

ASSESSMENT COMMITTEE REPORT ON RESEARCH
IN
INDUSTRIAL DESIGN ENGINEERING, 2007-2012
AT
DELFT UNIVERSITY OF TECHNOLOGY



FEBRUARY, 2015

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Title:

Assessment Committee Report on Research in Industrial Design Engineering
2007-2012 at Delft University of Technology

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Photos Courtesy of Patrick Whitney

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PREFACE

The Assessment Committee was assigned the task of assessing the three research programmes of the Delft University of Technology Faculty Industrial Design Engineering (IDE). Over two full days, we undertook an in-depth exchange and discussion with staff and management of IDE. This enabled us to understand, validate, and refine the initial impressions that we formed through the Faculty self-assessment report.

The Committee truly enjoyed the exchange and discussion. This took place in an open and positive atmosphere. We appreciated the major effort that the Faculty invested in preparing for this research assessment. We also appreciated the hospitality of the Faculty during the site visit. We apologise to those who prepared presentations for the lab tours whom we could not visit due to time constraints.

The Faculty and its members impressed the Committee with its rare combination of size, quality, commitment and spirit of collegiality.

Assessing the IDE research programmes was, in many respects, a balancing act. Although our task was to assess past performance, the Faculty specifically invited us to make recommendations on its future strategy and plans. We tried to find this balance by assessing the criteria quality and relevance to society on past performance and viability on future plans. At the same time the committee recognises that there is no evidence on which to evaluate future intentions.

This review was based on the Standard Evaluation Protocol for 2015-2021. This protocol is new to the Committee and new to the Faculty. This made assessing the programmes particularly challenging, since the Faculty collected evidence of past performance against the former Standard Evaluation Protocol.

On behalf of the Committee, I want to thank everyone who made it possible to us to review the Faculty and everyone who made us feel at home while doing so.

Prof. Hans van Trijp
Chairman of the Committee

1. ASSESSMENT COMMITTEE AND ASSESSMENT PROCEDURES

1.1 ASSESSMENT SCOPE

The Assessment Committee was asked to assess the research of the Faculty of Industrial Design Engineering at Delft University of Technology. This assessment covers research in the period 2007-2012. In accordance with the Standard Evaluation Protocol 2015-2021 for Research Assessments in the Netherlands (SEP), the Committee's tasks were to assess the quality, relevance to society, and viability of the research programmes on the basis of the information provided by the Faculty and interviews with Faculty management and research groups. Following this, the Committee was to make recommendations for the future.

1.2 COMMITTEE COMPOSITION

The members of the Committee were:

Prof. Hans van Trijp, Committee Chair, Professor of Marketing and Consumer Behavior at Wageningen UR.

Prof. Tracy Bhamra, Dean of Loughborough Design School, and Professor of Sustainable Design at Loughborough University.

Prof. Moniek Buijzen, Professor of Communication Science, Radboud Universiteit Nijmegen.

Prof. Alex Duffy, Professor of Systems Design, Director of the Computer Aided Design Centre, and Head of the Department of Design, Manufacturing, and Engineering Management at the University of Strathclyde.

Prof. Ken Friedman, former Dean of the Swinburne University of Technology Faculty of Design in Melbourne, and current Chair Professor of Design Innovation Studies at the Tongji University College of Design and Innovation in Shanghai, and University Distinguished Professor at Swinburne.

Prof. Scott Klemmer, Associate Professor of Cognitive Science and of Computer Science and Engineering at the University of California at San Diego.

Prof. Patrick Whitney, Dean of the Institute of Design, Illinois Institute of Technology, and Professor of Design.

A short curriculum vitae of each committee member is included in Appendix A.

Ir. Sven Laudy of Quicken Management Consultants was appointed secretary to the Committee.

1.3 IMPARTIALITY

All Committee members signed a statement of impartiality and confidentiality to ensure that they would assess the quality of the research programmes in an impartial and independent way. Committee members reported any existing personal or working relationships between Committee members and members of the programmes under review before the interviews took place. The Committee discussed these relationships at the first Committee meeting. The Committee concluded that there exist no unacceptable relations or dependencies that could lead to bias in the assessment.

1.4 DATA PROVIDED TO THE COMMITTEE

The Committee received the following detailed documentation:

- Self-evaluation report of the unit under review, including all the information required by the Standard Evaluation Protocol (SEP), with appendices,
- Copies of five key publications for each research programme,
- Previous assessment report 2001-2006,
- Mid-term Review Self-study 2007-2009,
- Mid-term Review Feedback 2007-2009,
- Research Portfolio 2008-2012
- Corporate brochure 2014
- IF We publish education
- Research Strategy IDE Vision Department Design Engineering
- Gemser et al. paper 2012
- Gemser et al. follow-up paper
- Information requested during the site visit, i.e. data concerning international staff, and publications per type per person in a graphic table.

In addition, programme leaders provided hand-outs for each presentation. The Self-evaluation report was the committee's key base for the assessment.

1.5 COMMITTEE PROCEDURES

The Committee followed the Standard Evaluation Protocol, 2015-2021 (SEP). Prior to the Committee meeting, on the basis of their specific expertise two committee members were appointed main assessors for a programme and were asked to lead the evaluation of that particular programme. These assessors independently formed a preliminary assessment for each programme. Final assessments are based on documentation provided by the Faculty, preliminary assessments and interviews. The Committee interviewed the Rector Magnificus of Delft University of Technology, the Faculty Management Team, the Faculty Advisory Board, and staff of the Graduate School and research programmes. Interviews took place on November 6 and 7, 2014 at the Faculty of Industrial Design Engineering in Delft. The interview schedule appears in Appendix B.

Before the interviews, the secretary of the Committee briefed the Committee on the Standard Evaluation Protocol for research assessments. This briefing covered the rating system (Appendix C). The criteria quality and relevance to society are assessing the past, while viability is assessed (more) forward looking. With this the committee has also taken into account the explicit request of the Faculty to make recommendations going forward. On the same day, the Committee discussed the preliminary assessments. For each programme, the Committee decided on a number of comments and questions. The Committee also agreed on procedural issues and aspects of the assessment. After each interview, the Committee discussed scores and comments. The Committee chair presented preliminary general impressions to the Faculty on the last day of the visit.

Following the on-site visit, the Committee finalised the report through email. Following approval by all Committee members, the Faculty received a copy of the first version for factual corrections. The Committee discussed these comments with changes to the report on a number of points. The Committee presented the final report to the Board of the University. This was printed after formal acceptance.

2. ASSESSMENT OF THE INDUSTRIAL DESIGN ENGINEERING FACULTY

2.1 THE INSTITUTE

The Faculty of Industrial Design Engineering (IDE) deals with designing and developing sustainable products that serve people and society. Design at IDE is an interdisciplinary area combining insights about people, technology, and business to create new solutions. The Faculty defines its research mission in this way:

Fostering sustainable well-being by exploring, generating and transferring knowledge and technologies for industrial design.

The Faculty's goal is to:

- Generate knowledge and methods, with tools and techniques to support future generations of designers.
- Educate inspiring and realistic leaders who can work toward a better future.
- Bridge gaps between science, technology and society.
- Develop design research, moving the research field from an interdisciplinary niche to an independent, trans-disciplinary research field.

In the assessment period, IDE pursued three main research goals:

- i) Raising scientific quality through increased publications in core design journals; increasing the number and quality of PhD projects; and increasing the amount of externally funded research;
- ii) Becoming an international leader in the field by organising conferences, linking to other leading design institutes, and increasing the focus on societal challenges such as sustainability and healthcare;
- iii) Creating collaborations within and between the IDE programmes and research groups, with other academic institutes, with industry, with the professional design field, and with the non-profit sector.

Research at IDE is structured in three programmes - Strategic Design (SD), User Experience (UX) and Technology Transformation (TT). It is managed through departments and sections. Each department represents a disciplinary area of expertise, with responsibility for one programme. Each of the three departments is responsible for staff, for advancing disciplinary expertise, for organising education, acquiring funding, and managing the departmental budget. Sections are groups within a department. Sections typically consist of one or two chairs and allied staff.

Programmes are coordinating structures that manage parts of the research portfolio.

REMARKS AND RECOMMENDATIONS

The Committee believes that the presence of design, engineering and business in the Faculty of Industrial Design Engineering is a key strength. The scale of IDE and the range of resources in one Faculty give IDE unique strength compared with other design schools and institutions. Collaboration with industry is very good. The Faculty welcomes collaboration with industry, and there is no concern that this collaboration will damage fundamental research. The position of the Faculty is that fundamental research can be driven by curiosity and inspired by use. IDE does fundamental research inspired by industry, as well as applied research.

During the site visit, the Committee learned that the Faculty plans to overlay the organisational structure of programmes, departments, and sections with an additional structure of four themes: 1) Unlocking People, 2) Meaningful Interaction, 3) Care for our Health, and 4) Let's Re(d)use. While the Committee applauds the bottom-up approach used to identify themes and create ownership within the organisation, the Committee has reservations about the additional layer. The Committee believes that too many different names and structures confuse the outside world and lead to a fragmented organisation. Also, the fundamental trans-disciplinary research questions that underpin the four themes are poorly elaborated at this time. The interviews suggested mixed feelings about the organisational structures within IDE. The Committee recommends aligning names and making the organisation less complex.

The Committee believes that IDE has too many focus areas. With three programmes and several themes per programme, critical mass per area is too low.

IDE faces an important strategic choice: does the University want the Faculty to focus on research and impact in a limited number of core areas, or does it want IDE to stay a bit fuzzy to allow for maximum creativity and personal interests? The committee believes that the list of research topics is too long and some staff members share this view. It is essentially a menu from which research staff may choose topics freely.

The Committee formed the impression that the strategy for the Faculty as a whole seems to be reconstructed logically from current activities. How research activities come together in the whole of the three groups is not always clear. The Committee therefore suggests developing an overall scientific question that can unite the three programmes with a clear consolidated vision, aims, and objectives. These should generate synergy among the defined areas.

The Committee learned that peripheral research is already taken out and IDE stopped some of the research outside the triangle. Also IDE stopped doing research on every topic of their education. Research is only conducted when pockets of energy are present. The Committee suggests focussing on areas where there is existing critical mass, consolidating topics, and/or where there is a demonstrable international leading position as a way of improving the research development at IDE. The newly proposed themes (as part of strategy for the coming year) can clearly serve a role in the marketing of IDE such as on the website and for funding, but the Committee recommends not to waste faculty time on it.

The Committee learned that the Faculty's Advisory Board has research strategy as one of its topics and can be helpful here. The Advisory Board currently has only one member, who is also working at the University. The Committee suggests to recruit new members quickly, especially members from outside the University.

It seems the Faculty has a low level of formalisation and relatively few protocols. The Committee was impressed by the way work is done in an informal way, without formal procedures. For example, collaboration within research themes seems to be motivated by individual interest rather than directed by the Faculty. IDE has international ambitions but there does not seem to be an explicit strategy in place for diversity.

The Committee believes that this loose, and bottom-up approach partly explains high staff motivation and the Faculty success. Even so, the Committee recommends that the Faculty consider the value of formal protocols, underlying principles, approaches, and mechanisms. These are necessary if the Faculty is to function as a coherent unit.

The Faculty does provide guidance to departments and groups, and it is willing to reduce support or to make cuts where no cooperation takes place. Technology Transformation is a case in point. The Faculty also provides guiding direction by acknowledging successful individuals with greater funding and resources.

The Committee recommends developing formal mechanisms on several issues: developing Faculty strategy, managing diversity, managing research integrity, setting output targets, collaboration between departments, and developing a recruiting policy, and developing feedback mechanisms for PhD candidates. Further discussion on these topics appears later in this report.

2.2 QUALITY

Table 1 shows the demonstrable research output of the Faculty of Industrial Design Engineering.

	2007	2008	2009	2010	2011	2012
Refereed articles	80	93	108	118	94	102
Non-refereed articles	4	0	2	4	2	1
Academic books	8	6	6	3	7	3
Academic book chapters	18	52	28	20	27	31
PhD theses	11	10	11	19	10	10
Refereed conference papers	193	197	250	159	180	162
Non-refereed conference papers	1	0	2	22	19	31
Professional publications	41	26	26	28	7	19
Other research output, including editorial roles for books and journals	19	24	24	29	16	30
TOTAL	375	408	457	402	362	389

Table 1: Total output Faculty IDE

Members of the Faculty have published in journals with high impact factors. These include Design Studies, the International Journal of Design, the Journal of Cleaner Production, the Journal of Engineering Design, the Journal of Product Innovation Management, and PLOS One.

During the site visit the Faculty provided additional information on the number and type of output by Faculty researchers.

REMARKS AND RECOMMENDATIONS

The quality of the programmes is varying between very good and excellent. The international Design Research Alliance and Design United are excellent examples of collaborative research that is paramount in today's challenging research environment. The Committee considers it important that the research is also published in disciplinary journals with design as the core focus, next to the trans disciplinary design journals.

The Committee notices a decline in the total number of publications from 2010 onward accompanied by an increase in publication quality. Comparing the first half of the review period against the second half, the publication focus shifted from conference papers to journal publications. Between these two periods, conference papers declined from 640 papers to 501 papers, while journal articles increased from 281 articles to 314 articles. This indicates an improvement in scientific quality and increased impact for the IDE research programme. In his interview, the Rector Magnificus of Delft University of Technology stated that this is a result of a new focus on quality over quantity. Until 2010, TU Delft rewarded the quantity of publications in its funding model. Today, the focus is quality. The Committee finds it refreshing to know that the Rector Magnificus also values more kinds of research output than publications. Designed products are also counted.

As the Committee gathered information on publications, evidence emerged to reveal a "long tail" in publication counts. A few researchers have a large output while others produce much less. The output of the research programmes in refereed articles per Full Time Research Equivalent (FTE) ranges between 1.4 (SD and TT) and 1.8 (UX), which can be seen as good and very good respectively. The Faculty seems to have no faculty-wide target for publications in place. The Committee recommends setting explicit targets for research staff. A minimum of

two refereed scientific articles per year per research FTE is the figure heard frequently during interviews.

It was difficult for the Committee to obtain demonstrable evidence for the use of IDE research by means of the citations. Despite requests, there appeared no information on citation counts per scientific paper, and no H-indices for staff members to have been made available to the Committee. This makes it hard to draw conclusions. The Committee strongly advises keeping track of these numbers. Even though the Faculty believes that citation counts are less meaningful in emerging, interdisciplinary fields, the Committee believes that these numbers give some indication of use. Moreover the Committee encourages the Faculty to be open about numbers.

A number of researchers and publications have contributed substantially to the scientific debate. Prestigious awards and grants have been won by a number of researchers.

The key publications provided in the self-assessment are of mixed quality. The Committee finds it difficult to assess research quality on only five publications, as prescribed by the SEP, and would have welcomed additional summary information on the totality of the scientific output. The Committee recommends finding a good comparison partner at programme level. At the Faculty level, this will be difficult. Singapore University of Technology and Design may be the only institution that can compare with IDE at Faculty level.

Based on its experiences during the site visit, the committee is of the opinion that the Faculty of IDE has even more to offer to the design world than the self study portrays. This is partly due to the fact that IDE staff and doctoral students are very loyal to IDE. As a result, they prefer to stay at IDE rather than moving to other design institutions. One way to improve impact and recognition for research at IDE is to actively encourage staff members and doctoral graduates to leave TU Delft to serve as IDE ambassadors in new jobs at other design schools. Nevertheless, the Committee believes that it is appealing to remain in the inspiring environment of IDE. The Committee understands this.

2.3 RELEVANCE TO SOCIETY

While research at IDE is highly relevant to society, the Faculty does not always articulate the impact and societal relevance of the research. Demonstrable evidence of societal relevance is missing for many research outcomes. The evidence for these is restricted to publications, a measure that focuses on scholarly and scientific impact rather than societal relevance. The Committee recommends keeping better track of outputs, monitoring such criteria as 'demonstrable outcomes', 'use of these outcomes' and 'marks of recognition'.

The lab tours made clear to the Committee that there is much more to tell to the world than IDE shows in its report. The Committee sees this as a missed opportunity. The underlying issue is that more is happening than people know. The Committee recommends showing demonstrable outcomes more to the public in visible ways. This will have much greater impact in the wider community than scientific publications can do alone.

The Committee learned that IDE only recently switched to the measures used in the new Standard Evaluation Protocol (SEP 2015-2021). During the assessment period, IDE used the old SEP. The new SEP allows a wider range of research outputs and more kinds of products. This fits IDE perfectly. IDE could do a better job in quantifying output and impact against the new SEP format. One way to do this is tracking citations of IDE work in the media. During the interviews, the Committee learned that staff members sometimes find it difficult to turn good results into evidence. The Committee recommends implementing a systematic way to measure evidence-based impact of research products other than publications.

According to the report, the Committee learned that patents are often not brought into use as working products or services.

2.4 VIABILITY

The composition of the research staff at Faculty level is found in table 2.

	2007		2008		2009		2010		2011		2012	
	#	FTE										
Scientific staff	65	19.8	71	23.7	79	25.9	78	21.3	83	23.2	88	24.5
Post-docs	15	5.3	7	2.2	6	2.4	7	3	16	6.4	22	9
PhD-students	44	27.2	52	34.2	58	36.2	67	37.8	65	31.1	72	39.5
Total research staff	124	52.3	130	15.9	143	64.5	152	62.1	164	60.7	182	73
Support staff	13	2.9	11	3.4	11	2.5	13	3.1	14	3.2	14	3.7
TOTAL STAFF	137	55.2	141	19.3	154	67	165	65.2	178	63.9	196	76.7

Table 2: Staff embedded in the Faculty IDE

REMARKS AND RECOMMENDATIONS

The Faculty seems viable and highly successful in the face of problems that all universities face in a challenging era. The question of viability involves a necessary tension between focus and an open frame in a field that functions more as an interdiscipline than a discipline. This creates a serious challenge when IDE speaks to other Faculties or to senior university officials. Design is unusual, perhaps even odd, at a leading university of science and technology with deep traditions and established disciplines. The nature of a field that is different to the other fields is one of the greatest risks to a Faculty at a time when universities face financial challenges.

Recruiting

The Faculty staff has steadily grown in the period from 2007 to 2012. During the site visit, the Committee learned that the Faculty has difficulties attracting senior research staff. The labour pool at the top is small. A strategy of developing more junior people from within the Faculty is more likely to happen than hiring senior staff members from outside. Moreover, the number of full professors is already quite high. So instead of recruiting senior people the Faculty better gives (home-grown) young staff the opportunity and train them. However, this should be

balanced in terms of developing young staff recruited from outside against an outflow of young IDE staff to pursue career elsewhere to “spread the IDE philosophy and practice”.

Development of Research Staff

The tenure track has been formalised in a three-year or five-year programme, depending on whether the candidate holds a postdoctoral position or not. The programme is very much appreciated by those on the tenure track. The Committee spoke with a very enthusiastic group of tenure track staff members. They seem well motivated and all seem to help each other.

The Committee learned that there are now courses for the supervision of PhD candidates. Typical topics include communication and leadership. In this respect, it would be helpful for research staff new to supervising to have a mentor or coach.

The Committee observed that significant effort is used to develop the research staff. The Committee applauds the programmes that have been recently formalised. The Committee also recommends a mentoring programme to support research staff.

Some non-tenured staff members feel pressure about winning promotion. The Committee heard some reports to indicate that feedback from management about their career path is not always clear.

Teaching seems to be well developed. There is a real teaching culture at IDE. The Committee believes that non-tenured staff are required to teach numbers of courses that are quite high. The Committee believes that staff should engage in research and teaching both. Some current staff, however, have mainly “lived on teaching in the past”. The need for research may not apply to them.

Leadership and Governance

The Committee formed the impression that much Faculty governance is organised informally, with much decision-making and implementation left to individual discretion rather than formal procedures.

Interviews described IDE leadership as implicit, while stating that IDE should develop more explicit leadership over time. Some expressed the hope that explicit

leadership will arise automatically in the future. This approach is a possible weakness. The Committee suggests defining an explicit approach to leadership style and governance, and an explicit method for appointing new leaders.

In the process of working together within teams, members of the Faculty had many discussions on such research funding programmes as Horizon2020. The Faculty management feels that the themes are working because the strategy is built around people. In the past, only a few people put effort in the key areas. The themes are better embraced by a larger group of researchers. This makes it easier to participate.

The management team considers the issues that motivate people and fit with strategy. The Committee sees people from the different departments working together successfully. The Committee considers this bottom-up approach as one of the key pillars underpinning the success of the themes. It recommends that the Faculty make this strategy explicit.

Some staff wish that management could better understand the pressures they face. There seems to be a lack of understanding the problems they face. Such a problem is, for example, getting EU research funding. The labs demonstrate an open culture. At the department, however, the culture sometime seems to be more closed.

Funding

Total funding rose over the years from €12.29 million in 2007 to €15.92 million in 2012 (table 3). The percentage of direct funding decreased from 88% in 2007 to 72% in 2012. The percentage of funding by research grants increased from 2% in 2007 to 5% in 2012, and the percentage of contract funding increased from 10% in 2007 to 23% in 2012.

TOTAL	2007		2008		2009		2010		2011		2012	
	k€	%										
Direct funding ¹	10781	88%	12078	86%	11995	85%	11988	84%	13075	83%	11395	72%
Research funding ²	278	2%	164	1%	189	1%	255	2%	454	3%	852	5%
Contract research ³	1233	10%	1801	13%	1978	14%	2015	14%	2136	14%	3673	23%
Total funding	k€ 12292		k€ 14043		k€ 14162		k€ 14258		k€ 15665		k€ 15920	

Table 3: Total funding at level of the Faculty IDE. All amounts in k€. Total funding of IDE is obtained through consolidation of the funding of the three programmes

1. Direct funding by the University, obtained directly from the University, and financial compensation for educational efforts.
2. Research funding obtained in national and international scientific competition (e.g. grants from NWO, KNAW, EU/ERC, ESF).
3. Research contracts for specific research projects obtained from external organisations, such as industry, government ministries, the European Commission, and charity organisations.

The Committee observes that the funding is moving toward more external funding and expects this to be even greater in the future. This follows international trends in the higher education sector. The Committee suggests developing more experience in obtaining external funding to make this shift sustainable. The Committee realises that building contacts with industry and developing funding consortiums takes time. That makes it vital to emphasize these developments now. In the interviews, the Committee learned that the University is already investing in this process through its valorisation office and through training offered to research staff.

Facilities

The facilities of IDE are among the best in the world. The Committee visited several labs during the Lab tours. The Committee believes that such labs as Model Production and Processing Lab and the Applied Labs are simply outstanding. The clear and close alignment of teaching and research are particularly noticeable. They are well integrated and the enthusiastic cultural attitude to research pervades the entire Faculty. This is a cultural quality that is difficult to achieve. Developing this culture is a significant challenge, and it takes many years to attain such a culture. The achievement of IDE in this respect is truly commendable.

During the lab tours, the Committee became convinced that working prototypes can be tremendously valuable tools in organising and synergising researchers from different design disciplines. They can also communicate and disseminate key insights from the research to a wider audience.

2.5 PHD PROGRAMMES AND GRADUATE SCHOOL

The IDE Faculty has had a faculty-wide supervisory support structure for PhD degrees since 2001. This became part of the TU Delft Graduate School in 2011. The Graduate School aims to support the structure, the research culture, and the community of PhD candidates and researchers at IDE. The average duration of PhD projects is 5.8 years.

REMARKS AND RECOMMENDATIONS

The Committee received enthusiastic reports about the Graduate School from research staff and PhD students alike. The Graduate School has a systematic, formal approach to doctoral education and the mentoring infrastructure is extraordinary. In addition to the thesis project supervisor, each PhD has a daily supervisor for personal mentoring and development. This system works very well.

The Committee believes that the formal provisions for supervision and mentoring effort are excellent. The number of hours allocated to this work is significant. 200 hours of supervision and mentoring a year for each student involves significant support. The Committee applauds this. The Committee also believes that the courses of the programme are important as the best opportunity to get the “Design DNA” into PhD research.

The interviews suggested to the Committee that the transferable skills course could be improved. It is important to note that no feedback mechanisms exist for student feedback about courses except for the PhD day. Feedback mechanisms should be formally organised.

The Faculty seem to run its PhD training programme on a yearly basis. The Committee suggests that it would be better to run the programme more regularly. It might even examine the possibility of starting with a group of PhD students any moment.

19% of the PhD candidates have not finished after seven years. The Committee is convinced that PhD candidates should graduate much faster. The Committee applauds the fact that the Faculty has developed a sense of urgency about this problem since the development of the Graduate School in 2011.

The Committee notes that the Faculty has no backup plan if a supervisor withdraws from supervision or leaves the Faculty. The Committee recommends appointing a co-supervisor or second supervisor. This system is in wide use at other universities.

IDE should specifically encourage and consider ways to offer financial support for post-doctoral work abroad. It should also consider a proactive job placement programme for graduates interested in working abroad. The international research community has many international placements for PhD students from a top research university. The Faculty should make use of this situation.

2.6 RESEARCH INTEGRITY

At the university level, TU Delft has an integrity policy with a Code of Ethics. This includes regulations and committees to support students and staff. These measures include a Roadmap for Matters of Integrity, a Scientific Integrity Committee, and an Administrative Integrity Committee. The university also has new regulations governing research ethics. For example, this now requires professors to report their external activities for transparency about potential conflicts of interest. At the faculty level, IDE and all Delft faculties have a Confidential Adviser to whom integrity concerns can be reported. The Graduate School includes a programme on research integrity and ethics. Ethics has been also been a focus of PhD day discussions, and it is part of the required PhD course at IDE.

Research data are normally stored for three to five years after the completion of studies. Storage formats and methods are left to the individual researchers.

REMARKS AND RECOMMENDATIONS

The Committee formed the impression that the Faculty primarily approaches research integrity in an informal way. The Committee learned that research integrity has the attention at University as well as at the Faculty level. Different faculties now address research integrity through different policies. Within six months, the University will implement research integrity software. The University acknowledges this effort is behind schedule compared with other universities.

IDE needs rigorous formal procedures for ethics, data storage of data, and ethics approval of research before research projects begin. The current international trend among journals is to accept papers involving research on human participants only with formal ethics approval. The University should speed up the process, implementing explicit ethics protocols as soon as possible.

3. ASSESSMENTS OF INDIVIDUAL RESEARCH PROGRAMMES

The Committee assessed the research programmes of the Faculty of Industrial Design Engineering of Delft University of Technology. These are the programme level assessments:

<i>Research programme</i>	<i>Quality</i>	<i>Relevance to society</i>	<i>Viability</i>
Strategic Design	Very good	Good	Good
User Experience	Excellent	Excellent	Excellent
Technology Transformation	Very good	Very good	Unsatisfactory - good

The detailed assessment of each programme follows.

3.1 RESEARCH PROGRAMME STRATEGIC DESIGN (SD)

Programme leader	Prof. Dr. Erik Jan Hultink	
Research staff 2012	14.7 FTE	
Assessments	Quality	Very good
	Relevance to society	Good
	Viability	Good

The programme mission of Strategic Design (SD) is to investigate how interactions among designers, organisations, and markets shape new product development (NPD). The primary research outcomes are grounded strategies and methods for improving NPD processes. The SD programme pursues a holistic overview of NPD and entails cross-disciplinary research using laboratory studies and field studies. These employing quantitative methods such as surveys and qualitative methods such as case studies.

SD hosts two subsidiary programmes, Marketing and Consumer Research (MCR) and Methodology and Organisation for Design (MOD).

The research staff is comprised of 6.8 FTE scientific staff, 0.7 FTE postdocs and 7.2 FTE PhD candidates as of 2012.

At a higher level, the SD programme faces a fundamental question caused by a mismatch between the name “strategic design” and work into the area of “design management”. SD conducts research that is closer to design management than strategic design. The lack of fit between the name and work makes it difficult to assess the programme. The work may be outstanding in quality and other factors. It might easily gain a high score in the area of design management. But how should a programme be assessed in strategic design if it is not about the topic? An analogy from engineering would be reading a strong paper in electrical engineering in the context of mechanical engineering.

The Committee dealt with this dilemma by assuming that the work is more important than the name. It is more likely that the Faculty will change the programme name than change the nature of programme work.

QUALITY

The quality of the research is very good with publication in high impact journals. During the review period, the publication focus shifted from quantity to quality. This can be seen in the increased number of journal publications and decrease in conference papers. Nevertheless, the Committee did not see powerful and remarkable research with a specific identity. The Committee challenges SD with this question: "What combination of topics makes research in this programme unique?"

Ten years ago, 90% of the SD publications involved foundational business issues. The work has been moving towards design while still publishing foundational work. The Committee considers this to be in balance now and it is the key strength of SD. Prof. Dr. Hultink was ranked number three in the list of the World's Top Innovation Management scholars, which is a clear sign of recognition.

With 1.4 refereed articles per FTE (total research staff), research output is good. The Committee recommends setting targets on publishing for research staff.

RELEVANCE TO SOCIETY

The research is relevant, but it is not ground-breaking. The key results are perceived as good although comparable with research at business schools. Evidence of relevance is not convincing, especially not the use of outputs. The Committee recommends keeping better track of the use of outcomes. While recognition appears to be good, very little is written. This makes impact assessment difficult.

The research questions and findings of this group resemble issues consistent with business schools and management studies, while the presentations resemble those at design schools. This can lead to ambiguity and confusion.

VIABILITY

The focus of SD differs from the work of product designers in a focus on innovation process rather than projects. SD research is good, but the research strategy lacks focus. The research similar to that of SD is done at business schools. The Committee notices that the strategy is comfortably vague. This is a difficult and challenging problem in SD and in IDE as a whole. This is the problem of a fuzzy profile. SD and IDE face a problem in creating a sharp profile while remaining open to diffuse challenges in a growing, changing field. One way forward may involve considering the explicit nature of what it means to focus on problems rather than the discipline or research methods. This may also be a challenge, however. It means that the focus changes as problems change.

The Product Evaluation Lab panel impressed the Committee. This consists of 1700 households that change every four years. The Committee believes that these facilities lead the world in this area.

Although the programme is good, the Committee believes that there are opportunities to excel. The Committee recommends that SD distinguishes itself from other programmes around the globe. The challenge is to focus on a few things, identifying unique research areas. For example, SD could focus on prototyping business models or linking design to company activity systems. It could also work on modifying the front end of the development process to accept radical innovations.

The programme can obtain greater scale and impact by focussing on fewer topics.

The connection of SD with business is a genuine strength. The Committee challenges the research group to think of ways to strengthen this connection even further. In its interviews, the Committee formed the impression that collaboration with other departments still is a weak point for SD. SD notes that collaboration is much better than it was a few years ago. Nevertheless, it shares the opinion that interdepartmental collaboration can improve.

3.2 RESEARCH PROGRAMME USER EXPERIENCE (UX)

Programme leader	Prof. Dr. Paul Hekkert	
Research staff 2012	31.6 FTE	
Assessments	Quality	Excellent
	Relevance to society	Excellent
	Viability	Excellent

The aims of the research programme User Experience (UX) are:

1. To understand how people experience products, including systems and services,
2. To measure and model such experiences, and
3. To support designers in designing for them.

The research programme covers four subsidiary programmes closely connected with the main theme of user experience while approaching them from different angles. The four subsidiary programmes are: Aesthetics, Meaning and Emotion (AME), Sensory and Cognitive Fluency (SCF), Usage, Comfort and Safety (UCS) and Culture, Situation, and Sociability (CSS).

Some directions are experimental, while other directions are more oriented toward developing methods and tools. The disciplines for the major UX focus are: research in design context and design-inclusive research.

The research staff is composed of 10.8 FTE scientific staff, 5.3 FTE postdocs and 15.5 FTE PhD candidates (2012).

QUALITY

The objectives of the programme are clear. Research funds and contracts have grown significantly in recent years. This reflects the importance of the area. UX aims for publication in the highest ranked journals.

The Committee assesses the UX group's research outcomes as quite exceptional. UX is doing well by creating a good mix of applied and fundamental publications. The Committee finds the quality of products to be extremely high.

Examples of research output are of very high quality. They show a high degree of significance and originality, the clear result of rigorous research. With an average of 1.8 refereed articles per FTE total research staff in the period 2007-2012, this group has the highest quantity of research output among the three groups. The group also publishes outside the design field.

The Committee believes that the quality of this work even exceeds its excellent reputation in the outside world. The Committee also evaluates the use of research outcomes as world class, in addition to the recognition this group receives. Convincing evidence of this involves the Veni Vidi Vici grants that three members of the group have been awarded, along with several successful public-private partnerships that the group has established. Many members of the group that the committee has interviewed are excellent. The Committee finds this fact to be truly exceptional for such a large group.

The Committee recommends shifting the publication portfolio more towards scientific papers and with less emphasis on framework papers.

The Committee learned that UX sometimes has difficulties in publishing its work because of the multidisciplinary nature of the topic. Journals want to publish the group's work under the condition that articles are rewritten to suit the journal. UX finds this frustrating. The Committee acknowledges that this is an issue for multidisciplinary research in general. The Committee appreciate the UX strategy of involving co-authors from other fields.

RELEVANCE TO SOCIETY

The research of this group is very relevant for society. The CRISP programme is an example of excellent cooperation with industry and other partners. Other examples include the Axia Smart Chair, the KLM inflight experience, and the recent publication in the New York Times about the ambulance drone developed at UX. These are convincing evidence of excellent societal relevance in terms of research outcomes, use of research outcomes, and recognition.

VIABILITY

The research group is in an excellent position for the future. The UX research facilities are outstanding. With its ID Studiolab, ID User Labs, and Concept House, the programme is well equipped for future research. The open atmosphere of the lab floors was truly inspiring. During the interview, the Committee learned that more field labs are needed. The Committee feels that the open lab spaces give ample room for collaboration. The Committee believes that the labs are world leading, as are the facilities for research in people's homes.

UX staff members are largely positive about the new Faculty themes. A few experience the themes as confusing.

Shaping user experience is not limited to designing products. It also involves interfaces and services. This strategy going forward is excellent.

Junior staff capabilities are excellent.

The Committee believes that the UX group has very good leadership.

Viability is excellent with regards to UX plans and its direction. Moreover, it is a relatively young group with all positions filled. The Committee suggests strengthening the strategic process by making strategy more explicit. At the same time, it is important to avoid bureaucracy.

There appears to be no formal mechanism regarding collaboration with the other programmes, but merely an informal network. Staff feel that it is important to know of each other's work. A newsletter to support this exists. The Committee sees

room for improvement here to ensure all departments benefit much more from each other's research and are able to take advantage of collaborative opportunities much more.

3.3 RESEARCH PROGRAMME TECHNOLOGY TRANSFORMATION (TT)

Programme leader	Prof. Dr. Catholijn Jonker (as from 1-11-2014)	
Research staff 2012	26.7 FTE	
Assessments	Quality	Very good
	Relevance to society	Very good
	Viability	Unsatisfactory – good

The mission of Technology Transformation (TT) is to link technological research with product engineering in two ways: 1) Identifying emerging technologies and adapting them to introduce them into product concepts, and 2) Influencing the agenda and priorities of technological research toward the most fruitful directions for new engineering concepts.

The programme has three subsidiary programmes: Design for Sustainability (DfS), Engineering for Design (EfD), and Design Support (DS).

The research staff is composed of 6.9 FTE research staff, 3 FTE postdocs and 16.8 FTE PhD candidates (2012).

QUALITY

Research quality as well as the use of research outcomes is very good. The Committee believes that the programme is better than the way in which TT presents itself in the self-assessment report. The Committee notes that three of five key publications are conference and workshop documents rather than seminal journal articles. The significance of the publications would seem to be that they are demonstrators, exemplars, and foundation articles that do not necessarily reflect the scientific quality of the research.

The quality of journal articles varies over the review period with some articles in the top design journals field identified by Gemser et al. (2012) and others. The use

of outcomes is very good and the recognition is outstanding. The new IDE methodology applied in various projects and other research programmes is convincing proof of recognition.

The Committee noticed that the number of research outputs shows a sharp decline from 2.1 refereed articles per FTE total research staff in 2010 to less than 1 in 2012. The Committee believes that some of this is due to changes within the research group and the Faculty.

The standing of the institutions with which TT collaborates is exemplary.

RELEVANCE TO SOCIETY

The research conducted at TT is very relevant for society, with serious impact. Tangible evidence for this is the proposed series of United Nations Standards on Design for Sustainability. The Committee learned that these proposed standards have been accepted, changing EU policy in Brussels. Also, the new methodology that is used as a framework for industry (3D/4D vision support for radiology interventions) is very relevant and has influenced policy for government and for industry. The guiding sustainable practice and emerging global standard through the EVR contribution is excellent. The focus and relevance of healthcare seems to be very good and the work is recognised through industrial support and funding.

The standing and reputation of the staff is excellent. The staff is engaged in leading activities and top journals in the field. While relevance is relatively easy to see, it is difficult to see the impact on society of the other areas. Other clear markers of recognition for the societal relevance are shown in several research projects funded by the industry, for example, collaboration with Océ/Canon.

VIABILITY

The research group is going through a difficult time now. Many organisational changes lie behind it, but many are still ahead. One of the changes is the implementation of a new strategy. The Committee learned that the management of

TT recognises that a strategy change is necessary. The research group is considering plans for a new strategy. For its strategy going forward, TT defined eight new research areas for its focus: internet of things, cyberphysical systems, mechatronics, advanced manufacturing, emerging materials, product architecture design, circular product design, and design for sustainability. This is not a viable strategy for the future of TT; there are too many research lines with eight areas within TT and the four Faculty themes, with too few professors to cover them. Each of these eight areas is important. However, a small group cannot do well in all of them. The Committee strongly feels, that with focus areas “less is more”.

Futhermore, the research areas should clearly align with the TT mission. For TT to succeed, it needs more a strongly consolidated vision and aims, and it must choose objectives that convey synergy.

Critical mass is needed to focus on all these technologies. With focus, TT can deliver on world-leading state-of-the-art technology commensurate with the stature and talent of TU Delft IDE. The Committee learned that from the TT research staff only five full professors with a total of two FTE are linked to the research group. This is not enough for world leading research across the planned areas and Faculty themes. Recruiting new researchers and professors will also be time consuming.

TT argues that the professors must be seen as integrators bringing people together from different research fields within the University. Given the transaction costs needed to integrate across faculties, the Committee questions the feasibility of this approach. Moreover, TT needs significant expertise to act as an integrator across faculties, expertise which TT currently doesn't now demonstrate. However, if TT were to address this lack of expertise through hiring and focus, the Committee believes that professors as integrators across research areas could be a model for TT research.

The Committee recommends that TT consider the role of integrator as the main research theme for TT. Many initiatives with integrators are going on around the world. TT should visit places that actually use integrators in their projects. With proper development, TT could become a role model of how integrators work.

Strong leadership for such a change is necessary. During the previous assessment period, this leadership was not always visible. The Committee found that there has been little formal guidance from leadership in TT. Rather, the eight themes primarily emerged from individuals who champion particular areas or initiatives. The Committee believes that TT requires more guidance to implement a new strategy successfully. In this respect the Committee, applauds the arrival of a new department head for TT who seems ambitious, and deserves a mandate for change from the Faculty.

To conclude: during the review period, the TT research group was not adequately equipped for the future. This is not a question of staff or facilities. Both are strong. However, the group strategy is not viable. There are too many directions for too few faculty. Furthermore, past leadership has not provided enough guidance with clear strategies. The viability for TT will be excellent if TT reforms its strategy by selecting a small number of topics for large impact, rather than a large number of topics with only small impact for each. For impact, TT requires appropriate critical mass. TT can also leverage its sibling programmes to play an integrating role. If TT does not shift to the right strategy, this group will be mediocre. This will harm both the Faculty and the University.

APPENDIX A CURRICULA VITAE OF THE COMMITTEE MEMBERS

Prof. Hans van Trijp (chairman of the committee) studied Human Nutrition at Wageningen University in the Netherlands and was awarded a PhD degree from the Marketing and Marketing Research Group of the same university in 1995. He joined Unilever Research and Development in 1995, a job he continued for 15 years next to his endowed (1998-2001) and full chair (2001-2012) in Marketing and Consumer Behavior at Wageningen University. He is a member of the editorial boards of International Journal of Research in Marketing and Food Quality and Preference. He chaired the Food & Consumer working group of the European Technology Platform Food for Life and acted as Scientific Director for enhancing consumer demand within the Dutch Innovation Programme Transforum for five years. He acted as Work Package leader in a variety of European Research Projects and currently acts as Project Leader of the Top Institute Food & Nutrition project on circular economy for product packagings. His research interest centres around social marketing approaches aimed at consumer understanding-based marketing approaches to enhance societally desirable behaviour, in such fields as health, sustainability and animal welfare.

Prof. Tracy Bhamra is the Dean of Loughborough Design School, Loughborough University and Professor of Sustainable Design. She has a BSc in Manufacturing and an MSc in Manufacturing Systems Engineering and Management. She then went on to complete her PhD in Design for Disassembly and Recycling in 1995. Professor Bhamra has extensive research experience in the field of sustainable design initially during her PhD and then following that at Manchester Business School and Cranfield University before joining Loughborough University in 2003. Tracy has supervised 19 PhDs to completion and currently supervising 2 full-time and 1 part-time PhD. Her research has received over £2.5m funding from the UK government and UK research councils and a number of large industrial organisations and is focussed on approaches to enable designers to integrate sustainability into their work, how to move towards sustainable services and also understanding how design can be used to create more sustainable user behaviour. Tracy is currently

the Vice-Chair of the Design Research Society, an international society for developing and supporting the interests of the design research community.

Prof. Moniek Buijzen (Ph.D.) is full professor and chair of Communication Science at Radboud University Nijmegen. She studied Communication Science at the University of Amsterdam and obtained her PhD degree at the same university in 2003. In 2003 she received a 3-year Veni award for talented junior researchers from the Dutch National science foundation (NWO). In 2008 she received a prestigious 5-year NWO Vidi grant for a research project on young people's commercial media environment. In 2014, she was awarded a Consolidator Grant from the European Research Council (ERC) for a 5-year project on social network-implementation of health campaigns. Buijzen's research focuses on the processes and effects of advertising, social marketing, and family and peer group communication about consumer matters. Her work has been recognized with numerous awards from the International Communication Association (ICA), the National Communication Association (NCA), and the International Conference of Research in Advertising (ICORIA). She is also the initiator of Bitescience.com, a website transferring academic research knowledge about young consumers to nonacademic audiences.

Prof. Alex Duffy is full Professor of Systems Design, Director of the Computer Aided Design Centre, and currently Head of Department of Design Manufacture and Engineering Management, at the University of Strathclyde. Before becoming Head of Department he was the Vice-Dean of Research in the Faculty of Engineering at Strathclyde and he is a past Vice President and President of the Design Society, an international body encompassing all aspects and disciplines of design. Before University he served an apprenticeship with the UK's Ministry of Defence (Naval) and worked there for six years on various practical, technical, and managerial projects. He obtained his BSc in Naval Architecture and PhD in Knowledge Based Computer Aided Ship Design at Strathclyde. He is a Chartered Engineer, Chartered Information IT Professional, Fellow of the Institution of Engineering Designers, Fellow of the British Computer Society and Honorary Fellow of the Design Society. He is a member of the International Advisory Board

for Engineering Product Development in MIT's/ZJU's Singapore University of Technology and Design, is the editor of the Journal of Engineering Design, a Strategic Advisory Board member for the International Journal of Design Creativity and Innovation, and on the editorial boards of the journals of Research in Engineering Design, Artificial Intelligence in Engineering Design Analysis and Manufacture, and the International Journal of Engineering Management and Economics (IJEME). He has been on the advisory boards of numerous conferences and workshops including Vice Chair Artificial Intelligence in Design, Vice Chair Design Computing and Cognition, Design to Manufacture in Modern Industry, Engineering Design Conference, International Conference in Engineering Design (ICED), Int. Symposium on Tools and Methods for Competitive Engineering, and World Conference on Soft Computing in Industrial Applications, as well as being a co-chair of ICED 2001 and Chair of the 2nd International Conference in Design Creativity in 2012.

Prof. Ken Friedman works at the intersection of design, management, and art. His research focuses on strategic design and value creation for economic innovation. Friedman has done research in theory construction, research methodology, philosophy of design, doctoral education in design, knowledge management, and philosophy of science. He has done design policy studies for Australia, Estonia, Latvia, Lithuania, Norway, and Wales. In 2007, Loughborough University awarded him the degree of Doctor of Science, honoris causa, for outstanding contributions to design research. Friedman is Chair Professor of Design Innovation Studies at Tongji University College of Design and Innovation, and University Distinguished Professor at Swinburne University of Technology Centre for Design Innovation, where he formerly served as Dean of the Faculty of Design. He is Adjunct Professor at the James Cook University School of Creative Arts, and Visiting Professor at the University of Technology Sydney Business School. Friedman is Editor-in-Chief of *She Ji. The Journal of Design, Economics, and Innovation* published by Elsevier in cooperation with Tongji University Press. He is Chief Investigator of the Design Capacity Mapping Project for the CSIRO Future Manufacturing Flagship. He is co-editor of the MIT Press book series *Design Thinking, Design Theory*.

Prof. Scott Klemmer is an Associate Professor of Cognitive Science and Computer Science & Engineering at UC San Diego, where he is a co-founder and Associate

Director of the Design Lab. He previously served as Associate Professor of Computer Science at Stanford, where he co-directed the HCI Group, held the Brett Faculty Scholar chair, and was a founding participant in the d.school. He has a dual BA in Art-Semiotics and Computer Science from Brown (with Graphic Design work at RISD), and a PhD in CS from Berkeley. His former graduate students are leading professors (at Berkeley, CMU, and UIUC), researchers (at Adobe), founders (including Instagram and Pulse), social entrepreneurs, and engineers. He helped introduce peer assessment to online education, and created the first such online course. More than 200,000 have signed up for this human-computer interaction design class. He has been awarded the Katayanagi Emerging Leadership Prize, Sloan Fellowship, NSF CAREER award, and Microsoft Research New Faculty Fellowship. Nine of his papers were awarded best paper or honorable mention at top HCI venues. He has been program co-chair for UIST, the CHI systems area, and HCIC. He advises university design programs globally. Organizations worldwide use his group's open-source design tools and curricula.

Prof. Patrick Whitney is Dean, and Steelcase / Robert C. Pew Professor at IIT Institute of Design. Whitney publishes and lectures throughout the world about design and business strategy. He has advised BP, Lenovo, McDonald's, Procter & Gamble, SC Johnson, and the governments of Denmark, Hong Kong, and India about methods linking design and competitiveness. His research about digital media and learning was supported by the Bill and Melinda Gates Foundation and the John D. and Catherine T. MacArthur Foundation.

Business Week featured Whitney as a 'design visionary' for bringing together design and business, Forbes named him one of six members of the 'E-Gang' for his work in human centered design, Fast Company named him a 'master of design' for linking the creation of user value and economic value and Sina listed him as one of the 20 people opening China to new ideas in design and business. He is a trustee of the Global Heritage Fund and was jury chairman for the 2011 Smithsonian National Design Awards.

APPENDIX B PROGRAMME SITE VISIT

Wednesday November 5th 2014

Time	Activity	Participants
18.00	Arrival of Committee and welcome	Committee (private) at hotel
18.30	Welcome of Committee	Dean + MT - Prof. Ir. Ena Voûte (Dean) - Prof. Dr. Pieter Jan Stappers (Director Graduate School & Research) - Drs. Simone de Jong (Faculty Secretary)
19.00	Diner	Committee (private)
20.30	Formal kick-off and preparation of interviews	Committee (private)

Thursday November 6th 2014

Time	Activity	Participants
8.00 – 8.30	Interview Rector Magnificus and Dean Assessors: - Prof. Hans van Trijp - Prof. Ken Friedman	- Prof. Ir. Karel Luijben (Rector Magnificus TU Delft) - Prof. Ir. Ena Voûte (Dean)
8.45 – 9.30	Interview Management Team Assessors: - Prof. Hans van Trijp - Prof. Tracy Bhamra	- Prof. Ir. Ena Voûte (Dean) - Prof. Dr. Pieter Jan Stappers (Director Graduate School & Research) - Prof. Dr. Jan Schoormans (Director of Education) - Prof. Dr. Paul Hekkert (Dept. Head ID/Programme leader UX) - Prof. Dr. Catholijn Jonker (Dept. Head

		DE/Programme leader TT) - Prof. Dr. Erik Jan Hultink (Dept Head. PIM/Programme leader SD)
9.45 – 11.15	Interview Programme 1: User Experience Assessors: - Prof. Tracy Bhamra - Prof. Moniek Buijzen	- Prof. Dr. Paul Hekkert (Dept. Head ID/Programme leader UX) - prof.dr.ir. Richard Goossens (professor) - Prof. Dr. David Keyson (professor) - Dr. Sylvia Pont (associate professor)
11.45 – 12.45	Visit Delft Design Labs part: Strategic Design + User Experience	- Prof. Dr. Jan Schoormans (Director of Education) - Dr. Ir. Anna Pohlmeier (assistant professor) - Ir. Aadjan van der Helm (lecturer) - Dr. René van Egmond (associate professor)
12.45 – 13.45	Lunch with PhD students	- Abighyan Sing, MSc (PhD candidate) - Steven Fokkinga, MSc (PhD candidate) - Lye Goto, MSc (PhD candidate) - Reinier Jansen, MSc (PhD candidate) - Kasia Tabeau, MSc (PhD candidate) - Ana Valencia, MSc (PhD candidate) - Zjenja Doubrovski, MSc (PhD candidate) - Ana Laura Rodrigues Santos, MSc (PhD candidate) - Milene, Guerreiro Goncalves, MSc (PhD candidate)
13.45 – 14.30	Interview Graduate School Assessors: - Prof. Ken Friedman	- Prof. Dr. Pieter Jan Stappers (Director Graduate School & Research) - Dr. Ir. Maaïke Kleinsmann (associate Prof. Doctoral Education Coordinator) - Prof. Dr. Ir. Han Brezet (professor, former Director of Research) - Ir. Monique van Adrichem (Graduate School Officer)
14.30 – 16.00	Interview Programme 2: Strategic Design Assessors:	- Prof. Dr. Erik Jan Hultink (Dept Head PIM/Programme leader SD) - Dr. Ir. Maaïke Kleinsmann (associate professor, Doctoral Education Coordinator)

	<ul style="list-style-type: none"> - Prof. Patrick Whitney - Prof. Ken Friedman 	- Dr. Ir. Ruth Mugge (associate professor)
16.30 – 17.15	<p>Interview Advisory Board</p> <p>Assessors:</p> <ul style="list-style-type: none"> - Prof. Moniek Buijzen - Prof. Scott Klemmer 	- Prof. Dr. Ir. Inald Lagendijk (chairman Research Advisory Board)
18.30	Diner	Committee (private)
20.30	Discussing and writing preliminary judgments	Committee (private)

Friday November 7th 2014

Time	Activity	Participants
9.00 – 10.30	<p>Interview Programme 3: Technology Transformation</p> <p>Assessors:</p> <ul style="list-style-type: none"> - Prof. Alex Duffy - Prof. Scott Klemmer 	<ul style="list-style-type: none"> - Prof. Dr. Catholijn Jonker (Dept. Head DE/Programme leader TT) - Prof. Dr. Ir. Jo Geraerds (professor) - Prof. Dr. Imre Horvath (professor) - Dr. Ir. Conny Bakker (associate professor)
11.00 – 12.00	Visit Delft Design Labs: Technology Transformation	<ul style="list-style-type: none"> - Dr. Ir. Jouke Verlinden (assistant professor) - Dr. Ir. Sacha Silvester (associate professor) - Prof. Dr. Ir. Peter Vink (professor) - Prof. Dr. Jan Schoorman (professor) - (remote: Juan Jimenez, MSc)
12.00 – 12.40	<p>Interview non-tenured staff (tenure-trackers only)</p> <p>Assessors:</p> <ul style="list-style-type: none"> - Prof. Tracy Bhamra 	<ul style="list-style-type: none"> - Dr. Ir. Christine de Lille (assistant professor) - Dr. Ir. Anna Pohlmeier (assistant professor) - Ir. Nynke Tromp (assistant professor) - Dr. Ir. Marco Rozendaal (assistant professor) - Dr. Tomasz Jaskiewicz (assistant professor)

		- Dr. Natalia Romero (assistant professor)
12.40 - 13.45	Lunch tenured-staff	- Dr. Maria Saaksjarvi (associate professor) - Ir. Marijke Melles (assistant professor) - Dr. Valentijn Visch (assistant professor) - Dr. Ir. Jasper van Kuijk (assistant professor) - Dr. elvin Karana (assistant professor) - Dr. Ir. Renee Wever (assistant professor) - Dr. Ir. Erik Tempelman (associate professor) - Dr. Zoltan Rusak (assistant professor)
13.45 - 15.45	Summarizing findings and first conclusions	Committee (private)
15.45 - 16.00	Concluding meeting with management Assessors: - Prof. Hans van Trijp	- Prof. Ir. Ena Voûte (Dean) - Prof. Dr. Pieter Jan Stappers (Director Graduate School & Research) - Prof. Dr. Jan Schoormans (Director of Education) - Prof. Dr. Paul Hekkert (Dept. Head ID/Programme leader UX) - Prof. Dr. Catholijn Jonker (Dept. Head DE/Programme leader TT) - Prof. Dr. Erik Jan Hultink (Dept Head. PIM/Programme leader SD) - Drs. Simone de Jong (Faculty Secretary)
16.00 - 16.30	Discussing and writing preliminary judgments	Committee (private)
16.30 - 17.00	Oral presentation on first impression by Committee	
17.00 - 17.30	Drinks with Committee and Faculty	

Between each interview, time is reserved for a *wrap up* by the Committee. To improve the readability this activity is omitted from the table.

APPENDIX C EXPLANATION OF THE SEP SCORES

	Meaning	Research quality	Relevance to Society	Viability
1	World leading/ excellent	The research unit has been shown to be one of the few most influential research groups in the world in its particular field.	The research unit makes an outstanding contribution to society.	The research unit is excellently equipped for the future.
2	Very good	The research unit conducts very good, internationally recognised research.	The research unit makes a very good contribution to society.	The research unit is very well equipped for the future.
3	Good	The research unit conducts good research.	The research unit makes a good contribution to society.	The research unit makes responsible strategic decisions and is therefore well equipped for the future.
4	Unsatisfactory	The research unit does not achieve satisfactory results in its field.	The research unit does not make a satisfactory contribution to society.	The research unit is not adequately equipped for the future.

Quality is seen as the contribution that research makes to the body of scientific knowledge. The scale of the unit's research results (scientific publications, instruments and infrastructure developed by the unit, and other contributions to science) are also assessed.

Relevance to society is seen as the quality, scale and relevance of contributions targeting specific economic, social or cultural target groups, of advisory reports for policy, of contributions to public debates, and so on. The point is to assess contributions in areas that the research unit has itself designated as target areas.

Viability is seen as the strategy that the research unit intends to pursue in the years ahead and the extent to which it is capable of meeting its targets in research and society during this period. It also considers the governance and leadership skills of the research unit's management.

The categories in this SEP and the descriptions differ from the scores in prior SEPs and are therefore not comparable.







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