Education and Research
- Chairman of the Supervisory Board of Applikon Biotechnology
- Chairman of the Consortium Partner Assembly of BE-Basic
- Chairman of the Board of the Dutch Techcentre for Life Sciences
- Chairman of the Supervisory Board of NanoNextNL
- Chairman of the Supervisory Board of the Netherlands Bioinformatics Centre
- Member of the Supervisory Board of BE-Basic, Member of the Supervisory Board of Wetsus
- Chairman of the Supervisory Board of Stichting Goed Afronden
- Member of the Audit Committee of Wetsus
- Member of the Supervisory Board of the Dutch Polymer Institute
- Member of the Executive Committee of KIVI
- Member of the TopTeam for Water

- Member of the TopTeam for Chemistry
- Member of the Coordination Council of Medical Delta
- Member of the Board of Stichting Medical Delta
- Member of the Supervisory Board of Theater De Veste
- Member of the Economic Programme Council of the South Wing
- Member of the General Meeting of Shareholders of the InnovationQuarter

Anka Mulder

- Vice-President for Education & Operations of TU Delft
- Member of the Comité d'orientation stratégique Université de Sorbonne
- Member of the Supervisory Board of Hotelschool The Hague
- Member of the University Advisory Board edX
- Member of the Advisory Board for student housing provider DUWO

The ancillary positions of the members of the Executive Board are with the permission of the Supervisory Board. This permission is not automatically granted. Further information on the TU Delft policy concerning ancillary positions can be found on the TU Delft website.

Administrative positions of Supervisory Board members as at 31 December 2014

Jeroen van der Veer:

- Chairman of the Supervisory Board of TU Delft
- Chairman of the Supervisory Board of ING N.V.
- Chairman of the Supervisory Board of Philips
- Chairman of the Science and Technology Platform
- Chairman of the Supervisory Board of the Netherlands Open Air Museum
- Member of the Supervisory Board of The Concertgebouw Amsterdam
- Member of the Board of the Dutch National Theatre
- Member of the Governing Board of the European Institute of Technology and Innovation (EIT)
- Vice Chairman of the Global Agenda Council The Future of Oil and Gas
- Chairman of the Advisory Council of the Rotterdam Climate Initiative

Douwe Breimer:

- Vice-chairman of the Supervisory Board of TU Delft
- Member of the Executive Board of KU Leuven
- Member of the Governing Body of University College Cork
- Chairman of the Supervisory Board of Museum Boerhaave
- Chairman of the Supervisory Board of Life Sciences Partners Amsterdam
- Chairman of the Supervisory Board of University Campus Fryslân
- President of the Advisory Council of the Medicines Evaluation Board
- Member of the Board of the Modern East Asia Research Center
- Chairman of the Physics and Chemistry Sector Plan Committee of the Ministry of Education, Culture and Science
- Member of the National Advisory Council of the Netherlands Cancer Institute

Maarten Schönfeld:

- Member of the Supervisory Board of TU Delft
- Member of the Supervisory Board of Fugro N.V.
- Member of the Supervisory Board of Arcadis N.V.
- Member of the Supervisory Board of S&B Minerals Holdings S.a.r.l Luxembourg
- Member of the Supervisory Board of the University of the Arts The Hague
- Chairman of the Board of The Children's Fund of Malawi
- Member of the Executive Board of Stichting Prioriteit ICT N.V.

Karla Peijs:

- Member of the Supervisory Board of TU Delft
- Member of the Supervisory Board of ANWB
- Member of the Supervisory Board of Q-park
- Chairperson of the Supervisory Board of Deltares
- Chairperson of the NIDV Foundation
- Chairperson of the Board of the Watersnoodmuseum

Laetitia Smits van Oyen:

- Member of the Supervisory Board of TU Delft
- Member of the Board of Stichting 'Zorg en Bijstand' in

The Hague

- Member of the Board of the African Parks Conservation
- Treasurer of the Ocean Heritage Foundation
- Supervisor of the Curaçao Dolphin Academy N.V.

