Panel report

Evaluation unit: Department of Information Technology

Panel number: 8

1. Introductory remarks

Within this report, we describe the evaluation by Panel 8 of the Department of Information Technology. Prior to the Department interviews the panel met to consider and synthesize the questions independently raised by the different panel members and to ensure that key areas of assessment are covered in a uniform manner.

The Department structured its interview sessions with the panel in a similar order to the sections within the Self-Evaluation report. The introduction by the Head of Department detailed the overall status and position of the Department within the University and the internal structure of the Department (as shown in figure 1). The Department currently has an annual turnover in 2016 of 263 MSEK (30% teaching; 70% research) with approximately 290 staff of which 125 are academic staff & 110 are PhD students. The Department teaches approximately 1000 full time equivalent students.

![Figure 1- The internal structure of the Department of Information Technology](image)

The Department is subdivided into divisions, which encapsulate similar activities within a single management and teaching unit. There are five Divisions, which between them host seven research programs:

- Division of Computing Science
- Division of Computer Systems
- Division of Scientific Computing
- Division of Systems and Control
- Division of Visual Information and Interaction

Research Programs:

- Computing Science
- Computer Systems
- Computer Architecture & Communication Systems
- Numerical Analysis
- Applied Scientific Computing
- Automatic Control
- Computerised Image Analysis & Human-Computer Interaction
programs. Alongside these divisions are three research centres and the hosting of three components of national activities. The Department has also been developing cross divisional research activities through a new activity, arenas, which are vehicles to develop a particular collaborative activity to the point where it may compete for external funding. An existing activity on Computing Education Research, UpCERG, is a similar activity that has already achieved a considerable scale and which is outside the regular research program structure, since its members belong to different research programs.

The management of the Department has been devolved in a number of areas, both in terms of day to day departmental operations and longer term co-ordination and planning as shown in figure 2.

![Departmental management structure](image)

_**Figure 2 - Departmental management structure**_

The rest of the formal sessions were led by the departmental Head of Research, with additional attendees depending on their relevance to that evaluation area, with each of these described in the table below. Throughout the two days we did not meet any official administrative staff.

<table>
<thead>
<tr>
<th>Evaluation Area</th>
<th>Participants and role</th>
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<tbody>
<tr>
<td><strong>Introduction, Initiatives and strategy</strong></td>
<td>Head of Department: <strong>Michael Thuné</strong>, Head of Research: <strong>Gunilla Kreiss</strong></td>
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<td></td>
<td>Research area representatives; Optimization: <strong>Di Yuan</strong></td>
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<td></td>
<td>BioMed IT: <strong>Robin Strand</strong></td>
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<td></td>
<td>Machine Learning: <strong>Thomas Schön</strong></td>
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<td>Social Robotics: <strong>Ginevra Castellano</strong></td>
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<td>Computational Systems Biology: <strong>Andreas Hellander</strong></td>
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<td>Energy efficiency in communication and networks: <strong>Christian Rohner</strong></td>
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<td>Formal analysis of software: <strong>Philipp Rümmer</strong></td>
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<tr>
<td><strong>Recruitment</strong></td>
<td>Head of Department: <strong>Michael Thuné</strong>, Head of Research: <strong>Gunilla Kreiss</strong></td>
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<td></td>
<td>Experience of the recruitment process: <strong>Thomas Schön, Lars-Henrik Eriksson, Stefan Pålsson, Joachim Parrow, Sverker Holmgren</strong></td>
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<td><strong>Research Leadership</strong></td>
<td>Head of Research: <strong>Gunilla Kreiss</strong></td>
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<td></td>
<td>Program professors: <strong>Sverker Holmgren, Bengt Jonsson, Alexander Medvedev, Ingela Nyström, Joachim Parrow, Per Gunningberg</strong></td>
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<td>Director of PhD studies: <strong>Wang Yi</strong></td>
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<td></td>
<td>PhD subject responsible professor: <strong>Carolina Wahlby</strong></td>
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</tbody>
</table>
| **Academic Culture** | Head of Research: **Gunilla Kreiss**  
Program professors: Sverker Holmgren, Bengt Jonsson, Alexander Medvedev, Ingela Nyström, Joachim Parrow, Per Gunningberg  
Arena coordinator: **Robin Strand**,  
Topical seminar series: **Philipp Rümmer**  
Gender equality work: **Åsa Cajander** |
| **Funding** | Head of Department: **Michael Thuné**  
Head of Research: **Gunilla Kreiss**  
Heads of Divisions: **Lina von Sydow, Lars-Henrik Eriksson, Arnold Pears, Bengt Carlsson, Ingela Nyström**  
Program professors: Bengt Jonsson, Per Gunningberg |
| **Cross Border Collaboration and Internationalization** | Head of Research: **Gunilla Kreiss**  
Leading collaborative activity leaders; **Erik Hagersten, Bengt Carlsson, Carolina Wählby, Stefan Engblom, Maya Neytcheva**,  
eSSENSE coordinator; **Sverker Holmgren**  
non-academic coordinator; **Kjell Osborn** |
| **Career Structure & Mobility** | Head of Research: **Gunilla Kreiss**  
Heads of divisions: **Lina von Sydow, Bengt Carlsson, Ingela Nyström, Lars-Henrik Eriksson, Arnold Pears**  
Head of Education **Aletta Nylén** |
| **Research-Teaching & Feedback/Evaluation** | Head of Research: **Gunilla Kreiss**  
Ethics research/PhD course. **Iordanis Kavathatzopoulous**  
Computer Education Research/Head of Education: **Aletta Nylén**  
Topical project courses: **Matteo Magnani, Maya Neytcheva**  
Work environment survey: **Michael Thuné**  
“Individual employee dialog”: **Lina von Sydow, Arnold Pears** |
| **Infrastructure & Publication** | IT Infrastructure:  
    at the department: **Henrik Hedlund**  
    at the faculty: **Sverker Holmgren**  
Administrative systems: **Åsa Cajander**  
Uppmax: **Elisabeth Larsson** |
| **PhD Students** | **Maike Paetzel**  
**Simon Sticko**  
**Anke Stüber**  
**Anne Peters**  
**Andreas Svensson** |
| **Associate Senior Lecturers and postdocs** | **Maxime Bombrun**,  
**Mikael Laaksoharju**,  
**Doghonay Arjmand**,  
**Dave Zachariah**,  
**Mohamed Faouzi Atig**,  
**Jonathan Bull**,  
**Sophia Knight** |
Each of the specific interviews was started with introductions from those present and then a single line describing the summary of each section in the self-evaluation by the Department in each area. The panel then questioned based on input developed from the self-evaluation, base data, bibliometric data and survey results.

2. Observations and analysis

There were several overall themes that arose during our meetings with the Department of Information Technology and after we discuss them we will relate to the themes in the self-evaluation.

Issues above the Department level:

- **Structure**: We are concerned by the number of levels in the academic hierarchy. The purpose of the Section is not obvious, especially where it represents multiple separate departments. One of the effects of the hierarchy within the Department is that departmental management is weakened by having a substantial percentage of funding going directly to entities below it. We do not see the benefit of either incomes for teaching going to the Division or for research going to the Research Programs. We saw numerous examples where the Department was weaker than the Divisions.

- **Accountancy Culture**: The separation of teaching money and research money and the accounting process of allocating teaching and research activities seems detrimental for several reasons:
  1. It removes flexibility within the Department to allocate resources,
  2. It puts substantial stress on the academics about what their work will be year by year,
  3. It is a very time consuming administrative task for academics who should be providing leadership rather than doing calculations,
  4. It is instrumental to academics losing faith in the credibility of their leaders, because of the necessity of creating an official view that all academics are exactly 100% occupied.

- **Employment Support**: The combination of national law and unnecessarily complex university procedures mean that the employment process takes such a long time that Uppsala is losing talent to other institutions.

- **Interdisciplinary Research Support**: The University has only limited mechanisms to facilitate the introduction of new interdisciplinary research areas.

- **Titles for Academics**: In an international arena it is confusing to have such titles as *Associate Senior Lecturer*. When listing academic positions in English, consider using the American titles (Assistant, Associate and full Professors).

- **Open Access**: Consider establishing policies on open access, open data, open software and ensure clear, easy linkage to these outputs thereby making all research outputs more visible and thereby increasing impact.
• **Visibility of Academics:** Consider whether all staff members have a publicly accessible ORCID, Scopus, Google Scholar or similar research profile with links to these on department personnel homepages.

• **Reviews of Funded Areas:** Which program areas should be funded and at what level of funding, should be reviewed on frequent basis.

• **Quality of Data:** The data provided by the university was inconsistent with the data that the Department held. There needs to be a single source of truth.

Issues at the Department level:

• **Self-evaluation:** The Department does not have a structured method to assess the quality of its research. This will require the collection and analysis of data. The analysis should be on the granularity of the individual. In addition, the Department should make sure the overall data are collected and analysed. These self-evaluations should be used to foster a department wide culture of excellence.

• **Personal Development Review:** The Department lacks an effective process for formal staff annual review process. The Department should start by devising a list of criteria for the reviews. It should ensure that it is clear this process is for development not performance management. This should include an upwards or 360-degree review component.

• **Department leadership:** The senior academics spend significant time on operational management rather than providing academic leadership. To shift to academic leadership will require the appointment of senior professional administrators to do many of tasks that are currently undertaken by the senior academics.

• **Consider the structure:** The Department should consider a major re-organisation, removing the Division structure entirely, having both teaching and institutional research income entering directly at the department level, and having the structural unit under the departmental level being the research program. This would also allow for teaching management to be done at the departmental rather than divisional level.

Themes in the Self-Evaluation:

**Evaluation unit’s aims:** The aims are to be in the forefront in research and education within a creative environment. The emphasis is on renewal, moving forward, contributing to interdisciplinary research. The panel would like the aims to be more department specific with measurable criteria; otherwise it is impossible to judge whether the Department meets its aims.

**Strategies and vision:** The Department views strategy as choosing the next research areas to foster. Every second year the strategy day looks at research and identifies areas that straddle the divisions. The Department supports research in these new areas by providing spark funding for a year and Arenas as a collaboration mechanism. The panel was very positive about the activity of supporting new cross disciplinary areas and the process to arrive at them. The panel suggests the Department consider undertaking strategy research days on a yearly basis. The concerns of the panel include that strategy and vision is focussed only on expansion. For instance, it does not include which areas to
close down or deciding what is good and what should be improved. The Department should also consider creating a mechanism to continue cross division activities that are past the startup phase, such as UpCERG.

**Recruitment strategies:** The Department’s policy is to primarily hire at entry level tenure track, which works well. A search group identifies needs (teaching and research) and resources. Most people offered positions arrive which the panel consider may be evidence that the Department is not aiming high enough. There is a supportive program that ensures new hires virtually all get through the hurdle of Senior Lectureship. This includes courses, a lighter teaching load, mentoring, and some research funding. The difficulties in attracting women to Computing academic positions is well known and the Department showed that its new gender actions policies are having positive results. There are several procedures that the Department could implement that might raise its profile internationally, leading to improving the quality of applicants. These include improving the website to make the hierarchy of academics accessible in fewer clicks, having some of the positions advertised on the American job cycle, and advertising on the Computing Research Association website.

**Research leadership:** Research leadership is done by Professors running Research Programs within the Divisions. Both the Department and the Divisions have a subdivision of the management into Head, Research, and Teaching (sometimes an individual holds two roles). The Head roles spend significant time on operational management rather than providing academic leadership. From the panel’s viewpoint we believe that Heads should be academic leaders. To shift to academic leadership will require the appointment of senior professional administrators to do many of tasks that are currently undertaken by the Heads. Given the fluid nature of Computing research topics it is not clear that a strong (that is they hold the great majority of the Department’s budget) divisional structure is best suited to running the research. The Department should consider implementing a flatter structure.

**Academic culture:** There is a strong culture of academic freedom, management consensus, and general contentment. However, there is no culture of self-evaluation. The Department does not collect data, nor does it have a policy of what data should be collected or how it should be judged. The panel was surprised at this lack of interest in either qualitative or quantitative analysis as it goes against all the pressures of international higher education. The panel was told that the Swedish government has a concern to show that university research has value. The Department needs to be proactive, to have a chance of choosing the metrics. This is a factor that is also applicable at several levels above the department within the university hierarchy.

There are established informal methods of celebrating success and achievement such as gatherings including cake when, for example, there have been 10 papers published within a division. There did not appear to be anything similar occurring regularly at a departmental level. The panel consider that having some form of regular gathering where responsible authors or investigators describe their new grant success or publication. This would encourage an atmosphere of celebrating success across the whole department.

There is no culture of sabbaticals, but there is space for academic visitors. There is an agreement that travel and visiting is good and that people should really do more than they do. The PhD students told the panel of administrative bottlenecks in doing internships which the academics were unaware of.
Current academic workload planning seems to be time consuming and counterproductive. The panel recommends finding a less ‘bookkeeping’ approach to work allocation.

**Infrastructure:** The department is forced (or chooses in some cases) to expose administrative computer systems to academics. These can be difficult for them to use as they do not have exposure on a regular enough basis to become familiar users. This would be less of not a problem if the department invested in a more professional administrative support. This would lead to academics having a smaller interface to centralised computer systems. There are specific concerns about the expenses system and its effectiveness. There is a concern that computer support for research may be centralised and will also be not fit for purpose.

**Research funding:** Funding for research is divided approximately equally between the block grant and external funding. The process for agreeing the distribution of the block grant is managed by the divisions and hence current program responsible professors have considerable influence on the distribution of the grant. There was talk of PhD students being always funded on soft money and the panel could not tell whether this was just a bookkeeping exercise or whether tenured academics without external funding would find it impossible to engage PhD students. The funding levels for the different Research Programs was quite unbalanced, but we did not understand what the repercussions of the disparity could be.

**Cross border collaboration:** There are very good mechanisms and examples of collaboration with other academics within the department, but it is harder to create these collaboration within the university itself. The university has only limited collaborative structures and could do with more. The Centre for Interdisciplinary Mathematics provides money for PhD students, co-funded by departments and there could be more such centres. The university could also encourage the collaboration by influencing the funding bodies to support interdisciplinary collaboration.

**Outreach:** Faculty provides a yearly outreach event SciFest. The Department would benefit with improving the visibility of successes and other news, including on their website as well as making sure local news becomes University news through engagement with the central media and communications section. An example of best practice is the annual report published by the Visual Interaction and Information Division which could be well replicated at the department level.

**Publication:** There is a belief amongst the academics that they all know what the top venues are for their research and that they aim for these. However, on examination in detail the publications of several academics, it is not obvious that they are all correct. The Department should, for each research area, determine the best venues and place (via a review system) greater emphasis on publishing in such venues. In our international environment, it is important that publications be easily accessible. The Department should establish policies on open access, open data, open software and ensure clear, easy linkage to these outputs thereby making all research outputs more visible thereby increasing impact.

**Career structure and mobility:** All new academic hires at Associate Senior Lecturer know that they have four years to meet the criteria for a permanent post, and there is support for both teaching and research. Divisions have grant writing workshops, which are well received, to pass on the information from the successful as to what to do. The department should ensure that all submitted grant applications are collected to ensure best practice is captured. There are good courses run by the
university. It depends on the division whether there are any interviews with academics about career development. Juniors like the environment and feel supported. The recently introduced career development programme is considered good. There should be a university wide support system for post docs including for those not considering a long term academic career.

Feedback and evaluation: Although there are several informal opportunities for feedback this is no means pervasive and there are many members of staff who have no one who gives guidance. The department lacks a uniform process for formal annual personal development review of all staff performance. The department should start by devising a list of criteria for the reviews. We encourage the implementation of this activity in the strongest of terms.

Research-teaching linkages: There are many examples of research influencing teaching. These include ethics, the topical project courses, individual projects that are research focussed, and content in advanced courses.

Collaboration and Internationalisation: There is a problem for people coming from outside of the EU dealing with official bureaucracy, though it is not immediately clear if the university can specifically ameliorate this issue. Migration paperwork takes about six months and the university should work with government to decrease the time, as it may lead to losing talent. Also at the end of PhD studies the overseas student goes into limbo (no travel, no healthcare). The panel hopes the University will take on a duty of care. It is also difficult for overseas PhD students to either travel to conferences or go on academic visits due to visa restrictions. The University should consider providing specific support for this kind of travel. The Department lacks an easily locatable web presence for attracting industrial research opportunities. The panels suggestion is that a gateway is available on the departments website that explicitly offers industrial research opportunities together with a follow through mechanism. It should be front and centre within the department website.

3. Summary

3.1 Strengths

- consensus decision-making
- academic freedom
- comfortable environment
- arenas and cross-division research
- attraction of good post-doctoral staff thanks to the good research reputation (of the best researchers)
- approach to gender equality: especially with respect to recruitment, but not exclusively
- training: for juniors, grant training (workshop for grant writing: "grant club"), new structured career development training
- startup research money: lower teaching given to junior new staff

3.2 Weaknesses

- above the Department level:
  - The university has a complicated structure with many layers: disciplinary domain, faculty, section, department, division, research program,
  - The enforced clear separation between funds for teaching and research reduces academic freedom with little benefit,
- A lack of structure to promote inter-disciplinary research,
- The mandated internal recruitment process takes too long and makes the process hard,
- There is no consistent translation for every position name (e.g. biträdande universitetslektor) in English and important documents are not translated which could hinder integration of international arrivals,
- The process to get the residence permit for non-EU people is very long; could it be delegated to the university? Sweden is losing talent because of this,
- There are inconsistencies between university and departmentally held base information.

**at the department level:**
- A separate budget that goes directly to divisions reduces the strategic possibilities of the department, weakens the department relative to the divisions,
- There should be a clearly understood aim across all of the department that striving for excellence with all activities is the clear priority.
- There is a lack of written and agreed departmental strategy document which should contain the aim, vision, methods for assessment of quality,
- Senior academic staff are spending too much time on administrative tasks
- There is little incentive to have PhD students get a broader exposure to outside culture (companies, other universities, abroad),
- The Department must make it easy for the PhD students to obtain this broader exposure, letting them know it is easy / put some pressure so that they benefit of it, currently there are needless hurdles,
- There is a non-uniformity of supervision: post-docs on block grant funding lack formally appointed mentors,
- There is no uniform availability of data: regarding staff (numbers and distribution among categories) and of grants (number and sources of external grants),
- The departments Webpage needs to be kept updated and should provide with very few clicks from the homepage lists of permanent academic staff (by type).

### 3.3 Recommendations

- **above the department level;**
  - review the organisational structure,
  - remove the clear separation between funds for teaching and research as it reduces academic freedom with little benefit,
  - work towards predictable research and teaching time for academic staff,
  - create opportunity that facilitates inter-disciplinary research in a sustainable way inside a faculty, and across faculties, examples are eSSENCE, CIM and UPCERG,
  - internal recruitment process takes too long and makes the process hard: find possibilities to speed up the process, Sweden is losing talent because immigration process takes so long,
  - Choose and implement a means by which all research outputs are easily accessible outside the specific academic community, e.g. ORCID, Google Scholar etc.

- **at the department level;**
  - develop a vision and define tools to assess quality, including collecting data,
○ review the distribution of finances (divisions/research programs are too strong relative to the department),
○ celebrate successes on a regular basis, e.g. a monthly meeting, with presentations of new large grants, or very good papers by their PI/1st author etc. to encourage the culture of excellence,
○ Decrease the amount of time academic staff spend on administrative tasks,
○ get an operational manager so that academic staff can provide academic leadership instead,
○ provide incentive to have PhD get a broader exposure to outside culture (companies, other universities, abroad),
○ simplify the process for the PhD students and let them know it is easy and put some pressure so that they benefit of it,
○ managers should be expected to carry out formal yearly (or periodic with reasonable period) personal development review with all staff.

4. Reflections on the similarities and differences between evaluation units within the panel – what to learn from each other?

Similarities

• The academic culture in both departments includes consensus-based decision-making, academic freedom, certainty to get tenure (comfortable place to work, less stress for junior people) and some celebration of successes (via cakes and coffee).
• Both departments are successful in attracting good people (PhD or post-doc) by the reputation of their respective department’s outstanding researchers.
• The complicated structure of the university (disciplinary domains, faculties, sections, departments, division, research programs) causes unnecessary difficulties within the departments.
• The lengthy recruitment process, prolonged by University procedures, creates disadvantages without benefits to both departments.
• The labelling of income to the departments as teaching or research, with the requirement that this split is faithfully honoured leads to difficulties for both departments.
• Both departments would benefit from diversifying their source of research income. In particular, the reliance on a few sources (VR and Wallenberg) is not optimal for ensuring steady funding. Although both departments have external funding coming from companies, this is an area that could be expanded. The panel does not think that either department puts sufficient effort into staff applying for ERC grants.
• Neither department has a properly structured policy for extended international visits by their PhD students.
• Both departments have a high proportion of international staff.
• Both departments provide good opportunities for training early career researchers such as running grant writing workshops.
• There are systematic annual reviews for PhD students in both departments.
• Regarding the new Ångstrom building, both departments view it as a financial threat.
Differences

• There are substantial differences in the way the Heads of Department carry out their duties.
• In the Department of Mathematics, the faculty provided funding is controlled by the department (and thus the department is strong) whereas in the Department of Information Technology funding arrives at the research programs (research funding). Providing the funding below the department level weakens the importance of the department.
• In the Department of Information Technology, senior academic staff have significant administrative roles whereas in the Department of Mathematics these tasks are undertaken by professional administrators.
• The Department of Information Technology has a mechanism for encouraging cross-disciplinary research. The existence of this mechanism (arenas) has helped cross-disciplinary topics to emerge.
• Regarding gender issues, the Department of Information Technology implements a well-defined policy whereas in the Department of Mathematics reliance is put on personal contacts only (and is thus less sustainable).
• The Department of Mathematics runs systematic annual development reviews for staff at all levels.