5 year Strategic Operating Plan - UPDATE: 2017/18 to 2022/23

Faculty: Engineering Sciences
Department: Computer Science

1. Update to progress against the key strategic goals for your Department that you set out last year? Please give meaningful, achievable goals covering Teaching, Research, Enterprise and International activities.

1.1 Teaching
- Continued growth in student numbers and fee income achieved, with targets exceeded, requiring continued investment in staff, facilities and equipment (see section 3 on risks).
- Appointments to Teaching Fellow posts (Yun Fu and Riaz Ahmad for 2016/17 AY).
- New MSc/MRes Robotics and Computation and MSc Data Science (CS strand) successfully recruited 1st intake Sep 2016.
- New MSc Logic, Semantics and Verification of Programs launch postponed to 2017.
- Launch of the Industry Exchange Network (IXN) framework to manage student projects with external collaborators (up to 150 projects and 400 students per year).
- NSS 2016 results were satisfactory, except in Assessment and Feedback area, hence continuing ASER intensive measures.

1.2 Research
- Alan Turing Institute – 4 Faculty Fellows, of which one is also UCL’s University Liaison Director.
- Crick Institute - one faculty secondment.
- Partner in the Institute of Digital Health.
- REF Dry Run on-going. Most data collected from staff. Heads of group now assigning status to each member: gold (on course for four 4*); green (will have enough 3's for return, but should seek 4's); amber (may not have sufficient 3* for return); red (clearly not on course for ref return). We will advise staff individually after data collection is complete. Work also on-going to develop REF impact case studies.

1.3 Enterprise
- BBC partnership renewal discussions post 1ES underway. Intel partnership successfully completing in mid 2017. Google partnership is expanding to include directed research.
- All cloud platform providers – Amazon, Google, MSFT and IBM working closely with us on our student industry programme – IXN.
- IDEALondon has moved to Engineering/CS and is being re-freshed Host partner is Cisco and new corporate partners EDF and SAP about to join.
- VR Labs project collaboration with the Digital Catapult, MSFT and other media companies will deploy in 2017. Expected growth in media related SME’s and innovation projects.
- DeepMind/Google employee PhD programme now up and running.
- Centre for Blockchain Technologies partners now being brought on board via a membership plan.
- Vortex programme for investment in CS startups is launching in 2017.
- New programme working with insurance companies and law firms on smart contracting being developed.
- MedTech co-location and SME programme plan being developed for launch in 2017/18.
- Developing AI/ML SME programme alongside a AI/ML Fund in collaboration with the ATI.

1.4 Staff
- Academic appointments in Vision and Imaging Science (Iasonas Kokkinos – 1 Oct 16), Programming Principles, Logic and Verification (Fabio Zanassi – 1 Oct 16); Financial Computing and Analytics (Daniel Fricke – 1 Sep 2016), Systems and Networks (Stefano Vissicchio – 1 Oct 16), Teaching Fellow appointments as mentioned under 1.1 above. Also Cathy Holloway (from CEGE); Ifat Yasin (from Ear Institute) and Natasa Przulj (from Imperial).
- Athena Swan (Silver) awarded 2016 as well as Informatics Europe Minerva Prize (2016)

1.5 Premises and facilities
- Conversion of CS lab MPEB 4.06 to Virtual GPU Lab, a new services allowing staff and students to connect to a high-end graphics workstation from almost any device, including laptops and tablets.
- Working towards moving Robotics research and teaching to HereEast.
- Installation of secure data processing area.
- Installation of large scale GPU farm for machine learning, medical imaging and bioinformatics researchers.
- Develop hybrid cloud to make cloud bursting easier.

2. New strategic goals / initiatives for your Department that have arisen since last year? What are your priority actions to address these new goals / initiatives? Indicate when you plan to start these actions, roughly how long you expect these to take and, as appropriate, how you will know they have been completed successfully

2.1 Teaching
- MSc Computer Science for Health (linked to UCL Institute for Digital Health) under development (1st intake 2018 or 2019).
2.2 Research
The process of rationalising the department’s research portfolio through identifying key grand-challenges and cross-cutting capabilities continues. Early draft of challenges produced; refinement is on-going. This may lead to some redefinition of group boundaries and highlight new areas for exploration and recruitment. Also intended to help identify groupings with the critical mass for strong platform/program/CDT applications. Implementation of changes in 2016/17 onwards to prepare for REF2020.

Looking for solutions to research space problems. This includes resolving detrimental effects of being unable to allocate desks to PhD students, as well as having staff/groups located in remote outposts (e.g. Hampstead Road) with no prospect of a return to the central computer science space.

Continuing support for experimentation at all levels from microelectronics designed, and built in-house, to large scale deployments of Software Defined Datacentres.

Continuing to increase the quality of our PhD intake through active recruitment and improved processes.

2.3 Enterprise
(all starting 2015/16 and continuing as appropriate 2016/17 onwards)
- The UCL Institute of Digital Health is exploring strategic collaborations, and establishing a Digital Health industry club.
- Launch new Impact studentship guidelines and financial plan in dept and test with industry - done
- Grow the new mobile platform for industry based student projects – extend its use across UCL and other universities.
- Put in place legal support for Corporate partnerships, use for all new contracts – not done and continues to be critical.
- Grow the industrial plan for the ATI.
- Develop industrial plan for QEO.
- Develop investment plans for new CS building.
- Develop entrepreneurship clinics and new investment fund for new CS staff and student projects/companies.
- Grow CPD and PhD programmes with industry partners.
- Continue to withdraw CS from the EIT project.

2.4 Staff
- Continuing process of key strategic academic appointments to support research developments, specifically in Quantum Computing, Natural Language Processing, Systems and Networks and ‘Living Software.’
- Recruitment to academic post linked to CREST (as committed by UCL when securing CREST funding).
- Recruitment to Teaching Fellow and/or academic posts as detailed in PIQs for new UG and PGT programmes.
- Recruitments as per Robotics/HereEast business case for up to 12 academic staff and various PS staff, joint between CS and other partners.
- Professional services staff to support teaching for the UCL Teaching and Learning Strategy (e.g., lab manager, industry projects administrator.)

2.5 Premises/infrastructure
- CS premises. Continuing project to relocate the department to single premises. Fundraising initiative.
- On-going move of our computing infrastructure to shared on-site and off-site locations. Also seeking to place some services inside UCL’s ISO:27001 data centre, to allow work on medical, social and economic data currently classified as confidential.
- Measures to enable everyone to work remotely in a safe and secure environment. Techniques such as virtual machines (VM), containers, graphics passthrough and self-service portals allowing staff and students to work in off-site locations are being considered.

3. What are the top 3-5 risks of achieving your strategic goals? Provide a sharp, analytical diagnosis of the current situation of the Department.

3.1 Premises – uncertainty about premises (and the associated infrastructure and facilities) puts department’s position at risk, both for teaching/student experience as well as recruiting and retaining staff at PhD, post-doc, and faculty level, negatively impacting our research strength. The continuing need to operate across several sites is potentially more damaging the longer it goes on.

3.2 Risk that some existing research activities will have to be stopped because of lack of space, and we will not have the space to take on new projects. The closure of 1ES instigated the downscaling of the UCL-BBC collaboration. Also estates have provided no plan to rehouse 40 people and an important lab space.

3.3 Unsustainable financial contribution requirements, especially if we are entering a period of difficult student recruitment in several of our Faculty's departments. This might then result in insufficient resources to support activities.

3.4 Negative impact of teaching load on research, meeting stretching financial targets can only be realistically met in the short-term by increasing student numbers. We are doing this but there is a danger of a negative impact on research quality and productivity, which must remain the primary goal in maintaining our leading position in REF2021 and globally.
3.5 Risk of continuing poor scores in some areas of the NSS and PTES, and negative assessment at TEF, might damage ability to recruit student numbers as targeted. Particularly worrying if application trends in some other Engineering departments also continue.

3.6 UCL’s TOPS programme potentially very disruptive and poorly thought through.

4. Changes to the resources necessary to accomplish your priority actions that you set out last year? Please be specific about staff, space, equipment or other resource dependencies.

4.1 Premises. Teaching lab space continues to be a particular priority. Now approximately 1000 taught students but insufficient facilities despite initiatives taken last year.

4.2 Computing infrastructure. Staff posts (dedicated to technical student support, and also dev ops to provide agile infrastructure support). Investment in the VM service (upgrade to support more operating systems or just pay for a commercial service).

5. Given the sensitivity of future financial contributions to taught programme recruitment, please provide 3 concrete actions you have planned to mitigate this. Please be specific about when you plan to start these actions, roughly how long you expect these to take and, as appropriate, how you will know they have been completed successfully.

5.1 Continuing development of the Advanced Teaching Group, to provide sufficient teaching-focused staff and to lead the development and dissemination of teaching strategies to support larger cohorts, and the goals of the Connected Curriculum. This will continue throughout the period and be measured against the ability to teach large cohorts to a high standard with the resources available.

5.2 ASER (intensive) process on-going, including a series of initiatives to improve the student experience. Progress monitored and measured via formal routes including DSSCC, course and programme evaluation questionnaires, and ultimately by future NSS surveys.

5.3 Continuation of the MSc review, including an overhaul of offerings, support structures and student experience. The MSc review needs to now push ahead rapidly, in order to get the overall teaching load down. We need to change strategy to teach less content better and stop adding new modules without dropping old ones.

5.4 Contracting still causing major concern.
In discussions with Engineering Dean and Legal team about having legal resource dedicated to Engineering.

Dated 02/12/16