LONDON'S GLOBAL UNIVERSITY
Office of the Vice-Provost (Research)
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Vice-Provost for Research

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TO WHOM IT MAY CONCERN

FuturICT- FET Flagship

I write as UCL's Vice-Provost (Research) in strongest support of the proposed FuturICT – Participatory Computing for Our Complex World FET Flagship programme and outlining our planned expenditure in related areas, totalling more than €7M per year between 2013-15.

I believe that among the six candidate flagship projects, FuturICT has a distinctive inclusive breadth in terms of both disciplinary areas and national research communities. It also has the greatest certainty of significant societal benefit, as neither reliant on a single family of technologies that may be superseded by alternatives nor directed towards a narrow cluster of social drivers for which requirements may change. Since a researcher does not need immediate physical access to expensive research facilities to participate in this area, research institutions across every European nation may participate in FuturICT, rather than just a few that have made major facility investments. Whilst other areas of the world may be able to focus greater investment and cheaper labour into the development of single families of technology, such as robotics or electronic materials, Europe remains the community that leads the world in establishing innovative social systems for common good. Hence, I believe FuturICT is a far better fit for a shared European endeavour than some of the alternative candidate flagships.

I personally chaired the meeting of the Heads of Institutions associated with FuturICT on 8th February 2012 at the Royal Society and was deeply inspired by the extent of the potential for cooperation and socially beneficial, world-leading science that was identified. I believe that in many ways FuturICT's goal of using information technology to understand and manage complex, global, socially interactive systems can been seen as a contemporary development of the thinking of Jeremy Bentham, UCL's philosophical founder. Hence, it is no surprise that UCL should have substantial existing and planned research activities in a number of areas that fit within the FuturICT philosophy and remit. It is also a matter of considerable satisfaction to us that Professor Steve Bishop of the UCL Department of Mathematics has contributed so much to the development of the programme through his work as Management Coordinator. UCL has already supported this work through funding of £30K to mount the pilot bid, £20K in extended support during the pilot phase and £30K to fund an assistant between the conclusion of the pilot and the potential start of the Flagship funding.

Whatever decisions are made on the FET programme, UCL will continue to take forward the FuturICT agenda and to invest in these goals. The areas in which UCL has the largest planned FuturICT-linked activities are, in the language of the most recent version of the partner list, "Sustainable Cities", "Smart Energy Systems", "Sustainable and Resilient Financial Systems", "Measuring and mitigating social challenges, crime and conflict", as well as in a broad range of the technologies underpinning the Planetary Nervous System and Living Earth Simulator approaches. Our expenditure across all these areas (derived from various government and industry funding as well as our own resources) in the region of €7M per year from 2013-15 without any additional funding associated with the flagship. Thus it is significantly larger than the c.€2.5M for research and c.€1.5M for programme management that it proposed UCL will receive within the current partnership plan. The attraction of FuturICT for UCL is not that it will enable us to establish new activities, but that there will be huge benefits from greater connections both between these currently distinct activities at UCL and beyond them to a more broadly energised FuturICT community across Europe.

Because of the significance to us of broader engagement across Europe in these areas, if FuturICT goes ahead as a flagship, we will be very pleased to act as the host of its project management team, building on the substantial experience that our European Research and Development Office has of project managing large projects. We will also be keen to host a London "node", providing bookable working and meeting space for FuturICT researchers within our Bloomsbury campus. Exact funding arrangements for Project Management, Coordination and Flagship Framework actions would need to be negotiated as part of a subsequent award.

Within the area of "Sustainable and Resilient Financial Systems", we are represented with FuturICT by Professor Phil Treleaven. He is Director of the UK Doctoral Training Centre in Financial Computing, which we are host, in partnership with the London School of Economics and London Business School. The Centre supports at least a dozen new four-year doctoral students each year, with supervisors from across UCL's quantitative departments. We have three senior academics who concentrate primarily on computational finance, and are currently recruiting three early career academics in computational finance and mathematics to support them. Hence, our spending on computational finance in the period 2013-2015 is planned to be roughly €1.3M per year, to which any funding received from FuturICT would be additional. (The income supporting this spending is derived from a wide variety of sources, including UK government, EU government and industry – it assumes an exchange rate of 1.2€ to £1. Note that in all cases, these are planned figures, based on our expected income from various government and private sources, and might drop in the event of unexpected cancelation of centres or movement of grant-holding investigators, or rise in the event of attracting substantial extra external investment. It represents investment into existing and planned research programmes closely associated with those of FuturICT and with the same academic participants, rather than co-funding expressly for the FuturICT programme staff.)

In "Smart Energy Systems" we are represented by Professor Tadj Oreszczyn, Director of the UCL Energy Institute, which has a substantial presence in energy systems and energy demand in the built environment and. The UCL Energy Institute hosts roughly forty PhD students within the UK Doctoral Training Centre in Energy Demand and the Built Environment (jointly run with Loughborough University). They are seeking to grow a major activity on energy epidemiology, that is closely connected to FuturICT's energy agenda. UCL's spending on Energy data research in the period 2013-15 is planned to be roughly €1.5M per year.

UCL's representation on "Sustainable Cities" is led by Professor Mike Batty of the renowned Centre for Advanced Spatial Analysis (CASA). Our related research activities are distributed across a significant number of leading research groups, including the Centre for Transport Studies and Bartlett School of Graduate Studies. The scale of UCL's research activity within the broader

area of Sustainable Cities is such that we have established that as one of UCL's four Grand Challenges, looking to provide cross-disciplinary connections between our many activities in this area. To begin to develop links between the UCL activities, we have already invested €70,000 through holding in September 2011 a two day sandpit meeting on "Big Data in the City" in collaboration with the FuturICT team and then supporting four collaborative cross-department research activities developed at it. In addition, we have recently signed MoUs with both Cisco and Intel for the development of substantial activities on Smart Cities in partnership with Imperial College. UCL's total research activity in this field is expected to see a spend of more than €5M per year over the period 2013-15, although this includes a wider range of activity than will be found within FuturICT, with roughly 25% (i.e €1.25M per year) that might be strongly linked.

In the linked areas of "Measuring and Mitigating Social Challenges, Crime and Conflict" and "Systemic Risk and Resilience" UCL is represented by Professor Shane Johnson and Jamie Macintosh. UCL's Department of Security and Crime Science and Jill Dando Institute of Crime Science have a global reputation in environmental criminology and in particular crime mapping. They host the EPSRC-funding SECReT Doctoral Training Centre, which supports at least a dozen new four-year doctoral students each across a wide range of security and crime related subjects. We expect this activity to be increasingly based on the exploitation of large data sets, so are planning substantial (c.€1M) investment in a new secure data facility to allow public sector security organisations to share confidential data in confidence. Together with an associated investment in new academic staff, these give a UCL spend on crime data research of €0.8M per year from 2013-15.

Within the underpinning technology areas, we are represented by Professor John Shaw-Taylor on "Sense Making", Professor Anthony Finkelstein on "Model and Data Management", Professor Anne Blandford on "User Applications and Business Models" and Professor Patrick Wolfe (recently recruited from Harvard) on "Data Science". In the event that FuturICT is funded, to realise the benefits of successful integration between these (and related) core technology areas and the application areas, we will make significant further investments, beginning with €1M for a "Big Data Institute" (subject to development of a satisfactory detailed science case).

To support these, and similar, research activities UCL plans to make substantial on-going investment in its research IT, roughly €2.4M per year over 2011-15.

In addition, we regularly receive large UK government investments in High Performance Computing and related infrastructure, such as our role in the recent €4.4M grant for the e-Infrastructure South Consortium (with Oxford, Southampton and Bristol) and the planned ARCHER National HPC facility, both part of the £145M investment announced in October 2011 by UK Government. We expect further investments on a comparable scale every few years to remain a priority for the UK Government. UCL researchers represent a significant fraction of the users of this infrastructure, and it ensures that high-end capabilities beyond what can be provided institutionally will be available if needed. To support exploitation of this institutional and national infrastructure, UCL is recruiting at least further two senior academic staff and three support staff in algorithm and software development.

Thus, UCL is planning expenditure in the region of €7M per year from 2013-15 in areas closely linked to FuturICT, even without any further income associated with the flagship. Given the strength of the groups concerned and significance of these areas within the national research agenda, we would expect that to grow further through the potential life of the flagship, assuming the UK government maintains its commitment to exclude research from wider cuts in public sector spending.

In summary, UCL's planned contributions to the FuturICT agenda include:

- Willingness to host the project management for the initiative;
- Willingness to provide a "London Node" within our Bloomsbury campus;
- Planned expenditure on Computational Finance research of roughly €1.3M per year 2013-15;
- Planned expenditure on Energy Data research of roughly €1.5M per year 2013-15;
- Planned expenditure on related Sustainable Cities research of roughly €1.25M per year 2013-15;
- Planned expenditure on Crime and Conflict Data research of roughly €0.8M per year 2013-15;
- Planned expenditure on Research IT Infrastructure of €2.4M per year 2013-15;
- Potential additional investment of €1M in Big Data Institute if flagship proceeds;

Note that these represent our plans as of submission of the final report at the end of April 2012. I will update this letter for subsequent funding proposals to reflect evolving plans within the Commission, Flagship consortium and UCL.

Let me conclude by repeating my support for the Commission's approach to this bold initiative, and the value of linking Europe's research community around unifying goals.

Should you have any further questions concerning my support, please do not hesitate to get in touch.

With best wishes

PROFESSOR G DAVID PRICE
UCL Vice-Provost (Research)