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Decaan FNWI, Universiteit van Amsterdam
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12 november 2015

Betreft: verzoek instelling Samenwerkingsinstituut ADI

Geachte decaan, beste Karen,

Wij vragen graag aandacht voor bijgevoegd gemotiveerd verzoek tot instelling van een samenwerkingsinstituut onder de naam "Amsterdam Department of Informatics" (ADI).

Wij zijn uiteraard ten allen tijde bereid nadere uitleg en/of aanvullingen te geven.

Met collegiale groet,

Jan Bergstra, Directeur Instituut voor Informatica, UvA

Guus Schreiber, Afdelingshoofd Informatica, VU

Bijlage(n): excerpt uit Zelfstudie Informatica UvA & VU ten behoeve van Onderzoekenvaluatie 2009-2014

Instelling Samenwerkingsinstituut ADI

1 Verzoek

De Afdeling Informatica (VU-INF), Faculteit Exacte Wetenschappen van de VU EW VU, en het Instituut voor Informatica (IvI), Faculteit der Natuurwetenschappen, Wiskunde en Informatica van de UvA, willen een samenwerkingsinstituut vormen onder de naam “Amsterdam Department of Informatics” (ADI) met een federatieve structuur en op één locatie.

2 Kernteam Information Sciences

Dit verzoek is opgesteld door het kernteam Information Sciences. Dit kernteam bestaat uit de leden van het MT van VU-INF en het MT-klein van het IvI met daaraan toegevoegd de onderwijsdirecteur van de Graduate School Information Sciences FNWI.

De samenstelling van het kernteam is momenteel als volgt:

- MT VU-INF: Wan Fokkink, Frank van Harmelen, Kris de Jong, Guus Schreiber
- MT-klein IvI: Jan Bergstra, Guus Delen, Alfons Hoekstra, Marcel Worring
- Onderwijsdirecteur Graduate School Information Sciences: Andy Pimentel

Het kernteam heeft in een aantal ronden en met verschillende groepen het perspectief van samengaan van beide groepen besproken. Onderstaande lijst is een selectie van bijeenkomsten die in de afgelopen jaren georganiseerd zijn¹:

- Vier verkenningscommissies (2011-2015). Het voorstel voor de eerste commissie dateert van zomer 2011 en was een initiatief van Informatica zelf.
- Regelmatig gezamenlijke MT vergaderingen (sinds 2011)
- Informatiebijeenkomsten met vertegenwoordigers medezeggenschap studenten en medewerkers n.a.v. van publicatie Programma van Eisen, maart-mei 2015
- Debatbijeenkomsten met VU informatica studenten (6 mei 2015) en UvA informatica studenten (in de Brainwave op 18 mei 2015).
- Gezamenlijke bijeenkomsten staf per onderzoeksthema (2014)
 - Computersystemen
 - Socio-technische systemen
 - Automatisch lerende systemen
 - Grondslagen van de informatica
 - Intelligente systemen
 - Computational science
- Gezamenlijke jaarlijkse afdelingsuitjes (inclusief sociaal programma):

¹ Voor achtergrondinfo zie gepubliceerde documenten, zoals o.a. het Dossier Kernteam Informatica: https://wiki.cs.vu.nl/departement/#Process_Documents

- oktober 2014: Beeld & Geluid
- oktober 2015: Westergasfabriek
- Overleg in gezamenlijke docententeams voor Masters met een joint program (Computer Science, Computational Science, Artificial Intelligence, Information Science, Information Studies)
- Overleg binnen het gezamenlijk opgerichte Amsterdam Data Science instituut
- Mogelijkheid voor stafleden om werkplek te wisselen voor 1 dag per week (vanaf 2014)
- Gezamenlijke redactie van de zelfstudie voor de onderzoekenvaluatie 2009-2014
- Een wekelijkse gezamenlijke nieuwsbrief (sinds 2014)

Voorts is veel aandacht besteed aan de strategie voor het nastreven van joint degrees. De eerste resultaten daarvan zijn inmiddels bereikt middels de toekenning van een joint degree voor de Master opleidingen Computer Science en Computational Science.

Daarnaast is veel gesproken over de gewenste infrastructuur en indeling van het NU gebouw waar het ADI in gevestigd zou worden. Inmiddels menen wij dat dit er gunstig uitziet. Er is gewerkt aan de principes van een samenwerkingsovereenkomst en aan een planning voor een financiële cyclus. De conclusie is getrokken dat een federatieve structuur, waarbij vooralsnog in formele zin beide afdelingen blijven bestaan (binnen het samenwerkingsverband ADI) onder de respectievelijke namen Computer Science Institute UvA, en Computer Science Institute VU, de voorkeur heeft.

3 Argumenten tegen/voor instelling ADI

Over de wenselijkheid van verregaande samenwerking tussen het IvI en VU-INF is in de afgelopen jaren vele malen gesproken. Het duidelijkst komt dit tot uiting in de recente voltooide zelfstudie voor de onderzoeksvisitatie waarin een gemeenschappelijke toekomstvisie wordt beschreven (als appendix bijgevoegd).

Hoe men het ook bekijkt, er is sprake van een onderwerp dat zich niet gemakkelijk eenduidig laat analyseren. Argumenten tegen een verplaatsing van het IvI naar Science Park Zuid met bijbehorende invoeging in een gemeenschappelijke bestuurlijke orde zijn en waren altijd aanwezig. Zulke argumenten vallen ook niet te weerleggen. Hieronder noemen drie soorten argumenten tegen, en wel vanuit het perspectief het IvI, vanuit het perspectief van VU-INF, en bezwaren in algemene zin.

Argumenten tegen, vanuit IvI perspectief:

- U.1 Het gaat het IvI nu goed in het nieuwe FNWI gebouw, in elk geval aanzienlijk beter dan vroeger.
- U.2 De unificatie van onderzoek en onderwijs heeft het IvI de voordelen gebracht die wij wensten.
- U.3 De ontwikkeling van Science Park Oost komt misschien nu pas goed op gang.

- U.4 Er is zinvolle samenwerking met het CWI, andere delen van de FNWI, en recent gestarte spin-off bedrijven waarvan geen verhuizing voorzien is.
- U.5 Er is geen betere verbinding met het Internet denkbaar dan op Science Park Oost en dat zal ook nog wel een tijd lang zo blijven
- U.6 Er is geen acuut probleem waarvoor samenvoeging met de Afdeling Informatica van de VU een oplossing biedt; we beleven thans een all-time high bij alle kengetallen die er voor ons toe doen.
- U.7 Er is steeds weer twijfel aan het vermogen van de VU om diensten en ondersteuning goed te organiseren.

Argumenten tegen, vanuit VU-INF perspectief:

- V.1 De afdeling is trots op haar consensus cultuur, waarin stafleden zich verantwoordelijk voelen voor de afdeling als geheel. Deze cultuur zou onder druk kunnen komen te staan door de schaalvergroting.
- V.2 Er is relatief veel inhoudelijke samenwerking tussen de verschillende onderzoeksgroepen. Ook hiervoor zou schaalvergroting negatief kunnen werken.
- V.3 De afdeling heeft een sluitende meerjarenbegroting, ondanks de voortschrijdende bezuinigingen binnen de VU. Het is nog onduidelijk in hoeverre een gezamenlijke afdeling de financiële ruimte zou hebben om de gewenste investeringen in personeel e.d. te kunnen doen (ook al zijn de twee onderdelen voorlopig financieel zelfstandig).
- V.4 Ondanks beperkte support heeft de afdelingsmanager nu goed zicht op de bedrijfsvoering in alle onderdelen van de organisatie. Schaalvergroting zou ook hier nadelig kunnen uitpakken.
- V.5 Alle vaste stafleden van VU-INF participeren met een vergelijkbaar inspanningsniveau in onderzoek en onderwijs (zowel bachelor als master). Dit ligt aan de Ivl kant genuanceerder, mede door een andere onderwijsorganisatie en andere financiële modellen. Ook hier zal afstemming/aanpassing nodig zijn. Hierbij dient wel opgemerkt te worden dat het bestaande VU-INF model door ontwikkelingen binnen de VU sowieso onder druk staat.

Algemene bezwaren:

- A.1 Er gaat veel tijd en geld zitten in welke vorm van verregaande samenwerking dan ook, en die resources kan men ook (en mogelijk beter) in het primaire proces steken.
- A.2 Alle verregaande samenwerkingsmodellen dragen een risico van mislukking in zich; zulke risico's te ontkennen is zinloos en deze goed te hanteren slaagt vaker niet dan wel naar men zegt.

Gegeven deze lijst van gronden tot twijfel moeten de argumenten die tot het systematisch onderzoeken en voorbereiden van de route naar integratie van de beide informatieafdelingen aanleiding geven, goed in kaart worden gebracht. Deze argumenten zijn niet eenduidig en betreffen ook niet de ontwikkeling van de wetenschappelijke informatica in Amsterdam op de korte termijn. In andere woorden, de terugverdientijd van de investeringen die men in deze wil overwegen is relatief lang. De vraag is dus, wat zijn de overwegingen die ten

voordeel spreken van het doen opgaan van beide afdelingen in een Amsterdam Department of Informatics.

- A. De informatica gaat door een ongekeerde schaalvergroting. Waar vroeger gespecialiseerde industrie om ICT expertise vroeg, komt nu geen eind aan de reeks van bedrijfstakken waar moderne informaticacompetentie gevraagd is. Gegeven deze dynamische vraag en de enorme snelheid van technologische ontwikkelingen is thematische flexibiliteit en mobiliteit gevraagd. Een grotere eenheid kan beter op deze ontwikkelingen inspelen, en raakt minder snel uit balans wanneer een nieuw thema opgepakt wordt.
- B. De informatica als vakgebied is nu zo groot dat beide afdelingen er een te klein deel van kunnen bieden, een grotere eenheid kan staf en studenten een veel breder pakket van thematiek bieden. Men zou kunnen argumenteren dat verregaande specialisatie het antwoord moet zijn op de waargenomen schaalvergroting maar dat is zeer de vraag. Steeds is de noodzaak tot integratie met aspecten die vroeger ver weg leken ook aan de orde. We zien op dit moment dat zelfs een informeel gecombineerde UvA-VUA informatica nog met uiteenlopende andere partijen moet samenwerken om de kansen die er zijn aan te grijpen, te noemen valt hier data science of software voor quantum computing.
- C. Een ADI kan een nationale en internationale zichtbaarheid verkrijgen die voor de afzonderlijke delen niet bereikbaar is. Schaal en kwaliteit hoeven voor de operaties op dit vlak niet onder te doen voor andere Europese centra. Zo kan een situatie ontstaan waarin wij gemakkelijker toponderzoekers aan ons kunnen binden ook al zijn de vergoedingen die wij nu kunnen bieden naar internationale maatstaven niet zo hoog. Het doel om evident bij de internationale top te behoren is voor een ADI volstrekt plausibel, en overigens ook noodzakelijk.
- D. Wij beleven nu een boven verwachting goede periode qua studenteninstroom en ook op de arbeidsmarkt voor onze alumni. Maar ook de informatica gaat door ups en downs en het is veel eenvoudiger om in een goede tijd te integreren dan tijdens een piek van problemen. De situatie waarin wij elkaar in een zinloze slag om de student bestrijden moet niet weer terugkomen. De slag om de student moet niet in Noord-Holland gestreden worden zoals aan het eind van de vorige eeuw, maar in de EU. En daar kunnen we gezamenlijk een aanbod neerzetten dat nog veel meer de aandacht trekt dan thans het geval is.
- E. Unilocatie van de academische informatica in Amsterdam is op een aantal opeenvolgende meetings van IvI en afdeling informatica van de VU als een aantrekkelijk perspectief waargenomen (zie lijst in de vorige sectie). Tegelijkertijd zal met kracht vermeden moeten worden dat de afstand tot andere delen van de academische gemeenschap daardoor op contraproductieve wijze toeneemt. De oplossing ligt in het ontwikkelen van een patroon van structurele samenwerkingsverbanden met andere eenheden, zoals nu b.v. bij data science al is ontstaan, bij complexity in

ontwikkeling is, en bij software voor quantum computing in beeld komt. Werkend vanuit een duidelijke identiteit zoals het ADI die kan gaan vormen is geen enkele samenwerking een bedreiging, is de vraag wie de penvoerder van een nieuw plan wordt niet altijd een hoofdzaak en kunnen we elke coalitie allereerst op de inhoud bekijken omdat we geen seconde tijd hoeven te steken in de vraag of het ADI er wel tegen kan. Naar verwachting zal het ADI niet snel ter discussie komen te staan als partner in grote samenwerkingsverbanden.

- F. Wie over unilocatie spreekt vanuit de UvA kan er niet omheen te constateren dat dit heel goed op Science Park Oost zou kunnen gebeuren. ook collega's van de VU zien dat zo. Dat valt niet te ontkennen en dat was voor het IvI wel zo eenvoudig geweest. Maar op Science Park Zuid (SPZ) kan het ook. Het is moeilijk de voor- en nadelen van beide locaties zuiver af te wegen. Maar het is in deze fase noodzakelijk om althans de voordelen van SPZ te kunnen benoemen. Als voordelen van SPZ valt te noemen: (i) uitstekende verbindingen nationaal en internationaal, (ii) sociale wetenschappen, medische wetenschappen, rechten en economie, allemaal van groot belang voor de informatica, pal naast de deur, (iii) een economisch kern op 500 meter afstand die in Nederland uniek is en die onverminderd doorgroeit. De Zuid-as omvat niet zomaar een kantorenpark, het is bij verre de sterkste locatie in Nederland geworden, en die voorsprong zal niet zomaar verdampen, (iv) de aanwezigheid van 20.000 studenten die alle ook steeds toenemend belang zullen hebben bij informaticakennis levert ongekende mogelijkheden voor verdere verspreiding van onze competenties.
- G. Een complex verhaal vormt de IT ondersteuning. Het is zeker zo dat daar van UvA zijde zorgen over bestaan, maar de eerlijkheid gebiedt te erkennen dat onvrede over wat de UvA op dat vlak te bieden had en heeft ook vaak voorkwam met name door de verschuiving van ondersteuning op niveau van het instituut naar facultair en UvA breed. De opportunity die we hier mogen zien is dat beide instellingen samen hier verder gaan komen in het verkrijgen van de specifieke ondersteuning die informatica vereist dan beiden apart. Die verwachting lijkt gezien het verloop van recente besprekingen gerechtvaardigd te zijn.
- H. Het nieuwe gebouw biedt mogelijkheden die we thans nog niet hebben, namelijk om er een geheel living lab van te maken. Dit kan heel veel kansen bieden die we nu nog niet hebben en het kan vele jaren van ongekende dynamiek brengen. Ook kan er gezamenlijk gebruik worden gemaakt van en doorontwikkeld aan labs voor experimenten zoals het Intertain lab (VU) en het robotlab (UvA).
- I. In de afgelopen jaren zijn we voor verschillende onderwijsprogramma's intensief gaan samenwerken met een aantal gezamenlijke programma's als resultaat. Een gezamenlijke locatie voor VU en UvA informatica vereenvoudigt op lange termijn de uitvoering van deze programma's voor zowel studenten en docenten.

4 Ambitie: ADI als internationaal topinstituut

De argumenten voor en tegen, zoals benoemd in de vorige sectie, zijn de afgelopen drie jaar in verschillende gremia uitgebreid bediscussieerd. Alles afwegende denken wij dat de argumenten voor een samenwerkingsinstituut uiterst sterk zijn. Het is voor beide instituten een natuurlijke volgende stap, zowel op het gebied van onderwijs als wat betreft onderzoek. Het onderwijsperspectief komt het best tot uitdrukking in het toenemend aantal gezamenlijke programma's waarin heel concreet wordt samengewerkt. Op onderzoeksgebied geeft de recente zelfstudie, die onder gemeenschappelijke redactie geschreven is, een goed inzicht. In de "Visie" sectie van dit rapport (zie appendix) geven de twee instituten handen en voeten aan de ambitie om gezamenlijk een internationaal topinstituut op het gebied van de Informatica te vormen. De benchmark vergelijking met het erkende topinstituut in Edinburgh maakt duidelijk dat dit een realistische ambitie is.

5 Gedeelde infrastructuur

Infrastructuur is voor Informatica essentieel. Een belangrijk aandachtspunt in de discussie over infrastructuur is de aansluiting van de VU op de Internet faciliteiten in de Watergraafsmeer. De recente overleggen, die door Cees de Laat (UvA) en Kees Verstoep (VU) met de directeurs ICT van beide instellingen gevoerd zijn, zijn op dit punt hoopgevend. Het is inmiddels wel duidelijk dat de gewenste infrastructuur op de Zuid-as ook meerwaarde heeft voor andere partijen naast Informatica. Dit blijft wel een belangrijk aandachtspunt c.q. randvoorwaarde.

6 Informatievoorziening en besluitvorming

In Sec. 2 is een selectie opgenomen van de gezamenlijk bijeenkomsten en activiteiten in het kader van het vormen van een samenwerkingsinstituut. Het kernteam heeft steeds alles in het werk gesteld om zo transparant mogelijk te werken. Door het schrijven van het "Programma van Eisen en Beleidskeuzes" (zie volgende sectie) hebben wij geprobeerd om de noodzakelijke randvoorwaarden duidelijk te benoemen. De algemene feedback die wij hierop kregen was dat men dit een helder stuk vond, en een belangrijke en noodzakelijke stap richting concrete samenwerking. "Draagvlak" is echter niet te vangen in een simpele operationalisatie.

7 Aandachtspunten

Aandachtspunten, die in beschouwing dienen te worden genomen bij het vormen van een samenwerkingsinstituut, zijn door ons eerder uitvoering in kaart gebracht. Wij verwijzen hier naar het "Programma van Eisen en Beleidskeuzes"², dat eerder dit jaar verspreid is binnen de UvA en VU gemeenschap.

De inrichting van het nieuwe gebouw verdient speciale aandacht. Het is van het grootste belang dat de medewerkers in dit proces vanaf het begin meegenomen worden. Dit geldt met name voor de IvI medewerkers, die nog niet zolang

² <https://wiki.cs.vu.nl/department/#PvE>

geleden een vergelijkbaar proces, met de bijbehorende ups en downs, hebben meegemaakt.



Self-assessment report for Research Evaluation Informatics 2009-2014 Amsterdam

Informatics Institute (UvA) & Computer Science Department (VUA)



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AMSTERDAM

Self-assessment report for Research Evaluation Informatics 2009-2014 Amsterdam

Informatics Institute (UvA) & Computer Science Department (VUA)

Editors:

Gusztai Eiben (VUA), Paola Grosso (UvA), Annette ten Teije (VUA)

15 september 2015

This self-assessment was written in close collaboration between the *Department of Computer Science of the VU University Amsterdam (VU-CS)* and the *Informatics Institute of the University of Amsterdam (IvI)*. The retrospective parts concerning the reporting period 2009-2014 (Chapters 1 and 2) were written independently, with a minimal alignment of the definitions for the quality measures used and the exact interpretation of the assessment dimensions. Since the two organisations are planning to merge between now and 2019, parts of this self-assessment (Chapter 3) concerning future cooperation were written together.

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3 Informatics Institute UvA and Computer Science Department VUA

3.1 PhD programmes

Supervision of junior researchers and quality control

In both departments PhD students are typically supervised on a weekly basis through direct interaction with their senior supervisors. In addition, all groups at UvA and VUA have regular group meetings and seminars (varying from weekly to monthly) to foster scientific debate. This is further enhanced by the many collaborative projects with their own technical and research meetings. For example, quarterly meetings are held with regard to our EU projects in which scientific and technical content is discussed in a focused workshop-like fashion, with all junior and senior researchers from the relevant research partners involved.

The UvA has mandatory evaluation moments at 9 months, 18 months, 24 months and 36 months for the duration of the PhD. These moments are used by the student and the supervisors to track progress and plan future research. The Ivi has also recently introduced an institute-wide evaluation at the end of the first year, where all students present their initial progress to a committee of staff members. This common evaluation moment provides an independent view on the progress of all the students, allows feedback to the (co-)supervisors of possible problems and provides a clear view of the individual progress in light of the comparison to peers. VU-CS currently has annual evaluation moments, with a go/no-go decision after year 1, but intends to follow the UvA model in the near future, giving a unified quality control mechanism across the two institutes.

For PhD students the research schools SIKS, ASCII, IPA and recently BioSB form a nation-wide platform for advanced education, scientific exchange, as well as for research quality control. The procedures for safeguarding PhD education are documented in the schools' self-assessment reports in national evaluation procedures under the SEP protocol. The national research schools run summer/winter schools and master classes for in-depth training about specific research topics. Also, the research schools offer regular courses for students to broaden their knowledge. By following these courses the students can achieve the 30 ECTS required as educational component for their graduation. Finally, the research schools offer popular (lightly peer-reviewed) conferences and doctoral consortia that give Ph.D. students an opportunity to practice writing papers and presenting their research plans and results, for example during conferences such as ICT Open. Ivi and VU-CS play an active role in these research schools: the chairs of IPA and SIKS as well as the scientific director of ASCII are from Amsterdam.

Both universities offer additional courses for PhD students. Some of these target the initial stages of the PhD program, e.g. courses on presenting and scientific writing in English. Other courses such as "Career training" and "Writing grant applications" offer extra support the PhDs in their final year in their search for jobs within and outside academia. Recently, a course on startups has been added to the course portfolio.

PhD students are also involved in educational tasks, primarily in assisting and supporting the practical part of bachelor and master courses, as well as in incidentally providing lectures on their topic of expertise. PhD students may also co-supervise bachelor and master students during their graduation project. Noteworthy is that we are moving towards a model where involvement of PhD students in the education programs will not be left to the decision of the supervisors and the explicit interest of the student, but is made mandatory. This change will provide a better financial model for education, and will give all PhD students the benefit of learning how to teach.

Length and success rates of PhD programme

The length and success rate of the PhD programmes of Ivi can be found in Appendix 4.5 (SEP table D3d). Ivi's goal is to have two PhD theses each year in each group, with a total number of at least 15 for the institute as a whole. 54% of enrolled students obtain their degree within five years; this is considered by the faculty as an 'on time graduation'. Ivi wants to increase the number of students finishing in time, without sacrificing research quality. This policy is aligned with the VUA's policy meaning that financing extensions stop after four years: this measure intends to stimulate both students and supervisors to try to maintain a proper graduation pace. The number of PhD students abandoning their position has been stable around ~20%. This number is high and Ivi is working to further improve the selection procedures to reduce this.

The length and success rate of the PhD programmes of CS-VU can be found in Appendix 5.5 (SEP table D3d). VU-CS has a rather constant number of starters over the whole period (on average 20 per year), with an exception in 2010 which was lower (13), but compensated in 2011 (26). The large PhD influx in 2011 is due to the start of the COMMIT project, which involved a considerable number of PhD students. Our PhD population has on average a 23% female participation (range 16%-31%). Only few PhD students finish in four years (on average 9%), in general it takes 4-6 years for them to graduate. The table might suggest that the percentage of discontinued PhD's is rather high (11%). This is however due to the fact that some senior staff moved to other universities, 6 PhD students consequently moved together with their supervisor and continued their work at the new location. If we do not take PhD students into account who left because they went with their supervisor to a new affiliation, we have a success rate of 92% (103 out of 111).

3.2 Research integrity

Integrity and ethics

With data becoming increasingly pervasive in society, more and more research projects within Computer Science deal with potential privacy related issues. In security research, too, we notice that a number of projects deal with ethical issues. Ivl and CS have therefore established an ethical committee (ECIS) to assess project proposals which might raise ethical questions, covering both proposals for external funding as well as bachelor and master projects. The committee is composed of senior Ivl and VU researchers as well as a representative of the UvA legal office. A handbook has been created with procedures and guidelines for project proposals. The guidelines have been designed on the basis of experience of all committee members as well as by contacting ethical committees within the UvA, operating in different disciplines. The guidelines make a distinction between standard research (without ethical issues or with known issues for which standard procedures apply) and non-standard research. Non-standard research is reviewed by two members of ECIS and if needed by the legal office representative. The aim of ECIS is to learn from experience and establish an exhaustive list of standard procedures. ECIS gives advice to the director of the institute who is responsible for taking the final decision concerning the project. If the director accepts the risk, the institute, rather than the researchers is liable for any ethical consequences the project may have. Submission of project proposals to ECIS is not mandatory for researchers, but as the institute is taking responsibility they are strongly encouraged to do so.

Three members of Ivl and CS (Profs Bergstra, Klop, Van Harmelen) are members of a committee of the Dutch Academy of Sciences which will write recommendations on how the Computer Science field should handle the increasingly urgent ethical dimension of Computer Science research. Local experiences with ECIS constitute an important input into these national recommendations.

VU CS also complies with the VU-VUMC Academic integrity complaints regulation (July 2014).¹⁰

Supervision of PhD candidates

Scientific integrity deserves special attention in the PhD supervision. All VUA PhD students are since April 2015 required to complete a course on "methodology and integrity".

Data management

¹⁰ [VU-VUmc Academic Integrity Complaints Regulations July 2014](#)

The Research Data Management (RDM) topic has received considerable attention at all University levels. At both VUA and UvA a university-wide task force has been chartered with implementing a policy and setting up an infrastructure for the handling of digital data in its entire lifecycle, aiming at a joint (or at least same) infrastructure for both universities, with a commitment to store all research data for a period of at least 10 years for datasets up to 128Tb. Some data repositories are handled by worldwide collaborations, others are well suited for the expected University-wide implementation of RDM. Ivi has temporarily appointed Prof. de Laat to chair a team of technical assistants which will implement and support RDM procedures in different research groups at the institute in close cooperation with the faculty data steward.

3.3 Viability: benchmark and SWOT analysis

3.3.1 Benchmark

Benchmarking target

The goal of this benchmark is to investigate how well the combined Amsterdam research power in Computer Science compares to a world leading institution in both volume and quality. To this end we have performed a benchmarking exercise of the joint VU-UvA Departments against the Edinburgh School of Informatics. In the 2001 UK Research Assessment Exercise, Edinburgh was the only department that received the highest 5*A ranking. In the 2008 edition it ranked first in volume and tied as nationally as second on quality, and in the recent UK Research Excellence Framework (REF) 2014, it has been rated as producing more world-leading and internationally excellent research (4* and 3*) than any other university in the UK¹¹. This makes the Edinburgh School of Informatics one of the leading institutions in Computer Science research in Europe and the world, making it an ambitious benchmarking target. We will compare the performance on a number of the key indicators from the SEP protocol.

Approach

From the data on the REF2014 website¹², we obtained the following data on the Edinburgh School of Informatics: headcount of permanent staff and division of staff over research groups¹³, acquisition of research funding including division across national and European sources¹⁴, and number of PhD degrees awarded³. From the list of names provided at the REF2014 site we were able to manually obtain Google Scholar citation profiles for 69 members of the Edinburgh staff (two thirds). Enquiry with the Edinburgh Head of School confirmed that the research effort of Edinburgh tenured staff is around 40% of their working time, making the situation comparable to Amsterdam. These data allow for a well-founded quantitative comparison between Amsterdam Computer Science and the Edinburgh School of Informatics.

Results on key SEP indicators

The table below (using 2013 as the most recently available benchmark year) shows that regarding size, Amsterdam is in the same bracket as Edinburgh. Amsterdam is somewhat smaller (73 vs 104 FTE), and when normalised for the number of staff, the key indicators show a comparable performance: the number of awarded PhD degrees per staff is roughly equal, and the overall funding acquisition per staff member in Amsterdam is within 15% of the Edinburgh performance. The acquisition of national funding (from NWO) is lower in Amsterdam (roughly half) than in Edinburgh (EPSRC), but on EU funding, Amsterdam outperforms Edinburgh by 45% per capita. This reflects the much richer national funding landscape in the UK compared to The Netherlands.

¹¹ <http://www.ed.ac.uk/informatics/about/research-excellence>

¹² <http://www.ref.ac.uk/>

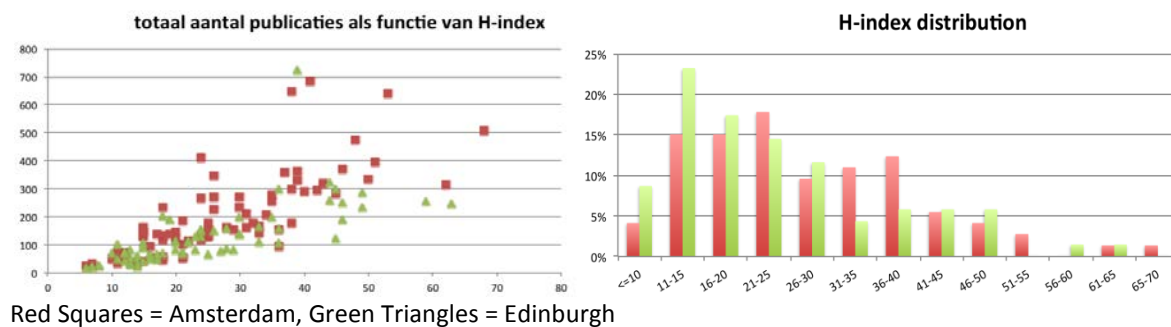
¹³ <http://results.ref.ac.uk/Submissions/StaffList/961>

¹⁴ <http://results.ref.ac.uk/Submissions/Environment/961>

Indicator	Amsterdam 2013	Edinburgh 2013
Scientific staff	73 ¹⁵	104
Research grants (National, European)	€ 7,0 M	€11,6 M
Research grants (National)	€ 2,2 M	€ 7,0 M
Research grants (European)	€ 4,8 M	€ 4,6 M
Research grants per staff	€ 95,6 k	€ 112 k
Research grants (National) per staff	€ 29,6 k	€ 67 k
Research grants (European) per staff	€ 66,0 k	€ 44,8 k
PhD's	27	36,9
PhD's per staff	0,36	0,35

Results on bibliometric indicators

The scatter plot below shows per tenured staff member the H-index against the number of publications. The ideal quadrant of this figure is bottom-right (small number of publications with high impact), and conversely the top-left quadrant is least desirable (many publications with little impact). Young researchers are typically in the bottom-left quadrant. The scatter plot shows a strong similarity in the distributions of Amsterdam and Edinburgh, with Amsterdam scientists publishing somewhat more papers for attaining the same impact, and Amsterdam having a higher share of its staff members in the very high impact category ($H > 50$): 6.8% (5/73) in Amsterdam versus 2.8% (2/69) in Edinburgh.



The bar chart shows which percentage of staff has an H-index in a particular bracket. Interestingly, this plot shows that the Edinburgh staff distribution over impact peaks sharply around the relatively low $H=11-15$ bracket, with a long tail towards the higher impact brackets. In contrast, the impact distribution of Amsterdam staff peaks around the higher $H=21-25$ bracket, and levels off much more gently towards the higher impact brackets ($H=36-40$). H-indexes are notoriously dependent on the age of the researcher. When we compensated for the academic age of our researchers, our young researchers turned out to have on average even a somewhat higher age-normalised H-index than the senior researchers with a high absolute H-index. This shows that besides high scoring senior researchers, we also have ample strong young talent.

The comparison of all these indicators (grant acquisition per staff member, PhD degree per staff member, publication volume and impact, both per staff member and across the population) shows that the combined research power in Amsterdam compares well (and sometimes even favourably) to the world-class performance of the Edinburgh School of Informatics.

¹⁵ Counting only permanent staff and tenure track positions, for proper comparison with the UK Research Excellence Framework.

Benchmark by an independent external party

In March 2015, the Urban Innovation Network in collaboration with Elsevier Science published an independent study of the research and innovation potential of the Amsterdam region¹⁶, benchmarked against 10 other European Cities: Barcelona, Berlin, Brussels, Copenhagen, Dublin, Hamburg, Madrid, Manchester, Stockholm and Vienna. The report identified Computer Science as a particularly strong discipline in Amsterdam. We quote from p.23 of this report¹⁷:

“Amsterdam’s output in computer science nearly doubled over the past decade, from fewer than 400 articles in 2004 to over 800 in 2013. This growth rate of 9% per year easily surpassed the growth rate of Amsterdam’s overall output (6.15%). In terms of publications per capita, Amsterdam’s output in computer science is second among the eleven European cities. Moreover, at 85% above the world average, the relative citation impact of Amsterdam’s research in computer science is higher than that of the ten other European cities.”

Usage of Amsterdam’s research in computer science has also increased, in relative as well as absolute terms in recent years. Amsterdam’s research in computer science from 2004 was downloaded on average 15% less than the world average, but its 2013 research has been downloaded on average 9% more than the world average. Moreover, the proportion of Amsterdam’s research in computer science that is in the top decile worldwide in terms of citation count has increased from 14.5% to over 20%.”

Table 2.2 of the report shows that among the 11 benchmark cities, Amsterdam computer science ranked first on both field-weighted citation impact and the ratio of publications in the top 10% worldwide.

Our own benchmark against a world-leading institution as well as an independent comparison with 10 cities shows that the combined Computer Science research effort in Amsterdam is of internationally leading quality.

3.3.2 SWOT-analysis

Strengths

1. Both Ivl and VU-CS have a strong research output of very high quality, with high peaks (witness the high citation impact scores of our top researchers), but also across the board (as shown by the high average citation impact score of the department as a whole in the citation benchmark study).
2. The leading staff of both Ivl and VU-CS form a good mix of experienced leaders and young talent.
3. Both Ivl and VU-CS attract significant external funding which results in many Ph.D. theses and a healthy financial position and investment capability.
4. Ivl and VU-CS have shown a very good performance in core computer-science areas: adaptive systems, computational science, computer vision, information retrieval, knowledge representation and reasoning, machine learning, security, social computing and system and network engineering.
5. VU-CS has a VU-shared research vision centered on The Connected World, one of the three distinctive themes of VUA. This is operationalized in collaborative projects and shared research infrastructure by the Network Institute.

¹⁶ <http://www.elsevier.com/research-intelligence/research-initiatives/amsterdam-report>

¹⁷ All analyses in the report are based on publication data from Scopus, 2004-2013.

6. Ivl has a significant track record in economic valorisation: systematic cooperation with industry, evolution of startups, entry in the international educational market.
7. Ivl and VU-CS both have a significant track record in societal valorisation: open standards, software downloads, applications in culture, health care, security, and societal services.

Weaknesses

1. The ratio of male/female in the permanent staff is around 4:1, which we consider to be too low. Both Ivl and VU-CS are actively working on strategies including scouting to get to a 3:1 ratio by 2020.
2. A number of senior figures have recently retired (e.g. Andy Tanenbaum), moved elsewhere (e.g. Maarten van Steen), or will retire in the next few years (e.g. Arnold Smeulders). Some of these positions have already been filled (e.g. by Herbert Bos), for others a joint strategy on replacement will have to be developed.
3. For both Ivl and VU-CS it holds that there has not been a concerted and unified effort toward external parties in the region and nationally. Contacts and initiatives have in many cases been carried individually, resulting in a lack of focus.
4. Ivl is not sufficiently embedded in the UvA corporate policies, for example in the area of big data and data science.
5. Sharp budget cuts within the VU as a whole on support personnel combined with the extremely poor quality of the e-services replacing these personnel have led to a significant increase in administrative workload for the VU-CS academic staff. This matter has required constant attention by the department management over the past two years.
6. The daily working environment of the VU-CS staff in terms of building and housing is below standard. The good news is that a new building is now under construction, which should be ready early 2018.

Opportunities

1. The formation of a joint UvA-VU Department of Informatics, which is planned to be effective by 2018-2019, provides ample opportunities in research and in joint research master programs because of the complementary character of Ivl and VU-CS. See also the section on future strategy.
2. Good opportunities exist to expand interdisciplinary collaborations. The VU Network Institute is one instrument to capitalize on this. As the VU has adopted the Networked World as one of the core themes, VU-CS finds itself in an attractive and central position within the university as a whole. VU-CS is actively working on cooperation between the Network Institute and the UvA Centre for Creation, Content and Technology (CCCT), and Amsterdam Data Science.
3. Given the emergence of the Internet of things, wearables and the instrumentation of Smart Cities and the proven strengths of Amsterdam CS in these areas, additional funding opportunities are emerging that strengthen our research power. This includes direct support from industry (Ahold, KPMG, Elsevier, Amsterdam city, Huawei) and funding from international bodies (the China Scholarship Council, the Russian Science Foundation and the Singapore National Research Foundation).
4. The cross-cutting nature of the ICT Roadmap in the top sectors arena provides ample opportunity for future funding for Ivl and VU-CS.
5. Individual members of both Ivl and VU-CS play a leading role in setting the national and international research agenda of their fields. Sometimes literally (for instance, by writing the National Cyber Security Research Agenda that was adopted by the Cyber Security Council and several Ministries) but also by serving as scientific directors of national research schools, or as members of the board of the Dutch ICT Innovation Platform (IIP), or chairs of large-scale collaborative networks or of working groups at standards bodies, etc.

Threats

1. The formation of a joint UvA-VU Department of Informatics brings also threats due to differences between the UvA and VU — for instance, with respect to the financial administration and situation, the difference in organizational structure (both in research and in education) and the culture of the two universities. Also, the formation process itself requires staff time and energy and thus drains resources away from research and education.
2. Both at Ivl and VU-CS we foresee a continuing downward pressure on our direct (1GS) funding, as a result of changing financial models plus the fact that in the Netherlands science is not given a high priority in government funding.
3. There is currently a concrete risk that financial difficulties of the UvA as a whole will have an impact on Ivl, for example in case the institute would be required to pay higher overhead costs or higher prices per office space.
4. Due to the lack of a long-term career perspectives and non-competitive salaries, many of the most talented postdocs and junior assistant professor candidates tend to leave academia for industry.
5. Both for Ivl and VU-CS it holds that the current university rules require long term financial coverage when hiring, making it difficult to hire permanent staff, even if many projects are being acquired.
6. A 2013 report¹⁸ from Informatics Europe shows that Dutch salaries of postocs and tenured staff is much lower than those in neighbouring countries such as the UK or Germany. We have missed out on excellent candidates in the recent past for this very reason.

3.3.3 Reference to previous assessments

UVA Informatics Institute

Previous research assessments provided a number of useful recommendations for our Institute, particularly the emphasis on broad engagement in the forming of the tight collaboration with the VU-CS. We are working on intense integration of our Institute and the Computer Science department at the VU.

Since 2012 Ivl is applying recruitment policies at the Institute level. A tenure track system has been introduced to hire new staff, evaluated on predefined performance criteria. New staff positions are recruited at the level of the Institute rather than at the group level where the opportunity arose. We believe this to be the best human resource model for this era.

The number of professors in Ivl has increased. De Laat, Gevers and Afsarmanesh became full professors and Welling has succeeded Groen. We have hired junior female staff (Grosso and Varbanescu). At the same time, strong group separation has been replaced by a jointly defined Institute-wide research strategy consisting of thematic clusters at a level above groups. The most prominent of these being data science combining the work of five groups, and system engineering, combining the work of two. Within these themes, people thrive by ad-hoc cooperation to solve externally posed inspirations. We believe this model to be the best response to the trend to larger programs in funding, as well as task-focusing suiting the intense collaboration with the VU.

What was a problem in 2009, to broaden the participation in decision making and increase awareness of the institute's challenges and directions, is no longer there: Ivl has since long introduced an extended Management Team, which meets bi-weekly. This has notably reduced the perceived distance within the Institutes. In addition, Ivl introduced a Staff Council and PhD student Council.

Changes in funding models within the UvA have actually made the Institute stronger. NWO, STW and EU projects, as well as COMMIT, are currently financially more rewarding. The remarkable budget cuts of 2010 have threatened Ivl's operations. The Institute has been able to cope thanks to an increasing student numbers and increasing external funding, a very positive trend indeed, but we do not see the near absence of a so-called "vaste voet" as a long-term viable situation.

¹⁸ <http://www.informatics-europe.org/images/documents/informatics-education-europe-data-2008-2013.pdf>

The Institute puts an emphasis on fundamental contributions in Artificial Intelligence and Computer Science alike. Applications generally serve as an illustration to deeper computational or methodological aspects, which we seek to uncover.

VUA Computer Science

We have made progress in line with several recommendations of the previous research assessment in 2008. In an effort to identify external collaborative research opportunities we heavily invested in the collaboration with the University of Amsterdam, as regards research as well as bachelor and master programs. This joint self-assessment document is a sign of the advanced state of our collaboration.

To professionalize the organisation across the board and improve the quality of education our staff massively followed the Basic Qualification Education (BKO) programme. PhD student supervisors are encouraged to attend the course “Supervising Ph.D. students”. From 2013-14 on we offer the Computer Science Bachelor Program completely in English. To expand and keep the number of senior staff in balance, we encourage (as well as facilitate) assistant/associate professors to set up their own independent research lines, resulting in some becoming full professors (e.g. Bos and Lago). We also have an improving gender balance. In 2014, the department had around 20% female scientific staff (three female associate professors, seven female assistant professors, nine female postdocs). The percentage of female PhD students is roughly 30%. In order to improve recruitment and selection practices, we stopped working with a purely chair-centric approach. We identified two rather broad research topics to pursue, data science and socio-technical systems, and recruited through a “wide-angle lens”. A specific M.O. in this direction is appointing a department-wide advisory commission for each new tenure-track and other strategic positions. The previous average of about 10 PhD students per year increased significantly to an average of 16 (see table “Research quality: Research products for peers” in Appendix 5.3).

The one dimension where we could not improve as advised is the administrative and technical support staff. In fact, the situation has worsened, because the support staff (inclusive IT support) is shrinking due to university-wide budget cuts. In the SWOT analysis (section 8.2) this is identified as a clear danger.

The last issue to mention is the mismatch between the idea of the committee concerning the computer science field and the idea of our department. The committee mentioned that core CS is very important and that the VUA is too focused on the multidisciplinary character of computer science, while neglecting the importance of core CS. The department recognizes the importance of the core CS component, but clearly sees the need and the value of integrating part of this research in applied topics including its role in the Network Institute; we find this has also helped us improve our gender balance. At the same time the core CS sections are quite successful in publishing their research in top venues in their field.

3.3.4 Future strategy

In recent years the two Informatics departments in Amsterdam have intensified their collaboration. In the educational sphere we have established joint Master programs in Computer Science, Computational Science, Artificial Intelligence and Information Science/Studies. There are a large number of research projects in which both institutes jointly participate. We have set up the Amsterdam Data Science center¹⁹, together with CWI and the Amsterdam University of Applied Sciences. The boards of the two universities are actively supporting this collaboration; recently 3M€ funding from the Amsterdam Academic Alliance was allocated to a Data Science program in which the two Computer Science institutes have the lead. The collaboration profits from

¹⁹ <http://amsterdamdatascience.nl/>

the fact that staff appointments at both institutes have for years been mainly in complementary field of expertise.

These developments have led to concrete process to form a joint UvA-VU Department of Informatics²⁰, with support from the respective faculty and university boards. The new department will be housed at the South Campus (the current VU campus) in the New University building (see appendix 7). This building is now under construction and will be available early 2018²¹.

The mission of the UvA-VU Department of Informatics is to be a premier league research center with a high world-wide visibility. The benchmark comparison with Edinburgh and the independent external benchmark by Elsevier indicates that this is a realistic target. The objectives of the joint department build on the strengths of the constituting groups:

- *Research quality*. Indicators: high-impact publications, prizes, awards, individual national and international grants, keynote presentations.
- *Grant acquisition*. Indicators: high level of external research grants; reputation as reliable and productive project partner
- *Economic valorization*. Indicators: spin-off companies, player in the Amsterdam economic region, strategic partnerships with key companies
- *Societal valorization*. Indicators: software downloads, contributions to open standards, strategic partnerships with key non-profit organizations
- *Educational quality*. Indicators: national and international training center for computer science professionals, PhD program collaborations with international parties.
- *Diversity*. Indicators: cultural and gender diversity of staff (at all levels) and of students (bachelor, master, PhD).

The mission of the UvA-VU Department of Informatics is to be a premier league research center with a high world-wide visibility.

Our strategy for realizing these objectives with the new joint department is based on the following cornerstones:

- The department will have a flat structure, consisting of a limited number of research clusters of 30-40 researchers each²². Tentatively, we have identified six clusters: computer systems, socio-technical systems, automated learning systems, foundations of informatics, intelligent systems, and computational science. Clusters will have a physical presence in the office space.
- The department will have light-weight mechanisms for creating virtual organization overlays, in which people of different clusters work together, typically also with external parties. Such virtual organizations will get modest seed funds as incentives for new activities and collaborations. The Network Institute and the Amsterdam Data Science Centre are already examples of such virtual organizations.
- The senior staff of the two departments has identified three primary research foci, which we view as key for our external profile:
 1. **Data & Decisions**. This focus builds on the combined excellence of the researchers in data science, computational science, machine learning and intelligent systems.

²⁰ See for example http://wiki.cs.vu.nl/department/PvE_18_March_2015

²¹ <https://www.youtube.com/watch?v=WUyTsqxCuww>

²² 40 is a well-known upper limit for social interaction within a group

2. **Performance & Security.** This focus builds on our excellence in parallel and distributed networked systems as well as security.
3. **Socio-Technical Systems.** This focus builds on our excellence in Web intelligence, socially-aware computing, and business informatics.

These foci identify target areas for grant acquisition, external visibility and valorization. The foci are deliberately not linked to clusters, since research on these foci will typically require contributions from multiple disciplines within and outside the department.

- The department will have facilities for start-ups such as training programs for PhD students, support for business plans and possibilities for office space.
- The department will have career development support in place for each phase of the academic career, from Master student to full professor. This support is institutional, so goes well beyond the standard support by direct supervisors. Help with acquiring personal research grants is an integral component of this.

The fulfillment of the mission also requires a professional administrative and financial infrastructure. This part has been identified as a potential weakness in the SWOT analysis. We are actively working on this in the current department-formation phase (for details see the Program of Requirements ²³).

²³ http://wiki.cs.vu.nl/department/images/7/72/PvE_IS_versie_1.2.def.pdf (in Dutch)

6 Joint Appendix: New Building

At this moment the construction for the New University building on the VU campus is well underway, with an intended completion date in early 2018. It will be a multi-purpose, very modern and ecologically friendly building, but foremost it will be the new location for the entire Computer Science departments of both the VU and UvA and the Network Institute including the Tech Labs of both universities.

The lower floors of the building are dedicated to commercial and educational functions and are going to be built around a huge atrium with glass ceilings creating a very light and open feeling. This lower part of the building will be topped by a flora and fauna roof.



The ground floor of the building will serve as a campus community center offering several commercial functions such as bars, restaurants and shops. This floor will also give access to two large lecture rooms that will turn into cinemas during the evenings and weekends.

On the first floor the University Library will create a large learning center focusing on new technology for accessing information and areas for study, work and relaxation. It is on this floor that we encounter the first sign of the Computer Science departments. Right on one of the corners facing the Boelelaan the Iconic Lab will be built. The Iconic Lab, or Intertain Lab version 2.0, is one of the Tech Labs and will be both a research and educational lab for researchers, teachers and students as well as a show case for state-of-the-art technology. It will be a place to conduct research, but also to invite guests, to give presentations and to hold social gatherings.

The other floors in the lower part of the building will be solely for education. These floors will offer several smaller lecture and workgroup rooms, as well as areas for studying.

The upper floors of the NU.VU building will house the Computer Science departments and Tech Labs of the Network Institute.



At the moment the Tech Labs are spread out over the VU campus and the UvA Science Park. In the NU.VU building the Tech Labs will be situated between the education layer and the office layer. This means the labs will be easy to reach from both areas and will also function as a meeting place for staff members, students and visitors. By gathering the Tech Labs together inside one building and one floor (except the Iconic Lab on the first floor), the Tech Labs will profit from a much greater flexibility, more efficient use of space and equipment, full-time support just a door away and easier access for everyone.

The Tech Labs will feature several spaces, each flexible and multi-functional. Some Tech Labs will be more specific in function such as the RoboLab, but can still be used for other purposes.

Adjacent to the Tech Labs will be the SNE (System and Network Engineering) lab. This unique educational lab features a large lecture room with dual monitor setup tables for students plus direct access to a special server room where students will be able to work on computer hardware directly.

On the roof, right on top of the Computer Science offices a large and state-of-the-art server room for the Computer Science departments will be built. This server room will be separate from the general purpose IT server rooms of the university and will be able to cope with future increased demand for server space from the combined Computer Science departments.

Several other ideas are currently under investigation to use this ultra-modern building itself as a research and educational tool. As the entire inside of the building will be constructed in a 3x3 meter grid structure with a large under-the-floor space where electricity and data cables will run, there are many options of converting this Green Building into a Smart Green Building using many different types of sensors that can gather data for research. Indoor GPS-like systems could track movement of participating individuals. Temperature, sound level and other sensors could give even more data about how the building is used.

Using large touch-enabled screens displaying realistic avatars that can guide visitors throughout the building, and could add a futuristic touch whilst at the same time function as a testbed for humanoid interactive systems.

A collaboration with the University's Library new Learning Center (LLC) on the first floor has already been set up to extend the capabilities of both the Tech Labs and the LLC. This means more advanced, state of the art systems for accessing and using information provided by the Library and higher visibility of the Tech Labs and Computer Science departments.