**School of Electronics and Computer Science**

### **Part IV Group Design Projects 2013/2014**

### **Project Proposal**

Note: The GDP is a substantial engineering design or feasibility study undertaken by a group of about four students. It carries 40 credits and, as a guideline, students should expect to spend about two thirds of their time on the GDP during the first semester in their fourth year.

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| **Project Title:** | Raspberry Pi Control Kit for teaching |
| **Proposer(s):** | Gary Wills |
| **Research Group:** | ESS |
| **Brief Summary of Project** (150-200 words):  Teaching the fundamental principles of computer hardware is difficult; especially as there is little to see in a modern computer. In the past we have used a virtual laboratory to teach these principles to ITO students. However, it lacks the connection with real hardware. Now the Raspberry Pi gives us the opportunity to have the virtual laboratory and the hardware.  The Raspberry Pi (RPi) is an excellent computing and interfacing device that has been designed specifically for learning about hardware and programming.  Although flexible and powerful, the RPi lacks scaffolding tools to enable newcomers to learn the necessary concepts quickly and efficiently. This project, proposed in collaboration with Haven Consulting, IBM, and the Raspberry Pi Foundation, will create a "CECIL" compiler on the RPi, linking it with the RPi's own I/O ports, and will design and produce a prototype latching interface to enable simple and safe connection to external devices.  The project is proposed with a combined team of Computer Scientists and Electronic Engineers in mind. However, it is flexible and can be adapted according to the skills and gifts of the project team assigned to the task. Creative approaches will be most welcome.  The resulting project outcome (hardware design and software) should be open source and available for wide distribution. | |
| If the project has an **industrial customer** (recommended), please provide the customer’s name, address,  telephone number and email:  Haven Cosulting will be the main contact:- Dr David Argles will be the contact person.  5, Harland Crescent, Shirley, Southampton SO15 7QB  tel: 07522 533 102  mail: [david@argles.org](mailto:david@argles.org)  However, we IBM on board too,  Contact Kate Bittles, (outreach) IBM Hursley Executive Briefing Centre Manager | |
| How many students is the project suitable for (typically 4,5 or 6)? **4 a mixture of Mainly CS/ITO but one electronics student will be good too** | |
| Will this project require laboratory space?  **Yes** | |
| What resources will be required:  **Supplies (please specify): Estimated Cost £**  1. Raspberry Pi £30  2. Raspberry Pi GPIO Electronics Starter Kit with solderless 830 point bread board £10  3.  4.  Is project viability dependent on additional funds or resources (e.g. provided by the customer?) …………… **N**  Additional funds/resources, if applicable, provided from (specify source):  Group funds | |

**Please return forms by email to tjk@ecs.soton.ac.uk before Friday 31 May 2013. Put the text ‘GDP Proposal 2013/14’ in the subject line.**