Assessment Committee Report on Research in Applied Mathematics 2015-2020 Delft University of Technology

July, 2022

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"Knowledge worth sharing"

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Photos Courtesy of Lucas van der Wee and Studio Oostrum

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SUMMARY

The Assessment Committee was asked to assess the research of Delft Institute of Applied Mathematics (DIAM) of the Faculty of Electrical Engineering, Mathematics & Computer Science (EEMCS) at Delft University of Technology (TUD). This assessment covers research in the period 2015-2020. The Assessment Committee Report is approved by all Committee members.

The research quality of DIAM is very good and in some sections even excellent. DIAM has a very good publication record with some key results in all the major research areas and with good productivity. DIAM's strategy is partly aimed at acquiring more personal grants. Attracting talented young researchers is a strong component of that strategy.

The research of DIAM has a very strong relevance to society; DIAM performs excellently in this respect. There are numerous collaborations with industry. Creating societal impact often follows an inside-out approach at DIAM. The Committee believes an outside-in approach would be stronger. DIAM is very active in small-scale cooperation projects, many of which are leading to master's and PhD theses, but is only rarely leading in a major research project. Collaboration between the various sections at DIAM and in the department seems rather limited, and at least no integrated approach is clearly visible.
DIAM seems to be too modest when it comes to outreach and to making its, sometimes exceptional, expertise clear to other parties. DIAM has a lot of "knowledge worth sharing", but the sharing of the available knowledge can be improved.
It surprised the Committee to hear that DIAM is sometimes still viewed as a mere service organisation; there is more to be valued and to be valorised. There are big opportunities to valorise mathematics and these are not fully exploited.

DIAM shows a very good viability: there is a strong and motivated group of excellent research staff and a large number of students, together creating a thriving environment. Moreover, overall DIAM is a very well organised department with excellent facilities and well supported PhD-students.

The high teaching load is still a problem, and not much improvement has been realised over the years, in particular for tenure trackers.
A good strategy of keeping very good people is lacking. Also a university strategy (and money) is needed to attract talents, in particular in getting the right gender balance.

The Committee is impressed with the changes made to the conditions of the tenure trackers. The development track seems to be a success. The interviewed tenure trackers seemed stress free, and really open. Tenured staff are positive about their situation and about the way they are helped with their promotion. The Committee believes that the personalised, transparent and non-rigid procedure for the promotion of tenured staff is very good and works well. There is one group of junior researchers that seems to fall off the radar for future strategy: postdoctoral researchers. Especially attracting and retaining junior researchers has to be understood as a long-term investment that will strengthen the viability of DIAM's self-set goals.

The choice of the two focal areas PDE and Mathematics of data science makes sense to the Committee from a research synergy perspective, more for PDE than for data science, and also from a collaboration-with-other-departments perspective. However, when reaching out to society, make sure that these rather generic terms become more concrete and more recognisable.

DIAM's activities in the area of data science also seem not that visible inside TUD, while nationally, unfortunately, funding for artificial intelligence hardly goes to mathematics.

The increase in open access publications is impressive. It is good that the percentage of open access publications is actively monitored. A significant amount of open-source software has been developed in many areas like Bayesian statistics and numerical simulations. It is unclear, though, whether publishing data and software is already fully embedded in the culture.

The Committee observed no major concerns regarding the academic culture. People seem happy with the atmosphere in the department, which is described by the interviewees as open and international.

The numbers show that there is gender imbalance. DIAM is fully aware of this and has also taken action upon this. The Committee notices that the diversity actions mainly focus on gender and hardly on other diversity.

The Committee likes to compliment the diversity committee that plays an active role in improving diversity, but also takes initiatives in topics like onboarding, improving the culture and inclusivity.

The time for graduation of PhD-candidates is improved. PhD-candidates claim to be happy at DIAM and seem well embedded. Guidance is much appreciated and the tutoring system is working well. The Committee received complaints from several PhD-candidates about the rigid administrative system DMA (Doctoral Monitoring Application). The Graduate School and the whole TUD are aware of the difficulties with the system and measures are taken.

The Committee makes the following recommendations to DIAM[1]:

[1] Continue the efforts to attract talented young researchers, and to be more assertive when it comes to nurturing and keeping its most promising researchers;
[2] Make a carefully planned effort to increase *both* Research Grants and Contract Research income;
[3] Quantify explicitly which time percentage its researchers are spending on teaching activities and what is considered to be an acceptable percentage;
[4] Jointly with higher management, a strategy should be formulated to not exceed the percentage spent on teaching;
[5] Follow an outside-in approach to create societal impact;
[6] Have persons at TUD involved with a helicopter view who are able to connect societal themes to DIAM's mathematical expertise;
[7] Do more to spread knowledge to a wider public (people/groups/companies);
[8] Take “outreach" initiatives that specifically target industries and the other departments at TUD;

[1] The recommendations are in order of appearance in the report and therefore not grouped by subject

[9] Consider whether the current way of working sufficiently guarantees the quality of open data and open software;
[10] Finally solve the teaching load problem;
[11] Improve the planning of teaching duties, in particular by fixing them before an early date for the entire academic year;
[12] Structurally develop the DIAM long-term strategy and make some clear strategic choices;
[13] Make sure that the rather generic terms PDE and Mathematics of data science become more concrete and more recognisable;
[14] Address also other diversity such as age, ethnicity etc.;
[15] Increase the proportion of female professors;
[16] Reduce the teaching load of tenure trackers significantly;
[17] Investigate the feasibility of having extensive periods with no (heavy) service teaching for all levels of research staff;
[18] Introduce a DIAM-broad PhD-seminar to strengthen the coherence of DIAM and the social cohesion of the PhD population;
[19] Carefully evaluate the results of the six-year PhD-track.

CONTENTS

PREFACE

The Assessment Committee was assigned the task of evaluating the Applied Mathematics research carried out by the Delft Institute of Applied Mathematics in the Faculty of Electrical Engineering, Mathematics & Computer Science at Delft University of Technology over the period 2015-2020. The Committee, composed of Martina Chirilus-Bruckner, Massimiliano Gubinelli, Sophie Huiberts, Ingrid Van Keilegom, Volker Mehrmann, Mark Roest and myself covered a broad range of expertise that matched well with the topics of the review.

The Committee visited DIAM May 18-20, 2022. The organisation of the site visit was excellent. We would like to express our gratitude for the professional, but also friendly and warm, way in which we were received and hosted. We are fully aware of the fact that the initial postponement of the visit, due to Covid-19, has caused much extra work and aggravation to the persons involved.

During the site visit we had in-depth discussions with management, staff and PhD students of DIAM. They took place in an open and positive atmosphere. The lab tours, with short presentations by persons who spoke passionately about their topic, were also very informative. The site visit enabled us to validate and refine the initial impressions that we had formed through DIAM's self-assessment report.

That report was prepared with much care; still, some data were hard to extract from it, and some issues were not clear to us. The site visit, along with some very useful additional information that was sent to us, made it possible to form a quite complete picture of DIAM's research achievements and strategy.

I wish to thank the Committee members for their hard work, and the constructive atmosphere they created. I am pleased that the final conclusions in this report are unanimously supported by all Committee members. Finally, I would like to express the gratitude of the whole Committee to our secretary Sven Laudy for his excellent preparations and support.

Onno Boxma
Chairman of the Committee

1. Assessment Committee and Assessment Procedures

1.1 Assessment Scope

The Assessment Committee was asked to assess the research of the Delft Institute of Applied Mathematics of the Faculty of Electrical Engineering, Mathematics & Computer Science (EEMCS) at Delft University of Technology (TUD). This assessment covers research in the period 2015-2020. In accordance with the Strategy Evaluation Protocol 2021-2027 for Research Assessments in the Netherlands (SEP), the Committee's tasks were to assess the quality, relevance to society, and viability of the research programmes on the basis of the information provided by the Faculty and interviews with Faculty management and research sections. In its evaluation of these three criteria, the Committee took care to include the following specific aspects, as described in the SEP protocol: Open Science, PhD Policy and Training, Academic Culture and Human Resources Policy.

Following this, the Committee was to make recommendations for the future.

1.2 Committee Composition

The members of the Committee were:

Prof. dr ir. O.J. (Onno) Boxma, Committee Chair, Professor of Stochastic Operations Research, Eindhoven University of Technology, The Netherlands.
Dr M. (Martina) Chirilus-Bruckner, Assistant Professor of Mathematics, Leiden University, The Netherlands.
Prof. dr M. (Massimiliano) Gubinelli, Hausdorff Chair and Professor of Mathematics, Universität Bonn, Germany.

Dr ir. S. (Sophie) Huiberts, postdoctoral fellow, Columbia University, United States of America.
Prof. dr I. (Ingrid) Van Keilegom, Professor of of Statistics, KU Leuven, Belgium.
Prof. dr V. (Volker) Mehrmann, Professor for Numerical Mathematics, Technische Universität Berlin, Germany.
Dr M. (Mark) Roest, General Manager, VORtech, The Netherlands.

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

Ir. Sven Laudy of Quicken Management Consultants was appointed as an independent and qualified process consultant to the Committee.

1.3 IMPARTIALITY

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

1.4 DATA PROVIDED TO THE COMMITTEE

The Committee received the following detailed documentation:

- Self-evaluation report of the unit under review, including all the information required by the Strategy Evaluation Protocol 2021-2027 (SEP), with appendices,
- Previous assessment report 2009-2014,

- Additionally requested data on 1) Journal publications, 2) Departmental and institutional policies regarding Academic Culture, Research Integrity, Open Science, and Human Resource policies on Diversity and Talent Management, 3) The relation between the three assessment criteria and the four above mentioned aspects at DIAM, 4) Full publication list DIAM 2015-2020, 5) The departmental organisation, 6) Teaching load, 7) Age distribution at the various positions, 8) The "Medewerkermonitor", 9) The development and tenure track report, and 10) The ratio between male and female hires.

These documents together with the interviews during the site visit formed the Committee's basis for the assessment.

1.5 COMMITTEE PROCEDURES

The Committee followed the Strategy Evaluation Protocol, 2021-2027 (SEP). On December 20, 2021 the secretary of the Committee briefed the Committee on the Strategy Evaluation Protocol for research assessments in an online meeting with the Committee. Prior to the site visit, the assessors were asked to evaluate the research programme. These assessors independently formed a preliminary assessment for the programme.

At the start of the site visit, on May 18 2022, the Committee discussed the preliminary assessments. For each interview, the Committee prepared a number of comments and questions. All Committee members were actively involved in the interviews. After each interview, the Committee discussed comments and recommendations. The Committee spoke with the Rector Magnificus of the TUD and the acting Dean of the Faculty of EEMCS and interviewed the department management team, and research staff of the department. Interviews took place on May 19 and 20 at the Faculty of EEMCS in Delft. The interview schedule appears in Appendix B. The Committee chair presented preliminary general impressions to the Faculty on the last day of the visit. Due to the COVID-19 situation, professor Van Keilegom could not attend the site visit on campus, but

she was involved in the preparations of the site visit and the final report, and contributed to the interviews by video conference.

The Committee also discussed a separate request for advice to the Executive Board of the TUD regarding the following question: *"Currently research funding (in the Netherlands) is shifting more in the direction of large scale thematic programmes, and it is expected that this trend will continue in the near future. While these large scale programmes need input from the mathematical research community, they are not primarily focused on mathematics. In light of this development and DIAM's strategy, what approach would the Committee recommend for selection of and participation (possibly taking a leading role) in thematic programmes? Please consider the (balance between) SEP criteria research quality and societal relevance in your recommendation."*

Following the on-site visit, the Committee finalised the report through email. Final assessments are based on documentation provided by the Faculty, preliminary assessments and interviews. Following approval by all Committee members, the Executive Board received a copy of the first version with the invitation to correct factual errors. In response, the Committee discussed these comments, made a few modifications to the text and then presented the final report to the Board of the University. This was printed after formal acceptance.

2. Assessment of Applied Mathematics at TUD

2.1 Applied Mathematics at the Faculty of EEMCS

Research and education in Applied Mathematics at TUD is carried out in the Delft Institute of Applied Mathematics (DIAM). This department is part of the Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), being one of the eight faculties of TU Delft.

As written in its self-evaluation report, the vision of DIAM is to make essential contributions at the forefront of mathematical research, create and study mathematical models and disseminate knowledge to empower current and future technological innovations.

The strategy enabling DIAM to fulfil this vision – its Mission – consists of three statements, roughly related to research, education and valorisation:

1. DIAM conducts high-level mathematical research ranging from fundamental to applied and bridges gaps in between. Fundamental research aims at understanding structures at a deep level. Applied research concerns the development of new mathematical models and tools that can be transferred to and applied by the mathematical and scientific community as well as by partners in industry.
2. DIAM educates new generations of mathematicians, scientists and engineers, teaching students mathematics at a high and internationally recognised level.
3. DIAM collaborates with industrial, societal and academic engineering partners to deepen the understanding of complex systems arising in science, society and technology.

Specific aims for the coming six years are:

1. Become leading, both nationally and internationally in the fields of Partial Differential Equations and Mathematics of Data Science.

2. Strategically exploit the connections with societal and industrial stakeholders, and with the academic world (both mathematical and engineering) to become more successful in obtaining grants in bigger consortia.
3. Use the opportunities available for colleagues to obtain personal grants on a national (VENI, VIDI and VICI) and international (ERC) level.
4. Strengthen the coherence, safety and diversity of the DIAM community, improve scientific climate.

	2015		**2016**		**2017**		**2018**		**2019**		**2020**	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Assistant professor	25.1	9.4	24.8	9.4	26.9	10.3	27.9	10.7	29.7	11.4	32.4	12.5
Associate professor	12.3	4.6	12.0	4.7	13.0	5.1	14.3	5.6	15.8	6.2	16.5	6.6
Full professor	8.0	3.0	8.3	3.0	9.0	3.0	9.7	3.3	9.3	3.1	9.7	3.3
Post-docs	2.9	1.2	4.7	2.6	4.1	3.2	4.3	3.4	4.5	3.6	6.7	5.1
Other researchers	2.0	1.2	0.0	0.0	0.0	0.0	0.9	0.7	2.2	1.6	3.2	2.5
PhD Candidate Standard	30.5	25.9	31.5	26.8	31.0	26.3	34.0	28.9	38.6	42.8	39.3	33.4
PhD Candidate Scholarship	20.6	19.5	19.5	18.6	19.9	18.9	21.7	20.6	20.1	19.1	19.0	17.1
PhD Candidate Industry	5.2	5.0	9.0	8.6	10.8	10.3	11.2	10.7	12.0	11.4	11.2	10.6
Total research staff	**106.5**	**69.7**	**109.9**	73.6	**114.8**	**77.1**	**123.9**	**83.9**	**132.0**	**89.2**	**136.9**	**91.2**
Lecturers 1-4	25.5	0.0	26.3	0.0	27.3	0.0	28.5	0.0	29.3	0.0	30.9	0.0
Support staff											1.33	0.8
Total staff	132.0	69.7	136.2	73.6	141.9	77.1	152.4	83.9	161.3	89.2	169.2	92.0

The composition of the research staff of DIAM is found in Table 1.

Table 1: Staff embedded in the DIAM department. Lecturers 1-4 are the fulltime lecturers. Support staff includes only research support staff

The total funding of DIAM is found in Table 2.

TOTAL	2015		2016		2017		2018		2019		2020	
	k€	%	k€	%	k€	%	k€	%	k€	%	k€	%
Direct funding[1]	7,360	81	9,034	82	8,945	82	8,675	76	9,738	83	11,555	87
Research funding[2]	750	8	551	6	1,194	11	1,698	15	1,547	13	1,251	9
Contract research[3]	834	9	862	9	656	6	830	7	337	3	417	3
Other	174	2	298	3	139	1	282	2	164	1	116	1
Total funding	**9,118**	**100**	**9,745**	**100**	**10,934**	**100**	**11,485**	**100**	**11,831**	**100**	**13,339**	**100**

Table 2: Total funding of the DIAM department. All amounts are in k€.

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

2.2 Remarks and Recommendations: Research quality

The research quality of DIAM is very good and in some sections even excellent. DIAM has a very good publication record with some key results in all the major research areas and with good productivity. The number of refereed papers is clearly increasing, more or less linearly with the number of FTE. Several researchers consistently publish in the very best journals.

Grants

DIAM's strategy is partly aimed at acquiring more personal grants. Attracting talented young researchers is a strong component of that strategy. The numbers of personal grants, in particular the more prestigious ones like Spinoza, VICI and ERC, have been relatively low in the past; acquiring major personal grants for senior researchers is an excellent ambition. The fact that in 2021 (i.e. after the

review period) there were grants in all three categories VENI, VIDI and VICI while also a Spinoza laureate has been attracted is an indication that DIAM's hiring strategy is successful. The Committee was pleased to see that DIAM realised its intentions to have two full professors per section and to attract at least one top researcher in PDEs (as discussed in the mid-term review); some of these actions can immediately be linked to the above successes.

The Committee also applauds DIAM's initiatives to support grant proposal writing, which already seems to have had a positive effect. It recommends to continue the efforts to attract talented young researchers, and to be more assertive when it comes to nurturing and keeping its most promising researchers [1][2].

It also recommends to make a carefully planned effort to increase *both* Research Grants and Contract Research income, which over the review period constituted a meagre 11 and 6 percent of total funding [2].

Teaching load

One of the main obstacles in raising the quality of DIAM's research in the past decade has been the high teaching load of its staff members. In the last decade, DIAM has witnessed a huge growth in mathematics students. Furthermore, the student population at TUD as a whole has also grown very significantly, while DIAM provides mathematics courses for all other departments and faculties.

It seems that the teaching load per researcher has more or less stayed constant over the review period, despite the – unplanned at the beginning of that period – sector plan and Van Rijn hirings. This suggest to the Committee that a clear strategy for solving the teaching load problem is lacking. The Committee was quite puzzled by the fact that DIAM discusses "heavy" teaching loads, but even when prompted, staff were not able to articulate what it means or what would be more acceptable.

[2] The numbers between the brackets throughout the main text refer to the list of recommendations in the Summary and at the end of each section

The Committee recommends to quantify explicitly which time percentage its researchers are spending on teaching activities and what is considered to be an acceptable percentage [3].

Subsequently, jointly with higher management, a strategy should be formulated to not exceed the latter percentage [4].

The Committee ends this section with two remarks.

The Committee was pleased to see that mathematics at TUD is taught by mathematicians, and that the service teaching activities enhance good research connections with other disciplines. However, a possible downside of the extensive service teaching is that it may have given both higher management and the valorisation office the (wrong) impression that mathematics has necessarily an ancillary and supporting role to other disciplines – and isn't a natural candidate to be in key leading positions in large research programmes.

In preparation of the research assessment the DIAM department carried out an international benchmark with ETH Zurich. While this benchmark makes sense when it comes to picking up best practices, to the Committee ETH does not seem to be a logical partner in terms of organisational and funding structure. The first major difference between ETH and TUD comes from the difference in government funding. In the Netherlands there is comparably a very low number of fixed fully funded positions at every level, such that there is great dependence on national and international grants. This is a problem that DIAM cannot solve itself. Lobbying for a more stable funding environment is hopefully on the priority list of the upper management layers of the universities. Secondly, the financial possibilities of ETH (in terms of salary and other benefits) are on a different scale than those of TUD, making the comparison rather unfair to DIAM.

Summary of recommendations

Regarding research quality the Committee makes the following recommendations:

[1] Continue the efforts to attract talented young researchers, and to be more assertive when it comes to nurturing and keeping its most promising researchers;
[2] Make a carefully planned effort to increase *both* Research Grants and Contract Research income;
[3] Quantify explicitly which time percentage its researchers are spending on teaching activities and what is considered to be an acceptable percentage;
[4] Jointly with higher management, a strategy should be formulated to not exceed the percentage spent on teaching.

2.3 Remarks and Recommendations: Relevance to society

The research of DIAM has a very strong relevance to society; DIAM performs excellently in this respect. There are numerous collaborations with industry (as can be expected from a technical university), including joint appointments and planned joint symposia. The application-oriented illustrative examples in the self-evaluation report are also really impressive.

Despite this excellent performance, the Committee sees room for improvement, and deliberately focuses on this in the next paragraphs.

Collaborations

Creating societal impact often follows an inside-out approach at DIAM. The Committee believes an outside-in approach would be stronger: learn the mathematically-related needs of society at large, get in touch with relevant external partners and subsequently recognise meaningful problems for applied mathematics that match the expertise in your department [5].

DIAM is very active in small-scale cooperation projects, many of which are leading to master's and PhD theses, but is only rarely leading in a major research project. However, there are topics which are relevant for society and where DIAM could take the lead. One could think of themes like image analysis, digital twins, molecular dynamics, climate research, or the energy transition to renewable energies.

It surprised the Committee to hear that DIAM is sometimes still viewed as a mere service organisation; there is more to be valued and to be valorised. There are big opportunities to valorise mathematics, also fundamental mathematics, and these are not fully exploited. Interest in and knowledge (content-wise) of mathematical research is needed for this. In this respect, it would be very useful to have persons at TUD involved with a helicopter view who are able to connect societal themes to DIAM's mathematical expertise, and to establish links, for such a theme, between the right research groups at DIAM and at other departments [6].

Collaboration between the various sections at DIAM and in the department seems rather limited, and at least no integrated approach is clearly visible. It is possible, though, that this collaboration was not enough emphasised in the self-evaluation report, which brings us to the next topic.

Communication and visibility

DIAM seems to be too modest when it comes to outreach and to making its, sometimes exceptional, expertise clear to other parties. Firstly, its many connections with external parties, e.g. via PhD supervisions, could have received more attention in the self-evaluation report and in communications within the university and to the public. Team performance is becoming an important quality measure. Only after a detailed inspection of individual publication lists (which the Committee could see via https://research.tudelft.nl/en/) it becomes clear that there is much more collaboration with external parties than the numbers show.

Secondly, the lack of visibility of publications for a general public and of public appearances of staff members is a missed opportunity. At the site visit the

Committee learned that dissemination of knowledge takes place, in the form of Science Stories in a book and on a few websites like EWInners, but that information was lacking in the self-evaluation report.

The Committee recommends to do more to spread knowledge to a wider public (people/groups/companies) than just using those – quite hidden – channels [7]. Therefore, the Committee would like to state that DIAM has a lot of "knowledge worth sharing", but the sharing of the available knowledge can be improved. The Committee also recommends to take "outreach" initiatives that specifically target industries and the other departments at TUD [8]. Mathematicians should make a bigger effort in making clear what mathematics can contribute to some pressing societal problems.

Finally, the impact of the produced software is not clearly explained in the self-evaluation report. Hence it is difficult to judge its quality and importance.

Open science[3]

The increase in open access publications is impressive. It is good that the percentage of open access publications is actively monitored. The awareness session in 2017 seems to have been useful and might be worth repeating from time to time. In collaboration with industry, issues regarding publishing in the open literature are discussed at an early stage, to enhance open science.

A significant amount of open-source software has been developed in many areas like Bayesian statistics and numerical simulations. The MRI software is also fully open. The Committee is pleased to hear that openly publishing data and software is the norm at DIAM and that all the knowledge needed for it is available. There is a course on data management and software management in the graduate school. It is unclear, though, whether publishing data and software is already fully

[3] The SEP requires to assess open science as part of one or more of the three main criteria. DIAM sees open science as one of the key indicators of its research quality, societal relevance and viability. The Committee positions this aspect under Societal relevance, since it thinks it could especially help improving the department's outreach.

embedded in the culture. Also, managing the quality of the open source seems to depend more on personal initiatives than on established procedures.

The Committee likes to compliment DIAM for initiating the MOOCs, which is an excellent way to share scientific knowledge with society broadly.

The Committee recommends keeping up the current developments. It is worth to reiterate from time to time the information about open access publishing and about publishing data and software. As a final recommendation on open science, the Committee suggests considering whether the current way of working sufficiently guarantees the quality of open data and open software [9].

Summary of recommendations

Regarding societal relevance the Committee recommends to:

[5] Follow an outside-in approach to create societal impact;
[6] Have persons at TUD involved with a helicopter view who are able to connect societal themes to DIAM's mathematical expertise;
[7] Do more to spread knowledge to a wider public (people/groups/companies);
[8] Take “outreach” initiatives that specifically target industries and the other departments at TUD;
[9] Consider whether the current way of working sufficiently guarantees the quality of open data and open software.

2.4 Remarks and Recommendations: Viability

DIAM shows a very good viability: there is a strong and motivated group of excellent research staff and a large number of students, together creating a thriving environment. Moreover, overall DIAM is a very well organised department with excellent facilities and well supported PhD-students.

The Committee learned that DIAM's financial situation is healthy, but nevertheless two remarks are in order. Firstly, the contract research is limited and declining, and according to the Committee this does not need to be so; see the Committee's remark in the Societal Relevance section. Secondly, the overview of funding seems to hide a lot of virtual income from for example 'buitenpromovendi', i.e. external PhD-candidates.

The Committee recommends the following to further strengthen the long-term perspective:

Firstly, finally solve the teaching load problem (see also the recommendation in Section 2.2 on teaching load) as the high teaching load is still a problem, and not much improvement has been realised over the years, in particular for tenure trackers [10] [3] [4]. It puts DIAM at a competitive disadvantage in attracting and retaining talented researchers.

One solution that will help to at least manage the teaching load – although the Committee realises it is by far not enough to solve the problem – is to improve the planning of teaching duties for the following academic year. At DIAM last-minute changes are especially impactful: personnel change of one course leads to a cascade of changes at other courses and thus creates much unrest in the entire department. Teaching activities should be fixed earlier in the year (before a fixed date) for the entire academic year, so that people can plan their research (in particular research visits and conferences) accordingly [11]. Other departments should fix their requests for service teaching before that fixed date. The Committee realises that a central TUD decision is needed here.

A second solution might be a further integration of teaching and research, with Bachelor and Master thesis projects closely linked to ongoing research projects, the former ones being performed in groups.

Secondly, structurally develop the DIAM long-term strategy and make some clear strategic choices [12]. Involve young staff in developing that long-term strategy.

Thirdly, be more assertive in attracting and retaining good people [1]. The Committee was surprised to see the fatalistic attitude of both DIAM and higher management towards people leaving. Moreover, the choice to let young

researchers leave should be counterbalanced by actions to keep a healthy age structure.

Especially attracting and retaining junior researchers has to be understood as a long-term investment that will strengthen the viability of DIAM's self-set goals. While there is increasing awareness of this for tenure-trackers, there is one group of junior researchers that seems to fall off the radar for future strategy: postdoctoral researchers. Ensuring fruitful years for members of the ever wandering postdoc community will give DIAM more visibility when it comes to attracting young faculty. The scientific network is to a large extent based on the mutual exchange of researchers, and the Committee suggests DIAM to formulate a deliberate strategy towards postdocs and their support and inclusion in the department, as well as to the scientific network more broadly.

Focal areas

The choice of the two focal areas PDE and Mathematics of data science makes sense to the Committee from a research synergy perspective, more for PDE than for data science, and also from a collaboration-with-other-departments perspective. However, when reaching out to society, make sure that these rather generic terms become more concrete and more recognisable [13].

In general, the Committee considers research on PDEs a very stable topic choice. PDEs will definitely stay relevant in applied mathematics and beyond. However, although PDEs are an obvious collective term for much of DIAM’s research, it is perhaps not a very inspiring focus/ umbrella term. More coherence could be created, working out core strengths/ themes of PDEs and making them visible beyond DIAM. Also, hosting larger events on PDEs could be helpful here.

The focal area Mathematics of data science covers many topics. DIAM researchers are involved in the Data Science Center and in many new initiatives. However, a common focus seems to be lacking, and there are also no joint seminars and less synergy than what one would expect in a focal area.

DIAM's activities in the area of data science also seem not that visible inside TUD, while nationally, unfortunately, funding for artificial intelligence hardly goes to

mathematics. The Committee recommends to consider the following option: make *Bringing data science together with physics and engineering* (or may be: *Physics informed data science*, that is, complementing data science techniques with insights from physical modelling) the focus, emphasising the role of physics instead of emphasising that DIAM considers the mathematical foundations of data science.

As a side remark, the Committee sees it as a disadvantage of this focal area that High Performance Computing and Statistics are hidden under data science, while they are two of DIAM's core strengths.

Academic Culture[4]

The Committee observed no major concerns regarding the academic culture. People seem happy with the atmosphere in the department, which is described by the interviewees as open and international. The onboarding process is appreciated and continues to be improved. Various seminars are organised that have a positive influence on the academic culture, both within sections and department-wide. Most people show up at the seminars. Also, the daily group lunches are appreciated and make people feel included.

Research integrity with relation to mathematical research is not fully on people's minds although the Committee sees awareness here, and available resources are more tailored to fields where more data is collected.

The Committee was pleased to learn that tenured staff members are sometimes asked in an 'arbitration' role by researchers in other fields, e.g. to properly interpret the outcome of an experiment before major issues arise.

[4] The SEP requires to assess academic culture as part of one or more of the three main criteria. DIAM sees open science as one of the key indicators of its research quality, societal relevance and viability. The Committee positions this aspect under Viability, since it thinks it could especially help DIAM's long-term success.

Human Resources Policy[5]

Diversity

The numbers show that there is gender imbalance. DIAM is fully aware of this and has also taken action upon this, e.g. by approaching women in their networks so that more female candidates participate in the hiring process. The Committee notices that the diversity actions mainly focus on gender and hardly on other diversity such as age, ethnicity etc. This could be addressed more [14].

The proportion of female professors, which is currently 20%, should be increased [15]. Opportunities and mechanisms to stimulate more female applications should be created. This should probably be done at the university level.

The Committee likes to compliment the diversity committee that plays an active role in improving diversity, but also takes initiatives in topics like onboarding, improving the culture and inclusivity, e.g. through the awareness trainings to create a more inclusive culture, and via the introduction of a 'professional listener'.

The Committee sees the diversity committee as a very valuable initiative, that will have a positive effect, especially in the long run. It puts a lot of focus on raising awareness and this is important. But it is not enough, it is the step before taking action.

Talent management

A good strategy of keeping very good people is lacking. Also a university strategy (and money) is needed to attract talents, in particular in getting the right gender balance.

[5] The SEP requires to assess human resource policy as part of one or more of the three main criteria. DIAM sees human resources as one of the key indicators of its research quality, societal relevance and viability. The Committee positions this aspect under Viability, since it believes that especially the HR-aspect of hiring very talented persons is invaluable for a viable future of DIAM.

The Committee feels that sometimes the hiring is too strict in the sense that if an applicant doesn't fit the rule, the rule is not flexed to appoint the talent even if the applicant, e.g. brings in a grant; incentives are needed to attract talents.

Tenure trackers

The Committee is impressed with the changes made to the conditions of the tenure trackers. The development track seems to be a success. The interviewed tenure trackers seemed stress free, and really open. They are treated fairly, with clear tenure criteria that are used in a personalised, non-rigid way. They reported very positively about PRIME for support to service teaching. Nevertheless, tenure trackers have high teaching loads. It is critical for tenure trackers to establish themselves as active and independent researchers. The Committee therefore recommends to reduce that load significantly until their evaluation, especially in the first three years [16]. This is a widespread and common measure all across Europe.

Tenured staff

Tenured staff are positive about their situation and about the way they are helped with their promotion trajectory. The Committee believes that the personalised, transparent and non-rigid procedure for the promotion of tenured staff is very good and works well.
There is good involvement of tenured staff in short-term decision making, e.g. in topics like: money streams, reducing workload and diversity, although the Committee thinks these topics are quite operational and should also include the long-term research direction and opportunities for (future) innovations. Tenured staff see a period free of teaching as ideal, to be able to focus entirely on research.

The Committee recommends investigating the feasibility of having extensive periods with no (heavy) service teaching for all levels of research staff [17].

Summary of recommendations

Regarding viability the Committee recommends to:

[10] Finally solve the teaching load problem;
[11] Improve the planning of teaching duties, in particular by fixing them before an early date for the entire academic year;
[12] Structurally develop the DIAM long-term strategy and make some clear strategic choices;
[13] Make sure that the rather generic terms PDE and Mathematics of data science become more concrete and more recognisable;
[14] Address also other diversity such as age, ethnicity etc.;
[15] Increase the proportion of female professors;
[16] Reduce the teaching load of tenure trackers significantly;
[17] Investigate the feasibility of having extensive periods with no (heavy) service teaching for all levels of research staff.

2.5 Remarks and Recommendations: PhD Policy and Training[6]

The TU Delft University Graduate School (UGS) and its local branch, the EEMCS Faculty Graduate School (FGS) provide a structured Doctoral Programme with a PhD Development Cycle, with a clear assessment timeline and a course-based Doctoral Education (DE) Programme. It is the ambition of the University Graduate School (UGS) to prepare and train doctoral candidates to become highly qualified, autonomous and leading researchers and skilled professionals. At TUD, a Doctoral Programme consists of Research and Doctoral Education. The research is embedded in the department. The DE Programme is an integral part of the preparation for the doctorate and the graduate's further career. It ensures and

[6] The SEP requires to assess the PhD Policy and Training as part of one of the three main criteria. For readability this aspect is described in a separate section. DIAM sees educating PhD's as one of the key indicators of its research quality, societal relevance and viability. The Committee endorses this view.

enhances the development of scientific quality along with the needed proficiency for interpersonal skills.

The success rates of the PhD Candidates at DIAM level are found in Table 3.

Enrolment (#)				Success rates (%)					
Starting year	**Male**	**Female**	**Total (female + male)**	**<= 4 years**	**<= 5 years**	**<= 6 years**	**<= 7 years**	**Not yet finished**	**Discontinued**
2012	16	6	22	4.5	54.5	63.6	77.3	0.0	22.7
2013	7	2	9	22.3	77.8	77.8	77.8	0.0	22.2
2014	4	2	6	0.0	50.0	83.3	100.0	0.0	0.0
2015	12	6	18	16.7	66.7	66.7		22.2	11.1
2016	11	5	16	12.5	56.3			25.0	18.8
Total	**50**	**21**	**71**	**11.3**				**11.3**	

Table 3: Success rates of the PhD Candidates at DIAM level

Remarks and recommendations

The time for graduation of PhD-candidates is improved. PhD-candidates claim to be happy at DIAM and seem well embedded. Guidance is much appreciated and the tutoring system is working well. There are many support opportunities: a mentor can be assigned, career consultancy for PhD-students is available, as well as confidential advisors, psychologists, etc. Regarding the latter, it was reported to the Committee that it takes very long to get psychological help.

The Committee received complaints from several PhD-candidates about the rigid administrative system DMA (Doctoral Monitoring Application): the administrative burden is really high, transparency is lacking, and emails are often not answered or very late, causing confusion and delay. The Graduate School and the whole TUD are aware of the difficulties with the system. The Committee learned that a project started recently to build a new system, but that this will take a while. Nevertheless, DIAM should be pushing for solving this problem as soon as possible.

The Committee recommends the introduction of a DIAM-broad PhD-seminar to strengthen the coherence of DIAM and the social cohesion of the PhD population [18]. This has already been mentioned in the 2019 midterm evaluation.

The Committee learned that some PhD-students get a six-year position, with a high teaching load. The Committee has not met any PhD-student on such a six-year track but has some doubts whether such a track is a healthy option for all parties involved. If this track is maintained, then the Committee recommends a careful evaluation of its results [19].

Summary of recommendations

Regarding PhD policy and training the Committee recommends to:

[18] Introduce a DIAM-broad PhD-seminar to strengthen the coherence of DIAM and the social cohesion of the PhD population;
[19] Carefully evaluate the results of the six-year PhD-track.

3. Executive Board's extra question

Question: *"Currently research funding (in the Netherlands) is shifting more in the direction of large scale thematic programmes, and it is expected that this trend will continue in the near future. While these large scale programmes need input from the mathematical research community, they are not primarily focused on mathematics. In light of this development and DIAM's strategy, what approach would the Committee recommend for selection of and participation (possibly taking a leading role) in thematic programmes? Please consider the (balance between) SEP criteria research quality and societal relevance in your recommendation."*

The Committee is well aware of the embarrassment of choice that Mathematics in general is facing in application-oriented research programmes. Mathematics has a huge potential to make important, even essential, contributions to research in such diverse domains as climate, energy, healthcare, artificial intelligence, digitization, epidemiology, finance, logistics and communications. However, for individual mathematicians this requires a significant time investment to build up the necessary domain knowledge and to establish valuable contacts with researchers in other disciplines and/or with industry; and the reward in terms of grants is likely to be minor – once in a while one or two PhD or Postdoc positions.

On the scale of a section or department, the situation could be better, but this requires a carefully composed long-term strategy. The section/ department has to be aware of the needs of society at large, and to recognise meaningful problems for applied mathematics, i.e. those problems which could also lead to the advancement of mathematics itself.

Furthermore, it must be well aware of its own strengths and weaknesses when it comes to its mathematical expertise, domain knowledge and external contacts.

Based on all this, it chooses particular problem areas and research programmes to invest in – and other areas and programmes to ignore. Next, time and money must be invested to strengthen its position; possibly also by hiring researchers with the right profile for a link with a thematic programme.

Subsequently, individual researchers could be encouraged to participate in strongly application-oriented programmes or industrial collaboration if such a programme is close to their mathematical expertise and if they will be able to really do mathematical research that is recognised by their mathematical peers.

If their research, and in particular the research of a group, is already well recognised as valuable for a particular domain, then even the lead can be taken in a research programme. In such an endeavour, appropriate support should be given by higher management.

Focussing on DIAM, the self-assessment report and the discussions at the site visit have not convinced the Committee that such a long-term strategy for making mathematically oriented contributions to important societal domains is in place.

Accordingly, we recommend that DIAM seriously invests time in further developing and articulating such a strategy. Subsequently, DIAM should specifically target external parties including other departments at TUD and, supported by the valorisation office more strongly than now is the case, explain what and where it could contribute to particular domains.

Despite this, we have seen two initiatives that look very promising, and that have a clear link with outstanding mathematical expertise already present in DIAM. We recommend that these initiatives are further pursued in the near future, and are strongly supported by higher management.

The first initiative is the Gravitation proposal, led by Jan van Neerven, in the area of partial differential equations – a mathematical subject in which DIAM excels. The Committee strongly supports the resubmission of this proposal, and recommends to get support from the university to get the right interdisciplinary partners (in particular in climate research) on board.

The second initiative, led by Kees Vuik, is the very recently drafted National Agenda for Computational Sciences. This is an excellent and timely initiative, well aligned with DIAM's expertise in high performance computing. It can strengthen the collaboration within DIAM, and of DIAM with external parties, and it has the right leadership.

Conclusion: "Knowledge worth sharing"

DIAM obviously shows very good research quality, and, with the excellent staff and facilities, high student numbers and a healthy financial situation, the viability is also very good. What puts the viability under pressure is the ongoing high teaching load; and although it is certainly true that this is mainly caused by external factors, DIAM should manage this teaching load better, and continue emphasising it to have it on the TUD-agenda.

The research is clearly very relevant to society, but much more could be done to reach out to society and to make impact. Therefore, don't be too modest and make yourself better heard. It is great work you are doing here. Let the Faculty, TU Delft, the country and beyond know about it: Knowledge worth sharing.

APPENDIX A CURRICULA VITAE OF THE COMMITTEE MEMBERS

Prof. dr ir. O.J. (Onno) Boxma, Committee Chair, received an MSc degree in Mathematics from Delft University of Technology in 1974, and was awarded a PhD degree in Mathematics at the University of Utrecht in 1977. Presently he is emeritus professor of Stochastic Operations Research in the Department of Mathematics and Computer Science of Eindhoven University of Technology. His main research interests are in queueing theory and its applications to the performance analysis of computer-, communication-, production- and traffic systems, and in insurance risk. During 2004-2009 he was editor-in-chief of Queueing Systems, and from 2005 till 2011 he acted as scientific director of Eurandom. Onno Boxma has received honorary doctorates from the University of Haifa and Heriot-Watt University (Edinburgh), and was recipient of the 2011 ACM SIGMETRICS Achievement Award and the 2014 Arne Jensen Lifetime Award of ITC.

Dr M. (Martina) Chirilus-Bruckner obtained her Diplom in Technomathematik in 2006 at the University of Karlsruhe (now Karlsruhe Institute of Technology) followed by a PhD in Mathematics there in 2009. After receiving several scholarships for research abroad from the German Research Foundation (DFG) she held postdoctoral positions at the CWI in Amsterdam, at Brown University (Providence, USA) and Boston University (Boston, USA). Before joining the Mathematical Institute at Leiden University as NDNS+ Cluster tenure-tracker, she also held lecturer positions at Boston University and the University of Sydney. Her research lies in the field of nonlinear partial differential equations and infinite-dimensional dynamical systems with emphasis on the analysis of existence, stability, bifurcations and interaction of localized structures such as fronts, pulses or wave packets. She has been nominated for both the research prize and the teaching prize of the Faculty of Science at Leiden University. She is currently part of the board of the NDNS+ mathematics cluster.

Prof. dr M. (Massimiliano) Gubinelli studied Physics in Pisa and got a PhD in Theoretical Physics from the same University in 2003 with a thesis on phase

transition in out-of-equilibrium interacting particle systems. From 2001 to 2006 he held an Assistant Professor position in Probability theory in the Institute for Applied Mathematics of the University of Pisa and then moved to the University of Paris XI (Orsay) in a position of Maître des Conferences at the Department of Mathematics. From 2008 to 2014 he has been Professor at the Research Center on the Mathematics of Decisions (CEREMADE) of the University of Paris-Dauphine. Since 2015 he holds an Hausdorff Chair in the Institute for Applied Mathematics and at the Hausdorff Center for Mathematics of the University of Bonn. In 2019 he has been session speaker at the International Congress of Mathematicians, Rio de Janeiro (jointly between the probability and PDE sessions) and he has been invited to give the Lévy lecture both at the 2019 Conference on Stochastic Processes and their Applications, Evanston and at the 2020 Bernoulli-IMS World Congress in Probability and Statistics, Seoul. His research lies at the boundary between Probability theory and Mathematical Physics touching subjects like the statistical mechanics of turbulence, of large-scale interacting random systems and quantum field theory with keen interest in developing mathematical tools to address the challenges of describing systems interacting across multiple scales.

Dr S. (Sophie) Huiberts studied Mathematical Sciences and Computer Science at Utrecht University and did her PhD research at Centrum Wiskunde & Informatica. She is a Simons Junior Fellow at Columbia University in New York City. She was chair of CWI's work council and member of CWI's diversity committee and she wrote the remote collaboration tool 'LaTeX in Slack'. Sophie was a Rising Star Speaker at the TCS Women Spotlight Workshop during STOC 2021, attended the 2019 Heidelberg Laureate Forum and was a finalist for the 2018 master thesis prize of Utrecht University's Graduate School of Natural Sciences. Her research focuses on explaining the performance of practical algorithms for linear and integer programming beyond worst case analysis, as well as related questions about the geometry of convex polyhedra. Algorithms she investigated include the simplex method, interior point methods, cutting plane methods and branch-and-bound.

Prof. dr I. (Ingrid) Van Keilegom studied mathematics at the Universiteit Antwerpen (1993), and obtained a master of biostatistics and a PhD in statistics both from Universiteit Hasselt in 1998. She has held positions as professor at the

Pennsylvania State University (1998-1999), Eindhoven University of Technology (1999-2000), and Université Catholique de Louvain (2000-2016). Since 2016 she is full professor at the Research Center for Operations Research and Statistics of the KU Leuven, Belgium. Her honors include: Fellow of the Institute of Mathematical Statistics (2008), Fellow of the American Statistical Association (2013). She received an honorary doctorate at the Universidade da Coruña (2022). She was holder of an ERC Starting Grant from 2008 till 2014, and is currently holding an ERC Advanced Grant (2016-2022). She has been editor of the Journal of the Royal Statistical Society-Series B (2012-2015), and is currently associate editor of the Annals of Statistics, Biometrika, among others. Her research interests include: survival analysis, causal inference, measurement errors, quantile regression, non- and semiparametric regression, and mathematical statistics.

Prof. dr V. (Volker) Mehrmann received his Diploma in mathematics in 1979, his PhD in 1982, and his habilitation in 1987 from the University of Bielefeld, Germany. He spent research years at Kent State University in 1979-1980, at the University of Wisconsin in1984-1985, and at IBM Research Center in Heidelberg in 1988-1989. After spending the years 1990-1992 as a visiting full professor at the RWTH Aachen, he was a full professor at TU Chemnitz from 1993 to 2000. Since then he is a full professor for Mathematics at TU Berlin. He is a member of acatech (the German academy of engineering), academia europaea and the European Academy of Sciences, he was president of GAMM (International association of Applied Mathematics and Mechanics), vice president of the European Mathematical Society (EMS), chair of MATHEON, the Research Center `Mathematics for key technologies´ and chair of the Einstein Center ECMath in Berlin. Since January 2019 he is president of the EMS. He is SIAM Fellow, has held an ERC Advanced Grant and also was member of the ERC Mathematics Panel. He is editor of several journals in numerical analysis and editor-in-chief of Linear Algebra and its Applications. His research interests are in the areas of numerical mathematics/scientific computing, applied and numerical linear algebra, control theory, the theory and numerical solution of differential-algebraic equations, and recently also in energy based mathematical modeling.

Dr M. (Mark) Roest studied applied physics in Delft, getting his MSc there in 1992. He got his PhD degree from the faculty of applied mathematics of Delft University of Technology in 1996. Then he cofounded VORtech, a company of scientific software engineers that works for a wide variety of clients from various sectors. The company has grown to 25 people, mostly with a PhD degree in one of the STEM fields. Mark's role is primarily in formulating the company strategy and managing the external contacts of VORtech. In this role, he strongly supports the mathematical community in the Netherlands. He is an active member of both the Innovation Committee and the Research Committee of the Dutch Platform for Mathematics, he is a member of the board of the Dutch-Flemish Scientific Computing Society and he is a member of the board of the Platform AI of the Dutch organisation for the metal and electrical engineering sector. He co-founded the Dutch OpenFOAM User Group and was a board member of the OpenDA Association that manages the OpenDA data-assimilation software. Mark is not an active scientist but keeps himself updated in the fields of High Performance Computing, Data Assimilation and Machine Learning as these technologies are central to VORtechs clients.

APPENDIX B SITE VISIT PROGRAMME

DAY 0 Wednesday 18 May 2022			
Location	**Time**	**Activity/ Assessors**	**Participants**
Hampshire Hotel	17.00	Welcome of Committee (Hampshire Hotel)	Committee: O. Boxma (Chair), S. Laudy (Secretary), M. Cirilus Bruckner, M. Gubinelli, S. Huiberts, I. Van Keilegom, V. Mehrmann, M. Roest TUD: Rector T. van der Hagen
	17:30	Working dinner: Kick off and preparation of interviews Committee (private)	
	21.30	Closure	

DAY 1 Thursday 19 May 2022			
Room	**Time**	**Activity/ Assessors**	**Participants**
Snijderszaal LB 01.010	08:30 – 09:00	Preparation of interviews	Committee (Private)
	09:00 – 09:45	Interview Management Team Lead Assessors Entire Committee	Dean L. van Vliet, C. Vuik, F. Redig, G. Jongbloed, J. van Neerven, H. Schuttelaars, D. Gijswijt
	09:45 – 10:00	Reflection	Committee (private)
	10:00 – 10:30	Interview Executive Board	Rector T. van der Hagen + Dean L. van Vliet
	10:30 – 11:00	Reflection / Break	Committee (private)
	11:00 – 11:30	Interview combined research groups, theme: Partial Differential Equations	F. Redig, C. Vuik, J. van Neerven, H. Schuttelaars
	11:30 – 11:45	Reflection	Committee (private)

	11:45 – 12:15	Interview combined research groups, theme: Math of Data Science	D. Gijswijt, M. van Gijzen, A. Heemink, A. van der Vaart
	12:15 – 12:30	Reflection	Committee (private)
	12:30 – 13:30	Lunch PhD's (HB 03.520, 03.540, 04.520, 04.530, 04.540, 05.520)	S. Della Corte, V. Lenz, A. Pengel, S. Franssen, D. Pantova, M. Rozendaal, J. Willems, L. Hashemi, L. Scavuzzo, V. Dwarka, E. Atza
Penguïnlab HB 02.130 / DelftBlue HB 04.090	13:30 – 14:30	Lab Tour I / Round tour premises / demo's	K. Lemmens, D. Balague, presentation DelftBlue (J. Thies & D. Palagin), MRI. A. Bekkering, M. van Gijzen (social room)
Snijderszaal LB 01.010	14:30 – 14:45	Reflection	Committee (private)
	14:45 – 15:15	Interview Tenure Trackers	K. Marynets, H. Kekkonen, N. Parolya, A. Bishnoi, D. Toshniwal, Y. Dijkstra
	15:15 – 15:45	Reflection/ Break	Committee (private)
Penguïnlab HB 02.130 / DelftBlue HB 04.090	15:45 – 16:45	Lab Tour II / Round tour premises / demo's	K. Lemmens, D. Balague, presentation Delft Blue (J. Thies & D. Palagin), MRI. A. Bekkering, M. van Gijzen (social room)
Snijderszaal LB 01.010	16:45 – 17:15	Interview Diversity Committee DIAM	T. Nane, C. Smet, E. Pulvirenti, J. van der Woude
	17:15 – 17:30	Reflection	Committee (private)
	18:00	Refreshing at hotel	
Rest. Kruydt Paardenmarkt 1 Delft	19:30	Working dinner: discussing and writing premliminary judgments	

DAY 2 Friday 20 May 2022			
Room	**Time**	**Activity/ Assessors**	**Participants**
Snijderszaal LB 01.010	08:15 – 08:45	Preparation interviews Committee	Committee (private)
	08:45 – 09:15	Interview Tenured Staff	J. Söhl, W. van Horssen, N. Budko, L. van Iersel, M. Caspers, D. Kurowicka
	09:15 – 09:30	Reflection	Committee (private)
	09:30 – 10:00	Interview Graduate School	D. Epema, A. van Gulik
	10:00 – 10:30	Reflection/ Break	Committee (private)
	10:30 – 11:00	Interview with valorisation office / communications office / HR	A. Baggerman, L. Klijnsmit, K. Reijenga
	11:00 – 11:15	Reflection	Committee (private)
	11:15 – 11:45	Interview Postdocs	A.Krishnawamy, W. Cames van Batenburg, X. Shan, C. Liu, M. Jones
	11:45 – 12:00	Reflection	Committee (private)
v. Katwijkzaal HB 08.150	12:00 – 13:00	Summarising findings and first conclusions (including working lunch)	Committee (private)
	13:00 – 13:30	Concluding meeting with management	D. Gijswijt, H. Schuttelaars, G. Jongbloed, F. Redig, C. Vuik, J. van Neerven
	13:30 – 14:15	Discussing and writing preliminary judgments	Committee (private)
Snijderszaal LB 01.010	14:15 – 14:45	Oral presentation on first impressions by Committee (including live-stream, DIAM)	Committee, all faculty members invited (within Covid regulations)
		Closure	Refreshments with Committee and Faculty

Quicken ORGANISATIE ADVISEURS

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