Global impact in interaction

Implementation plan for the Department of Computer Science for year 2017

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1 STRATEGIC FRAMEWORK

1.1 CHANGING CONDITIONS FOR OPERATIONS

Significant changes have occurred in the department's operational conditions, the most significant being the cutbacks to university funding and the UH reform programme that followed, as well as the tightening national and international competition for funding and professionals. The department has developed its operations in line with known and foreseeable changes in conditions.

The department considers the following to be its strengths:
- a high standard of research (participation in three centres of excellence, repeated success in the scientific reviews of the university)
- international research and students
- research cooperation with the corporate world and Aalto University
- innovative teaching and active development of teaching methods (e.g. national centre of excellence in teaching two periods in a row, 2007-2009 and 2010-2012 (the system was discontinued in 2012) and a successful auditioning in 2015)
- the number of BSc degrees (rising, 80 in 2015). The number of MSc degrees is also on the rise (66 in 2015)
- employment rate of students
- the sense of community and good work atmosphere at the department, representing the best at the university.

To name a few weaknesses, there is the modest number of Master's and Doctoral degrees compared to admissions, the long times to complete degrees (working while studying), students who have completed at least 55 credits in an academic year, the disproportionate division of teaching duties and research activities, the stunted growth of research funding, the aging of teachers (though, on the other hand, the professorate has been strongly renewed lately, and is continuing to renew), and the department's poor visibilty in the schools. Programming will become part of the school curriculum in autumn 2016, which may improve the visibility of computer science. The university has adopted a new service organisation during spring 2016, which has moved the administrative duties from the department to service teams.

The most obvious of external threats to the department are the financial slump and the difficulties in the ICT sector in past years, though they have not yet affected the popularity of the discipline or employment opportunities. The financial situation and prospects for growth may, however, decrease the significance of the discipline for students. The funding framework for the department has shrunk in 2016, and external funding may be cut back in the coming years.

The new data science focus at the department has gained a great deal of interest, both among students and industries. Data science is a multi-disciplinary science focusing on the management of large data collections and especially analysis of them. Data science is mainly built on computer science methods. Data science centres on digital and multi-disciplinary work, social impact, and corporate collaboration, which are the corner stones of the university's new strategy and future success. The Department of Computer Science has systematically developed its teaching and research in data science since the 1990s, and the department coordinates the new multi-disciplinary Master's programme in the field.

Among the opportunities, the close collaboration with Aalto University must be mentioned, as does the cooperation with the industry, active fund-raising, active international recruitment, the versatile utilisation of different funding sources, the rising number of principal investigators (especially professors),

and the department's raised profile in the school system due to the new, online teaching, and thereby gaining better and more committed students.

The department's strategic map and plan of action are based on the above-given analysis of the state of the department.

1.2 MISSION

MISSION

The department's mission is:

The department is an internationally significant unit in its field. It carries out top research in its focus areas, and gives Master- and Doctor-level instruction based on that research, both nationally and internationally. Focus areas are machine learning and algorithms, networks and distributed systems, software systems, and bioinformatics. The department carries out research and gives advanced teaching also in areas outside the focus areas, which are significant socially or financially. The degrees that the department confers hold a high standard and are socially relevant, and graduates find employment in demanding jobs.

It is the department's goal to be the leading department of computer science in the Nordic countries.

1.3 STRATEGIC GOALS AND TARGETS FOR IMPROVEMENT

1.4 Profiles and focus points

The two main points of focus at the department are computer science and the newly established data science based in computer science. For these two focus points, the department has profiled itself within four different areas supporting them:

1. machine learning and algorithms
2. networks and services
3. software systems
4. bioinformatics

Starting in autumn 2017, teaching will be organised through the Big Wheel education programmes. The department is in charge of the Bachelor and Master's programmes in computer science and the Master's programme in data science. Furthermore, the department participates in the Bacheloräs programme in mathematics (the computer science theory sub-programme), the Master's programme in theoretical and computational methods, and in the Master's programme in life science informatics.

In 2017, the following specialities will be emphasised within research:
- data science, 'big data' and computational creativity
- data security
- life science informatics

Several centre-of-excellence applications have been submitted from the department in relation to these specialities, two of which are being coordinated at the department (regarding data science and security).

The department has participated in a bid to strengthen the profile of the University of Helsinki in the Finnish Academy's profiling applications. The department has gained funds in the first profiling application for two assistant professorships in life science, which will be filled during 2016. The department participated in another project to promote digital humanities (HELDIG, Helsinki Centre for Digital Humanities). The department will submit a third profiling application emphasising data science.

The research is centred on the focus points and large enough research units and groups. Several research units work at the department and it participates in several separate institutes.

The role of Helsinki Institute for Information Technology (HIIT) as a shared research environment for the department and Aalto University is significant. HIIT coordinates the activities of 'Helsinki ICT' within the two universities. The department is also a partner in Helsinki Institute of Life Science (HiLIFE) and the related Master's programme, Life Science Informatics.

In the field of security, the Intel Collaborative Research Institute on Secure Computing operates at the department, and in spring 2016, the Helsinki-Aalto Center for Information Security (HAIC) was established to support international student recruitment. In spring 2016, the Nokia Center for Advanced Research (NCAR) was established. The Software Factory, Interaction Lab, and NodesLab are also based in the department.

The degrees and teaching offered by the department keep a high standard and are socially relevant. The Bachelor's degree forms a basis for the Master's education, while giving sufficient skills to work in the field for those who do not want to continue with the Master's programme. The Master's and Doctoral education is based on the research carried out at the department and its focus areas. Profiling the teaching in accordance with the strengths in research at the department makes it attractive internationally. The research at the department combines theory and interaction with companies and the application fields. Graduates from the department find employment in challenging jobs.

The department functions and IT team support teaching and research. The department's IT unit will transfer some basic services to the IT Centre, and in spring 2016, the new Kumpula Science IT Support unit was established to support research.

The work atmosphere at the department is among the best at the university. The work is being improved in a communal way and wellbeing is a priority.

1.5 Quality management

The quality system supports the attainment of the goals set for research, instruction, and societal impact, as well as other functions, defined in the target programme. How these goals are realised is followed up with the help of reporting and departmental feedback. The quality management processes and responsibilities are documented in the quality manuals. In the quality manual of the department, quality management is described in the chapter Quality assurance system. The head of the department is responsible for the quality of work and results at the department. The director of HIIT is responsible for the quality of work and results at HIIT. The quality liaison at the department coordinates the quality management of the unit.

Each employee and student at the department is responsible for the quality and development of their own work effort and results as a teacher, as a researcher, as a student, and as part of the administration and support teams.

The quality assurance system at the University of Helsinki passed an international audit in 2014. One of the assessment and visiting points was the basic teaching at the department, which gained the highest possible grade, 'advanced,' in the audit.

In 2017, quality management will be carried out in cooperation with the university service organisation.

1.6 Risk assessment and management

Transferring to the new operational structure in 2018

Planning for a new operational structure has started at the University of Helsinki. The new operational structure is going to be based on departmentless faculties. In the departmentless model, the department's teaching would be channelled through the education programmes. For research, we need a new structure, which will be planned starting autumn 2016. The risks with the change include: a lessening of the communal feeling within the discipline, decreased internal impact, and a weakening of the connection between teaching and research.

Transferral to the new service organisation and sufficiency of administrative resources

The University of Helsinki adopted a new service organisation during spring 2016. The reform transferred the department's administration to units based on functions. Most administrative duties have been transferred from the department to the service organisation during the spring, but some duties still need to be cleared, as do the resources for some of the transferred duties. More resources will be needed for the administration and updating of the department's website, for example, and for communications and various coordination duties.

The financial crisis (Finnish situation, Euro-crisis, Brexit)

The difficult national and international financial situation affects both the budget framework of the department and the development of external funding. The framework for the department was cut back by 11% in 2016. There have been cut-backs in Tekes and Finnish Academy funding and the SHOK instrument is being discontinued. The department has coordinated two SHOK programmes, and their coming to an end has a considerable impact on external research funding.

The department should utilise research funding opportunities as widely as possible. The turbulence in society continues and there may be more consequences on the department in future.

The social significance of computer science

The interest of students and society at large towards computing seems to have increased in past years with the event of e.g. artificial intelligence, the Internet of Things, and mobile communications. The insight that computer science solutions will change society from the core in the coming years has gained force. As the applications of the discipline spread, the risk is that the applications gain more attention than the core contents.

The number of applications for the basic degree programme has risen, and computer science is the most popular subject in the faculty, based on the statistics. Employment in the field is good.

Students entering the job market at an early stage

Traditionally, this risk has widely come true in computer science: a large part of our undergraduates enter working life in their second year, at the latest, which means their studies are prolonged or interrupted completely, and their intensity weakens. Encouraging students to commit to their studies from the beginning is important, and the department has developed and is developing ways of improving their commitment. The legislation to limit times of study may improve the situation in future.

Tuition fees for new students from outside the EU/ETA area

The University of Helsinki will start collecting tuition fees from new students coming from outside the EU/ETA countries on 1 August 2017. This will reduce the attractiveness of the Master's programmes outside the EU/ETA countries. The risk is that the number of applications from these countries will plummet. The university will implement a grant programme to support students attending degree programmes subject to fees. The department will make use of this mechanism and develop parallel support mechanisms in cooperation with industry. The Helsinki-Aalto Center for Information Security (HAIC) established in spring 2016 has as its goal to support the recruitment of international students in the field of information security.

1.7 National special duties, international and academic responsibilities, network coordination

Helsinki Institute for Information Technology HIIT: a research institution shared by UH and Aalto University with its UH operations located at the department. Professor Petri Myllymäki from the department has been elected director of HIIT for the period 1 August 2015-31 July 2020.

Helsinki Institute of Life Science (HiLIFE): The department participates in the work of HiLife and its Life Science Informatics Master's programme.

Helsinki-Aalto Center for Information Security (HAIC): HAIC, jointly established by UH and Aalto in spring 2016, is developing support for international recruitment.

Intel Collaborative Research Institute on Secure Computing (ICRI-SC): The department participates in the international research institute of Intel, with a focus on information security. ICRI-SC is coordinated by TU Darmstadt.

Nokia Center for Advanced Research (NCAR): A new research centre coordinated by the department was started in the spring together with Nokia and Aalto. NCAR studies networks and data science.

Helsinki Doctoral Education Network in Information and Communications Technology (HICT). The department coordinates the Helsinki region doctoral education network, HICT.

Linkki: Linkki is a resource centre operating at the Department of Computer Science at the University of Helsinki. It organises activities for school pupils, where young people interested in computer science can meet each other and learn about subjects that interest them. Linkki is also a meeting place for teachers needing complementary education. Linkki is part of the national LUMA resource centre.

2 ACTIONS 2017

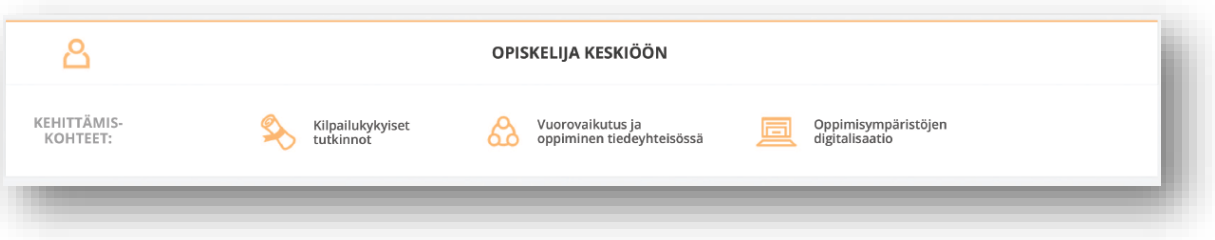
The primary actions to be taken in 2017 are:

1. Strengthening the research and teaching of data science; integrating the professors recruited in 2016 into the department and opening any necessary new professoships. Starting the planned Data Science Center. Research profile in data science to support the Helsinki University life sciences (HiLIFE) and Digital Humanities (HELDIG).
2. Transferring to the new BSc and MSc programmes in accordance with the Big Wheel programme, and consolidating the work.
3. Planning the organisation of research related to the restructuring at the University of Helsinki: planning how to operate in the departmentless faculty.
4. Participation on the Finnish Academy's centre-of-excellence application with the goal to have at least one CoE starting in 2018 coordinated at the department.

2.1 A creative environment for international learning and top research

Development target	Measure	Description	Responsibility and timetable
	2. Staff recruitment predicting future needs	The international visibility of staff recruitment will be improved and tenure track utilisation extended. The department has three assistant professors and two vacant asst. professorships to fill. The department will open new asst. professorships during autumn 2016 and year 2017 in accordance with the HR plan. When opportunity arises, top researchers from outside the focus areas of research will be employed. Proactive monitoring of changes in the research field and updating of research programmes.	
	3. Student recruitment predicitng future needs	The Linkki centre of the department is actively working to make computer science known among young people. At the spearhead of Linkki is the MOOC for upper-secondary pupils, coaching for competitive programming, programming clubs and camps, and school visits. Evaluate how admissions procedures (especialy MOOC) affect student progress in the long run, based on work done during previous planning period. Further development of Oodi and more extended use. The recruitment of international students will be developed to ensure that admitted students have a high enough basic education level. Through HIIT, the department will coordinate the wide HICT doctoral education network, which acts as a tool for recruitment.	

High-end basic research and its impact	5. Support for researchers carrying out high-end research	Proactively identifying promising new research themes and researchers and allocating research funds to them out of department funds. Applying to the Finnish Academy centre-of-excellence programme, with the goal to have a department-coordinated unit. Participation in several CoE units outside the department. The department is part of three national CoE research units: the CoE of inversion problems, the CoE of cancer genetics, and the CoE of computational inference. Active participation in HIIT programmes. Multidisciplinary research collaboration between UH and Aalto University. The strong tradition of multidisciplinary collaboration at the department continues. ICT support for research at the department: consolidating the work of the Kumpula Science IT Support team. Improving the research infrastructure: utilising the CSC resources and FGCI cluster. Improving the department's own infrastructures. The department has received faculty support in 2015 (NodesLab) and 2016 (Software Factory).	
	8. Strong increase in corporate collaboration	The department will improve corporate collaboration via lablets and R&D units. During the past period, the department has established two lablets that have gained significant visibility.	



2.2 Focus on the students

Development target	Measure	Description	Responsibility and timetable
Competitive degrees	16. Organising the university's degree programmes in accordance with the Bologna model, three levels of degrees	The department's degree structure follows the Bologna model. The new Big Wheel education programmes will be implemented in autumn 2017. The expedience of teaching arrangements, i.e. learning support, is constantly improved, but the expedience of teaching itself is also monitored. With the help of data gained through Oodi, the bottlenecks of the course programmes will be clarified, as well as how teachers have succeeded in different courses.	

	18. Starting the Honours Programme	The department will start a pilot Honours Programme in autumn 2017.	
	19. The job market actively participating in degree programmes	The department informs the industry about its education and asks for feedback on relevance. The department is investigating the possibility of offering specialised education in cooperation with the industry. Starting up pilot projects. In doctoral education, the department is part of the EIT ICT La job-market-orientated doctoral programme via Aalto University. HAIC, jointly established by UH and Aalto in spring 2016, is developing support for international recruitment. The department is developing a lablet/R&D unit model for collaboration between university and industry. Through this method, students can acquaint themselves with the practices and challenges of the industries during their degree programme.	
	22. Students are steered towards research-based work methods	Increased presentation of research methods and processing of research problems at an earlier stage of the degree programmes. Research methods are emphasised at the beginning of Master's programmes. Research work is presented to students at an early stage, while offering the opportunity to create contacts to the research groups. Develop a smoothly working summer-trainee procedure. Develop smoothly working apprentice instruction. The department has developed the teaching arrangements for first-year students so that it is more involving and activating for the students. More is invested in this area continuously (workshop instruction along with apprenticeship systems, MOOC and the TestMyCode server). The effects are being followed up regularly.	

2.3 Resources that enable renewal

Development target	Measure	Description	Responsibility and timetable
An open and experimenting	28. A world-class digital work environment.	The department encourages advances in implementing and utilising digital teaching and research environments.	

mode of operations			
Development of staff skills	33. Developing digital skills	The department develops digital learning environments, such as MOOC, and applies them in practice. The dartment develops and applies digital tools for analysis of learning.	
Versatile and agile funding	37. New practices and sources of external funding	The department will improve corporate collaboration via fixed-term lablets/R&D units supported by the industry. The department will focus on finding backers. The department will extend the funding basis for research and participate in research programmes such as the Finnish Academy's, Tekes', Dimecc's, EIT's, and Horizon 2020. The department encourages the preparation of ERC applications.	

3 RESOURCES

3.1 HR plan

Baselines for the HR plan

The background for the HR plan includes the department's strategic choices, the HR policy of the University of Helsinki, the department's own HR policy, and the financial parameters of the department. The HR policy details what kind of staff structure will promote the goals of the department.

The structural basis for the department HR plan is built on the specialisation areas and education programmes of teaching and research at the department. The planning and its financial conditions are examined annually during the planning period, as well as during the restructuring of duties. The examination of the plan is also necessary due to the reformations being carried out at the department, the more detailed specification of the university's HR policy, and the influence of the new university legislation and changing financing structures.

Department mission

The missions of the department have been described in its Quality Manual (the chapter Strategic premises and operational goals):

Teaching: the department offers a broad basic scientific education for the Bachelor's degree, expert instruction based on its key research areas for the Master's degree, and a scientist's education based on its key areas for the Doctoral degree. The instruction follows a high standard.

Research: the department carries out international cutting-edge research in its focus areas along with quality research into new domains.

Societal interaction: the department is active in its interaction with the rest of society, both through its research and its teaching.

The key areas of teaching and research at the department and the sub-programmes for the Master's degree are algorithmic bioinformatics; algorithms, data analytics and machine learning; networking and services; and software systems. Starting in autumn 2017, teaching will be organised through the Big Wheel education programmes. The department is in charge of the Bachelor and Master's programmes in computer science and the Master's programme in data science. Furthermore, the department participates in the Bachelor's programme in mathematics (the computer science theory sub-programme), the Master's programme in theoretical and computational methods, and in the Master's programme in life science informatics (the bioinformatics sub-programme).

To carry out its basic duties, the department receives basic funding allocated by the faculty, as well as separate project funding. In addition, the department receives a great deal of external funding for research projects, and some smaller sums of separate funding. This HR plan only details the HR structure as far as the staff employed with the basic allocation is concerned. The directors of research units and projects are in charge of the HR planning for their units.

Current HR structure

Staff salaried through the regular allocated funds 1 July 2016

Teaching and research staff

- 12 full professors (Hyvärinen, Jacucci, Kangasharju, Kivinen, Myllymäki, Mäkinen, Männistö, Niemi, Paakki, Tarkoma, Toivonen, Ukkonen)

- 1 fixed-term professor (Asokan 20% 31 December 2017)

- 3 assistant professors (Koivisto until 31 July 2019, Roos 31 December 2019, Lu 31 July 2020)

- one vacant visiting professorship (Tommi Mikkonen) and three assistant professorships/professorships (bioinformatics partial 1/3 (on Viikki campus), data science, life science informatics)

- 11 permanent lecturers/university lecturers (Floréen 50% until 31 March 2017, Karvi, Lemström Head of Studies, L. Kutvonen, Kärkkäinen, Luukkainen/other funding, Tuovinen, Kerola, Kojo, O. Nurmi, Wikla)

- 1 permanent research coordinator (Moen)

- 1 fixed-term senior researcher (P. Nurmi until 31 December 2017)

- 1 permanent and 1 fixed-term university instructor (T. Niklander, A. Vihavainen until 31 December 2017)

- 2 fixed-term doctoral students (Barral 1 Jan 2016-31 Dec 2017 and Xu 1 Jan 2018-31 Dec 2019 (shared position)

Administration, support and other

The administration of the department transferred to the service organisation on 1 May 2016.

The department has a permanent translator (Kurtén)

The IT team at the department consists of an IT manager (P. Kutvonen) and an IT specialist (P. Vettenranta). Four IT specialists (Jaakkola, P. Niklander, Hautakangas, Nuorento) from the department's IT team will transfer to the new Kumpula Science IT Support team that will start up in 2016.

There are 4 academy fellows (Honkela, Järvisalo, Klami, Puglisi) working at the department, and annually some 30 part-time teachers. Further, post-doctoral researchers, doctoral students, and research assistants have been employed on project funding and result-based funding from the faculty.

Posts becoming vacant

Professor Jukka Paakki and University Lecturer Heikki Lokki retired in August 2016. Of the current department employees on basic allocated funding, 6 persons will be at least 63 years old during 2017.

Graduate schools

With the reform of doctoral education, the doctoral programme DoCS has been operating at the department since 2014, currently with 57 students. In addition, doctoral students at the department are being funded by results-based funding from the evaluation of research at the University of Helsinki.

On 1 July 2016, the situation with DoCS was as follows:

- Doctoral students a total of 57, of which

  * 61.4% Finnish and 38.5% foreigners

  * 82.5% male and 17.5% female

- A total of 8 students on university, faculty, science foundation, and department funding, out of which

  * 1 funded by the science foundation (Talvitie 1 Jan 2016-31 Dec 2019)

  * 4 funded by the university (Kangas 1 Jan 2014-31 Dec 2016, Peltonen 1 Jan 2014-31 Dec 2017, Leppä-aho 1 Jan 2015-31 Dec 2018, Saikko 1 Jan 2016-31 Dec 2019)

  * 1 funded by the Science Faculty (Berg 1 Jan 2015-31 Dec 2018)

  * 2 funded by the department (Barral 1 Jan 2016-31 Dec 2017 and Xu 1 Jan 2018-31 Dec 2019 (shared post)

- The total funding of doctoral students (57) is divided as follows:

 * Science foundation, university, or sc. faculty: 6

 * * the department: 3 (one of which is a university instructor)

 * projects: 42

 * corporations: 4

 * research institutes (VTT): 1

 * own funding: 1

Employees retained on external funding

There are totally some 70 person-years carried out on different levels of the work structure, from research staff to principal investigators.

Target state for HR structure

The present state is near the target for the staff structure. The distribution of research and teaching positions still needs to move towards more emphasis on professorships, by employing more professors. Several teaching and research posts will become vacant during the planning period, due to retirements.

Outlines and goals for improving the HR structure

Annually, over 200 employees work at the department, completing some 160 person-years (178.1 person-years in 2015). Around half of the person-years are completed on external funding (in 2015 99.5 person-years). In addition, a significant number of part-time teachers work at the department.

When considered from the viewpoint of the four-tier tenure track of teaching and research staff, the majority of person-years are still carried out on the 1st, lowest tier of the tenure track (research assistants and doctoral students). The increase in external funding in past years has especially enforced the 1st tier of the tenure track. However, in 2015, a larger number of post-doctoral researchers and doctoral students were recruited, in accordance with the goals set in the HR plan. At the same time, the number of person-years by research assistants started to fall. Doctoral students are also supported by basic funding, but the majority of basic funding is directed towards person-years carried out on the higher, 2nd-4th tiers of the tenure track (professors, university lecturers, post-doctoral researchers).

In 2015, the average age of the department staff was 36.2 years. During the past five years, the average age has fluctuated between 34.2 and 36.2 years. The department staff has become increasingly international in the past years. By the end of 2015, the percentage of foreigners among teaching and research staff was nearly the same as the previous year, 34.97%, while in 2011, it was 12.33%. The percentage of person-years completed by women increased a little from the previous year to 21.8% in 2015.

At regular intervals, an HR plan is drawn up at the department to define the changes to be made at the department during the planning period when it comes to the structure of staff employed on allocated funds. The heads of research units and projects are in charge of the HR plans for their own units.

The principles and actions, according to which freed-up resources are directed and the staff structure at the department is improved:

- The use of the tenure-track system will be extended; new posts set up at the department will primarily be professorships and assistant professorships.

- Employment contracts will preferably be made for the whole time the project will last and for postgraduates for the estimated time of their studies.

- Attempt to increase the number of post-doctoral researchers and doctoral students while decreasing the number of research assistants. Support the research fields of new assistant professors/professors by hiring post-doctoral researchers/doctoral students in their areas.

- International and active recruitment as well as a faster recruitment process; continue to try and recruit quality teaching and research staff from abroad and consider establishing a departmental application committee.

- The HR planning considers equality aspects.

- The core staff in administration and support has permanent employment.

- When recruiting employees for teaching posts, more attention will be paid to merits in the field of teaching.

- Any new key areas in research will be examined during the planning period, and open vacancies will be directed towards them.

HR-related improvemtns during the planning period

The distribution of department staff into their various duties is near its objective. However, the department is planning to increase its number of professors in accordance with the previous scientific evaluation, as well as to participate in the new tenure-track method of professor recruitment. These vacancies will be funded with monies freed up from lecturers and professors going into retirement, as well as support awarded the department from profile applications, and external funding. Post-doctoral researchers or doctoral students will be recruited on a staggered process for the research fields of new professors. In addition, the research groups of the new professors will increase the number of research staff salaried with external funding.

In past years, the department has attempted to curb the increase in the number of research assistants, since quality research cannot be based on the work of students. The department hopes to use a larger part of research resources on higher-end research positions than currently. The research assistant posts are still significant for recruiting new, upcoming talent into the research community at an early stage.

Starter packages for new professors:

The goal is to fund obe post-doctoral researcher or doctoral student for each new professor's team (post-doc 1-2 years, student 3-4 years). Using department basic allocated funding and external funding.

Actions in planning period:2017

The planned number of professor's or assistants professor's vacancies will be declared open for applications annually. The field of each position will be determined case-by-case. The funding of the posts will be taken from resources freed up by retirements, funds directed to the department (profile applications), and any other support the university may direct to the department. In 2016-2017, 4-5 permanent teachers will probably retire, which has been noted in the next recruitment plan.

1. Fill the following posts already under application or to be posted as vacant:

- A professorship in data analysis and distributed systems. Autumn 2016.

- An assistant professorship: networks and mobile computer science. Call for applications autumn 2016.

- An assistant professorship: algorithms and machine learning. Call for applications autumn 2016.

- An assistant professorship: software research. Call for applications 2017-2018.

- An assistant professorship:theoretical computer science. Call for applications 2017.

- Several assistant professorships in data science. Call for applications 2017-2019. Funding Profi #3.

- Assistant professorship: analytics of learning. Call for applications 2017-2018. This is linked to the professorship in future learning (see below), a dontaion from the fundraising campaign of the university's 375-year anniversary.

- An assistant professorship: algorithmic data analysis with a special focus on humanities and social sciences applications. Call for applications in accordance with HELDIG plan (Profi #2).

2. Starter packages for new professors:

- In 2017, we will need starter packages for four new professors (Tommi Mikkonen, bioinformatics, data science and life science informatics).

- Other support for new professors: the department will participate in funding any special equipment that may be necessary for starting up the work of the new professors.

3. A professorship in future learning (incl. MOOC): to be implemented in collaboration with the Faculty of Behavioural Sciences, if the professorship gains funding from the fundraising campaign for the 375-year anniversary of the university.

4. 1-3 doctoral students will be funded for the DoCS doctoral programme with the department's allocated basic funding.

5. More senior researchers (post-docs, university researchers) will be recruited if the department has enough resources.

6. Replacing lecturers and professors who are retiring: the posts will be directed according to the primary needs of research and teaching at the department case-by-case.

7. Improving the quality of staff:

- More systematic integration of new supervisors into the routines and supervision duties at the department.

Staffing needs for development projects during the planning period

1. Development of teaching and research into information security

- 20% fixed-term professoship (Asokan)

2. MOOC and specialised education

- two research assistants to support the development of the subject matter

3. Developing the Software Factory

- The Software Factory has received infrastructure funding in 2016.

Focus areas and goals of improving skills and wellbeing of staff

The main focus areas of improving the wellbeing of department staff is described in the Quality Manual, chapter C.2.

The main focus areas of skills and wellbeing at the department during the planning period are:

1. Staff training

The department supports its staff to improve and maintain its skills actively. Employees are encouraged to participate in staff training by the university, as well as independent studying relating to their work duties through e.g. flexible working hours. The pedagogical studies of the teaching staff are supported especially, and we are making it more systematic. In accordance with the university's strategy, we will ensure that work on all levels will be carried out by competent staff. Especially international, communications, networking, managing, and financial skills will be strengthened.

3.2 Facilities

The work spaces of the department are in efficient use and the number of office spaces seems to be appropriate, also in a longer perspective. The new service organisation and the Kumpula Science IT Support team are located in the A corridor on the 2nd floor of Exactum. The work spaces were reorganised on a small scale during the last planning period. Some reorganisation will be considered during this planning period.

In the summer months, there is a shortage of work spaces due to the large number of summer employees. The growing research groups of new professors add to the need for spaces, as well as the need to reorganise spaces to support the work of research groups better. On the other hand, work spaces have been set aside for part-time employees and visitors, who do not use their work space every day.

The department's expenses for facilities have grown since 2015, when they made up 10% of the department budget. The facility expenses are projected to be 12% in 2016, and they are assumed to increase a little in 2017.

3.3 Budget

The preliminary budget estimate is in the attachment.

4 QUANTITATIVE GOALS AND MONITORING

4.1 Quantitative goals for teaching

Maximum numbers of new admissions in 2017:

- Bachelor's programme in computer science 180
- Master's programme in computer science 100
- the MOOC quota is 50 (included in the BSc programme quota)
- Master's programme in data science 50
- DoCS doctoral programme 25

4.2 Quantitative targets for monitoring and indicators

	Comments
Percentage of international staff among teaching and research staff	
Feedback from wellbeing query: management	
Feedback from wellbeing query: skills	
Feedback from wellbeing query: working community and cooperation	
Societal interaction number of publications	
Scientific publications	
Jufo 2-3 publications	
International collaborations publications	
Competed financing in relation to total financing	
Credits / person-year of teaching	
Number of applicants (basic degree)	

4.3 Responsibilities and roles in monitoring and reporting

The head of the department is responsible for the implementation, monitoring, and assessment of the action plan. How the action plan has been realised will be assessed annually by the faculty and the department. Monitoring will be based on the unit's quality reporting and the use of indicators. The dean/head of department will report on the realisation of the strategy to the rector. The dean/ head of department will discuss how goals have been attained with the members of their unit.