QANU Research Review
Industrial Design (Engineering)
TUE & UT

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FOREWORD

This report follows the Standard Evaluation Protocol 2009-2015 (SEP) for Research Assessment in the Netherlands that was developed by VSNU, KNAW and NWO. The purpose of this report is to present a reliable picture of the research activities submitted for this review and to give feedback on the research management and quality assurance.

The review Committee was supported by QANU (Quality Assurance Netherlands Universities). QANU aims to ensure compliance with the SEP in all aspects and to produce independent assessment reports with peer review Committees of international experts in the academic fields involved.

QANU wishes to thank the chairperson and members of the review Committee for their participation in this assessment and for the dedication with which they carried out this task.

We also thank the staff of the units under review for their carefully prepared documentation and for their co-operation during the assessment.

Quality Assurance Netherlands Universities

Mr. Chris J. Peels
Director

Dr. Jan G.F. Veldhuis
Chairman of the Board

1. The review committee and the review procedures

Scope of the assessment
The Review Committee was asked to perform an assessment of the research in Industrial Design at the Eindhoven University of Technology (TUE) and the University of Twente (UT). This assessment covers the research in the period 2003-2008, but information about 2009 and 2010 was taken into account where relevant.

In accordance with the Standard Evaluation Protocol 2003-2009 for Public Research Organisations (SEP), the Committee's tasks were to assess the quality of the institutes and the research programmes on the basis of the information provided by the institutes and through interviews with the management and the research leaders, and to advise how this quality might be improved.

Composition of the Committee
The composition of the Committee was as follows:

- André Rotte, director Design Initiatief (Chair)
- Hans Dirken, emeritus professor TU Delft
- Sidney Fels, University of British Columbia, Vancouver, Canada
- Simon Fraser, Victoria University Wellington, New Zealand
- Chris McMahon, University of Bath, UK
- Michael Tovey, Coventry University, UK
- Surya Vanka, Microsoft, USA.

A short curriculum vitae of the committee members is included in Appendix A.

Roel Bennink of the independent agency QANU (Quality Assurance Netherlands Universities) was appointed secretary to the Committee.

Independence
All members of the Committee signed a statement of independence to safeguard that they would assess the quality of the Institutes and research programmes in an unbiased and independent way. Any existing personal or professional relationships between Committee members and programmes under review were reported and discussed in the committee meeting. The Committee concluded that there was no specific risk in terms of bias or undue influence.

Data provided to the Committee
The Committee received detailed documentation consisting of the following parts:

1. Self-evaluation reports of the units under review, including all the information required by the Standard Evaluation Protocol (SEP), with appendices
2. Copies of three key publications per research programme.

Procedures followed by the Committee
The Committee proceeded according to the Standard Evaluation Protocol (SEP). Prior to the Committee meeting, each programme was assigned to two reviewers, who independently formulated a preliminary assessment. The final assessments are the responsibility of the Committee as a whole and are based on the documentation provided by the Institutes, the key

publications and the interviews with the management and with the leaders of the programmes. The interviews took place on 20-23 June 2010 (see the schedule in Appendix C) on location in Eindhoven and Enschede. After the interviews the Committee discussed the scores and comments. The texts for the committee report were finalised through email exchanges. The final version was presented to the faculties for factual corrections and comments. The final report was presented to the boards of the participating universities and was printed after their formal acceptance of the report.

The Committee used the five-point scale of the Standard Evaluation Protocol (SEP). The meaning of the scores is described in Appendix B.

2. General remarks

The Committee reviewed the research of two of the three universities in the Netherlands for education and research in Industrial Design (Engineering)[1]. At the University of Twente (UT) and at Delft University of Technology this domain is called "Industrial Design Engineering" (IDE), whereas at the Eindhoven University of Technology (TU/e) it is called "Industrial Design" (ID). Though each university gives special accents and colour, the domain can be regarded as the same discipline, whether called ID or IDE.

There are many different definitions of Industrial Design or Industrial Design Engineering. Generally speaking, this professional field gives tangible and visible form and shape to abstract ideas through engineered solutions for industrially manufactured products meeting user requirements. Product systems and related services can also be designed and engineered. The research and education can focus on many different aspects, ranging from the appearance and emotional functions of the artefacts to manufacturing technologies or materials. This wide range of aspects is illustrated in the different, sometimes separate research programmes in this review. In the view of the committee the design identity should lie in the conscious effort to create a meaningful integration of the different elements within this range.

An organisational difference between the two sites reviewed is that Industrial Design at Eindhoven constitutes a separate Faculty, there named Department, being a more or less independent scientific body, with a Dean, financial means and scientific policy of its own.
At the University of Twente the IDE department is a part of the Faculty of Engineering Technology, which also encompasses Mechanical Engineering and Civil Engineering. Research priorities and project funding at UT are determined by the interdisciplinary research institutes in a matrix organisation which is aimed at enhancing cooperation across the boundaries of the individual faculties, but which does not seem to facilitate developing a clear identity and positioning, in the opinion of the Committee.

The Committee noted differences between TUE and UT in policies regarding recruitment and funding. For instance, at TUE several established research groups from other parts of the university were relocated in order to become part of the new discipline ID, together with one group that came from the Delft University of Technology, whereas UT followed a process of individual recruiting from within the university or from outside. This difference is also reflected in aspects such as change of traditions or in the cohesion between parts of the new organization.

The Committee reviewed the research carried out during the period 2003-2008 and did this mid June 2010. In contrast to many older, more established research groups in universities, the ID(E) departments at TU/e and UT were in 2003 still in a beginning stage, slowly increasing their research staff, facilities, networking and policies and gradually completing the intended 'research scape'. In 2008 this growth cannot yet be regarded as completed in all aspects. A consequence of this situation is that much of the research output in the period under review was produced with a (mono)disciplinary focus rather than a multidisciplinary design focus. The Committee has assessed the work mainly from the perspective of Industrial Design (Engineering), but has attempted to take the shift in focus between the past, the present and the future into account.

In the one and a half years after the review period of 2003-2008 many things have been achieved and changed. In some cases even completely new research facilities and chairs were started up.

[1] The report of the research review of Industrial Design Engineering at Delft University of Technology (TUD) was published in July 2008, see www.qanu.nl

During the site-visits in June 2010 both Departments provided much information about these recent developments. The Committee decided to incorporate these data into the assessments as far as they contribute to a more accurate and fair judgement of the research qualities of the different research groups.

3. Institute assessment TUE

Department of Industrial Design (ID), Eindhoven University of Technology

Mission & Goals
The mission of the Industrial Design Department at Eindhoven University of Technology is to perform research on and to provide education in 'creating intelligent systems, products and related services.' An *intelligent* system and product is characterized by adaptive behaviour based on the situation, context of use and users' needs and desires. Particular focus is on problems and opportunities that are of benefit to individuals, societies and different cultures worldwide. A *system* denotes an adaptive environment in which humans can *interact* with intelligent products to gain access to services. The intelligent products are connected to each other and to the surrounding system to achieve new types of user experiences. To create such interactive and intelligent environments, expertise is provided for the *context of use*, the *conceptual design*, the *implementation* and *realization*, and *evaluation*. Appropriate expertise for *production processes* is provided to realize all these in an industrial and commercial setting. The main target of the design expertise is the interaction between users and systems in a context of use.

The Department's ambition is the realization of a new content of industrial design, based on the integration of three scientific approaches: Design, Social Sciences and Engineering. ID is progressing to a situation in which more and more academic staff combine at least two of the three paradigms.

Evaluative remarks about mission & goals
The Committee considers the vision, mission and goals clear and appropriate; the focus on intelligent systems provides direction and supports the positioning of the Department.

The Department has pointed out that much of the research output in the period under review was produced when some groups were not yet part of the department and when integration/design focus was therefore not yet an issue. The Committee has assessed the work mainly from the perspective of Industrial Design (Engineering), but has attempted to take the shift in focus between the past, the present and the future into account.

Leadership
The Department consists of four capacity groups: Designed Intelligence (DI), User Centred Engineering (UCE), Designing Quality in Interaction (DQI) and Business Process Design (BPD). The capacity groups are involved in both education and research. The Departmental Board is composed of the dean, vice-dean, managing director and two advisors, namely the director of education and a student member. The Departmental Board has a number of advisory bodies that play a role in its decision-making processes, such as the Advisory Committee for Research, consisting of the capacity group leaders and the dean, which advises the Departmental Board with respect to the acceptance of PhD projects directly financed by the Department, prepares the research assessment and plays an active role in advising on policies in quality control of research in general. There is also an External Advisory Board with prominent international and national experts from universities and industry.

Evaluative remarks about leadership
The Committee appreciates the great effort made towards a recognized role in the field on a regional, national and international level. Leadership in the chosen field is obtainable if a strong cohesive integral research program is further developed. Concerning the four capacity groups it is noted that although these groups have their own focus, it is of paramount importance that more

programmatic coherence is achieved under the overarching notion of a full process of industrial design; from ideation to products in use.

Strategy & Policy
During the review period the organizational structure of the Department was continuously developing in parallel with the structural growth of the Department and its activities in education and research. From 2003 the Department started to work towards a complete and full-content Industrial Design Department with a balanced input of education for the Bachelor's and Master's programmes, and with high-level research in the capacity groups. The educational model is strongly focused on the integration of teaching/learning on the one hand and exploration/research on the other hand. The results of team projects in education, even at the Bachelor's level, are fed into research, and research results launch initiatives within education.

In the view of the Department, designing and reflection, synthesis and analysis alternate, leading to improvements after each cycle. Empirical data are analysed and fed into the body of design knowledge, thus improving design knowledge and the quality of the prototype with each cycle. This view is referred to as 'research by design'.

It is the policy of the Department to distinguish between output in the form of publications in international journals and output in the form of new designs and prototypes. Both research output and design output are evaluated against two criteria:

- Scientific quality such as the addition of new knowledge and methods to the design field
- Social quality such as societal relevance, economical value and societal impact.

These two criteria are further elaborated in a number of sub-criteria, such as:

- Methodical approach: the design is realized by using an effective design methodology and by selection from alternatives after a sound and traceable selection process
- Feasibility: the design meets the requirements of technical and economic feasibility.

Evaluative remarks about strategy and policy
Regarding the development of the strategy and policy, the Committee remarks that indeed there is always the dilemma of allocation of resources to either research or education. Involving students to a large extent in the research programmes as part of their education as academically trained professionals elegantly contributes to solving this problem, while the main reason for this involvement is educational.

Resources, Funding Policy & Facilities
The Department has provided the following overview of the personnel resources, in full-time equivalents (fte) research time.

Institute level	2003	2004	2005	2006	2007	2008
Tenured staff	5.9	6.6	6.6	6.5	8.1	9.6
Non-tenured staff	0.4	3.3	4.1	5.2	5.2	10.0
PhD students	2.4	8.7	11.0	12.5	16.1	18.3
Total research staff	8.7	18.6	21.7	24.2	29.4	37.9

Programme level	2003	2004	2005	2006	2007	2008
Programme *Designed Intelligence*						
Tenured staff	3.1	2.9	3.7	2.4	2.8	3.1
Non-tenured staff	0.1	0.9	0.7	0.7	2.0	3.0
PhD students	1.7	2.3	1.5		1.4	3.0
Total research staff	4.9	6.1	5.9	3.1	6.2	9.1
Programme *User Centred Engineering*						
Tenured staff	2.8	3.7	2.9	2.9	2.9	3.3
Non-tenured staff	0.3	2.4	3.4	4.2	2.4	4.2
PhD students	0.7	6.4	9.5	10.9	11.2	9.2
Total research staff	3.8	12.5	15.8	18.0	16.5	16.7
Programme *Designing Quality in Interaction*						
Tenured staff				1.2	2.4	1.5
Non-tenured staff				0.3	0.4	2.0
PhD students				1.6	3.2	2.3
Total research staff				3.1	6.0	5.8
Programme *Business Process Design*						
Tenured staff						1.7
Non-tenured staff					0.4	0.8
PhD students					0.3	3.8
Total research staff					0.7	6.3

The Department offers all new scientific staff a tenure track position. This means that each new scientific staff member gets a temporary contract for a period of 4 to 6 years. In this period the candidate has to qualify for a tenured position as an assistant professor, and later as associate professor. Several training programmes to support personal development are offered by TUE in general and the ID Department in particular.

The yearly funding and expenditure of ID during the period 2003 – 2008 is shown in the table below.
During the first years ID was almost completely dependent on the budget assigned by the Executive Board of the University. Since then contract funding has increased. Research funds and contract funding are essential elements in the long-term financial goals.

Funding and expenditure at Departmental level (in percentages)

	2003	2004	2005	2006	2007	2008
Direct funding	100%	95%	91%	91%	87%	84%
Research funds	0%	0%	0%	0%	0%	1
Contract funding	0%	5%	9%	9%	13%	15%
	100%	100%	100%	100%	100%	100%
Personnel costs	77%	83%	81%	77%	80%	83%
Other costs	23%	17%	19%	23%	20%	17%
	100%	100%	100%	100%	100%	100%

The self-assessment report gives the following overview of the funding per capacity group, based on average full-time equivalents research input. This illustrates the recent start of some of the groups.

	2003	2004	2005	2006	2007	2008	average
Designed Intelligence	56%	33%	27%	13%	21%	24%	29%
User Centred Engineering	44%	67%	73%	74%	56%	44%	60%
Designing Quality in Interaction				13%	21%	15%	8%
Business Process Design					2%	17%	3%
	100%	100%	100%	100%	100%	100%	100%

According to the self-assessment report, the TUE has excellent digital and software services for the analytical steps of modeling and theoretical analysis and product and system simulation. There are campus licenses for all major scientific packages such as Mathematica and Matlab, and excellent library services including subscriptions to all relevant journals. The design step of building prototypes is supported by a variety of workshops and laboratories. The analytical step of prototype testing and experimental analysis has very different laboratories with dedicated equipment and installations for specific experiments. The step of consumer tests, which is also analytical in nature, is supported by several laboratories which combine a proper context of use, such as at-home, in-flight etc., with sophisticated observation facilities.

In the view of the Department, the design steps of creative idea generation and concept design call for innovative integrated design studio concepts. By rearranging the structure and the facilities in various workspaces in the Department a further cross-fertilization between research and education is supported. Core design activities such as sketching, brainstorming and group negotiations, are being combined in a technology-enhanced design studio of the future, the so-called Concept Lab.

Evaluative remarks about resources, funding policy & facilities
The Committee feels that the recent development towards a more integrative approach is very supportive to the overall policy goals. Although the premises look somewhat outdated, a glimpse of what a design department can be was demonstrated in the integrated studios (the 'test beds').

Academic Reputation
Evidence of the academic reputation of the Department in the form of prizes, grants and rewards is provided in the sections about the individual programmes. The self-evaluation states that the Department has a leading position in national and international initiatives to develop criteria to determine the scientific level of design activities and related types of output. The Department proposes to integrate both elements of scientific practice to develop new knowledge: *analysis* (research) with the results mainly presented as publications in international journals, and *synthesis* (design) with the results mainly presented in new designs, prototypes etc. In the view of the Department, "scientific design" integrates analysis and synthesis. [See also under Strategy & Policy]

The Department took the lead in building an international network of partner universities and (multinational) company research groups for staff and student exchanges, and cooperation in research. Partners from four continents take part in the network: North America (GeorgiaTech, Carnegie Mellon, USA), Asia (National University of Singapore and Zhejiang University, Hangzhou, China), Oceania (Royal Melbourne Institute of Technology and University of

Technology, Sydney, Australia) and New Zealand (the Victoria University of Wellington). In Europe collaborations exist with many different partners, including the Politecnico di Milano, University of Florence, UIAH (Helsinki) and RCA (London,). These contacts are now mostly based on educational exchange but the aim is to reach a Global Research Agenda for the focus of Industrial Design. Developing clusters of new PhD projects between partner institutes is regarded as a good way to reach in-depth cooperation. There are plans for a yearly research conference. All partner institutes, together with representatives from the relevant industries, discuss the long-term vision on the development of the field and use this information when new chairs are defined.

Evaluative remarks about academic reputation
The Committee noted that efforts were made not only in building an international network, but also in using the network for developing deeper insights through research in the chosen field. The Committee regards this as a good way to build reputation by exposure.

Societal Relevance
The self-evaluation states that the themes that the Department explores in both education and research are generally considered to be highly relevant by the general public. The work of the Department is communicated to a broader public in several ways. There is substantial media coverage, a website, a monthly digital newsletter (IDzine) and various interactive events with partners from other institutes and industry. The Dutch Design Week is an annual, national gathering of the many design (sub)disciplines and includes among others a 3TU exhibition of work by design students. The 3TU exhibition attracts more than 8000 visitors. The Department participates in the 'Design Initiatief', aimed at creating extra opportunities for Dutch industry by focusing on future questions from the market and by bringing together industry, design expertise, universities and schools.

Aspects of societal relevance are also incorporated in the mission of the Department, especially the aim to further understand the world and to change the world into a more preferred situation, and the combination of human and technological orientations.

Evaluative remarks about societal relevance
Looking at the contents of the research programmes and the projects, combined with the many connections to societal bodies, industry and institutions, and at the growing percentage of contract research, the Committee believes that a high degree of societal relevance has already been achieved.

Balance of Strengths & Weaknesses
The self-assessment report gives the following analysis:

Strengths
- *Unique industrial design content in academic context, as represented in mission statement*
- *ID research has the lead in this field and is recognized internationally for its trend-setting role*
- *Unique educational approach (as mentioned by accreditation committee)*
- *Strong ties between research and education*
- *High motivation among the employees and students (see accreditation report)*
- *Education highly appreciated (source: Gids voor het hoger onderwijs)*
- *Large number of international contacts*
- *(Inter)national industrial network*
- *Inspiring mix of disciplines, ranging from Mathematics and Physics, to Biology, Sociology, Psychology and Design*

- *ID is the initiator in formulating guidelines for evaluating design (alongside publications) as academic output*
- *Produces many PhDs on design theses*
- *Dynamic and flexible*
- *Master graduates find their way well to the professional market*

Weaknesses

- *There are not yet sufficient academic designers with an engineering background and industrial expertise in the capacity groups*
- *Educational processes are not optimized yet and therefore require relatively much time from the capacity group staff; research time is spent on education issues as well.*
- *There is a gap between the mission and the daily activities (capacity groups are still less integrated than intended according to the mission statement)*
- *Facilities (including the building) do not support integration sufficiently*
- *Integration processes are very time consuming*
- *ID's flexibility and dynamism hinder optimal high level internal and external communication*
- *Insufficient technical support staff available to build prototypes*

Opportunities

- *Further growth of international network ('Global Research Agenda' for the field of industrial design)*
- *Modern economy requires a multidisciplinary academic engineer, well suited to the demands of the industry*
- *All aspects of the society of the near future will be served by intelligent systems, products and services*
- *Further development of collaborations such as i-Lighting the World, Top Technology Institute Design, among others*
- *The fact that Brainport and Eindhoven highly value the societal and economic role of design*
- *The PhD on design can become a powerful tool to demonstrate the (academic) value of design*
- *The new dean to be appointed will set new priorities for the opportunities mentioned above*

Threats

- *Reduction of the financial means (university and nationwide, such as the recent shift of about M€ 100 from the direct funding to the competitive funding through NWO)*
- *The current economic crisis (2009) can influence the development of a new field of industrial design in a negative way*
- *Until the moment the academic evaluation of design is considered equal to publications, the field runs the risk that it is underrated in the academic world. Performance metrics are currently strongly focused on Science and not on Engineering and Design*
- *Design has many definitions. As a consequence, design initiatives receiving the most public attention and support, are not always the most relevant and innovative initiatives.*

Evaluative remarks about the SWOT-analysis

The Committee was impressed by the big steps forward that have been taken in the relatively short time since the establishment of the Department. The achievements are very promising for the future, for the Department to position itself as a leader in their field. The vision, mission and goals are clear; the field of Intelligent Systems offers great opportunities. The capacity groups are well-chosen and are managed by good professional leaders. The staff and PhD-students are motivated and energetic. The attitude towards research is exploratory, inventive, non-traditional. The work is design research in the true sense, although the coherence between the topics, groups and researchers can still be improved.

Design and the role of design should provide input to the four capacity groups, in line with the metaphor of the table with the four legs. The Committee recommends to emphasise 'Design

Research' and 'Industrial Design from start to realisation' as the main focus for the two new professors that can be hired. This would add the aspect of how to bring products to market and into the lives of people.
The Department is well connected to the Eindhoven context (Brainport) and plays a well-respected role nationally, while the international reputation is growing steadily.

During the site-visit, the Committee noted that there is collegiality and openness between the programme leaders and across all layers of the organisation. Having the students participate in the research projects is an important asset; it allows them to develop research skills and provides capacity and input of ideas and approaches to the research.

The Committee shares the view that integration is of prime importance in Design Engineering. Design as a discipline is integrative by nature. The capacity groups need to have a distinct identity while maintaining cohesion in order to achieve the best possible results in teaching and research. The Department is heading in that direction. Integrative steps have been taken since the assessment of the educational programme two years ago. The link between teaching and research is clearly a strong point.

The Committee visited the 'test beds' and saw some highlights of integrative design. The facilities and approach of these test beds are very worthwhile; people are brought together to tackle problems through design research.

The Department has indicated that within the wider term "Industrial Design" their work could perhaps be more sharply characterised as "Interaction Design". In the view of the Committee, this would indeed enable the Department to distinguish itself more clearly from "hard" engineering fields, and from product development without strong interaction elements. On the other hand, changing the name of the Department and/or its programmes may have consequences that are beyond the scope of this review.

Regarding what the self-assessment report describes as the risk of being underrated in the academic world (see above, the 3rd point under Threats, as quoted from the self-assessment report), the Committee agrees with the Department that at this moment the academic evaluation of design is not considered equal to publications, and that performance metrics are currently strongly focused on Science and not on Engineering and Design. Within research universities this situation is not likely to change dramatically, because it is in the nature of knowledge creation that the academic audience needs to be targeted through selective peer-reviewed publications with demonstrable impact in their (sub)field, and through academic recognition in the form of prizes, invited lectures and memberships of important societies. The significance of the work for other audiences, such as Industry or professionals, can be shown and appreciated in different ways, but these are complementary. The 'traditional' metrics such as citations and journal impact will remain instrumental in measuring success, even though these indicators may be harder to interpret and difficult to compare with other disciplines. Convincing proof of the impact of the research results can also be given in the form of texts, and the research management (and review committees) will have to take these into account just as much or even more than the metrics, as long as the innovative aspects of the research contribution are made evident.

The Committee notes that the department is engaging with, and actively involved in discussions on the appraisal of "design based research". There is potential to make a significant contribution to the international debate on what constitutes valid research in design and what constitutes valid forms of publication. The department is to be encouraged in addressing these issues and to take

the lead in defining and demonstrating the answers. It is beyond the scope of the review committee to prescribe the future parameters of design research.

The Committee expects this School to develop into a very good leadership position with the approach they have chosen to design research, encompassing intelligent products, product systems and related services.

4. Programme assessments TUE

The Committee assessed the following programmes of the Department of Industrial Design (ID), Eindhoven University of Technology:

	Quality	Productivity	Relevance	Viability
Designed Intelligence (DI)	4	4	3	4
User Centred Engineering (UCE)	4	4	4	3
Designing Quality in Interaction (DQI)	4	4	4	5
Business Process Design (BPD)	3.5	3	3	3

The detailed assessment per programme follows in the next section of this report.

Programme TUE 1:	**Designed Intelligence (DI)**	
Programme director:	Prof. Dr. G.W.M. Rauterberg	
Research staff 2008:	9.1 fte	
Assessments:	Quality:	Very good (4)
	Productivity:	Very good (4)
	Relevance:	Good (3)
	Viability:	Very good (4)

Short description
The main topics of investigation are the software and hardware architecture of intelligent systems and products. The group provides the necessary technical expertise to investigate, design and build such systems, aimed at improving the quality of life. The DI group has three research lines:

- Adaptive Systems (bio-signal processing and modeling, learning algorithms, smart material, smart sensors)
- Autonomous Systems (autonomous robots, embodied intelligence, human-robot interaction, mental modeling)
- Aware Environments (cultural computing, dynamic processes, medical applications, sensing behaviour)

Quality
The group has published in a number of respected journals (MMS, IEEE Trans on Robotics, Design Issues) and conferences (i.e. ACM CHI, AAAI, AAMAS) leading to recognition internationally. The ACM/IEEE Conference on Human-Robot Interaction is still emerging and the impact they have there emphasizes the growth potential of this group in this area. The various research projects in the areas of interaction design seem to have considerable room for increasing their impact in a way that fits the department's mission more closely. Much of the work has the potential to appear in places such as SIGGRAPH, SIGCHI, NIPS, or additional papers at AAAI. During the review period, the group regarded their research as largely beyond the scope of these conferences, and presented their work at other conferences such as ACM/IEEE Conference on Human-Robot Interaction (HRI), IEEE International symposium on wireless communication systems, IEEE International Symposium on Information Theory (ISIT), International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), and Conference on Artificial Intelligence (AAAI), which are less obviously centred on Designed Intelligence.

The leadership of the group appears to be strong and is having a positive impact on the groups' success. Dr. Rauterberg is gaining an international reputation that is bringing recognition to the group as a whole.

There was some concern about how the group differentiates itself from the activities of the others, especially UCE and DQI, as stronger linkages to some of the projects across these areas could significantly improve the quality of the research overall. The team also suffers from a lack of strong design influences (including product and system realisation), and thus is not adding as much to the body of design knowledge, but rather is doing more work to help inform designers, which may not be as significant a contribution for the long-term recognition of the ID Department. Nonetheless, understanding of smart interface technologies and the role they play in interaction paradigms for creating effective designs is being explored in a number of important areas leading to a significant contribution to the field.

The group is having a growing influence in professional organizations and has played key roles in establishing new journals and conferences demonstrating leadership in the international research community.

Productivity
The DI group is consistently producing publications based on its research, supporting the notion of the group being recognized nationally with a high potential of international recognition. Some of their work has appeared in high impact venues and an appropriate amount has been published in more specialized venues to reach the audiences that will benefit most. Given the nature of the work, some of it would be expected to appear in places like e-tech at ACM SIGGRAPH[2] or Interactivity at SIGCHI[3] to get a larger international exposure of the research done by the group. The number of students graduated is very good.

Relevance
The DI group promotes the neo-Natal project as a solid example of the research they are doing that is relevant to society. We agree that this is an excellent example of the research's societal relevance. However, concern was raised about some of the other projects, not so much in terms of the potential societal impact, but on relevance to the overall field of Industrial Design. The main research strategy outlined by Dr. Rauterberg during the site-visit illustrated a particular user-centred design approach that applies a design methodology; however, it is not clear that there is a reflection upon this process to suggest improvements to it or refinement for specific domains that will ultimately lead to new industrial design fundamentals.

Viability
The group is doing well and its funding appears sufficient and is moving in the direction away from strong dependence on direct support. They have already implemented a shift of emphasis from a primary focus on generating research outputs towards building capability (expertise, funding, facilities) in the department, in order to consolidate the quality of their research and achieve a more sustainable programme**.**

Conclusion
In summary, the group is doing good research and is establishing itself nationally and beginning to have impact internationally. The impact of the work can be improved but the volume being produced is testimony to the hard work and enthusiasm of the group under Dr. Rauterberg's leadership.

Opportunities exist for the group to work together with the other groups to perform high-quality, design oriented research and this should be taken advantage of. We see good opportunities with the BPD for example. Thus, while there are some areas that need addressing, overall we see this ambitious, strong- minded group as having made good progress towards becoming a leading, internationally recognized group.

[2] ACM SIGGRAPH: Association for Computing Machinery's Special Interest Group on Computer Graphics and Interactive Techniques.
[3] ACM SIGCHI is the Special Interest Group on Computer–Human Interaction.

Programme TUE 2:	**User Centred Engineering (UCE)**	
Programme director:	Prof. Dr. Ir. J.H. Eggen	
Research staff 2008:	16.7 fte	
Assessments:	Quality:	Very good (4)
	Productivity:	Very good (4)
	Relevance:	Very good (4)
	Viability:	Good (3)

Short description
The research mission of the programme is to design, develop, implement and evaluate new concepts for human-system interaction. The research is focused on understanding the human aspects of the interaction between people and intelligent systems. System intelligence is determined by humans who interact with the system or by humans interacting with each other through the system (mediated interaction). The activities are focussed on two (broad) classes of intelligent systems:

- Awareness systems that support sustained interaction between individuals or groups and that allow people to build up and maintain an understanding of the activities of each other. In this way, awareness systems can, for example, support social presence and connectedness.
- Systems that support Co-located Mediated Interaction, i.e., systems that support people at the same location in interacting with each other and with physical artefacts in order to reach a common goal or target.

The UCE team produced a well-structured and well-written self-assessment, with a well-justified evaluation of the programme and team.

Quality
During the review period the UCE team published in a range of high-quality journals, and the presented key publications have already attracted a number of citations. The team has also made a substantial number of contributions in generally well-respected conferences. The leadership of the group by Professors Eggen and Martens is strong and the team meets regularly to good effect. Well-equipped laboratory facilities provide a focus for the team, which comes from a diverse range of academic backgrounds (although with only limited strength in design). The differentiation of the UCE activity from the activities of the other groups, especially DI and DQI, is an issue, and stronger linkages to some of the projects across these areas could benefit the integration of the teams within the Department.

The team shares with DI a lack of a strong design focus in the research, which reflects very much the HCI tradition of the group before joining the Department. The consequence is that the UCE team sees itself as producing knowledge that can be used by designers, rather than in gaining knowledge about design methods, tools and processes. It is recommended that the team should endeavour to increase its focus in this way on design and designing, not only in the conceptual phase but also including realised products and systems.

Nevertheless, the emphasis on such issues as natural interaction, awareness and mediated interactions is important for intelligent products and systems, and the UCE group, with its good industrial connections and very good international academic connections, is justly recognised for its contributions in these respects.

Productivity
The UCE group publishes, as noted above, in good quality journals and conferences. The number of papers published is good for the size of team, and has grown gradually over the review period. The PhD completion rate is good, and the engagement with external organisations very positive. The productivity strategy was however not so clear, especially with regard to improving the output of the team in design-centred conferences and journals. Strengthening the design expertise of the group through strategic recruitment would go some way to addressing this.

Relevance
The social relevance of the UCE programme is high. While there is scope for increasing the relevance of the work in a design context by using design more strongly as an integrating framework, the research of the group has wide application for children and in families, and significant potential application in areas such as social inclusion, inclusive design and design for the aged and infirm. More generally the work also has potential economic impact in embedded and ubiquitous computing as these topics have a large industrial importance.
UCE established and is responsible for the Concept Lab in which design tools like 'Sketchify' [4] are implemented and further developed 'in situ'.

Viability
The UCE team is a small, well-led and vibrant inter-disciplinary group, with a coherent and feasible programme of research. Contributions to key outputs are made from across the team, which should be positive for robustness. The research is timely and the application domain is also conducive to industrial interest in the work being maintained, although the risk that the work will be influenced by adverse economic circumstances is always present.

UCE acquired substantial funding from national and international design research programmes such as the national "IOP-MMI" and "IOP IPCR" and the European REPAR and DESIRE projects.

The noted ambition to integrate design and research more closely and to achieve greater internal integration will take effort, but is important to the long-term robustness of the team in an Industrial Design context.

Conclusion
In summary, the group is doing high-quality research and has an international reputation and influence. It has good academic and industrial connections. It is a well-led and enthusiastic team that has had a substantial growth in output over the review period.

The work is socially and industrially relevant but rather firmly placed at present in the HCI traditions of the team. Issues to be resolved are the movement towards a more design oriented focus and addressing the overlap between the group's activities and those of the DI team. This will be very much assisted by key appointments in design practice and in design research.

[4] *Sketchify* (also known as *AMICO Sketchpad*) is a toolset for sketching novel classes of user interfaces, originally developed at the Concept Lab of the TUE, building on the results of the Adaptable Multi-Interface Communicator (AMICO) project at the Interactive Information Access group at CWI in Amsterdam.

Programme TUE 3:	**Designing Quality in Interaction (DQI)**	
Programme director:	Prof. Dr. C.J. Overbeeke	
Research staff 2008:	5.8 fte	
Assessments:	Quality:	Very good (4)
	Productivity:	Very good (4)
	Relevance:	Very good (4)
	Viability:	Excellent (5)

Short description
The DQI group focuses on how to design for highly interactive intelligent systems. DQI is shifting its research and teaching context from Human Product Interaction (HPI), mainly focused on opening up the functionality of products, towards a broader approach aimed at enhancing interpersonal and societal values, including those in the personal, aesthetic and socio-cultural domains, through the application of highly interactive intelligent systems. The complex nature of systems necessitates a research-through-design approach, with *doing* as the mechanism for gaining insight into the process at hand, guided by relevant theory and a vision of what can be achieved.

Quality
The leader of this programme of research has good standing and externally acknowledged reputation. He has been convincing in demonstrating effective intellectual leadership and a coherent approach. The group has strength in its confidence in innovation in particular, not only in developing research propositions but also in creating novel scenarios of investigation. The demonstration of research through doing is persuasive and has demonstrated its efficacy. The atmosphere within the group appears to be one in which there is a designerly relish for novelty and original viewpoints, with an orientation towards continental European philosophy and the scientific researchability of product-user interactions. It is to be commended for its refreshing willingness to take risks.

The quality of this work would be further strengthened if the integration within the programme of design theory and practice were to be re-evaluated. It would be possible to move design from its current position as a driver alongside social science and engineering, to one which where it was seen as the integrator for the inputs to the programme. It would thus function to provide grounding for the strands of activity, and the discipline of design research would give direction to the research investigations.

The lead academic publications from the group demonstrate the achievement of its current ambitions through outputs of good quality. Their numbers have grown gradually over the review period. Overall they reveal that there is good intellectual strength and authority in its core activities. The work is original, internationally competitive and makes a significant contribution to the field.

Productivity
The progressive but gradual development in the number and quality of publications is in a context where the engagement in conferences is growing well. This would seem to reflect the positive approach of the younger researchers in the programme, which bodes well for future productivity. The further engagement over the period of a number of external and commercial organizations in support of the programme is a positive signal. Overall this confirms the nationally leading position which this group occupies.

Relevance

In the context of the process of proposing new designs the work within this programme has a self-evident and strong relevance. All of the work demonstrated showed a product user-interaction focus, and much of it was approached with a fresh, playful and engaging originality. However it was possible to see within this body of work that there is scope for this to be further enhanced. The relevance would be both sharpened and made more effective by the acceptance of a design research frame for the project work and the positioning of design as the integrating component. Nonetheless the programme's work is already of demonstrable significance in developing understanding of the nature of user-product interaction.

Viability

This group has intellectual vitality and is being provided with effective and inventive leadership. The group is well integrated with shared goals, and sufficient members to enable a lively and productive exchange of ideas. It would appear to be generating intellectual energy which spreads beyond the group and it has the potential to provide a direction for the other programmes within the Department. It could be argued that elements of this programme are world leading.

Conclusion

This is an energetic, lively and inventive group pursuing interesting and relevant research. Its area of research has great potential for making a significant impact to design thinking and design research internationally. In order to realize this potential the research should be re-framed so that design becomes the integrator, and established design research is incorporated to give both a context and a future direction to the work. The proposed future appointments of chairs in design practice and in design research are crucial to realizing these ambitions.

Programme TUE 4:	**Business Process Design (BPD)**	
Programme director:	Prof. Dr. Ir. A.C. Brombacher	
Research staff 2008:	6.3 fte	
Assessments:	Quality:	Good to Very good (3.5)
	Productivity:	Good (3)
	Relevance:	Good (3)
	Viability:	Good (3)

Short description
The mission of the group is to design and analyze business processes for the design of intelligent systems, products and related services. Such systems have the ability to adapt their behaviour to the situation, the context of use and the needs of the users. There are two main research challenges:

- *Adaptability of the system and the users*: because intelligent systems adapt to individual users while users also adapt to individual systems, a wide variety of user–product interactions form the commercial arena for which a product should be designed.
- *Innovation in flexible networks*: because intelligent systems are often a combination of various products and services, they are designed and marketed by dynamic networks of different parties. An attractive elaborated value proposition must be ensured for all stakeholders.

For the major part of the assessment period (up to 1-1-2008) the BPD group has been part of the department of Technology Management and the research school BETA. Their mission was: *"To model, analyze, control and improve the quality, reliability and safety of products, by improving the performance of the relevant technical-operational business processes."*

Quality
The group has published recognized work during the reporting period. There are several examples of their international reputation and visibility, such as their contribution to and collaboration with the Design Technology Institute at the National University of Singapore (NUS), which was jointly set up by NUS and TUE in 2002 to focus on research, education and transfer of design technology to industry. They now need to adjust their work to focus on interactive, intelligent and collaborative design and use of IT-based product cycles. In the balance between marketing focus and human factor aspects of consumers a shift is needed to include realized products and services next to concepts and prototypes. They appear to be well on their way to producing significant quality publications related to the new mission.

Productivity
The productivity is good, but is still focussed on TM and needs more output in ID related disciplines. The selected key publications are good examples of the TM focus.

Relevance
The publications during the reporting period were more appropriate for the Department of Technology Management than for the design of interactive systems. There appears to be an acknowledgement that this needs to shift and current projects are moving towards a more contemporary view given the ID Department setting. Still, some of the projects were not so obviously advanced yet and continue to be more of a technology assessment rather than leading to new models and methods of BPD for interactive systems, products and services. For example, the emphasis on instrumentation of products does not have clear relevance to BPD in an ID setting given that it was not integrated into a design methodology research agenda. Working with

a design researcher and designers can improve these shortcomings in the research direction, making the work more relevant to the field and resulting in higher quality, higher impact research.

Viability
The most significant challenge to the group is going to be that the chair is now Dean and will be having increased pressures on his time away from the group. Coupled to this the small FTE and full-time participation of group members may leave this group floundering. This will need to be monitored carefully. The identification of the direction the group needs to go in appears well thought out within the context of the Department and thus provides evidence that the group is vital and may overcome its main challenge. The group can benefit greatly through collaboration with DI and UCE and they appear to be starting these collaborations.

Conclusion
The group recognizes the need to shift from its traditional areas of business process research and embark upon new ones to be more relevant to new types of models needed for functional analysis and design of interactive systems. This is good and provides an important component to the overall Department. If successful, they will help to provide a strong identity for the ID Department. However, there is a significant threat to the programme with the chair taking on the Dean's role in that he will have little or no time to devote to the research.

The group does not have any design research experience as part of the team and does not have significant access to it either. The hiring planned into the ID Department does not seem to take this into account which is a threat to this group in that they may end up deviating to a TM oriented focus and not look at locating their research in the ID domain.

For this group to have internationally leading work, it will likely need to partner with the other groups in ID to ensure that it leverages off the talent from these groups.

Overall, BDP is an energetic and ambitious group providing a good foundation to develop from.

5. Institute assessment UT

Industrial Design Engineering (IDE), University of Twente

Mission & Goals
The research mission of Industrial Design Engineering is to develop qualitative and quantitative knowledge on all phases in the life cycle of products, i.e. initiative, design, production, use, maintenance and recycling, all with a strong emphasis on the user, in a societal and environmental context, with special focus on interdisciplinary cooperation, leading to answers on design questions from 'the real world'. Research in the field of IDE is carried out in a socio-economic context. In general, four stakeholders can be distinguished: the academic world, companies, society and students. The existence of behavioural and social sciences at the same university stimulates that IDE research pays attention to societal issues, including environmental concerns.

Three focal areas can be distinguished in the research: design knowledge, product knowledge and manufacturing knowledge. The combination of these technologies in one Faculty is beneficial for the cooperation between the research groups, according to the self-assessment report.

Historical context
In 2000, the department of Mechanical Engineering decided to initiate a new five-year educational programme in Industrial Design Engineering (IDE) which was accredited in 2001. The first students enrolled in the same year. This educational programme has become a success, with close to 500 students enrolled now. In order to realise the educational programme, three sources of knowledge and capacity were identified. First of all, a substantial part of the required knowledge and capacity was available within the department of Mechanical Engineering, especially in the fields of design methodology, design tools, materials and manufacturing. Secondly, knowledge and capacity could be supplied from within the rest of the university, from fields such as marketing, psychology, sociology and logistics. Lastly, knowledge and capacity had to be acquired from outside the university in specific IDE fields such as sketching, design and styling, graphic design, ergonomics and user investigation.

In 2000, the aim of the IDE research was to upgrade the discipline Industrial Design Engineering and the educational programme in particular. The emphasis was on interdisciplinary and participative domain research, mainly application-oriented, and on integrative and organisational aspects of the product creation process. The Industrial Design Engineer was positioned as an interdisciplinary knowledge integrator and the research aimed at better and faster disclosure of existing knowledge from various disciplines. Since 2000, all decisions regarding research were in line with these intentions.

Evaluative remarks about mission & goals
The Committee noted that in spite of a well-formulated mission, the interpretation of that mission varies amongst the chairs and members of the Institute. There is less clarity about the focus and the goals.

Leadership
The Faculty of Engineering Technology (in Dutch: *Construerende Technische Wetenschappen,* CTW) is headed by the Dean, Professor Eising, who is assisted by a Management Team. Dean is a full-time position for a full professor. The Dean carries responsibility for all strategic, organisational, financial and personnel affairs concerning the Faculty. The Management Team is chaired by the Dean and discusses all strategic matters concerning the Faculty – ranging from strategic plans for research and education to organisational issues, human resource management, budgets and

financial results, public relations and accommodation. The Dean also chairs the Disciplinary Councils of the departments, in which their research strategy is discussed. The members of the Disciplinary Council are the full professors/ programme leaders of the department and the Director of Education of that department. Each Council meets every month.

IDE is not an independent department or Faculty, but an Institute/department within the Faculty of Engineering Technology. This Faculty is responsible for three Bachelor programmes: Industrial Design Engineering (IDE), Mechanical Engineering (ME) and Civil Engineering (CE), three related Masterprogrammes and two 3TU Master programmes.

IDE research at the University of Twente is carried out by most of the research groups within the Faculty of Engineering Technology, but also by research groups of other Faculties. Within the Faculty of Engineering Technology, a large section of the staff involved in IDE education and research is employed by the *department of Design, Production and Management*, a cluster of full-time and part-time chairs addressing the area of product and production system research and development.

Three full chairs carry the main responsibility for IDE education and research:

- Design Engineering (hosting the part-time professor in Packaging Design and Management)
- Product Design (hosting the part-time chair of Design History)
- Product Realisation (recently established).

Full chairs coordinate their own research programme, divided into sub-programmes. Some of the subprogrammes are within the domain of competence of other chairs inside and outside the Faculty and are carried out by those chairs.

A Master track in the area of Architectural Building Components Design Engineering (ABCDE) or Product Development for the Building Industry is under development as a joint effort with the Department of Civil Engineering. An IDE Bachelor variant with the emphasis on ICT was recently launched together with the Faculty of Electrical Engineering, Mathematics and Computer Science. These initiatives lead to broadening of the research programme towards building innovation and smart product design.

Industrial Design Engineering in Twente acts as intermediary between fundamental technological sciences and practical application in industry and society. IDE cooperates with each of the six research institutes of the University.

Evaluative remarks about leadership
The Committee responded positively to the overall intention to make use of all the assets available on the campus, but there are some doubts whether the expressed goals can be achieved in the context of a matrix organization. In order to develop recognized leadership in the field there must be room to develop a clear design identity and create a sharper positioning for the Institute. The Committee has the impression that IDE not only finds this difficult in the current context, but that there is also a lack of clarity in that direction. The links of the "IDE-core" with other individuals, groups and themes inside and outside of the Faculty of Engineering Technology, both in teaching and in research, seem to be considered as more important than developing a clear design identity. The Committee regards this as a matter of strategic choice; can the ambitious goals and objectives of IDE be attained in such a diverse context? In the opinion of the Committee there will need to be a well-developed core identity. The assessments and recommendations in this review are based on that opinion.

Strategy & Policy
The vision behind the research programme of Industrial Design Engineering has the following main elements. Twente positions itself as an entrepreneurial university. For IDE this implies that the starting point is in the first place the company involved, in need of new commercial activities. The university therefore concentrates on the development of knowledge that can help companies to be successful in this respect. In the development and marketing of products a number of phases are distinguished that each require specific knowledge; this approach is called evolutionary product design. The knowledge is characterised in a cycle of *research* (fundamental and applied), *development* (technical and commercial systems) and *design* (applications and styling). In the view of IDE, design and styling are directly connected to fundamental research questions of both a technical nature and a human science nature. The self-assessment report describes how the focus of each if the chairs in IDE relates to this vision. Associated chairs outside the Faculty include Philosophy, Advanced Robotics, Experimental Psychology, Safety Studies, and Marketing Communication and Consumer Psychology.

At the University of Twente, six research institutes have the task to stimulate collaboration, cohesion, quality and critical mass of the research programmes and to enhance the cooperation across the boundaries of the individual faculties. The research affiliations of the department of Design Engineering at the Faculty of Engineering Technology (CTW) are mainly with the institutes IMPACT and IBR. The Biomechanical Engineering group fully participates in MIRA. Some research activities are part of the research programmes of CTIT and MESA+.

The research of IMPACT, the main partner of the IDE group, now focuses on Energy and Resources: the production, transport, storage and use of energy against the background of (re)utilisation of scarce materials and other resources. Energy efficient products and processes and the responsible use of resources are the basic elements of a sustainable society. Four research clusters have been defined:

- Mechanics of Fluids, Solids and Systems
- (Thermo) Chemical Reactions and Process Technology
- Design, Synthesis, Materials and Production
- Computational Science and Engineering.

In these areas, IMPACT covers the full range from exploration and thorough understanding of the underlying principles of design and production methodology, physics, chemistry, mechanics and mathematics to the development of tools for practical applications and engineering solutions for industry and society.

In February 2007, the three technological universities in the Netherlands established the 3TU alliance with the aim to cooperate on education and research. In order to enhance the cooperation, so-called Centres of Competence (CoC) were formed on the following five subjects: (1) high-tech systems, (2) information and communication technology, (3) sustainable energy, (4) application of nanotechnology and (5) fluid and solid mechanics. For Industrial Design Engineering, the CoCs on high-tech systems, sustainable energy, information and communication technology, and on fluid and solid mechanics are of interest.
In addition, six Centres of Excellence (CoEs) were formed to give an extra push to research in the fields of (1) intelligent mechatronic systems, (2) dependable ICT systems, (3) sustainable energy technologies, (4) multi-scale phenomena, (5) bio-nano applications and (6) ethics and technology.

As the research priorities set by the University are consolidated in the scientific agendas of the Research Institutes, the further development of IDE research is very much dependent on their mid-term and long-term goals. Within the IMPACT institute, energy and resources will be the main topic, covering not only the production of energy, but also energy transport, storage and use. The issue of availability and utilisation of resources will also be taken into account. All of this has a strong link with all aspects of life cycle engineering. These decisions will have a large impact on the future research portfolio of IDE.

Evaluative remarks about strategy and policy

The Institute started off with a heavy engineering component, in later years complemented with the chairs of Evolutionary Product Development and more recently with the chair of Product Realisation. The Committee feels that a more balanced research programme is needed around these three pillars in order to achieve a clear design identity.

Resources, Funding Policy & Facilities

IDE started with a limited budget in combination with a heavy workload for educational tasks.
The Faculty has provided the following overview of the personnel resources, in full-time equivalents (fte) research time.

Institute level	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Tenured staff	3.96	4.65	5.01	5.02	6.22	8.03
Non-tenured staff	0.08	0.28	0	0	0.27	1.67
PhD students	1.52	2.91	4.31	7.69	10.26	13.20
Total research staff	5.56	7.84	9.32	12.71	16.75	22.90

Programme level	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Programme *Design Engineering*						
Tenured staff	2.83	3.20	3.50	3.45	3.41	4.98
Non-tenured staff	0.08	0.28	0	0	0	0.87
PhD students	0.80	2.20	3.14	4.84	6.46	8.10
Total research staff	3.71	5.68	6.64	8.29	9.87	13.95
Programme *Evolutionary Product Development*						
Tenured staff	0.54	0.80	0.80	0.80	1.99	2.10
Non-tenured staff	0	0	0	0	0	0
PhD students	0	0	0	0	0.07	0.94
Total research staff	0.54	0.80	0.80	0.80	2.06	3.04
Programme *Product Realisation*						
Tenured staff	0.59	0.65	0.71	0.77	0.82	0.95
Non-tenured staff	0	0	0	0	0.27	0.80
PhD students	0.72	0.71	1.17	2.85	3.73	4.16
Total research staff	1.31	1.36	1.88	3.62	4.82	5.91

The yearly funding and expenditure during the period 2003 – 2008 is shown in the following table.

Funding and expenditure at Departmental level (in percentages)

	2003	**2004**	**2005**	**2006**	**2007**	**2008**
Direct funding	94%	94%	80%	71%	68%	72%
Research funds	0%	0%	0%	0%	0%	0%
Contracts	5%	5%	19%	29%	31%	28%

Other	1%	1%	1%	1%	1%	1%
	100%	100%	100%	100%	100%	100%
	2003	**2004**	**2005**	**2006**	**2007**	**2008**
Personnel costs	8%3	79%	62%	66%	76%	75%
Housing costs	6%	10%	7%	11%	9%	9%
Other costs	11%	12%	31%	23%	15%	16%
	100%	100%	100%	100%	100%	100%

Evaluative remarks about resources, funding policy & facilities
The self-evaluation report gave no insight in the available funding per sub-programme. From the number of staff it is clear that the emphasis is on the programme of Design Engineering. The amount of external funding seems good, especially judging from the excellent facilities in the T-Xchange lab. In general, the premises are modern and the technical labs seem well-equipped.

The Committee has the impression that the build-up of the staff has not yet reached a well-balanced situation.

Academic Reputation
Staff members of IDE are members of editorial boards of international refereed journals. Tenured staff and PhD students have presented their work in refereed journals and at numerous international conferences. Several members have received personal grants to develop their scientific work. The research groups have been successful in attracting research funds from national and international scientific programmes and from industry. The self-assessment report gives highlights of the period under review, such as:

- Appointment of Professor Van Houten as Vice President Elect of the International Academy for Production Engineering (CIRP) in 2008;
- Election of Professor Van Houten as member of the German Academy of Science and Engineering (acatech) in 2009.

Evaluative remarks about academic reputation
The Committee believes that given the relative youth of the Institute it has hardly been possible to already build a solid reputation. Two of the three constituting chairs have not yet fully matured and contributed to the body of knowledge. The fact that many other Faculties and departments contribute to the research programme also makes it difficult to establish the necessary inclination towards the Industrial Design field; this may be an obstacle for developing a leading role in the specific research field.

The Committee suggests that there is a need to create greater exposure to the international field of design research. If possible, new staff should have an established academic reputation in the design field.

Societal Relevance
The self-evaluation states that the research results of IDE are successfully implemented in practice. Knowledge transfer is an important objective of the group and takes place in a number of ways:

- Dissemination of results occurs at conferences and seminars, via guest lectures and in public media
- A large number of projects are funded directly by users and practitioners.

- Collaboration with institutes for applied research is a given.
- There is involvement of users' committees at the project level.
- There is involvement in several in-company courses and committees.

All groups have strong ties with industry, institutes for applied science, societal organisations and various Ministries; this contributes to the direct applicability of the research results. Collaboration with the government and professional partners is strongly stimulated in order to disseminate research findings and to gain insight in the knowledge demands from practice.

Evaluative remarks about societal relevance
The Committee recognizes the strong ties with industry and other societal organizations and institutes. Some of the projects at hand clearly showed the contribution of the research to the solution of societal issues.

Balance of Strengths & Weaknesses
The self-assessment report gives the following analysis:

Strengths
- *Embedded in Faculty of Engineering Technology*
- *Strong foundation with respect to technical aspects*
- *Low threshold to other disciplines*
- *Intensive cooperation with industry*
- *Social sciences at same university*
- *Good laboratory infrastructure, in particular for Virtual Reality*
- *Good balance between junior and senior researchers*
- *Entrepreneurial attitude*
- *Strong regional links*

Weaknesses
- *Limited primary budget in combination with heavy workload for educational tasks has consequences*
- *for time available for research*
- *Initially, additional manpower was recruited with education as main task*
- *Complex matrix organisation demands much time and attention*

Opportunities
- *Young and flexible organisation*
- *Low barriers between other disciplines within the University*
- *Support from University's Route 14 policy for integration of social sciences and natural and engineering sciences*
- *Niche market developments, like IDE for building industry*

Threats
- *Primary funding cuts*
- *Still a lot of extra attention required for educational tasks*
- *Decrease of involvement of industry as a result of economic recession.*

Evaluative remarks about the SWOT-analysis
The department or Institute is relatively young and it is hardly possible to build up a solid reputation in eight years, but it is clear to the Committee that much progress has been made. The intentions, drive, enthusiasm and collaborative spirit are all aimed towards that goal. In the view of the Committee, there are many good opportunities for reaching a high level of research

performance. Particularly strong points are the good collegial relationships across all levels, the sharing of knowledge, the use of networks and the trust amongst each other.

The many contacts with Mechanical Engineering, with the close proximity of all labs and disciplines, add to the core of IDE. Being situated on the campus of a university that houses both technical and human sciences is also an asset. It will be a challenge to make full use of that for the quality of the research.

The Committee saw great eagerness to collaborate with industry. In terms of societal relevance the department is ahead of many other departments, which adds to the value of the research.

The Committee sees the department as pioneers, as an organisation in a start-up phase, with great expectations and lots of potential, but also with a degree of anarchy and uncertainty on when the efforts will pay off. At a certain point the focus will have to change from doing many things to a more limited selection.

The vision and mission of the department are currently interpreted in many different ways and need to be more clearly defined. The time seems to have come to define the area where the department wants to be strong and leave a mark.

The department started off with a heavy engineering component and later added the user-focus and styling aspects of design and the evolutionary approach towards product development. More recently the area of product realisation was also added. In order to reach a good balance in the research programme, it seems necessary to create a real design identity, a specific passport. In the opinion of the Committee, this will require adding extra design expertise and overcoming certain conditions that restrain the growth in the desired direction. The University and the Faculty should provide the appropriate means somewhat sooner than planned.

The Committee believes that the main condition for successful development now lies in clarifying the areas in which the department can really leave a mark.

6. Programme assessments UT

The Committee assessed the following programmes of the Department of Industrial Design Engineering (IDE), University of Twente:

	Quality	Productivity	Relevance	Viability
Design Engineering	4	3	4	3
Evolutionary Product Development	2	2	3	2
Product Realisation	no score	no score	no score	no score

The detailed assessment per programme follows in the next section of this report.

Programme UT 1: Design Engineering

Programme director	Prof. dr. ir. F.J.A.M. van Houten	
Research staff 2008	4.98 tenured, 13.95 total fte	
Assessments:	Quality:	Very good (4)
	Productivity:	Good (3)
	Relevance:	Very good (4)
	Viability:	Good (3)

The Design Engineering group focuses on understanding and improving design processes through development of design methods and tools and their application in new products and systems especially in energy and sustainability applications.

The DE team has historic strengths in CAD/CAM and at the design/manufacture interface, and has overlaps with a number of programmes in Mechanical Engineering. The programme leader, Professor Van Houten, has a very strong international reputation. He leads a young, enthusiastic and highly motivated team that comprises a number of Assistant/Associate Professors and a recently initiated part-time chair in Packaging Design and Management. The team has excellent laboratory facilities, especially in Virtual Reality, and there are also good manufacturing and studio facilities and links to a number of strong laboratories in Mechanical Engineering. The team has a good range of industrial contacts and has been successful in attracting a number of industrial and research contracts in recent years.

The basis of a strong research team has been established, but in the face of a number of challenges: the team has also been responsible for developing and teaching a number of new educational programmes; young staff are developing their research profiles and a number of Assistant Professors are studying for PhD; globalisation and the recent poor economic position have threatened traditional manufacturing partners; for most of the review period the tenured FTE staffing in the group was less than four; the matrix organisation of research in the university has meant that quite a number of themes compete for the research team's attention, with the result of spreading their efforts broadly but thinly.

The position has stabilised in the past two years. Staffing has now increased to over six FTE. Teaching is established. The team recognises the need to focus, and it will be important for them to do so if they are to fulfil their promise. They realise that not all technological products should be covered, but that concentrating on the product domain of consumer durables is appropriate to their mission. It is especially important for the team to establish where they wish to develop research leadership, and to place themselves carefully with respect to leading centres in the Netherlands and in other countries.

Quality
The key publications are in respected journals and have started to attract citations, but a number of the other publications listed reflect the team's traditional strengths in manufacturing rather than design engineering. As noted above, the reputation of the team is good, and there is a good understanding of the direction in which it needs to develop to maximise quality.

Productivity
In the initial part of the review period journal output was relatively low, but it improved strongly in 2008. Given the noted constraints that the team has faced the output is creditable. The strategy for increasing productivity is generally sound, but achieving the highest performance in

the future will depend on the team focusing its efforts and carefully placing its work in the international community.

Relevance
The work of the DE team generally has good industrial relevance and much of the work also has societal relevance, especially that concerning product lifecycle management, sustainable energy and the design of medical devices. Certain parts of the work presented in the publication record for the period did not, however, have a close relevance to Product Design Engineering, and the overall impression is currently of rather a diffuse work programme.

Viability
As noted, a young, enthusiastic team has been created, with good internal communication, a sound research infrastructure and good industrial links. There are substantial risks, however, that too diverse a programme will dilute the effort of the research team.

Conclusion
After a period of expansion of the team and strong concentration on teaching over a number of years the Design Engineering team has the potential for a period of consolidation, focus and stability. The team has the necessary leadership and industrial relevance and support, but needs to focus its efforts on improving the academic quality of its outputs and their positioning in the design engineering community.

Programme UT 2:	**Evolutionary Product Development**	
Programme director:	Prof. Dr. Ir. A.O. Eger	
Research staff 2008:	3.04 fte	
Assessments:	Quality:	Satisfactory (2)
	Productivity:	Satisfactory (2)
	Relevance:	Good (3)
	Viability:	Satisfactory (2)

Short description
The programme aims to develop methods for the analysis of the history of products and for the development of new products. Research areas are Evolutionary Product Development, Gender and Design and Co-Creation. The research of the History of Product Design is concentrated on two aspects: the product and the organisation.

Quality
This is a relatively small research group, with nonetheless directions of activity which are quite widely spread. The evolutionary product development scheme has the potential for making an important research contribution. In order to do this it is essential that it be located alongside other relevant research, taking on board its findings, building on them and being influenced and constrained by its methods and processes. These include not only programmes of technology innovation management in other universities, but also the broad bodies of design research, particularly those focusing on engineering design.

Productivity
The overview of publications for the group for the review period records a fairly steady level of activity, which is modest in overall quantity, but appropriate for the size of the group. In the period after 2008 a strong upward trend can be detected. The sampled publications were interesting, with some undoubted quality in the approaches and topics covered. Overall this body of work has been respectable, with outputs which signal an impact at a national level.

Relevance
The product evolution scheme has achieved some resonance with industrial companies and other external bodies. Some aspects of the research in the programme are achieving a respectable level of societal relevance. In the view of the Committee, the evolutionary product development scheme has not yet sufficiently established a basis for coherence of the research programme as a whole. Especially if this scheme is also intended to provide an overall frame for the three research programmes in Industrial Design Engineering, it would be necessary to build on work in other universities in technology innovation management, and embrace the traditions, methodology and vocabulary of design research

Viability
The research programme has been established on a relatively low level of investment in its national context. The individuals concerned have made good contributions. If the group were able to develop, embrace and incorporate the suggested areas of supporting research, they would achieve a stronger intellectual viability. At the moment and taking account of its circumstances, the viability is assessed only at a satisfactory level. There is a clear need to consider succession planning for the leadership of the group.

Conclusion
This group gives the impression of being in the process of establishing itself. It looks as if it consists of a collection of activities from various scholarly traditions with staff from different

backgrounds. The ambition of the programme to become coherent on the basis of a shared developmental frame, and for this approach to evolutionary product development to provide the shared context for all of the Industrial Design Engineering research programmes, is worthwhile. Achieving this ambition will depend on the rigorous application of approaches to integrate the work into mainstream technical innovation management and to incorporate design research. It would be helpful if the academic leaders of the Faculty were able to reflect on these matters to determine the most effective way forward.

Programme UT 3:	**Product Realisation**	
Programme director:	Prof. Dr. Ir. W. Poelman	
Research staff 2008:	5.91 fte	
Assessments:	Quality:	no score
	Productivity:	no score
	Relevance:	no score
	Viability:	no score

Short description
The mission of the programme is to develop and transfer knowledge related to the optimal use of product technology in the industrial design engineering process and to apply this knowledge in product design. The aim is to contribute to the valuable and sustainable application of technology in society.

Four sub-programmes are distinguished within the chair

- Technology diffusion in design as the core research issue (Poelman and Beusenberg);
- Mobility, sociality and safety (Poelman);
- Industrial Building Innovation (Poelman);
- Cradle to Cradle (Poelman).

Outside the chair, five sub-programmes are presented as part of this research programme:

- Transformable Green Buildings (Durmisevic);
- Materials Engineering (Akkerman);
- Biomedical Product Development (Koopman);
- Sound Design and Perception (De Boer);
- Friction and Tactility in Product-User Interactions (Schipper).

Since the period of the review terminated at the end of 2008 and the Product Realisation Programme was founded in December 2008, the Review Committee decided it would be unreasonable to score the programme after such a short period. However, the self-assessment report did provide valuable insights into the structure and vision for the new programme and the Committee felt it would be appropriate and constructive to respond to this information with written feedback.

Quality
The research projects and publications currently in progress or emerging from the programme are heavily influenced by the collaborative partners in the Faculty of Engineering Technology; to the point that the focus of the research and the methodologies used do not distinguish themselves significantly from Mechanical or Civil Engineering research. While this is in line with the current broad mission of the programme, the Committee agrees with the suggestion in the SWOT-analysis that consolidation is necessary in order to achieve a clearer design identity.

There is very sound strategic value for the Faculty in leveraging the product technologies emerging from its many research programmes, however in order to engage these technologies to their full potential with new and innovative applications (including aesthetic innovation) there is a need to develop research that is specific for Industrial Design Engineering. Not only will this achieve greater marketability and consumer acceptance for these technologies (i.e. value added in

direct relation to 'consumer products on the shop floor') it will also help to establish a clearer research capability and identity for the programme.

Productivity
It is difficult to assess productivity since most of the publications and outputs predate the formation of the PR programme and are largely co-authored by researchers outside the programme. While this strong multidisciplinary collaborative network is an efficient strategy for kick starting a new programme it will need to be carefully managed in order to guarantee commitment from the collaborative partners in other departments. There is also a concern that with so many 0.01 FTE appointments there is a risk of setting up a 'virtual' research group which lacks cohesion and focus.

Relevance
The programme is well positioned to have very significant relevance on a number of levels:

- It serves as a model to inform the design professions and other disciplines on the role design can play as a catalyst or integrator mediating between technologies, industry and the user.
- The general areas of research focus, i.e. technology diffusion, sustainability, mobility and safety, all have significant relevance to society.
- The emphasis on the entrepreneurial aspects of design promises to reach an audience beyond academic circles in the form of start-ups and manufactured products.

These considerations form a strong foundation for the programme, however the challenge will be to realise that potential as the programme grows.

The Committee noted that most of the publications are in engineering or scientific journals and conferences. There is a need to enhance the design relevance of the programme and to disseminate it through accredited design research journals and conferences.

The Committee noted the good contribution the Chair for Product Realisation (Poelman) in collaboration with the Chair for Product Design (Eger) is making to Industrial Design on a national level as editors of the professional magazine 'Product'. These activities serve as a model for expansion into a wider international arena.

Viability
The PR programme clearly supports the whole Faculty as a product developer with a clear strategy of technology diffusion and product realisation while calling on the behavioural sciences to connect technology to users and vice versa. In this respect the Committee believes the viability of the programme is high. However, the combination of a wide range of collaborative partners and very diverse research areas risks dissipating efforts to build a strong and cohesive research programme.

There is an urgent need to distinguish the programme from its partner disciplines of Civil and Mechanical Engineering with a clear design research agenda. The programme should not see itself, nor be seen, as just a support group for other disciplines. It needs to develop a unique identity with its own design specific methodologies and approaches to research which complement rather than duplicate engineering research. To achieve this goal the current core expertise described as "presenting potentialities to designers" could appropriately be expanded to "capitalising on potentialities by design research" and the creation of new knowledge out of this scenario.

Conclusion
The Committee acknowledges Product Realisation as an ambitious new programme which promises to play an important integrative role in the Faculty of Engineering Technology. In order to leverage this potential two main challenges need to be addressed: resources and identity.

Resources
There is a concern that with a total of 1.44 FTE tenured research staff in 2009 (made up of a majority who are 0.10 FTE) the programme is under-resourced. While there are significant numbers of PhD students to call on for teaching and research, more depth in permanent staff is required in order to maintain continuity. Given the pending retirement of the Chair the Committee recommends that a high level appointment with the necessary design expertise and international reputation be made sooner rather than later.

Identity
In view of the collaborative interdisciplinary nature of the programme, the Committee feels it is important to maintain a balance between diversity and focus and to consolidate the programme with a clear design identity. There is already awareness within the programme of the need for consolidation but greater emphasis also needs to be given to establishing a more evident design focus to the research agenda. It should be noted that this does not infer greater emphasis on styling as an approach to design.

With these two aspects (i.e. resources and identity) in mind the Committee supports the need to undertake an 'inventory' of research activities, as mentioned in the self-assessment report, in order to focus the programme and to gain full commitment and resources from the Faculty of Engineering Technology.

Appendix A: Curricula vitae of the committee members

André Rotte is director of Design Initiatief, a government supported project organisation for stimulating collaboration between industry, knowledge institutions and design bureaus with the aim to create new business opportunities and innovations. Since 2000 he was responsible as vice-president of Philips Design for the portfolio of Business Process Management. Special assignments were the development of design services for new emerging markets and for the design of Immersive Virtual Environments.
He retired from Philips in 2007 and started the consultancy agency "Management and Design" focusing on the integration of design in processes and organizations. He has served as member, president and advisory board member of the former Dutch Society of Industrial Design (KIO) and was a board member of the Bureau of European Designers Associations.

Hans Dirken is Emeritus Professor (1969-2001) of Industrial Design Engineering and Product Ergonomics at Delft University of Technology. He has initiated and coached about 150 projects on product development in industry, innovating furniture, medical equipment, packaging etc. He has published several books and many articles on research projects and on developments in industrial design engineering. He has held positions as Rector Magnificus of the Delft University of Technology, Dean of the Faculty of Industrial Design Engineering, chairman of the Dutch Consumers Union, member of the National Energy Council and of many other boards.

Sidney Fels is Director of the Media and Graphics Interdisciplinary Centre and leads the Human Communication Technologies Laboratory of the University of British Columbia. He is internationally known for his work in Human-computer interaction, biomechanical modeling, neural networks, intelligent agents, new interfaces for musical expression and interactive arts with over 100 scholarly publications and exhibitions. Sidney is one of the principal investigators of the Institute of Computing, Information and Cognitive Systems through his authoring a CFI grant to create a new $22.1M facility to house interdisciplinary research using advanced technologies. He has been the Director of MAGIC since 2001.
Sidney has been in the department of Electrical & Computer Engineering at the University of British Columbia since 1998. Sidney received his PhD and M.Sc. in Computer Science at the University of Toronto in 1994 and 1990 respectively. He received his Ba Sc. in Electrical Engineering at the University of Waterloo in 1988. He was a visiting researcher at ATR Media Integration & Communications Research Laboratories in Kyoto, Japan from 1996 to 1997. He also worked at Virtual Technologies Inc. in Palo Alto, CA developing the GesturePlus system and the CyberServer in 1995.

Simon Fraser is Head of the School of Design, Victoria University of Wellington, New Zealand. In 2001 he was appointed founding Director of the Industrial Design Programme at the VUW School of Design. He took over as Head of School in June 2007. The School has a strong commitment to the exploration of the social, cultural, technological and economic implications of design in the digital era. In 2004 Simon and his colleagues secured significant government and corporate funding for their innovative 'Design Led Futures' programme (see www.designledfutures.com).
Previously he was Assistant Design Director at Porsche Design in Austria where he worked for a select list of major international clients including Volkswagen, Audi, Grundig, Grohe, Faber-Castell, Artemide, Sharp, TEAC, NEC and Samsung. He also taught regularly for eight years at the Art Center College of Design in Montreux, Switzerland and Pasadena, USA.
Since his return to New Zealand he was appointed to the New Zealand Government's 12 member Design Industry Taskforce and the Better by Design Advisory board to develop strategies to raise the global competitiveness of New Zealand businesses 'by design'.

Chris McMahon is Professor of Engineering Design in the Department of Mechanical Engineering at the University of Bath, which he joined in 2002 from the University of Bristol. In his early career as an engineer he worked in the railway industry and with a consulting engineering company specialising in IC engines. He teaches and researches in engineering design and computer-aided design. He is interested in many aspects of design and computing, in particular how computer aids can assist design in the organisation and management of the information used in design.
Chris is part of the team responsible for design teaching in the Department. He is on the Board of Management of the Design Society and through that Society has been involved in the organisation of a number of ICED conferences, including this year's in Stanford, California

Michael Tovey is professor and director of design education and applied research at Coventry University. He is Director of CEPAD, (the Centre of Excellence in Product and Automotive Design), with strong links with the Industrial Design Department, and with the Coventry School of Art and Design, of which he was Dean for 18 years. His discipline base is in Industrial Design. Following a period of practice in industry, he came to Coventry and was responsible for the establishment and development of transport design. Much of his research work has been concerned with how designers think and on the use of computer support for the creative aspects of design. The context for this work has been concept design in the automotive industry and the development of novel techniques to support the design activity. He is a member of the Art and Environment Committee, University Hospitals, Coventry and Warwickshire (2004-current), a member of the City of Coventry Ambassadors Groups (2003-current), associate editor of Design Journal (1997-current), member of the editorial advisory board of Design Studies (1992-current).

Surya Vanka is Principal Manager of User Experience at Microsoft Corporation, and oversees best practices and engineering standards to create high-quality user experiences for Microsoft's customers. He has worked as a designer and manager on several products during his ten years at Microsoft. His primary areas of design management focus are Information Design and Interaction Design. His mission is to put the users rather than technology at the centre of the development process for all of Microsoft's products.
Surya was professor of design at University of Illinois at Urbana-Champaign, and was a Fellow at the prestigious Center for Advanced Study. He is the author of two books on design, has lectured on design in over 20 countries, and is widely published. His work has appeared in numerous publications including Design Council UK global design study, Form, ID Magazine, WIRED, Interactions, BBC Radio, National Public Radio, and Channel 15 Television. Surya is a frequent speaker worldwide. He regularly teaches design, research and innovation courses in more than a dozen countries including Australia, Hungary, and India.

Appendix B: Explanation of the SEP-scores

Excellent (5)	Work is at the forefront internationally and will most likely have an important and substantial impact in the field. Group is considered an international leader.
Very Good (4)	Work is internationally competitive and is expected to make a significant contribution; nationally speaking at the forefront in the field. Group is considered international player, national leader.
Good (3)	Work is competitive at the national level and will probably make a valuable contribution in the international field. Group is considered internationally visible and a national player.
Satisfactory (2)	Work that is solid but not exciting, will add to our understanding and is in principle worthy of support. It is considered of less priority than work in the above categories. Group is nationally visible.
Unsatisfactory (1)	Work that is neither solid nor exciting, flawed in the scientific and or technical approach, repetitions of other work, etc. Work not worthy of pursuing.

Quality is to be seen as a measure of excellence and excitement. It refers to the eminence of a group's research activities, its abilities to perform at the highest level and its achievements in the international scientific community. It rests on the proficiency and rigour of research concepts and conduct; it shows in the success of the group at the forefront of scientific development.

Productivity refers to the total output of the group; that is, the variegated ways in which results of research and knowledge development are publicised. The output needs to be reviewed in relation to the input in terms of human resources.

Relevance is a criterion that covers both the scientific and the technical and socio-economic impact of the work. Here in particular research choices are assessed in relation to developments in the international scientific community or, in the case of technical and socio-economic impact, in relation to important developments or questions in society at large.

Vitality and feasibility. This dual criterion refers to the internal and external dynamics of the group in relation to the choices made and the success rate of projects. On the one hand, this criterion measures the flexibility of a group, which appears in its ability to close research lines that have no future and to initiate new venture projects. On the other hand, it measures the capacity of the management to run projects in a professional way. Assessment of policy decisions is at stake, as well as assessment of project management, including cost-benefit analysis.

Appendix C: Schedule of the site-visits

Sunday, 20 June 2010: Eindhoven	
16:00	Committee meeting: introduction, general issues, discuss preliminary assessments
19.30	Committee dinner with Rector TU/e, Board ID and Research Group leaders
Monday, 21 June 2010: TUE	
8:30	Committee meeting (continued)
9:00	TU/e: Institute management, starting with ID Overview
10.00	TU/e 1: Designed Intelligence: Matthias Rauterberg/Loe Feijs
11.20	TU/e 2: User Centered Engineering: Berry Eggen/Jean Bernard Martens
12.40	Lunch in University Club
13.40	TU/e 3: Designing Quality in Interaction: Kees Overbeeke/Emile Aarts
15.00	TU/e 4: Business Process Design: Aarnout Brombacher/Elke den Ouden
16.20	Teabreak together with Jeu Schouten, group leaders, Caroline Hummels and Sabine van Gent
16:50	2009 and beyond: integration by Aarnout Brombacher
17.30	Committee meeting (without ID staff), reflection and set-up of schedule for Tuesday
Tuesday, 22 June 2010: TUE	
9:00	Committee meeting
10:30	TUE Institute management (second session)
11.30	Presentation of first findings
12:00	*Travel to Twente*

Tuesday, 22 June 2010: UT	
15:00	UT Institute management : Prof dr H. (Ed) Brinksma (Rector UT), Prof dr F (Rikus) Eising (Dean ET), Prof dr ir F.J.A.M. (Fred) van Houten (MT ET & Drs C.T.A. (Kees) Ruijter (MT ET)
16.00	UT 1: Design Engineering (DE): Prof dr ir F.J.A.M. (Fred) van Houten, Dr ir M.C. (Mascha) van der Voort, Dr ir D. (Eric) Lutters & Prof dr ir R. (Roland) ten Klooster
17:00	UT PhD-students: Ir W. (Winnie) Dankers (DE), Ir D.C. (Dennis) ten Dam (DE), Ir. J.C. (Jochem) Nijs (PR), Ir M.G.J. (Roy) Damgrave (DE), Drs J.J. (Jorrit) de Boer (EPD), Ir. J.W. (JanWillem) Hoftijzer (EPD), Ir M. (Mieke) van der Bijl-Brouwer (DE), I. (Irene) Anggreeni Msc. (DE), Ir J.C. (Jacob) Alkema (PR)
18:00	Drinks with staff UT
19:00	Dinner Committee with Dean, Programme leaders and their assistants in the programme interviews
Wednesday, 23 June 2010: UT	
9:00	Lab tour
10:00	UT 3: Product Realisation (PR): Prof dr ir W.A. (Wim) Poelman, Prof dr ir A. (André) de Boer & Ir C.M. (Marc) Beusenberg
11:00	UT 2: Evolutionary Product Development (EPD): Prof dr ir A.O.(Arthur) Eger & Prof dr J.W.(JW) Drukker & Ir W. Wouter Eggink (EPD)
12:00	*Lunch and Committee meeting*
14:00	Lab tour: VR lab
15:30	Meeting with Dean
16:00	Presentation of first findings