

# Update TU Delft Strategic Plan 2007-2010

Priorities, 2009-2010

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# *Updated TU Delft Strategic Plan 2007-2010*

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*Priorities, 2009-2010*



Delft, July 2009



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# *Foreword by the Executive Board*

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The publication of this strategic plan coincides with a period in which the global economy is enduring a severe recession, and the Dutch economy is feeling the effects of this. TU Delft, too, will face as yet unknown consequences of the crisis. At the same time, we have to deal with the challenge of finding solutions to the reduction in government funding that started long before the economic crisis began.

TU Delft is a university of technology with a very strong reputation internationally. The faculties at TU Delft are internationally recognised as being among the best in their field, in terms of education, research and design. The faculties are home to an enormous technical-scientific and economic potential. Their reputation – and therefore that of TU Delft as a whole – is based on the individual and collective achievements of the many generations of researchers, designers, lecturers and countless engineers who have been or are being trained in Delft.

In providing engineers with a package of skills that makes them suitable for employment in a wide range of fields, and through its internationally renowned research and designs, TU Delft makes a substantial contribution to the prosperity and welfare of the Netherlands. Proof of its success can be seen, for example, in the increasing student intake numbers and the scientific and societal impact of our research and designs.

The number of young people electing to take our degree programmes is rising every year. In the previous fifteen years, some 80% of our first-year students have chosen a programme in which design and construction are essential elements: the heart of the engineering sciences.

Our research is use-inspired, in every respect. TU Delft seeks to carry out research that is groundbreaking and innovative, but always with a view to the main aim: how the results might be applied in practice. This is clear from the solutions to societal issues that are put forward by TU Delft. The impact of our research is reflected in our high position in the international university rankings.

The great strength of TU Delft is that we are able to offer the whole chain: from fundamental science to design and construction. The design and construction disciplines form the most important link between pure and unqualified scientific research and innovation. Many innovative designs would not have been created without the insights of fundamental research. At the same time, those innovative products, processes and services would not have been developed without the engineers who were able to convert that fundamental knowledge into ingenious constructions and apply them in a

societal context. Engineering and design knowledge is therefore indispensable when it comes to creating all kinds of innovative products.

In short, then, TU Delft is working on solutions to urgent societal needs. It is training high-level engineers for the employment market. Our university converts scientific knowledge into economic value. This societal value that TU Delft represents is considerable. It is therefore essential that it can continue to operate under favourable conditions.

There is not enough room in a country as small as the Netherlands to allow cutthroat competition at national level for what are scarce resources for education and research. Competition at international level for people, resources and reputation is gaining strength. The most significant competitors are abroad, traditionally in other European countries and the United States, but in the next few decades those in South-East Asia will also become increasingly important: a new knowledge market is evolving there very quickly.

For TU Delft, the European Union is very important. The European education and research area will be further consolidated in the next few years. This offers great opportunities for additional finance for the kind of research and innovation that TU Delft is involved in. Further development of partnerships with other European universities is essential for TU Delft: close alliances of this type are vital for the purpose of gaining a strong and internationally competitive profile. For that reason, TU Delft is continuing to nourish its collaborative partnerships, which are based on the many national and international relationships between academic professionals. Important examples of this are the 3TU Federation and the partnership with Leiden University and Erasmus University Rotterdam.

The starting point for this strategic plan is the TU Delft Strategic Plan 2007-2010, which outlines – from the perspective of the year 2006, and using information available at that time – the policies being proposed by TU Delft in the fields of research, education, knowledge valorisation and organisation. The changes to the conditions in which TU Delft has to operate and the related uncertainties make it necessary to set priorities for the next two years that apply university-wide and are not faculty-dependent. The Executive Board launched this process of readjustment and focus on university-wide priorities together with the faculty deans and the directors of the University Corporate Office in the spring of 2008.<sup>1</sup> The purpose of these priorities is to realise the ambitions and strategy as laid out in the Strategic Plan 2007-2010 as much as possible, in spite of the changing financial background.

The mission and ambitions in the Strategic Plan 2007-2010 are therefore provisional proposals for action for the near future. A university-wide discussion, based partly on the information available at the time, will be needed in the next strategic plan – for the years 2011-2014 – to assess TU Delft's vision, ambitions, strategy and objectives in the light of the prevailing circumstances.

Our university is still focused on contributing to the innovative power of the Netherlands. TU Delft is seeking to put the Netherlands back at the top of the world's most important knowledge economies. By making the necessary investments in research and education, we can use our strong position to help boost the knowledge economy of the Netherlands.

Executive Board, TU Delft

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<sup>1</sup> *In order to arrive at a cohesive entity of university-wide priorities, a number of mission-critical areas have been identified – activities that are vital to TU Delft, the successful fulfilment of which are regarded as important preconditions for achieving the goals of the whole or part of the university. The approach taken here is that described in Niland, J. (2007), The challenge of building world class universities, in UNESCO-CEPES, The world class university and ranking: aiming beyond status.*

**1**

*Profile of TU Delft*

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## Environment

The effects of the significant increase in the world population in the next few decades and the desire for ever-higher standards of living will require major technological breakthroughs in order for basic needs to be met. This global development will have a far-reaching and long-term influence on the societal mission and position of TU Delft in the coming years – all this in a context of further globalisation of political, economic and academic networks.

## Mission

With its unique technological infrastructure, broad knowledge base, worldwide reputation and successful alumni, TU Delft makes a significant contribution to finding responsible solutions to urgent societal problems, at both national and international level.

## Vision

TU Delft seeks to implement its mission by developing new and groundbreaking scientific insights that lead to the technological breakthroughs that are needed: knowledge as a product. At the heart of this is – from the perspective of sustainability – the creation of world-class multidisciplinary research and design. Its faculties and its unique large-scale technical research facilities are an important foundation to that end. TU Delft disseminates its knowledge by training highly qualified knowledge employees and by stimulating knowledge applications: knowledge as power. Its degree programmes have an international appeal. A principal feature of the vision is to attract and exploit as varied a talent pool as possible. Education and research are interwoven and coordinate: both are important preconditions for knowledge valorisation.

## Strategy

In order for its mission and vision to be realised, TU Delft is seeking to achieve the following objectives in 2010, through selective partnerships, both national and international, quality improvements, and by strengthening its profile:

- preferred partner in research to the world's leading (or potentially leading) universities,
- preferred partner in education for students, from both inside and outside the Netherlands,
- preferred supplier of knowledge and graduates to multinational businesses, government organisations, small and medium-sized enterprises and newly launched companies,
- preferred employer for academic talent and support staff.

## Policy

In order to achieve this, TU Delft will concentrate on:

- attracting the world's leading academic talents;
- investing in disciplines that contribute to solving urgent societal problems;
- providing broad-based internationally oriented degree programmes that include active teaching formats;
- creating an inspiring work and study environment;
- investing in large-scale state-of-the-art research facilities;
- developing its strategic alliances with preferred partners;
- providing attractive locations where businesses can base themselves.

# 2

## *Changing Context*

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It is expected that the number of people on earth will increase by almost fifty per cent in the next forty years and that people will want ever-higher levels of prosperity. The rate at which this is taking place means that in 2050, it is estimated that more than six times the earth's potential will be needed to provide every basic need. Application-based science and technology are essential in finding sustainable solutions to societal issues and for strengthening the innovative capacity of the economy. Providing such knowledge is the core task of TU Delft. TU Delft is in a complex and fast-changing field of influence. In the near future, the university will face high expectations regarding the provision of solutions to urgent societal problems through research and education, while at the same time having to manage with a considerable structural fall in income.

### Macro trends in strategic plan 2007-2010

The Strategic Plan 2007-2010 outlines a number of trends – many of which are global in nature – that are relevant to TU Delft.

- Urgent need for technical-scientific solutions.
- Compelling movement towards a global knowledge economy.
- Further development of the European education and research area.
- Structural changes to the university system.
- Increase in knowledge intensity from national and international business.
- Structurally low intake in science subjects in Europe.
- Intensification of global competition for academic talent.
- Strategic importance of large-scale research infrastructure.

The general position of TU Delft with regard to these macro trends is largely unchanged. Nevertheless, the financial situation in particular in which TU Delft finds itself – and its related long-term financial prospects – has now changed considerably. In spite of this, TU Delft would like to adhere as much as possible to the course on which it set out in 2007. For this reason, it is necessary to set priorities within the context of the Strategic Plan 2007-2010. This should produce enough financial benefits both in terms of costs and revenue while at the same time making it possible to achieve the ambitions and objectives in the Strategic Plan 2007-2010 to the required level in 2010.

### Economic recession

The Dutch economy is part of the global economy. An open economy like ours is vulnerable, as highlighted by the forecast of the Netherlands Bureau for Economic Policy Analysis of the effects of the current worldwide recession. The economy of the Netherlands is expected to shrink by 3.5% in 2009, with the budget deficit rising to 5.5%. Unemployment is forecast to increase to around 5.5%, with a further possible rise to 8.75% in 2010. Additionally, a drastic reduction to the tune of 22% (around 13 billion euros) in investment by businesses is expected by 2010 – this could have far-reaching consequences for TU Delft with regard to its income from commercial funding. All told, it should be assumed that the financial position of the government will

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deteriorate sharply and that this will in all likelihood affect the level of resources that are available for higher education.<sup>2</sup>

- TU Delft favours – especially now – substantial investments in the Dutch knowledge system. In doing so, it is advocating the position taken by the Innovation Platform on this matter in its recent '*In de tegenaanval*' ('counterattack') memorandum as well as the joint standpoint of the VSNU.<sup>3</sup>
- Together with the Innovation Platform, TU Delft believes that an extra 1.8 billion euros should be invested in the next three years in knowledge and innovation. This will represent an important contribution to the recovery of the Dutch economy.

### Reduced government financing

TU Delft is expecting a further reduction in financial support from the government over the next few years. Government funding for TU Delft rose between 1999 and 2005 by an average of 4% a year. In 2005, it amounted to 369 million euros, including tuition fees; in 2009, it is 345 million euros. The reasons for the turnaround can be found in a combination of policy measures at national level. First, the introduction of the Smart Mix scheme and the current transfer of the Netherlands Organisation for Scientific Research (NWO) Innovational Research Incentives Scheme. As a result, TU Delft will from 2011 receive 18 million euros less every year in government funding than it did in 2005. Second, TU Delft is facing a decline in the national proportion of diplomas awarded: from 10.6% in 2002 to 6.9% in 2007, the result of the falling intake numbers in the late 1990s. Also, the relatively quick introduction of the BaMa system at TU Delft originally led to a temporary growth in government funding between 2002 and 2006. However, this temporary growth became an unintended shortfall of around 15 million euros in 2007-2008 because of a national funding model that is not in harmony with the fundamentals of the BaMa system.

- TU Delft has drawn the attention of the Ministry of Education, Culture and Science and the VSNU to the deficit in diploma-based funding, with the aim of having it structurally restored so that the budget for this part of the government's funding once again corresponds to the market share of diplomas awarded.
- Partly against the background of the transfer for the NWO Innovational Research Incentives Scheme, TU Delft is concentrating on expanding the opportunities for indirect funding in the Design & Engineering disciplines as well as for taking up a leading position in the case of government-managed programme financing (contract funding).

### Growth in numbers of students and phd candidates

Student intake numbers have increased substantially since 2002 – up by 70 per cent to 3,559 in 2008. This brings the total number of students at TU Delft to 15,321 (January 2009). The number of PhD students has shown a similar pattern since 2002, with a 114 per cent rise to 1,695 in 2008. This scale of growth on several fronts has made it doubly necessary to, among other things, invest in extra educational and supervisory capacity, support capacity and accommodation. In addition to these investments the growth has, because of the necessary upscaling, put extra pressure on operational costs – costs that are incurred many years before any benefits are forthcoming, given the lengthy amount of time that is needed on average for students to obtain their diplomas

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<sup>2</sup> Cf. *Netherlands Bureau for Economic Policy Analysis (February 2009)*, Voorlopige ramingscijfers 2009-2010.

<sup>3</sup> Cf. *Innovation Platform (2009)*, *In de tegenaanval: investeren in mensen en kennis om sneller uit de crisis te komen*

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and PhDs, the numbers of which determine the level of government funding. Total expenses as a result of this upscaling are now around 5% higher than was the case in 2005 (some 25 million euros).

- TU Delft will consider in the short term how the ambitions of the faculties and of the organisation as a whole can be balanced over a period of years with the financial parameters within which TU Delft has to operate.

### Long-term financial prospects

In addition to the developments regarding external sources of income, the autonomous growth in student and PhD candidate numbers and the related burden on costs, there are several other matters that affect the long-term financial prospects of TU Delft. These concern expenses incurred as a result of the fire and the temporary accommodation of the Faculty of Architecture. Regular maintenance of the buildings and the investments in expensive research infrastructure are also relevant factors. TU Delft will have to assume a structural reduction in government funding, in part due to the previously mentioned transfer for the Innovational Research Incentives Scheme as well as the possible consequences of the recession on government expenditure as a whole. Furthermore, not all the revenues from the growth in student and PhD candidate numbers will materialise until later, while the investments and costs that are related to these greater numbers have already increased.

A new national education-costing model is going to be introduced in 2011. An important part of the national education budget will then be reserved for student enrolments for the nominal study duration. The number of diplomas awarded will then be less relevant for the purpose of calculating government funding. Because of the long average (greater than nominal) study duration, and the downward revaluation of diplomas that have not yet been attained, the effects of the new model would appear to be unfavourable to TU Delft. Finally, the university's considerable financial reserves will be needed as a cushion in order for the necessary investments to be made and to temper the consequences of the Innovational Research Incentives Scheme transfer.

- TU Delft will have to exercise even greater caution in 2009-2010 when it comes to expenditure and investments. This situation also requires a re-evaluation of how the financial management and policies of the university should be structured in relation to its ambitions and financial parameters, with a view to securing a sustainable financial position. Because of the uncertainties surrounding budget allocations, a number of guidelines will be formulated in the short term in combination with the 2010 Financial Framework.

# 3

## *Research*

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*Promoting Societal Embedment*

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Technical-scientific research and design are significant driving forces behind innovative and sustainable solutions to societal challenges on both a national and global scale. This is to assume that pioneer technologies will continue to be developed, that groundbreaking scientific insights will continue to be created and, based on the interrelationship between research and education, that the transfer of this knowledge to new generations of students and researchers will also continue. TU Delft would like to position itself in the international knowledge arena as a preferred partner for a select group of leading universities on account of its outstanding research results, its talented academic staff, its prominent presence in global academic and industrial networks, its large-scale state-of-the-art research facilities and its broad knowledge base for multidisciplinary research.

### Priorities for 2009-2010

- Positioning of research through Delft Research Initiatives
- Improving the external visibility of Design & Engineering
- National and international research collaboration
- Strengthening the PhD process
- Need for state-of-the-art research infrastructure

### Positioning research through Delft Research Initiatives (DRI)

Society is demanding to an ever-greater degree a systematic and explicit link between the academic activities of knowledge institutes and their contributions to solving urgent societal problems. These are often complex questions that in most cases entail the resolution of challenging engineering issues. TU Delft has decided to profile a significant proportion of its DRIs according to different themes. The DRIs are concentrated on four societal fields: energy, health, living environment and infrastructure & mobility. Technical-scientific research in the field of ICT has an important role to play here. The DRIs are closely relevant to national and international societal agendas, such as the Societal Innovation Agenda.<sup>4</sup> A DRI is a large-scale and substantially cohesive classification of research activities based around one of the four societal themes mentioned above. They run for a period of ten years. Through high-level technical-scientific research and innovative designs and constructions in these four fields, TU Delft is seeking to further strengthen its position as a strategic partner to government, businesses and its academic peers.<sup>5</sup> As an integrated part of this positioning of DRI research, investments will also be made in the next few years in fundamental aspects of technical-scientific research, such as in the field of bionanoscience.

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<sup>4</sup> Cf. Ministry of Economic Affairs (2008) – Lange termijn strategie: Naar een agenda voor duurzame productiviteitsgroei *as well as* Maatschappelijke Innovatie Agenda's Water, Gezondheid en Veiligheid.

<sup>5</sup> Cf. Kennis in Kaart 2008 Hoger Onderwijs & Onderzoek, Voortgang afspraken uit strategische agenda hoger onderwijs-, onderzoek en wetenschapsbeleid.

#### 2009-2010

- The formal launch of the Delft Research Initiatives will be in the spring of 2009, and their activities will be in accordance with the DRI Strategic Perspectives 2009-2013.
- An internal process evaluation will be held in the second half of 2010 to broadly examine how the DRIs are developing financially, organisationally and in terms of their content in the light of the DRI Strategic Perspectives 2009-2013. There will be an external interim evaluation in 2012.

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## Improving the external visibility of Design & Engineering

Design & Engineering make a very weighty – but not sufficiently prominent – contribution to stimulating numerous important societal and economic innovations. TU Delft considers it vital that the capacity for finding solutions and for innovation in these disciplines that are so relevant to society should be high on the agendas of key societal organisations. Design & Engineering feature in every DRI, and in that respect Design & Engineering, functioning as cross bracing between the four DRI themes, form a crucial part of TU Delft research positioning. TU Delft would like – in the 3TU federation, among others – to work towards a situation in which Design & Engineering are regarded as ground-breaking research activities that are essential to society. TU Delft has noted that Design & Engineering disciplines are underrepresented in regular indirect and contract funding. It is important that this programmatic underrepresentation is rectified, so that researchers in these disciplines who are working with high-quality and relevant proposals can draw from the resources of the Netherlands Organisation for Scientific Research (NWO) and the Economic Structure Enhancing Fund (FES). Against that background, an evaluation framework, devised by the 3TU federation and others, will have to be discussed with the Royal Netherlands Academy of Arts and Sciences, among other bodies.

### 2009-2010

- The TU Delft Design & Engineering Platform will be set up in the spring of 2009. Its task will be to draw up its own medium-term plan for 2009-2010 for Design & Engineering – the theme that links the DRIs – in parallel with the plans of the DRIs themselves.
- This TU Delft Design & Engineering plan will include concrete proposals for improving the external positioning of Design & Engineering, with the aim of enhancing the status of Design & Engineering in the academic world and in the eyes of societal stakeholders, and thereby increasing the likelihood of Design & Engineering-based proposals attracting more indirect and commercial funding. One way of achieving the latter is to devise a proposal to that effect for the FES.

## National and international research collaboration

Research activities are often embedded in national and international partnership agreements: from small-scale national peer-to-peer contacts to large-scale international research programmes. TU Delft operates at faculty level and on a peer-to-peer basis in many academic networks: regional, national and international. The DRIs have an important role in the further development of strategic partnership agreements with knowledge institutes, government bodies and businesses. For example, at regional level there is close collaboration in the field of healthcare with the universities in Leiden and Rotterdam through DRI Health, while the 3TU collaboration in the area of sustainable energy has now come into being. In the IDEA League, the IDEA League Excellence Clusters are closely related to the themes that have been defined in the DRIs. It is important that strategic collaboration agreements (including those in the future) with other universities – at full university level – are properly rooted in the relevant academic field. A theme-oriented focus of national and international collaboration – as advocated through the DRIs – serves to contribute to the strengthening of the position and societal visibility of TU Delft. The European

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Union and in particular the programmes that are being developed in the context of the European Research Area are of great significance to TU Delft, both as far as positioning and the opportunities that this offers for programmatic financing of research are concerned.

#### 2009-2010

- In order to better define and facilitate national and international research collaborations with universities with which TU Delft enters agreements at full university level, an assessment will be made in 2009 to see if, for example, the formation of a TU Delft Research Fellowship Fund linked to one of the DRIs can contribute to this process.
- Furthermore, the 3TU collaboration agreement will be more clearly defined as a result of the completion of the six 3TU Centres of Excellence. At regional level, too, TU Delft will be collaborating with Leiden University and Erasmus University Rotterdam.

### Strengthening the PhD process

TU Delft would like to see the PhD process improved quickly. A sound PhD process depends on three pillars: good supervision by the academic staff, a transparent embedment in the research organisation and especially in research training courses, and talented candidates. In recent years, the number of PhD candidates with a four-year contract at TU Delft has risen from around 600 to 1,000. The maximum number, in terms of supervisory capacity by the academic staff, is 1,695 (2008).<sup>6</sup> Proportionally, there has been no rise in the numbers of other academic staff. The increase in the supervisory burden and the related pressure on the quality of the PhD process mean that additional measures are called for, such as the introduction of a PhD monitoring system and Doctoral Education quality safeguards in a Graduate School for example. Graduate Schools seek to strengthen the teaching part of the researcher training course, to offer PhD candidates a clear organisational embedment and at the same time to safeguard the responsibilities associated with the course with regard to, among other things, the substantive supervision of PhD candidates. The purpose is to improve the numbers of students transferring to do a PhD and the completion rate, as well as to make career prospects more attractive. TU Delft is maintaining the research schools at which it is the coordinating university or in which it is participating. A Graduate School can be shaped within a research school, but can also serve as a structure for PhD courses where no research school is available.

#### 2009-2010

- In anticipation of the introduction of a PhD monitoring system and the results that it will produce, TU Delft is considering the possibility of setting up the position of an ombudsman for PhD candidates in order to generate greater input regarding the development of a code of practice and to encourage more candidates to complete the PhD process successfully.
- To strengthen PhD processes – and from an operational point of view – consideration will be given in 2009 as to how many new PhD candidates the organisation is capable of taking on every year.
- TU Delft is actively dedicated to managing talented PhD candidates and to making careers in the engineering sciences more attractive.

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<sup>6</sup> Around 750 PhD candidates of the overall total are registered in PeopleSoft not as employees, but as guests. 'Employee' here refers to employees of TU Delft or elsewhere

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- To strengthen PhD processes, generic end-of-course skills will be formulated that will apply to every TU Delft PhD student.
  - In order to guarantee the quality of supervision, a TU Delft-wide code of practice will be drawn up. Every effort will be made in the course of its development and implementation to garner support for the code.
  - TU Delft would like to experiment with the Graduate School concept in 2009-2010, using the faculties of Applied Sciences; Electrical Engineering, Mathematics and Computer Sciences; Mechanical, Maritime and Materials Engineering; and Architecture, in which a number of master's students will be given the opportunity to do a Research Honours Track in the fifth year of their initial course. This will take place in close collaboration with those research schools where the embedment of PhD candidates is already established and organised efficiently and effectively.

### Need for state-of-the-art research infrastructure

TU Delft believes a necessary precondition for keeping individuals with academic talent at TU Delft, for being able to continue performing ground-breaking research, and for achieving technological breakthroughs, is to have research facilities that are state-of-the-art. Such facilities are also essential for training new generations of researchers and knowledge employees. However, the long-term financing of research facilities – particularly in the light of the changing nature of government funding – is under severe pressure. As a result, it is almost impossible to make investments in research infrastructure, which in the near future can be maintained only if there is sufficient will from government funding and from industry to finance it, through reimbursement of integrated costs.

#### 2009-2010

- In 2009, TU Delft will be making an inventory of its research infrastructure – in coordination with the 3TU federation – so that government and industry can gain an insight into its value. The inventory will form the basis for a plan, to be drawn up in 2009-2010, for replacing and updating the research infrastructure.

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# *Education*

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*Improving Quality  
and Pass Rates*

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TU Delft aims to train engineers for the future – engineers who are skilled, willing to work in teams, focused on the further development of their own knowledge field, internationally oriented, who have initiative and a sense of responsibility, who take account of the societal context in which they are operating, and who can use these qualities to contribute to solutions to the pressing issues facing society. In 2010, TU Delft is seeking to be a preferred partner for students worldwide through the challenging content and enlightening inspiration of its degree programmes. Proof of this can be found in the growing number of students who are deciding to study at TU Delft. In order to train tomorrow's engineers, TU Delft offers programmes with challenging content, by deliberately linking them to urgent societal themes, especially those relating to the field of sustainability. The programmes can be said to be enlightening and inspirational because of the widespread use of active teaching methods. TU Delft sees students as its future alumni – alumni who can be employed in a wide number of fields and who are in a strong position when it comes to competing on the international employment market. An engineering degree from Delft is seen nationally and internationally as top notch. In return for the demands it makes of its students and lecturers, TU Delft provides good facilities.

### Priorities for 2009-2010

- Intake, educational portfolio and study success rates
- Targeted communication regarding the curriculum
- Strengthening the importance of teaching in academic careers
- National and international strategic collaboration in education
- Establishing a TU Delft-wide education quality assurance system
- Strengthening the quality of educational infrastructure

### Intake, educational portfolio and study success rates

An important aspect of the Strategic Plan 2007-2010 is the focus on encouraging more students to enrol. This is logical, given the low intake numbers of previous years. The growth targets have easily been reached. TU Delft sees it as its social mission to accommodate further growth and believes that the quality of education it provides should not be compromised in the process. During the next few years, TU Delft will have to meet the challenge of maintaining this level of quality in the face of a higher intake of students in combination with reduced funding from the government. Among other things, this means that TU Delft will have to examine its educational portfolio more closely in order to see whether its programmes are relevant to the wishes of students and the reduction in resources, and whether it has sufficient focus and mass. The problems of poor pass rates and the high level of students dropping out of degree programmes are difficult to tackle. It is acknowledged that there are multiple factors that determine success rates and that the required remedy should take this into account. This is something that TU Delft is constantly looking at: at the time of the composition of this document, the Executive Board decided (after the relevant consultation process had been completed) to introduce a system of binding recommendation on continuation of studies. It is important for students themselves, as well as from a societal point of view, to limit the dropout rate. Whenever a student does drop out from a programme,

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he or she should do so at the earliest possible stage, namely in the first year. By 2012, TU Delft is aiming to cut drop-out rates in the second and third years of BSc programmes by half, thereby underlining the performance agreements that the VSNU has made with the Minister of Education, Culture and Science with regard to study success rates.<sup>7</sup> The intention by 2012 is that 50% of bachelor's students will obtain their degrees within four years. To this end, appropriate changes are needed in the information provided for students seeking to transfer from VWO (pre-university education) to the university. Action will also be required during the degree programmes, such as the stimulation of a more personal teaching culture, the development of varied working methods, the provision of good facilities and by laying down clear rules for progressing from one part of a programme to the next.

#### 2009-2010

- In 2009, TU Delft will be starting a process for examining its educational portfolio, including a search for a new balance between the content and the size of the curriculum as a whole. This means that both the quality and the quantity of the educational portfolio will be tackled. One area of attention will be the provision of minor subjects and any possible overlaps that may exist there.
- TU Delft will also be taking action to further streamline student supervision, especially in the first year of the degree programmes, though obviously this will depend on the context of the individual programmes.
- TU Delft is seeking to develop new challenges for talented students, such as an honours track in the bachelor's programme.
- TU Delft is seeking to devise measures aimed at further promoting study success rates. Management information in this area will be strengthened in order that study success rates can be better monitored.

### Targeted communication regarding the curriculum

TU Delft would like to attract students who will complete their studies with us successfully. This means that information and communication should paint as clear a picture as possible of the competencies that students require when they enrol. In spite of the large growth in student numbers, there is only limited interest in some of the programmes. TU Delft would like to focus more on these programmes in its communications – especially as it is so important that engineers be trained in these disciplines, which are so vital to society.

#### 2009-2010

- In the information provided to potential students, extra emphasis will be laid on opportunities and risks: what is expected of students, and what skills do students need in order to successfully complete the programme.
- TU Delft is devising differentiated recruitment policies, with an extra focus on the programmes that have not profited from the growth in student intake numbers.

### Strengthening the importance of teaching in academic careers

Interesting and effective education depends to a large extent on the efforts of motivated and didactically competent teachers who are appreciated for the work they do. The principle here is that teaching, alongside research, is an

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<sup>7</sup> Cf. *Kennis in Kaart 2008 Hoger Onderwijs & Onderzoek*, Voortgang afspraken uit strategische agenda hoger onderwijs-, onderzoek en wetenschapsbeleid.

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important part of the career of academic employees. It is against that background that the idea of providing didactic training courses as standard for new members of the teaching staff is being examined. Also under consideration is how, for example, in the framework of the Result & Development Cycle, agreements might be reached with existing members of the teaching staff on the possible further enhancement of their didactic skills. In addition, TU Delft would like to strengthen the didactic leadership of managers with the help of training courses. This would involve deploying existing HR instruments more effectively in order to encourage greater successes in the teaching field and to make sure that such successes are better appreciated. TU Delft would also like to improve its positioning in the field of ICT in teaching.

#### 2009-2010

- TU Delft is drawing up university-wide agreements to make teaching a more fundamental aspect of the recruitment, selection and careers of academic employees. This also includes creating the right conditions for improving teaching levels still further, such as the provision of training courses with a focus on ICT and English.

### National and international strategic collaboration in education

The education provided by TU Delft is aimed at students from both inside and outside the Netherlands and the purpose of the programmes is to enable them to compete on the national and international employment markets. TU Delft regards the development of collaboration agreements in the field of education as a necessary precondition for being among the top-level educational establishments in a globalising and competitive world. The 3TU federation, in the form of the 3TU Graduate School, makes a significant contribution in this respect. Regionally based collaboration is also important here. Being in a competitively advantageous position means that TU Delft can be selective with regard to its choice of partners – quality is a key criterion. For that reason, TU Delft strictly applies the relevant assessment procedure when evaluating or approving new joint degree programmes.

#### 2009-2010

- TU Delft is working within the 3TU federation on the creation of the 3TU Graduate School; this will make it easier to provide an internationally appealing range of master's programmes in engineering disciplines.
- International master's students seeking to come to TU Delft continue to be subject to rigorous admission requirements, to which the TU Delft admission procedures will be more closely tailored.
- TU Delft is taking measures to further internationalise the campus, given the growth and requirements of the international community on campus.
- TU Delft is also working on further improvements to how talented HBO (higher professional education) students can transfer to degree programmes at TU Delft. Nevertheless, HBO students face tough entry requirements before being admitted to TU Delft, to which the TU Delft admission procedures will be more closely tailored.

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## Establishing a TU Delft-wide education quality assurance system

TU Delft wishes to create a system of quality assurance in preparation for a possible accreditation. This should also include an element of peer review. A system of this kind is very important, as accreditation is fundamental for the national and international reputation of the degree programmes. The system will enable TU Delft to better monitor its educational objectives, such as those relating to study success rates.

### 2009-2010

- TU Delft is introducing a university-wide quality assurance system in preparation for official accreditation, following changes to the present Higher Education and Academic Research Act.
- TU Delft is investigating the possibilities for joining international quality assurance systems, educational rankings and accreditation. An administrative balance is being drawn up between the efforts that this would entail and the rewards it would bring for TU Delft.

## Strengthening the quality of educational infrastructure

TU Delft provides a stimulating educational environment and good logistical support for its degree programmes. It seeks to attain a satisfaction rate among students that is comparable to those of the highest-scoring universities in the Netherlands. Services should be in line with students' expectations, but without losing sight of the objectives of TU Delft.

### 2009-2010

- TU Delft is taking measures to improve student satisfaction scores. On a scale of 10, it is currently (2008) 6.7. The target is to attain a score of 7.0 on a scale that realistically can be expected to reach around 7.2.
- TU Delft will also reveal rates of satisfaction among the teaching staff in 2009.
- TU Delft intends to increase the number of classrooms, with the focus not only on quantity, but also on the quality of seating and ICT facilities.
- TU Delft is continuing its efforts at making further improvements to digital services for students and teaching staff.

# 5

## *Knowledge Valorisation*

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*More effective marketing  
of research agenda*

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Using scientific knowledge, once it has been developed, is essential for contributing to the solutions to major issues concerning sustainability. Technological universities have an important role to play here – it is there, after all, that work is being carried out into the technological breakthroughs that are needed to defeat the problems relating to energy, water, raw materials, construction and production. The use of scientific knowledge is also a precondition for sustained economic growth, in both the Netherlands and Europe. Making accessible its reservoir of knowledge and knowledge potential for society is – particularly in the case of research – the third core task of TU Delft.

### Priorities for 2009-2010

- Optimum exploitation of intellectual property
- Strategic collaboration with government and industry
- Strengthening relationships with small and medium-sized businesses
- Creation of Science Port Holland
- Encouraging entrepreneurship

### Optimum exploitation of intellectual property

TU Delft would like to significantly raise the level of awareness among its academic employees of the importance of intellectual property and knowledge valorisation by using the increase in the number of applied patents as an indicator. It is seeking to identify and realise the commercial potential of the patents in the current portfolio. TU Delft will claim property rights for itself on a more frequent basis, and build up a strong patent portfolio with clear market prospects. In doing so, it will be necessary to find the right balance between operating costs and any possible benefits. By making more technology and market combinations, it will be possible to commercialise more of the intellectual property owned by TU Delft. When transferring intellectual property, the agreements TU Delft makes with external parties are based on the value of the intellectual property.

#### 2009-2010

- In 2009, TU Delft will be drawing up a technology-market agenda, based on an evaluation of its intellectual property portfolio. It is partly in this context that a committee will be set up to deal with conflicts of interest that may occur when TU Delft knowledge is being used. A TU Delft holding company, Delft Enterprise, will also be established.

### Strategic collaboration with government and industry

TU Delft would like to develop structural collaboration agreements with multi-nationals, major technological companies and relevant government bodies. This will be done by making strategic and long-term agreements about research, and preferably about training and degree programmes (lifelong learning), knowledge management and facility sharing. At the same time, TU Delft will aim to include contractual conditions that are more in keeping with actual costs and the quality of the services provided.

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#### 2009-2010

- An Industrial Liaison Programme will be developed in 2009. A post-doctoral programme in Industrial Ecology will also be marketed in collaboration with the Rotterdam Climate Initiative.

### Strengthening relationships with small and medium-sized businesses

TU Delft would like to see a firm link between the development of knowledge and the application of knowledge in practice by small and medium-sized businesses. This mostly concerns providing support when products and services are renewed. In addition to intensifying its working relationship with the building sector, TU Delft is concentrating on collaborating at industry level in the field of ICT in combination with the Delft ICT network, in the field of glasshouse horticulture via the Technological Innovations in Glasshouse Horticulture platform, and on medical applications via the Business 2 Science Portal with the Leiden University Medical Centre and the Erasmus University Medical Centre. It is clear, then, that TU Delft is actively contributing to the ability of small and medium-sized businesses to continue innovating.

#### 2009-2010

- A small and medium-sized business platform for the construction industry is being founded in 2009, while the platform for the glasshouse horticultural industry will be added to the Greenport Campus network. It is also the intention to set up an 'operation room-innovation centre'.

### Creation of Science Port Holland

TU Delft is seeking to become an attractive base for companies with a high R&D component, and is therefore creating a science park in the immediate vicinity, with the support of the Province of Zuid Holland and the Delft and Rotterdam city councils. The park will enable businesses to gain the maximum possible benefit from TU Delft in its role as a knowledge centre. The proximity of TU Delft will be promoted as a competitive advantage. Working in close cooperation with local and provincial governments, TU Delft is aiming in the next planning period to generate new economic activity. To develop the site, infrastructure for the up-and coming businesses is essential, and this will take the form of new buildings for the YES!Delft Incubation Centre. For the time being, the land will be sold to the businesses that base themselves in the science park. The plots of land will be allocated by TU Delft, which also has the right to veto any proposals.

#### 2009-2010

- The building for housing new businesses on the Science Port Holland site will be made ready for users of YES!Delft, students, classrooms for the Delft Centre for Entrepreneurship and Delft Top Tech.
- A business plan will be devised for attracting companies to Science Port Holland and will be implemented on the basis of a number of themed areas.

### Encouraging entrepreneurship

TU Delft would like to see top-level research translated into advanced business activity around the university campus. A structured approach is needed to acquire and develop this, and it will be achieved through the Delft Centre for

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Entrepreneurship which provides training in entrepreneurship for students on bachelor's and master's programmes. TU Delft is also working together with market parties – government bodies, businesses and investors – in supporting newly launched technology companies. In particular, TU Delft is seeking to provide opportunities to new businesses that have the potential to build up a structural relationship with the university. Support is available for a maximum of three years.

#### 2009-2010

- Details of the TU Delft New Businesses Policies are being worked out, as is the Entrepreneurship Development Programme for both new and established businesses. Entrepreneurship labs are also being built and collaboration with sustainable new business programmes (ENVIU) in Rotterdam is being strengthened.

# 6

## *Organisation*

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*Improving Operational  
Effectiveness*

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It is the general ambition of TU Delft to position itself on the international stage as a preferred partner in the fields of education, research and knowledge valorisation. A necessary condition for this is that the organisation runs in such a way as to allow these primary activities to function decisively and effectively. This in turn makes possible the provision of a wide-ranging and high-quality package of general amenities and services.

### Priorities in 2009-2010

- Adjustment of TU Delft-wide financial and economic policies
- Strengthening of support for academic staff
- Organisational development of academic departments
- Development and implementation of HR strategy
- Modernisation of TU Delft campus
- Strengthening the marketing and communication strategy
- Improving the quality of services provided

### Adjustment of TU Delft-wide financial and economic policies

As already stated, the financial position of TU Delft is under pressure: government funding is shrinking, while costs are rising. The urgency with which this situation needs to be addressed is underlined by the continuing economic recession. This means that financial and economic policies and instruments across TU Delft have to be reassessed. It is proposed that the internal allocation model for drawing up financial frameworks be readjusted for 2010, with further alterations being necessary from 2011. The current model, by which in recent years government funding has been allocated and offered in the form of incentives, has had its day. Consideration is now being given to how resources might realistically be distributed internally in 2009-2011, but with retention of a form of the current system of incentives. The introduction of a new national system for setting education budgets is expected in 2011. TU Delft is then proposing to make in particular the financial aspects of its entire operations more transparent, and to strengthen the important role of joint purchases for the whole university. It will be necessary against this background to make systematic improvements to the visibility of the management unit budgets, and to significantly limit TU Delft-wide expenditure on the hiring in of external employees. Finally, in the previous period the TU Delft investment agenda included a number of large-scale infrastructural investment proposals, such as new faculty and teaching facility buildings and necessary maintenance of existing infrastructure. However, the reduction in government funding has cast a shadow over the investment agenda. There will have to be some prioritisation with regard to these investments and this will be done through the long-term real estate investment plan. The Works Council will be informed, in confidence, about this plan.

#### 2009-2010

- Starting in the spring of 2009, and in the light of the changed circumstances described above, a number of interrelated activities and projects will be launched by the Executive Board that will be aimed at readjusting financial

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and economic policies and instruments across TU Delft. The aim is to create a sustainable financial position even in times of external and internal turbulence.

- In 2009, consideration will be given to the long-term planning and organisational structure of the Faculty of Civil Engineering and Geosciences and the Faculty of Architecture. It is of course very important that all parties involved continue to communicate clearly during these complex processes of change.
- Consideration is being given to where the Faculty of Architecture is to be housed in the future. Various options have emerged from which one will be selected, in 2009 if possible.

### Strengthening of support for academic staff

TU Delft would like to see a substantial increase in its share of indirect and commercial funding, and the academic staff have a key role to play here. Being able to provide proactive and high-quality support to academic staff while they are devising and submitting research projects and programmes for additional external funding is an important precondition. Support of this kind should preferably be on hand as near to the academic work floor as possible. One way to be more successful in major national and international grant schemes is to set up a systematic inventory of investment proposals and also to administratively prioritise proposals that have been submitted by TU Delft. Although playing a leading role in large-scale research consortia involves considerable management expense, such a leading role can be the key to gaining an increased share of commercial funding in particular.

#### 2009-2010

- Consideration will be given in 2009 to how the Valorisation Centre can be embedded into the standing organisation of the University Corporate Office organisation and how it can remain there permanently in the future.
- In order to be able to play a leading role in large-scale research consortia, the creation of a network of project managers within TU Delft is being considered who would then be linked in particular to the DRIs.
- Training programmes for academics and support staff will also be organised, with a focus on writing and submitting projects to give them a good chance of success.
- A project will be starting in 2009 with the emphasis on a closer alignment of supply and demand in the area of research support; the first step in this context will be to identify how accessible the information about this support is.

### Organisational development of academic departments

The production and transfer of academic knowledge is undergoing far-reaching changes. Universities no longer have a monopoly on the production and transfer of academic knowledge. Increasingly, it is cross-border multidisciplinary networks consisting of numerous organisations that produce, use and transfer knowledge to a global knowledge market.<sup>8</sup> In parallel to this development, universities themselves are operating more and more as open network organisations. Disciplines and sub-disciplines – which at TU Delft are grouped in departments within the faculties – all have their own biotope. These biotopes each have their own relevant national or international academic networks and

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<sup>8</sup> Cf. Gibbons, M. (et al), 1994, *The new production of knowledge*.

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their own specific contacts with government and industry. In the long run, these changes have had and will continue to have an effect on how universities are organised and managed. A number of years ago, for example, the academic department was introduced as a third organisational and management layer. Changes of insight can lead to earlier ideas being readjusted.

#### 2009-2010

- To start with, discussions will be launched in 2009 with the academic community at TU Delft using the motto, 'Future of the Universities/ Universities of the Future'. They will cover the possible future development of the academic departments in the faculties and how to position them in the light of the external changes that are taking place.

### Development and implementation of HR strategy

TU Delft is a talent driven organisation *par excellence*. It asks much of its academic staff. In order to realise its ambitions, TU Delft must position itself as a preferred employer on the global knowledge market, as an employer that allows its talented people to excel in their field in a world-class and inspiring environment. They are the driving force behind and for TU Delft. It is essential that TU Delft invests more in its academic potential and especially in the conditions that make the continued delivery of world-class achievements possible. These conditions are created by outstanding and highly motivated staff. For that reason, an HR strategy will be developed in 2009 in relation to TU Delft. It will make clear what people can expect from TU Delft as an employer and what TU Delft expects from its employees. It is important, too, that students and PhD candidates be made aware of the opportunities and advantages of an academic career. TU Delft is also keen that its employees develop skills at an early stage in their careers that are necessary for them to be able to function properly, both inside and outside TU Delft.

#### 2009-2010

- An HR strategy will be developed for TU Delft employees in 2009, for both academic and support staff. One of the central themes will be that teaching, together with research, should occupy an important place in the careers of academic staff.
- Also in 2009, the talent management plan will be implemented and communication with the employment market improved. An Employability Centre will be set up for advising individuals, and greater emphasis will be laid on the important role of the employee adviser for individuals seeking advice.
- In the light of TU Delft's ambitions for greater internationalisation, an International Office will be set up. It will provide support for foreign staff and students wherever necessary.

### Improving the quality of services provided

Effective support processes make an essential contribution to the fulfilment of TU Delft's mission, and therefore to strengthening its international position. It is therefore necessary to have high-quality support processes. The Support Services Organisation internal review project group carried out a survey in 2008 into the quality of service provision and into where there was room for improvement. The project group's findings painted a varied picture as far as

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levels of quality were concerned. The idea that many of the services are very good, but that there is much scope for improvement, was shared by many. Generally speaking though, the project group's findings did not justify a review of the basic principles of how support services are currently organised.

#### 2009-2010

- The formal decision-making process in relation to the report by the Support Services Organisation internal review project group will be completed in the spring of 2009. The report is regarded as a broad-based programme for improvement for service provision as a whole within the university. The programme will have to be embedded into the organisation.
- At the same time, efforts will be made – wherever formally possible and desirable from the point of view of the substance of the report – at implementing solutions to the problems identified in the support service organisation. This includes making significant improvements to data provision and monitoring, especially in the personnel and finance fields; this could clarify the situation regarding outsourced work.

### Modernisation of TU Delft campus

TU Delft would like to see its campus as an environment that encourages people to spend their time there, and invites them to interact and contributes to the appealing character of the university. To that end, the campus has been transformed into an attractive, park-like and car-free area. At the new heart of the TU Delft campus – the Mekelpark – space will be created for ideas and designs by students. The latest developments regarding Mijnbouwstraat 120, the former head office on Julianalaan, the new buildings for the departments of the Faculty of Applied Sciences and for the Faculty of Architecture also affect the campus concept. The northern side of the TU Delft campus is included as an integral part of the campus concept in this design. The worsening long-term financial prospects, the fire in the Faculty of Architecture and the need for more student accommodation mean that a long, hard look will have to be taken at planned building projects in 2009-2010. However, TU Delft still has the intention of giving the go-ahead to the construction of the new Faculty of Applied Sciences building.

#### 2009-2010

- TU Delft would like to build two pavilions in the Mekelpark with amenities for the whole campus, including small-scale shops (operating commercially). The 'Shell' location will also be developed, with the emphasis being on accommodation for students and possibly some services. Finally, TU Delft would like to fill up and 'compress' the campus with student flats, among other things. Safety aspects and user-friendliness are essential features of any preparations for further development of the campus.

### Strengthening the marketing & communication strategy

TU Delft is a strong brand. Employees from the university appear frequently as experts in the national news. TU Delft can make its employees and students more aware of this and help boost its strong image still further. It will also inform its employees about internal and external developments that affect the university in relation to its ambitions and operations. For specific external target groups, TU Delft has devised a targeted marketing strategy based on the life cycle principle ('from Lego to alumnus'). As a means of portraying its

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societal role and reputation, it would also like to draw the attention of its stakeholders, on a more systematic basis, to the contribution it makes in a broader sense to the economy and society. This would additionally serve to make more stakeholders aware of TU Delft, and it could result in our being in a stronger position with regard to entering into strategic relationships. Modern media that are appropriate to the relevant target group will be used for this purpose.

#### 2009-2010

- The 2009 Annual Marketing & Communication Plan will be modified in the first quarter in the light of the changing financial background and revised priorities of the faculties and university as a whole, as described above. The focus will be placed even more on making the TU Delft organisation communicative, so that we are more oriented towards facing the outside world from the inside. The emphasis will be placed primarily on strengthening the websites and using them more effectively, and on approaching the media in a proactive fashion.

# 7

# *Implementation*

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TU Delft regards the strategic plan as a means by which it can realise its mission and strategic objectives for the coming period, 2009-2010. How the plan is to be implemented is described below.

### Planning and control cycle

The important objectives for the planning and control cycle are making the strategy and policies of the university, faculties, departments and support services more cohesive, and promoting administrative dialogue and consistency between these units. It is a continuous process of learning and improving: as TU Delft and the faculties, are we doing the right things, and what we do, are we doing it well? As well as the internal objectives, there are also performance agreements between individual universities and the Ministry of Education, Culture and Science that must be adhered to.

### Long-term faculty plans

The faculties formulate their vision, mission, strategy and policy outlines in their long-term faculty plans. They do so from their own perspective but within the strategic goals and framework of the university as a whole, as set out in the strategic plan. The long-time faculty plans are adjusted every two years and are intended to cover a period of four years, comparable to the strategic plan. These long-term plans also provide input for the following strategic plan.

### Bilateral administrative consultations

Every autumn, bilateral discussions are held between the Executive Board, and the dean and management team of each individual faculty as part of the integrated planning and control cycle. The talks cover the attainment of the faculty's objectives. At the same time, agreements are made about the most important objectives or challenges for each faculty for the coming year. These agreements are related to the content of policies as well as to the attainment of target scores in the area of education, research, knowledge valorisation and management. A condition of the agreements is that they should be in keeping with the long-term financial frameworks of the faculty. As already stated, further restraint will be needed with regard to expenditure and investments in 2009-2010.

### Management contracts

The outcomes of these bilateral discussions are set out in an annual management contract. They also form an integral part of the appraisals of the deans – these are held every spring by the Executive Board, and cover the previous calendar year.

### Employee participation

In the near future, the planning and control cycle will be further integrated into the TU Delft administrative organisation and management system. As part of the regular bilateral discussions with the faculties, and given its role and responsibilities, the Executive Board will put on the agenda the strengthening of the involvement of faculty employee participation bodies in drawing up faculty plans. In accordance with legal requirements, any major alterations to the strategic plan that are necessary will be put before the General Assembly of Councils for approval.

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## Formulation of the Annual Administrative Agenda

The Annual Administrative Agenda is drawn up following discussions between the Operational Committee and the University Corporate Office team of directors. Administrative priorities, which are often driven by external factors, and the available capacity in the organisation form the basis on which the goals are selected for inclusion in the Agenda. It is drawn up on 1 October each year and put before the Supervisory Board, and before the General Assembly of Councils for information purposes. The Annual Administrative Agenda functions primarily as an administrative planning document in which the annual goals, and the speed and method by which they are to be achieved, are portrayed.

## Implementation of priorities

The priorities are aimed at implementing necessary changes and improvements across the university. The process of translating them into concrete action takes place through the long-term faculty plans and the University Corporate Office long-term plan. Every priority has its own administrative 'coordinating faculty' on the Executive Board. The content and progress of the priorities are regularly discussed in the Executive Board and from time to time also feature in the discussions in the Operational Committee, the Team of Directors and the General Assembly of Councils. The annual report includes a yearly progress report.

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*TU Delft targets  
up to 2010*

The TU Delft Annual Report contains details about whether these targets are reached. In the light of the circumstances that prevail at the time, these values and their underlying objectives will be reassessed for the purposes of the 2011-2013 strategic plan.<sup>9</sup>

Subject	Position in 2008	Target for 2010 (benchmark year: 2003)
Education		
Increased intake for bachelor's programmes, partly by attracting more students from abroad.	+54% (2008) total = 2,636	+15% total = 1,963
Increased pass rate of bachelor's programmes.	69% <sup>10</sup> (forecast)	70%
Increased intake for master's programmes.	Master's: +35% total = 923	+20% Master's: +20% total = 821
Increased intake for design degree programmes.	Design programme: +25% total = 20	Design programme: +20% total = 19
Increased international intake for master's programmes.	Master's: +107% total = 564	Master's: +30% total = 355
Increased pass rate of master's programmes.	89%	90%

<sup>9</sup> These targets were formulated in 2004. For the next strategic plan, an examination will be made of whether, and if so, how, a set of up-to-date of targets can be formulated – this will be done on the basis of, among other things, the performance agreements that apply in the higher education sector, or which have been concluded with the Ministry of Education, Culture and Science.

<sup>10</sup> Forecasts have been used to help get an indication of the eventual degree programme pass rates. However, they are based on historic pass-rate data, as shown in the education statistics (see the separate appendix in this annual report). Although the pass rates here are based on the obtaining of a diploma

regardless of the amount of time taken, it nevertheless gives a picture of the final educational 'yield' for the outside world. The Executive Board has launched policies aimed specifically at reducing the average study duration and to allow those students (in the case of internal TU Delft students) seeking to take a master's study to do so only if they are already in possession of a bachelor's degree (from 2010). See sections 2.3 and 2.5 of the Education chapter. Because of the large number of students taking bachelor's and master's degree programmes at the same time, it is not possible to give a representative indication of study pass rates based solely on criteria that cover specific periods of time.

Subject	Position in 2008	Target for 2010 (benchmark year: 2003)
Research		
A joint (3TU) position at the very top in Europe with research priority areas, according to the usual criteria.	<p><i>Shanghai ranking 2008</i> World Top 500: Position 152-200</p> <p><i>Times Higher Education ranking 2008</i> World Top 200: Position 78</p> <p><i>Times Higher Education ranking 2008</i> World's universities of technology: Position 17</p> <p><i>The Leiden Ranking 2000-2007</i> European top 100 – CWTS 'crown indicator': Position 11</p>	
Confirmation of this position for all research priority areas following international research visitations.	Of the research programmes that were subject to a SEP visitation in 2008, 75% had a score of 4 to 5 for quality. The other criteria scored as follows: 61% (productivity), 79% (relevance) and 75% (viability).	As an objective, research at Delft must score at least 4 for quality (according to the SEP protocol) for the sake of international recognition and visibility.
Increased number of PhDs obtained.	+28% total = 236	+20% total = 222
Increased PhD completion rate, after the first year (2008).	No representative data available. In 2009, TU Delft will be developing a system for reliably determining PhD completion rates.	75%
Increased indirect funding.	+77% total = €24.3 million (2007)	+20% total = €16.4 million
Increased international funding.	Forms part of previous point.	+20%
Knowledge valorisation		
Increased contract funding.	+43% total = €81.3 million (2007)	+20% total = €68 million
Increased number of patents (including innovation research and involvement with third-party patents).	+96% total = 104 (2007)	+25% total = 66
Increased number of spin-off companies.	+37,5% total = 11	+25% total = 10
Organisation (specifically TU Delft)		
Improvement in the ratio of academic staff to support staff.	1.47 position at 31-12-2008: academic staff = 2,762 FTEs; support staff = 1,878 FTEs; salaried employees only	1.4 (target for 2007)
Expansion in the number of academic functions.	+455 FTEs total = 2,762 FTEs; salaried employees only	+250 FTEs target for 2007: total = 2,557 FTEs
Increased number of female professors.	19 salaried (= 7.3% of the total number of salaried professors) 5 unsalaried (= 3.7% of the total number of unsalaried professors)	At least 15 (target for 2006)

