

Impact for a better society

TU Delft Strategic Framework 2018-2024



Impact for a better society



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This Strategic Framework is an abstract framework. Its purpose is to serve as a high-level compass for TU Delft, and to provide guidelines for the myriad decisions, both big and small, that are taken in every part and level of the University.

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Preface

At the dawn of the new strategic period 2018-2024, TU Delft is in a very good starting position. In our previous strategic plan, the Roadmap 2020, we expressed the ambition to play in the global 'premier league' in all our academic disciplines and in selected fields to top that league. Looking back, it is fair to say that this objective has been accomplished. TU Delft has risen steadily in international rankings and is now one of the top 20 universities in Europe, and one of the top 20 universities of technology worldwide (THE and QS). We contribute recognised global research leadership in fields as diverse as quantum nano, bio-nano, civil engineering, maritime technology, architecture, transport, water management, aerospace technology and robotics. Moreover, we boast an active startup ecosystem and, according to Reuters, we are among the top 10 most innovative universities in Europe. In addition, our educational approach and the extra-curricular activities that we offer students have proved to be highly successful. The Accreditation Organisation of the Netherlands & Flanders (NVAO) recently concluded that TU Delft has a strong quality culture and stated that our record of accreditation is impressive: all Bachelor's and Master's degree programmes were positively assessed during the period under review (2012-2016). We have no difficulty attracting qualified students and the proportion of female students is slowly but surely increasing.

The number of online students has increased even more, and last year we welcomed our millionth MOOC student. Our graduates find work easily after completing their studies and are valued by employers for their disciplinary knowledge, (cooperative) skills and 'can do' attitude.

For these reasons, we are entitled to say that the TU Delft is in a strong position. It would also be tempting to conclude that for the next years, all we should do is to keep things as they are and to build upon our current strengths. But in a world that is highly subject to change, we have to move with the changes, anticipate future developments and create opportunities. Examples of global trends and sometimes disruptive developments in the field of higher education that are likely to have a major impact on our university in the coming years include the changing role of government and government funding, the impact of the digital society, the growing demand for higher education globally and the (so far) continuous growth of enrolment of students at our university. The question we are dealing with in this framework is not so much 'How do we hold on to our current position?' but rather 'Where do we want to be?'

The current strategic framework provides high-level guidelines for determining what kind of university we strive to be. Our ideas in this regard come close to what is sometimes called a ‘flagship university’ or ‘civic university’. However, the current framework does not articulate one specific model. Rather, the framework identifies a number of features, or ingredients, for such a model. One important ingredient is that we not only strive to be good *at* what we do, but also that we want to be good *for* something.

Now that the place and role of universities in society is changing, we need to find a balance between, on the one hand, our pursuit of world-class academic excellence and, on the other, the expectations society has of us as a provider of life-enhancing education and expert solutions to societal problems. This seems like a dichotomy, but it does not have to be that. We have amply demonstrated in various areas that societal impact and academic excellence can be mutually reinforcing. Groundbreaking initiatives in which we play a key role, such as the Institute for Advanced Metropolitan Solutions and Medical Delta have opened ‘living lab’ educational and research opportunities grounded in active solutions to societal challenges.

In these and other areas, teams within the University are pioneering new strategic roles as conveners and

orchestrators of multi-stakeholder collaborations, working with other universities and with civic and private sector partners. We make good use of the complementarity of the universities in the region through the LDE alliance, and carefully coordinate with the other technical universities in the Netherlands within the 4TU. Federation. Guiding our activities is our global ambition, while we are at the same time very much aware of our national and local roots and value a strong connection with our surroundings: the region and the municipality of Delft. In the coming years we intend to further develop these partnerships and to further increase our involvement in societal challenges and international developments. Our ambitions in this are closely aligned with the Sustainable Development Goals of the United Nations.

For all these reasons, ‘Impact for a better society’ is the motto of the Strategic Framework 2018-2024. Both here and elsewhere in this document, we use the word ‘impact’ in a broad sense. For us, impact can take many forms and can be found everywhere: from technological breakthroughs and practical applications to intangible cultural value and education; from political, social, economic, and environmental changes to the intrinsic value that society assigns to knowledge itself. It is in all these areas that we aspire to strengthen our involvement and make a contribution¹.

Finally, we would like to emphasise that the strategy presented here is the result of an extensive, joint process of reflection and consultation that builds on existing ideas at TU Delft as described in, for example, the multi-annual plans of the faculties, the strategy documents of the various services or the reporting of the Employee Monitor (Medewerkersmonitor). The Executive Board is very grateful to everyone who contributed to this process. This involvement has ensured that the strategic framework that you currently

hold in your hands truly reflects our shared vision. It will be important to continue this interaction in the years to come; the success of the new strategy depends on the ongoing engagement of the whole TU Delft community. This community includes over 100,000 members: students, academic staff, support staff, alumni and former staff members. Together we can, and will set out to realise our shared ambitions and create impact for a better society.



Tim van der Hagen
Voorzitter



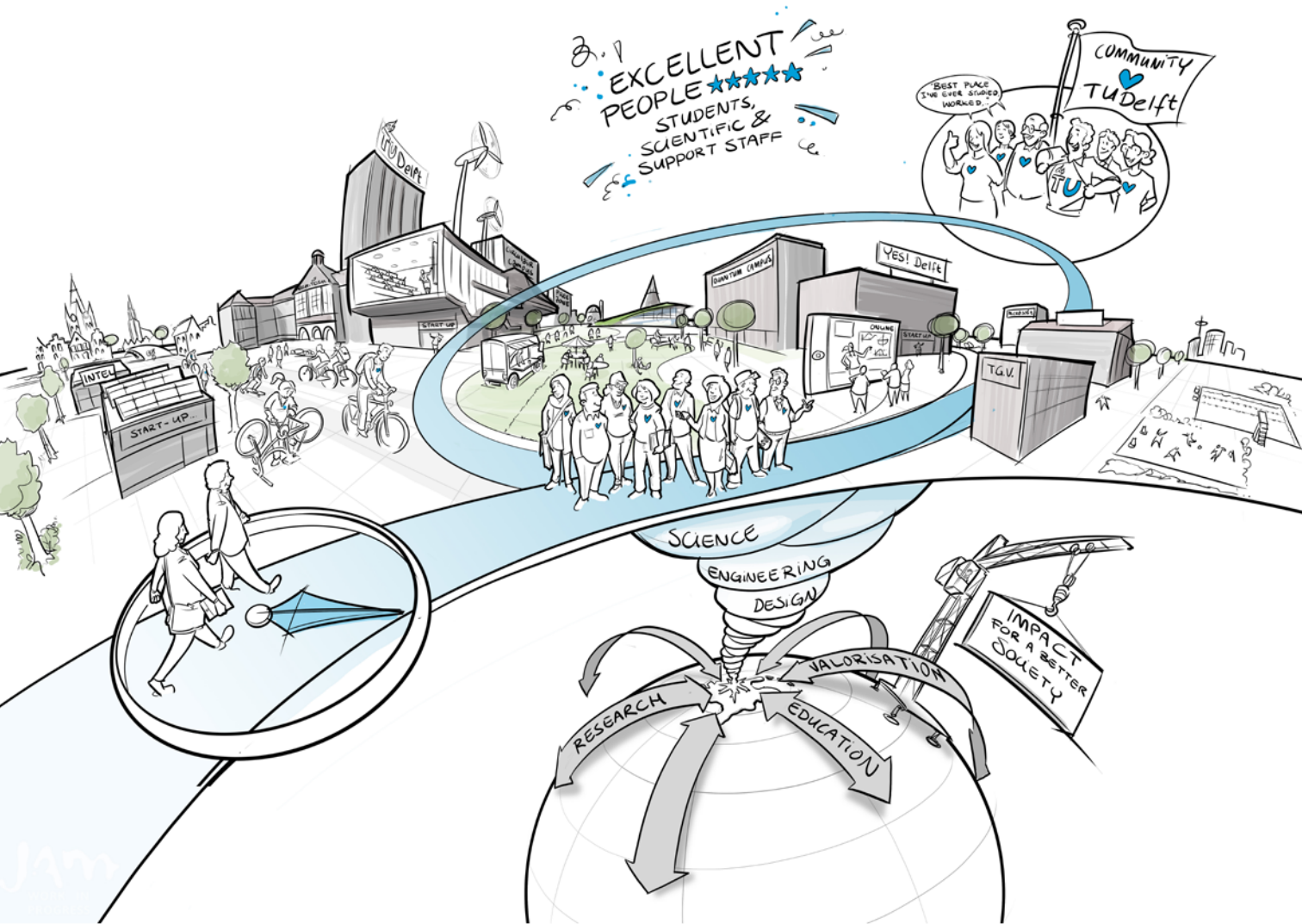
Karel Luyben
Rector Magnificus



Anka Mulder
VP for Education & Operations

¹ In addition to education and research, the third core task of universities is the utilisation of knowledge by making it applicable in products, processes or services. This task is often referred to as 'valorisation'. This term, however, specifically refers to economic or commercial applications. As we value a broader range of applications with various kinds of societal benefits, we want to give a broader interpretation to this task. For this reason, we have chosen in this document to refer to this third core task of the university with a different word, namely 'innovation', or 'innovative applications'.

Strategy in a picture



Introduction

In 2016, the Executive Board announced the start of an institution-wide strategy process aimed at developing a new strategic framework for TU Delft for the period 2018-2024. In this introduction, we will set out the basis on which the substance of the framework has been developed. We focus on three questions that will shape the following sections:

- Why does TU Delft want or need a new strategic framework?*
- What is the intended purpose and use of the framework?*
 - How has the framework been structured, and why?*

The first question has already partially been addressed in the preface. This framework is more than a formal requirement; it is our moral responsibility. We feel the obligation to reflect on what goes well within our university, and less well, so that we can draw valuable lessons from this and continue to get the best out of ourselves. We want a strategic framework that, for the coming years, gives everyone within the organisation guidelines for how we can deal with changes in our environment and embrace opportunities. The answers of course depend on the more fundamental question as to what kind of university we want to be. This question was also explicitly discussed during the strategy process, and the ideas on this have been included in the preface.

With regard to the second question, we note that the process towards this strategic framework has been almost as important as the resulting framework itself. Like many other universities, TU Delft actually consists of a rather loosely-coupled community of diverse and sometimes disparate stakeholders that does not take readily to corporate directives or impositions. In order to make the new strategy a success, it is important to take this cultural aspect of TU Delft into account. The strategy process has therefore been carefully designed with this in mind. This has led to a people-centred approach and an intensive, year-long consultation

process in which more than 600 internal and external stakeholders have been actively participating. The resulting framework expresses the shared values, aims and working principles with which our stakeholders can identify and align their energies and contributions. The purpose of the strategic framework is then to serve as a high-level compass that will guide decision-making bodies at all levels within our university in the years ahead.

An important note is that this strategic framework has a rather high level of abstraction. The reason for this is that TU Delft is active in many areas and engages in so many different activities that a framework that sought to address each of them separately would quickly collapse under the weight of too many detailed sub-strategies. This framework therefore does not produce targets or plans for every area of the university's operations. This will be the next step, and is detailed in Chapter 5.

This brings us to the third question, the structure of the framework. This structure can be described on the basis of two dimensions. First, the breakdown of the university's core operations into four operational areas: Students & Education, Research & Innovation, People & Community, and Campus & Services. This dimension is reflected in the four chapters of the present document. Secondly, we distinguish four major principles that guide

the distinctive characteristics that the framework aims to develop. These principles run through the narrative and propositions presented below, and may be summarised under the headings: Excellence, Impact, Engagement and Openness. In the matrix on the inside of the cover, these two dimensions are linked. This table does not provide a complete overview, but aims to give an impression of the way in which the various elements are related and how, collectively, they map to the future vision.

Strategy on one page

	Excellence	Impact	Engagement	Openness
Students & Education	We strengthen our ambitious study culture that is characterised by substance, challenges and academic breadth.	We prepare students for solving societal challenges and educate tomorrow's responsible leaders in science, engineering, design and innovation.	We invest in lifelong learning, offering a relevant portfolio in a global environment.	We promote and facilitate Open Education. We strengthen online education.
Research & Innovation	We strive to increase the number of scientific focal points.	We make a significant contribution to the solution of societal challenges by combining science, technology and design in a responsible manner.	We promote outreach to the wider (local) public; we strengthen global engagement via joint research initiatives.	We promote and facilitate Open Science and Open Innovation. We increase the number of large-scale public-private partnerships.
People & Community	We challenge our students and staff to get the best out of themselves and provide them with the necessary support to do so.	We support students and staff members to co-create and deliver solutions to community concerns.	We create stronger engagement with our alumni and people from the surrounding area; together, we build a 'TU Delft community for life'.	We are convinced of the importance of diversity, as a cornerstone for innovation. We aim to integrate internationalisation in all our core activities.
Campus & Services	We develop excellent, user-friendly and efficient services.	We develop the campus as a multi-partner 'Living Lab' in which education, research and innovation contribute to solving societal challenges.	We gear our facilities and services to our aim to make a sustainable and responsible contribution to the region, the Netherlands and the world.	We develop our campus in such a way that we are more welcoming to interested people from the near surroundings.

Vision

Delft University of Technology contributes to solving global challenges by educating new generations of socially responsible engineers and expanding the frontiers of the engineering sciences.

Mission

- We perform world-class research by combining science, engineering and design in a socially responsible manner. Thus, we advance and share the benefits of technology.
- We develop and enhance the expertise of tomorrow's engineering leaders and educate professional, high-level and responsible engineers throughout their careers.
- We help to develop and deliver technology-driven, innovative solutions to societal problems through collaborations with leading national and international partners whilst being firmly rooted in Delft.
- We continuously improve our collective effectiveness, performance and organisational resilience through the principles and practice of professionalism, collaboration and openness.

Our values

- **D**iversity
- **I**ntegrity
- **R**espect
- **E**ngagement
- **C**ourage
- **T**rust

1. Students & Education²

² The recently published 'TU Delft Vision on Education' can be seen as a further elaboration of this chapter, whereby this Strategic Framework is the leading document.

'Impact for a better society' is the motto that will guide TU Delft in the coming years. In this, our students play a pivotal role as educating the next generation of responsible top-level engineers is the biggest impact that TU Delft has on society. Our graduates make a difference by combining technical expertise with personal and professional attributes for effective leadership.

A major objective of TU Delft is therefore to continue to strive for world-class education. Our recipe is quite simple: we want to be attractive both nationally and internationally for ambitious students and we will provide them with an excellent education. We want to be an accessible university that is open to students who can handle our studies. In this, diversity and inclusion are indispensable and we strive to be attractive to new students who are as diverse as possible with respect to gender, cultural and ethnic background, nationality and age. We foster a culture of innovation and experimentation in teaching and learning, for example through a blend of types of educational formats, including online and on-campus education and an integrated teaching of 21st century skills with which students are well prepared for success in a rapidly changing, digital society. We wholeheartedly support Open Education and want to make Open Educational Resources part of our educational policy.

Central to our curriculum is the 'T-shaped profile' with which our graduates acquire a thorough and in-depth disciplinary knowledge, while at the same time (usually in the minor and MSc programme) familiarising themselves with other disciplines and developing competences in the application of technical expertise to 'real world' complexities. Education and research are closely interwoven throughout the entire curriculum, and

especially in the MSc programme. This ensures that our graduates enter their professional career equipped with the latest research findings and first-hand knowledge of the state of the art within their field, so that they are optimally prepared to make their contribution to solving the world's current and future challenges.

In addition, TU Delft offers students opportunities outside the curriculum to realise their full potential. There is an active student community that organises many social and cultural activities, students have the opportunity to develop their soft skills and there are special, challenging student projects such as the Dream Teams and the Energy Club. The starting point is that it must be feasible to complete a Bachelor's and a Master's degree programme at TU Delft within the official five-year period. However, we believe that some extra-curricular activities, such as the special projects mentioned above, are valuable enough to justify a longer study time. In such situations, in which students have a good reason, we give them the scope to realise their ambitions within a possibly longer period (such as BSc in 4 years, and MSc in 2.5 years) with room to explore and develop their individual capabilities.

An important trend in recent years is our steadily growing student population, from 17,000 students in 2010 to around 22,000 students in 2016. This growth, which is

expected to continue in the coming years, is in itself a positive sign: society has a great need for our graduates. But it also has negative consequences, because at the same time our (financial) resources decrease. Preserving the high quality of our education has therefore become a major challenge. Analyses based on the current funding model show a preferential scenario in which we grow to approximately 25,000 students, a number that fits our identity and environment. We intend to better control the growth over the coming years and to strive for a valuable diversity of students and a good balance between Dutch and international students. This balance should not be at the expense of the influx of qualified Dutch students. The quality of our education is leading herein.

Given the continually expanding knowledge needs of working professional engineers, and TU Delft's mission to remain engaged at the leading edge of innovations and problem-solving in engineering practice, we will expand our educational mission further into the lifelong learning journeys of our students. We will transform the TU Delft student proposition from pre-career education to lifelong learning partnerships that extend the relationship between learning and professional practice throughout individual careers. A modular portfolio, developed and delivered through partnerships with other universities and providers and made available through combinations of online, work-based and campus-based modes, is



one of the options that could be developed to support continuous updating of content for lifelong professional development.

Last but certainly not least, we will give priority in the coming years to strengthening a culture within TU Delft in which education and teaching receive more appreciation and recognition. We understand that cultural change will not take place overnight, but requires constant effort and even then only gradually will be realised. We are, however, convinced that such a change is needed and we will be strongly committed to working towards this objective in the coming years. We would like to create a culture in which our academic staff have room to excel in the field of education, educational leadership and/or educational research. To this end, we will refine our HR policy so that it will offer further scope for professional development and career opportunities within education, in balance with the rest of the workload. This is further elaborated in Chapter 3 'People and Community'. We will also explore a possible strengthening of the connections and cooperation between various education initiatives on campus, such as the Delft Teaching Academy, the Teaching Lab, the Extension School and educational activities within the faculties.



SWOT

Students & Education

Strengths

- Broad and high-quality curriculum with room for self-development, making graduates attractive for the labour market
- Robust educational innovations
- Strong link between education, research and innovation

Weaknesses

- Education not fully recognised as a career path for academic staff
- Insufficient study spaces during peak hours
- Above average drop-out rates and relatively often too long study duration

Opportunities

- New models of innovative and engaged learning
- Lifelong learning partnerships
- Global online education

Threats

- Too low staff-student ratio
- Unbalanced student growth, and limited legal possibilities to select students
- Uncertainty in funding model (performance agreements, study advance, etc.)

Strategic goal

We develop and enhance the expertise of tomorrow's leaders in science, engineering and design through lifelong learning partnerships, from a student's initial formation and throughout their careers. We want to strengthen an ambitious and enterprising student culture.

Principles

We continue to ensure the high quality of our education by further strengthening our ambitious study culture that is characterised by substance, challenges, dedication and academic breadth. For that, we will:

- Encourage a mentality built upon study success and the attitude to go with it.
- Use the principle that it must be and remain feasible to complete our studies within the official five-year term.
- Provided they spend their time in a valuable manner, we give students the opportunity to realise their ambitions in a longer period (such as BSc in 4 years and MSc in 2.5 year) with freedom to make individual choices.
- Implement a further series of study success-enhancing measures. If new quality agreements with the Ministry of Education, Culture and Science are made in the coming years, these measures will be adjusted accordingly.
- Increase our attractiveness for a diverse group of students, for example in terms of gender, cultural and

ethnic background, nationality or age.

- Formulate and implement concrete, university-wide measures to accommodate the growing student population.

We further strengthen the connection between research and education at TU Delft by:

- Firmly embedding research training in all educational programmes, for example by focussing on the fundamentals of research and research methodology within the BSc programmes.
- Supporting research into university (engineering) education and learning. We do this with our partners in the LDE Centre for Education and Learning, the 4TU Centre for Engineering Education, and internationally.

We prepare students to contribute to solving societal challenges by:

- Providing students with a solid grounding in interdisciplinary skills, sustainability and entrepreneurial thinking. To this end we will increase the elective space in MSc programmes.

- Enabling students from different faculties to work together, or to work with students from Rotterdam, Leiden or the other Universities of Technology via the various LDE initiatives and 4TU programmes.
- Integrating teaching of 21st century skills such as communication, ethics, critical thinking and digital literacy in the programmes.

We enable a ‘student experience’ with room for personal and professional development. To this end, we will:

- Stimulate a rich culture of student associations, clubs and societies, both academically and in general.
- Accommodate extra-curricular activities, such as participation in special student projects, Dream Teams, or the Energy Club.
- Support students to develop their soft skills, within and outside their regular study programme.

We foster a culture of innovation and experimentation in teaching and learning, through:

- Further developing different types of education, including a blend of online and on-campus education.
- Stimulating the application of evidence-based innovations in university education.

We increase our impact on education worldwide by:

- Strengthening thematic online education, in collaboration

with other front runners in the field of innovative education.

- Offering a relevant portfolio for both working professionals and lifelong learners worldwide.
- Focusing our activities, e.g. MOOCs, where relevant on the UN Sustainable Development Goals.

We invest in lifelong learning, and alternative study paths. For that we will:

- Support closer cooperation with alumni and the professional field.
- Stronger utilize the potential offered by online education, for example via the Extension School and international partners.
- Facilitate students to switch to and from higher professional education, for example through agreements with partner institutions in the region.

We make Open Educational Resources part of TU Delft’s education policy by:

- Structurally supporting lecturers and students with the use of such means.
- Encouraging lecturers to publish their educational material under an open license.
- Making open education part of the basic teaching qualification programme and the evaluation criteria of courses.
- Replacing commercial textbooks by open resources in all BSc programmes as much as possible.



2.

Research & Innovation

Science, engineering and design: these are the cornerstones of research at TU Delft. Although the degree of emphasis placed upon each of these dimensions may vary per discipline, the research profile of TU Delft as a whole is characterised by a combination of these three approaches that reinforce each other. The integration of science, engineering and design already starts with the design for a research project and continues throughout the entire research process, up to and including a possible implementation. We also see this integration reflected in our educational curriculum, especially in the minor and MSc programme.

We create a similar synergy between our research, education and innovation activities that strengthen and inspire each other. These mutual connections are complex and versatile. One way to view these relationships is to start from societal demands: in order to meet these demands, we need innovative solutions which can only be achieved through groundbreaking research. This, in turn, requires a next generation of top-level researchers. But one may also reason the other way around: our research findings fuel the educational curriculum, and also give rise to new and sometimes surprising innovations.

Overall, the quality of research and innovation across the University is very high. From a strong tradition for over 175 years in the field of civil engineering, we have developed our research portfolio into a broad array of research areas. Currently, we contribute recognised global research leadership in fields as diverse as quantum-nano, bio-nano, maritime technology, architecture, transport, water management, aerospace technology and robotics. We are building alliances with leading Dutch and international universities and we are a key partner in high profile research-led collaborations such as AMS, QuTech, Medical Delta and RoboValley.

Our objective for the coming years is to take this further and to increase the number of fields in which we are

leading. In this way, we aim to reduce our dependence on a relatively small number of scientific focus areas. At the same time, we will remain the academic free zone we always have been, in which new and sometimes daring ideas are encouraged and in which we stimulate creativity, courage and pride among our researchers – also financially. How we will do this exactly is best illustrated by the metaphor of a garden. We start by sowing a large number of seeds and subsequently cultivate the most promising ones. This we will do by providing our researchers with what they need most: autonomy, good support, and the necessary infrastructure. At the same time, we are cutting back on initiatives that have less growth potential. In this bottom-up manner we create a certain focus in our budget allocations, and we arrive at strategic choices in a natural way.

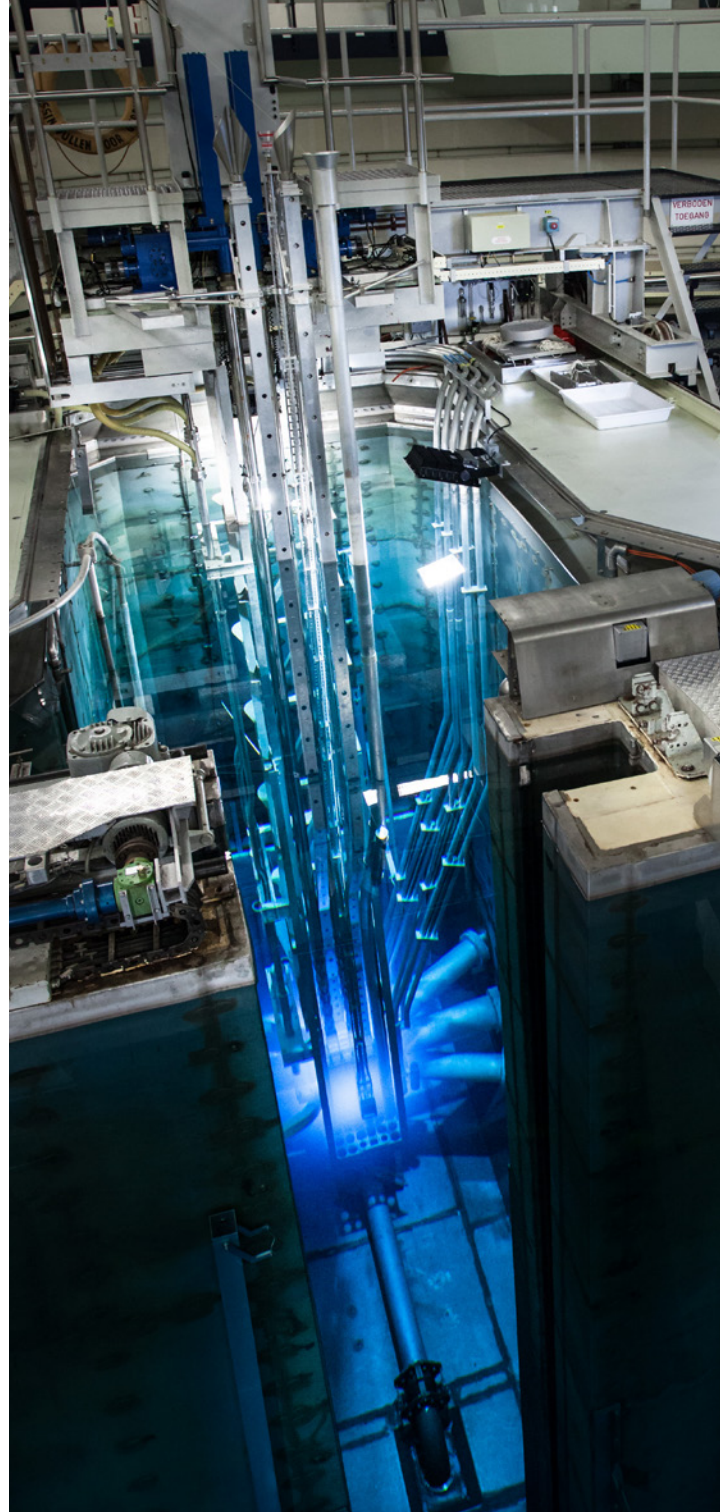
Another important ambition of TU Delft is to further increase our societal impact by offering knowledge-intensive, technology-driven solutions to societal challenges. These solutions are rooted in groundbreaking research: research that enables us to stay ahead of the competition and that makes us an attractive cooperation partner. However, it is our ambition to go further than to provide scientific insights. We aim to develop new models for engaged education and research-based solutions that can be

implemented within the framework of active co-creation and realisation. We will do so in a responsible manner and ensure that our integrity policy is implemented in a robust manner.

In order to achieve our objectives, we want to firmly establish a culture of excellence within our university. A culture in which it comes natural to our researchers to get the best out of themselves. That is why we will explore whether our ‘team model’, which has proven its worth at a number of places in the university, could also work well elsewhere in the organisation. The starting point of this model is to support researchers in working together as a team, by ensuring the necessary coherence, capacity and critical mass at departmental level. At the same time, this model gives individual researchers the autonomy they need to develop into independent research leaders (Principal Investigators), with all the freedom and responsibilities that come with it, and to pursue their own ambitions.

An important precondition for our ambitions is access to state-of-the-art research infrastructure. This is necessary to attract scientific talent, conduct groundbreaking research and train the next generation of engineers. On campus we have a wide range of research facilities, ranging from wind tunnels, a chip facility, high-voltage laboratory and a nuclear reactor

to facilities for serious gaming and product evaluation. Many of these are unique in the Netherlands and are a defining factor of TU Delft's profile in the international research landscape. In this sense they are an essential part of the TU Delft branding, and an important instrument for cooperation with partners from all over the world. In order to keep our research performance at a high level, it is crucial that we maintain and modernise our existing infrastructure or develop new facilities, sometimes outside our own campus. An important challenge here is the increasing financial pressure: research infrastructure is very costly and government resources have continuously decreased over the past years. This requires that, also in this area, we have to make well-considered choices.



SWOT

Research & Innovation

Strengths

- High quality of research and innovation across the university
- Research profile: science, engineering and design - in a responsible manner
- Strong linkage between education, research and innovation

Weaknesses

- Dependence on relatively small number of scientific focal points
- No systematic approach to strategic partnerships
- No university-wide policy on Research Infrastructures, including their accessibility

Opportunities

- Increasing demand for technological solutions to societal challenges
- Cooperation with world-leading research institutions and industry
- Innovation ecosystem development on/ around campus

Threats

- Decrease of 1st money stream, and growing dependence on 2nd and 3rd money stream
- Strong, global competition
- Declining appreciation for science in society

Strategic goal

We advance and share the benefits of technology through our abilities to combine world-class excellence in science, engineering and design in a responsible and financially sound manner.

Principles

We continue to ensure the high quality of our research performance. In particular, we aim to increase the number of internationally recognised and impactful areas of research strength, by:

- Implementing a focused strategy for academic recruitment, talent management and personal career development. We aim to attract (potential) figureheads in (upcoming) scientific fields where TU Delft has the potential to be world leading, as well as supporting our own excellent researchers in developing as such ('Freedom Fellowship').
- Providing the facilities and research infrastructure that are needed for excellent research. We will set up a university-wide policy regarding investments in, maintenance of, and accessibility to large-scale research infrastructure.
- Periodically selecting a number of strategic research opportunities that are limited in time, substantial in size, and based on the 'fly or die' principle.
- Encouraging faculties to hold a strategic reserve for outside-the-box ideas that are too premature for standard funding.

We connect our research more systematically to societal challenges, and will make this more visible to the outside world, by:

- Stimulating multi-disciplinary, and cross-faculty research that aims at responsible, societal innovation, e.g. focusing on the UN Sustainable Development Goals. To this end, we will further capitalise on cooperation with the social sciences and the humanities, both on and off campus (e.g. LDE and 4TU).
- Exploring best practices for the development of the next generation of profiling tools, with special emphasis on our societal and scientific profile. We concentrate knowledge transfer and outreach activities on our scientific focal points, and position our scientific figureheads more visibly in the societal debate.

We strengthen our research biotope, by:

- Exploring the desirability and possibility for the introduction of the aforementioned 'team model' at a larger number of places within the university. We safeguard the embedding of tenure trackers by ensuring sufficient research mass in terms of group size and facilities.

- Striving for an optimal department scale: large enough for impact, whilst small enough for a sense of community.
- Providing new tenure trackers with a financial start-up package. We create attractive arrangements that enable new staff members to get off to a flying start.

We develop and consolidate long-term strategic partnerships with selected universities, either from the Top 100 or otherwise ‘the best’ in their field worldwide. For that, we will:

- Develop a TU Delft operational plan for long-term strategic engagement with key partner universities.
- Actively participate in a number of carefully selected academic networks, like edX or CESAER. We choose a clear focus in this.
- Set up TU Delft-wide missions for fact finding and visibility. These match our research priorities and strengthen existing partnerships or create new opportunities for strategic cooperation.

We increase the number of large-scale, long-term and sustainable programmes for public-private partnerships (PPPs) by:

- Proactive agenda setting at regional, national and international level.
- Linking with the research and innovation agenda of collaborating partners in academia, society and industry.

- Strengthening our (inter)national strategic partnerships with leading companies.
- Developing TU Delft Science Park into a vibrant ecosystem with a strong connection to the university.
- Utilising profiling tools more directly for the development of PPPs,
- Investing in (senior)-support staff who are able to support large PPPs, and have experience in working in a multi-stakeholder organisation such as TU Delft.

We continue to encourage entrepreneurship and stimulate the translation of our research findings into innovative, commercial activities, by:

- Increasing entrepreneurial skills among students through dream teams and MSc education in entrepreneurship.
- Strengthening the linkages with economic activities in the region, for example by foraging closer ties with the next generation of young entrepreneurs.
- Allocating specific funding that supports the use of TU Delft research findings by existing companies or start-ups.
- Continuing the best practices developed by our incubator Yes!Delft. We develop science park Technopolis further into an attractive location for prominent industrial partners whose expertise is closely linked to the scientific research at TU Delft.

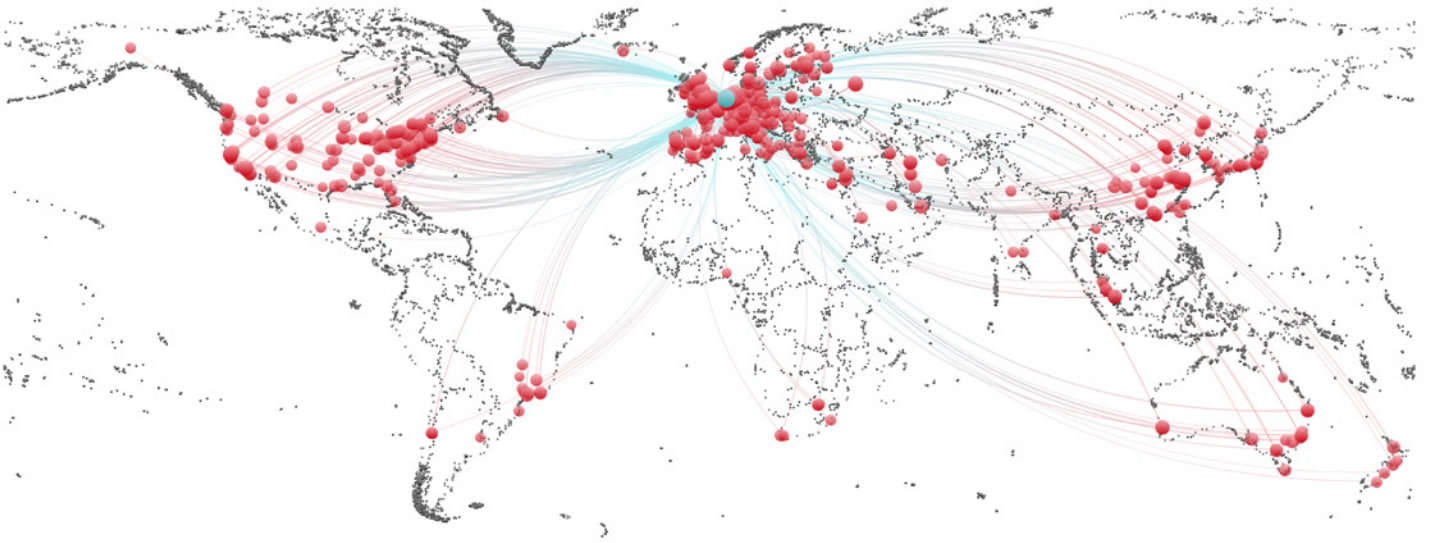
We develop a stronger awareness among our researchers for Open Science, by:

- Stimulating Open Access publishing and the sharing of research data. We provide our researchers with the necessary support, for example by appointing data stewards and data engineers within all faculties who advise researchers in managing their data.
- Dedicating ourselves to reducing costs for Open Access publishing by negotiating journal subscriptions with publishers. We encourage our researchers to serve on relevant Editorial Boards.
- Exploring new ways to present and disseminate knowledge.
- Collaborating with (inter)national leaders in the field of non-traditional metrics ('altmetrics').

We promote and facilitate Open Innovation by:

- Adapting Intellectual Property policies to the current funding landscape, and making those policies suitable to programme-based funding schemes.
- Developing best practices for working with open source software, for example in relation to copyright and archiving of source code.
- Creating an open source software community with active ambassadors.

Research collaborations



3.

People &
Community

People are central to TU Delft. They are the alpha and omega of everything we do. That is why we find it so important to attract people who fit at TU Delft and match our ambitions. That is also why we strive for a culture at TU Delft in which it becomes second nature to our staff and students to always want to get the best out of themselves. A culture in which students and staff members feel challenged to be the best in their work, and are happy to take up this challenge.

Clearly, this is only possible if people have the time and tools to do so. This, therefore, is an important priority for the coming years.

In the next years, we continue our efforts to attract and connect the most ambitious students and staff members from Netherlands and around the globe, and to foster their development. For our academic staff, we further enlarge the possibilities to pursue a variety of career paths linked to the various goals and values of TU Delft: research, education and innovation. Also for our support staff, we will further expand the options for personal and professional development aimed at sustainable employability. We strive to bring our staff members closer together and to create stronger ties between our academic and support staff. We continue to invest in leadership development throughout TU Delft.

Openness and diversity are our guiding principles herein. To us, diversity is an important precondition for excellence. Especially at TU Delft where team work is central, the value of a diverse team – in which the various team members all bring in their own, specific strengths – is well understood. The value of diversity is therefore hard to overestimate. At TU Delft we promote a balanced and well-integrated population of students and staff, in terms of gender and cultural background. Over the last years, we have been successful in attracting more women to the university, most notably via the Delft Technology Fellowship programme which offers high-profile tenure-track positions to top female scientists. Currently, women form 25% of our academic

staff (including PhD positions), and we are committed to further increase this percentage in the coming years. We also have been actively enhancing and extending our international profile and presence. This has resulted in an increased number of international students (18%) and academic staff (51%). Vice versa, we encourage our own staff and students to go abroad and to gain international work experiences.

At the same time, we would like to see the typical Delft mentality ('getting things done') clearly shining through. Although it is hard to give a precise definition of what this mentality entails exactly, we are convinced that there is something special to being a 'Delft engineer'. The Delft engineer is a problem solver and analytically very strong, critical and innovative, enterprising and ambitious, active and involved, a (multidisciplinary) team player and a responsible leader. This identity is something we are proud of and would like to bring to the fore. This is related to a growing awareness and recognition of the specific region in which TU Delft is located, and how this partly determines our identity. We are a Dutch university. Even more so, we are a Delft university. We are embedded in a broad and dynamic region that is both academically and entrepreneurially leading with partners like the City of Delft, the province of Zuid-Holland, the Port of Rotterdam, the Metropool-region, Zuidvleugel and the Innovation quarter, as well as our academic colleagues at

The Hague University of Applied Sciences and our LDE partners in Leiden and Rotterdam. We will strengthen this regional cooperation in the coming years, for example by implementing the Covenant with the City of Delft, in which we work together on matters such as mobility, urban planning and accommodation for international staff and students, as well as strengthening the existing movement towards more societal involvement.

We also want to strengthen the ties with our alumni and further strengthen the sense of community among both existing staff and students and our alumni. Clearly, alumni – by whom we understand both former students and former employees – always have been part of the TU Delft community, but we would like to generate more involvement. We hope that in the near future our alumni will continue to visit the University throughout their career, both online and on campus, either as a student, (guest) teacher, mentor or consultant, or as a scientific or business partner within a research project. That is why we will develop a solid alumni policy in the coming years, so that the 'blue heart' will continue to hold true in all former TU Delft people and create a community for life. A community consisting of more than 100,000 members: students, employees and alumni.



SWOT

People & Community

Strengths

- Capable and committed staff and student body
- Both students and academic staff have good cooperative skills and team player mentality
- Strong academic and industrial partnerships (national and international)

Weaknesses

- Unbalanced gender distribution in academic staff (faculty)
- No clear career path in the field of education for academic staff
- Sub-optimal integration of international staff and students

Opportunities

- Stronger engagement of alumni
- Our strong reputation offers opportunities for attracting ambitious staff and students
- Stronger community building with (local and global) societal partners

Threats

- High workload and increased pressure for greater cost-effectiveness, both for staff and students
- Strong international competition for academic talent
- Restrictive governmental remuneration policy

Strategic goal

We encourage and support students and staff members to get the best out of themselves. Social responsibility is part and parcel of our culture. We offer a vibrant and diverse working place that is a community for life.

Principles

Staff

We continue to set high quality standards for our staff, both academic staff and support staff. In particular, we:

- Continuously scout for talent. We have a keen eye for diversity and new ideas.
- Foster career development. We facilitate mobility to other types of positions within, or outside, the organisation and enthuse our staff members for this.
- Increase support staff's involvement in the primary process. We support them in developing affinity with research, innovation and education.
- Stimulate leadership development from a vision of shared and coaching/serving leadership.
- Take the lead in national initiatives aimed at extending the job classification for support staff with positions that support recent developments, such as data stewards that advise researchers in managing their (open) research data.

We value a variety of career paths for our academic staff that each in its own way contributes to the various goals and values of TU Delft. To this end, the R&O cycle will include a more explicit recognition of:

- Education. We strengthen a culture and create a career structure that gives academic staff the opportunity to excel in education, educational leadership and/or educational research.
- Team effort. We value each person's individual contribution to team performance.
- Impact activities, knowledge transfer and outreach. For example, we will explore the option to have an impact paragraph in PhD dissertations and Master's theses.
- Engagement with Open Science and Open Education. For example, we support (inter) national initiatives aimed at finding alternative indicators that positively value open access publications.

We strengthen the social cohesion and interaction within the organisation, by:

- Supporting mobility across the campus. For example through interfaculty micro-sabbaticals.

- Stimulating joint activities and knowledge exchange across the various faculties and service departments.
- Strengthening relations between academic staff members and support staff.

Lifelong community

We create a stronger engagement with our alumni and build a true ‘TU Delft community for life’ that is based on joint interests and a common purpose. To this end, we will:

- Develop a two-way plan to involve alumni more strongly. This plan takes into account the different levels of experience and life phases of alumni.
- Prioritise fostering relationships that offer short-term opportunities for collaboration, for example as (guest) lecturer or project partner.
- Harness alumni as TU Delft ambassadors.
- Encourage alumni groups to self-organise. We exchange best practices, both within and outside TU Delft.

We increase the awareness of the ‘TU Delft community for life’, by setting up a programme that:

- Clearly articulates our distinctive identity and common purpose. This explicates our reason to be, our values and what it is that drives us.
- Stresses the added value of our broad network

community via activities like Dies Natalis and faculty meetings. We will initiate an annual, international Delft alumni experience.

- Develops a brand policy that safeguards the quality standards and visual appearance.

Diversity

We are convinced of the importance of diversity as a cornerstone for excellence and innovation. We ensure a balanced and well-integrated population at TU Delft, by:

- Maintaining an inclusive recruitment policy for both students and staff members, aimed in part at achieving a good mix of Dutch and international students and staff.
- Developing a recruitment and admission policy for students that guarantees a good balance between students with different backgrounds who are most suitable for our programmes.
- Offering training on intercultural communication and facilitating staying in the Netherlands.
- Appointing staff with, or who are willing to obtain, international experience, for example through staff mobility programmes.
- Focusing on examples in study information and educational assignments that reflect diversity and inclusiveness.

- Continuing our efforts to further improve the gender balance across all levels of our organisation.
- Continuing our strive to make everyone at TU Delft feel supported in expressing their authentic selves, regardless of their sexual orientation.

We explicitly value and harness the broad spectrum of scientific perspectives and approaches at TU Delft, by:

- Paying explicit attention to the added value of combining science, engineering and design aspects in areas such as profiling, recruitment and funding applications.
- Promoting and supporting mobility and co-appointments of faculty across campus.

Societal engagement

We encourage students and staff members to engage with public and private partners and to co-create and deliver multi-faceted solutions to community concerns. Priorities are:

- Developing a best practice analysis in the area of societal engagement.
- Formulating a strategic agenda for societal engagement, taking into account key stakeholders, current working relationships, expertise and capabilities, resources and funding.

- Developing a community engagement programme to strengthen the link between the University and its localities, for example via the Covenant 2016-2026 with the City of Delft.
- Institutionalising societal engagement into the mainstream of the University's operations.

We embed societal engagement into the University's primary process, by:

- Promoting public participation in scientific research ('citizen science'). We support our staff in giving public talks and lectures.
- Enabling students to gain working experience through practical assignments, internships and volunteer work, both in the local community and abroad.
- Making our campus more inviting to a wide audience including school children.
- Strengthening global engagement via joint research initiatives in selected countries, and through the Delft Global Initiative.
- Using innovation as an instrument for branding, and promoting best practices.

The TU Delft Community*



* Figures from 2017

4.

Campus & Services

In the coming years, a number of trends seem to have a profound effect on the Dutch system of Higher Education: internationalisation, localisation, demographic changes, digitisation and flexibilisation, to name but a few. These developments pose major challenges for TU Delft but at the same time also offer interesting opportunities.

Many of these trends come together in one of the most important challenges lying ahead of us: the re-development of our campus. While we understand that a large part of our community is connected online, we are convinced that in this age of digitisation a strong and vibrant physical community is more important than ever before. We will therefore endeavour to create an attractive 'living campus' that inspires people to work, think and to be creative. This means that our new campus should not only have excellent facilities for education, research and innovation, but it should also have a pulsing heart: a central hub that connects the primary process to a broad range of social activities. This central 'plaza' will be accessible to the larger TU Delft community (i.e., business partners, academic collaborators and other visitors) and will in this way contribute to the community feeling. Our vision is that of a 'Delft UniverCity' that enhances cooperation between the University and our surroundings in order to foster economic, social and technological innovation as drivers for building a smart, sustainable and inclusive society. We want to do this in a responsible manner, and are firmly committed to the principles of sustainability, safety and security. Examples already under development are the new PULSE and ECHO buildings, especially equipped for state-of-the-art education. Another example is the Green Village – a living lab to jointly develop sustainable solutions.

Another important challenge is to keep TU Delft financially sound. At the moment, our financial position is good but due to declining government funding, increasing student numbers and the growing number of activities that society expects from a university, the financial pressure is increasing. Therefore, it will be important in the coming years to maintain a high standard of transparency, accountability, and financial control. To this end, we ensure strict financial guidelines are respected, such as the solvency ratio, 'current ratio', debt service coverage ratio and leverage ratio.

Another important objective the coming years will be to improve the quality of our professional services. Be it student services, facility management, electronic and mechanical support, or library services: an excellent university requires excellent support services that are efficient and effective. The aim is to provide our customers – students, staff members and external clients – with a clear point of contact. This 'one-stop shop' for all requests should be simple and effective, but equally important is the personal touch. Services will therefore be digital where possible, but personalised where needed. In order to make the services even more user-friendly, we need to consider processes as chains that sometimes exceed the boundaries between service departments. Implementation requires enhanced chain management and chain management policies, with the

various services being well-matched at the central and faculty level, and with a solid and modern ICT base.

Some of our services may already see some improvements in the short term, like our digital services or catering services. Other areas may need more time to develop, such as our business intelligence capability that can support fact-based policy making or a general, TU Delft-wide risk and compliance policy that covers more than financial risks. What all these developments have in common is that they require a cultural change, with the end user in the driver seat. In order to create more value for users, we will need a better understanding of our users, and of their requirements and wishes. The aim is to provide everyone with effective and efficient support delivered from a user's (and colleague's) perspective and with affinity for the work we do as a university.

Service



AED



SWOT

Campus & Services

Strengths

- High-quality facilities (labs, equipment, etc.)
- Strong start-up ecosystem
- Sound financial position

Weaknesses

- Current buildings are in need of renovation
- Campus lacks a 'pulsing heart'; at night the campus is desolate
- Support services are often fragmented, a 'one-stop-shop' is missing

Opportunities

- Re-development campus
- Digitisation
- City-as-campus, Campus-as-city

Threats

- High maintenance costs for estate
- High reserves (for re-development) present wrong image of our financial position
- High, long-term campus investments with many uncertainties (e.g. student numbers)

Strategic goal

We continuously improve our collective effectiveness and performance through the principles and practice of openness, collaboration and professionalism. The campus is developed into an inspiring free zone that invites students and staff members to excel.

Principles

Estate

As a world-class university, we need a world-class campus. We will therefore modernise the campus in the coming years with the aim to hereby:

- Optimally support the primary process.
- Make effective and efficient use of space, energy, equipment and materials.
- Showcase our (societal) impact, using the campus as a showroom for our work.

We create UniverCity Delft, a vibrant campus that is attractive to students, employees, businesses and visitors by:

- Investing in public areas for meetings and private spaces for concentration. Cooperating partners have the opportunity to set up support facilities on campus (e.g. student accommodation or catering facilities).
- Welcoming visitors from Delft and the nearby surroundings to the campus.

We encourage co-creation in the development of the campus. We increase awareness among users and enable them to contribute to solutions by stimulating:

- A sense of ownership among the users of our facilities.
- A multipartner ecosystem for innovation activities.
- Participation of researchers, students and other partners in 'living lab' projects. We build up know-how, financial resources and organisational tools for an effective organization.

We align our facilities and services to the University's objective of making a significant, sustainable and responsible contribution to society, by:

- Investing in buildings in such a way that they are adaptable to future developments in education and research, both in size and quality. We discard outdated and obsolete buildings.
- Developing and execute a sustainability plan for a CO2 neutral and Circular Campus in 2030.

Operational excellence

We establish user-centric services for all TU Delft users, aligned with our ambitions. These services:

- Meet expectations (on timing, quality, etc.).
- Are effective and efficient (e.g. by offering a choice between standardised and tailor-made services).

We connect with the great variety of users and colleagues by:

- Having a clear point of contact: a 'one-stop-shop'. Services will be digital where possible, and personalised where needed.
- Better attuning the support services at central and faculty level. At central level, we establish a balance of staff members with or without a background at the faculties. The secondment and circulation of support staff among the various services and from central level to faculties and vice versa is stimulated.
- Designing operational processes in an integrated and uniform way where possible. We tailor these to our primary processes. Starting point is the process chain as a whole that may cut across the various organisational units.

We improve our services continuously along priorities:

- Services that need to work more user-friendly

are prioritised.

- The decision-making processes to meet, or reject, specific user requirements are clearly specified.
- We start by improving those services that may be improved now (e.g. digital services, catering).
- Account managers with a clear ownership and mandate will prioritise improvements.
- Working methods for rapid improvement and a customer feedback system are implemented.
- A priority is strengthening the support for 2nd, 3rd and 4th money stream funding, preferably via long term arrangements.
- Reviews in order to improve processes are carried out regularly.
- We are future oriented, inspired by state-of-the-art examples and adaptable towards our rapidly changing environment.

We build an effective organisational structure that enables leadership and commitment to international activities. We aim to integrate internationalisation in all our core activities. Priorities are to:

- Establish a coordination team for the development, implementation and evaluation of a 'Framework Internationalisation' and the strategic allocation of resources.
- Initiate hospitality services that will welcome TU Delft visitors, facilitate short stay research fellowships and

develop academic partnerships.

- Support, and stimulate, a bilingual language policy. For example, by providing English and Dutch language training programmes for staff and students.

We support the implementation of Open Science and Open Education. In particular, we:

- Facilitate a central place of support for researchers who want to use open source software.
- Implement a TU Delft policy for research data, and enable researchers to control their own research data in accordance with this policy.
- Create low-barrier data management systems across the research lifecycle, and involve researchers in contributing to TU Delft's policy for research data management.
- Set up an integrity policy that protects scientific data and personal data in line with the EU directives.

We develop a business intelligence capability that improves our understanding of TU Delft and the context in which we operate, and that facilitates decision-making based upon transparent and trusted information. To this end, we will:

- Put the end user in the driver seat of business intelligence. We foster an organisational culture where business intelligence is understood, valued and trusted.

- Broaden the availability and usability of information across systems for an expanding group of stakeholders. In doing so, we will protect the personal data of all concerned.
- Continually improve predictive capabilities and learning analytics.

We are better prepared for upcoming developments in the field of Higher Education, by:

- Improving the coordination of information within the organisation.
- Strengthening the monitoring and the analysis of longer-term trends in higher education worldwide.

We develop an overall TU Delft risk and compliancy policy aligned with our vision, mission and strategic goals. To this end, we will:

- Implement an inclusive risk management framework to systematically identify, manage and monitor risks at multiple levels and in different categories and determine the risk appetite.
- Determine ownership of risk management at different levels of the organisation (rules, roles, and responsibilities).
- Integrate risk management in existing (decision-making) processes.
- Develop our compliance functionality thereby strengthening our accountability.



5.

From
Framework
to Work
programme

As we emphasised in the introduction, this Strategic Framework 2018-2024 is not a top-down blueprint or work plan to be implemented, but an expression of the values, principles and objectives that the TU Delft community has agreed will shape and distinguish our day-to-day workings over the coming years. This ambition started through an open and consultative process leading to the current document, and will remain part of the continuing and critical discourse within the University going forward.

The strategy process is not over. So far, what we have is an abstract framework. Its purpose is to serve as a high-level compass for TU Delft, and to provide guidelines for the myriad decisions, both big and small, that are taken in every part and level of the University. Next, the principles set out in this framework will be translated into a work programme with tangible, concrete actions. This programme will indicate how we will utilise the opportunities and strengths pointed out in the framework, and how we will face the identified weaknesses and threats. In other words, we will move from the 'why and what', to the 'how, who and when'.

The work programme will in particular specify:

- How each faculty/service department will contribute to achieving the objectives.
- The estimated planning horizons for each objective.
- The key performance indicators and target values.

We realise that strategy is not something apart from the day-to-day workings of TU Delft. Rather, the key is to integrate the realisation of the strategic objectives into the 'business-as-usual' management of the institution. A requirement for 'making the strategy real' is therefore to embed the framework objectives into the general and operational planning and evaluation cycle (P&E cycle) across the University. Crucial elements in this cycle include: the annual budgeting process, the multi-

annual plans of the faculties and their annual work agendas, the strategic discussions during the spring and autumn consultations, specific policy proposals in accordance with the planning, and the University's annual report. The progress of the work programme will be monitored in the P&E cycle. Specifically, during the spring and autumn consultations the faculties and service departments will present their progress and discuss possible adjustments to the work programme in response to changes in the external and/or internal environment.



Colophon

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