Project proposal template
Graduate School studentships
March 2015

Project title	High Performance Cloud Computing: The Management of Complex Scientific and Engineering Problems
First Supervisor	Dr — Souheil Khaddaj
Second Supervisor	Andreas Hoppe
School	Computing and Information Systems
Other member of supervisory team (no more than three KU supervisors in total)	
Specific requirements beyond 2:1 degree	

Project summary

(max 4,000 characters)

Recently, Cloud Computing has emerged as a new large-scale distributed computing and service-oriented paradigm in which dynamically scalable virtualised computing resources and services are provided over the Internet. However, the management of such resources for large scale scientific problems is still a challenging task. Thus, the aim of this project is to produce a novel type of cloud resource broker based on a new multi-criteria decision making mechanism for the management, distribution, control and optimisation of systems resources within large distributed systems and which enforces an assured Quality of Service (QoS). Unlike traditional strategies, the mechanism takes into account several quality attributes while preserving the overall quality of the system by continuously assessing the impact of the attributes against each other. This important as different applications might have different quality requirements for example many scientific applications have performance as their main concern while some real time engineering applications are mainly concerned with reliability and robustness. The mechanism establishes its decisions on a combination of quality attributes, referred to as the quality model instead of using a single quality attribute.