1. **Job Details**

**Job title:** Principal Architect  
**School:** School of Physics  
**Unit:** EPCC  
**Line manager:** Technical Director

2. **Job Purpose**

To provide advanced technical expertise and technical leadership across a wide range of EPCC's activities including both academic and industrial projects. To advise the senior management of EPCC on critical technical issues.

3. **Main Responsibilities**

1. *Team leadership and management of* activities with particularly challenging technical dimensions to produce novel technical solutions and high-quality deliverables. Most significant of these is managing the “Software Engineering” Team that forms part of the support effort for HPCx (the current UK academic supercomputer service).

2. *Advanced technical contribution* to projects including acting as project Architect to ensure successful completion of projects that are particularly challenging. For example, projects where significant research is required for the project to succeed. Designing, building and maintaining software tools to aid the operational procedures of EPCC and its associated projects.

3. Participating in the technical management of EPCC and of relevant projects such as HPCx to ensure successful project results.

4. Contribute to teaching and supervision activities for postgraduate students to meet the School’s teaching and research objectives and to advance the technical development of EPCC staff and postgraduate students.

5. Oversee the development of the software design processes used by EPCC staff in the course of software development projects to ensure best practice is followed. This includes chairing the Architecture Advisory Board, which implements software design reviews for projects within EPCC.

6. Technical analysis to solve difficult problems faced by EPCC’s technical staff. Performing technical investigations and analysis as requested by management. Providing technical assistance and trouble-shooting for staff.

4. **Planning and Organising**

- Project management and Team leading activities. Planning team activities for up to one year in advance.
- Reporting on team progress on a regular basis to both senior EPCC management and to external organisations such as EPSRC.
- Supervising and mentoring of EPCC staff and Postgraduate students.
5 Problem Solving
- Research into new techniques for exploiting HPC systems.
- Produce novel approaches to problems, which are of publishable quality.
- Design overall technical solutions for projects as a whole.
- Designing and building software tools for use by EPCC staff.
- Design and implement detailed solutions for key project components.

6 Decision Making
- Decide on development and research activities to be pursued by team members.
- Make major architectural decisions on technical projects and significant design and implementation decisions.
- Decide on prioritisation of requirements and technical tradeoffs within a project.
- Decide on project scoping and timing in collaboration with the project manager.

7 Key Contacts/Relationships
- Provide strategic technical advice to the senior management of EPCC, including the Director and Technical Director.
- Represent the University to external academic and commercial clients.
- Represent the University to funding bodies such as the EU, RC UK, SE.
- Represent the University at national and international level in project technical fields, for instance at conferences, workshops and by general contacts.

8 Knowledge, Skills and Experience Needed for the Job
- At least 10 years relevant experience of research and development in HPC computing, covering a variety of HPC and novel computing architectures.
- At least 10 years experience of Software Design and development.
- Significant in-depth knowledge of all major computing languages used in HPC such as C, Fortran, C++ and Java.
- Experience of low-level programming such as assembly language, device drivers and networking.
- Wide ranging knowledge of technical areas relevant to EPCC business areas and the ability to investigate new technical areas at short notice.
- Postgraduate qualification in computational science.
- Experience of Unix system administration including an understanding of the particular issues associated with the management of HPC systems.

9 Dimensions
- Job-holder provides technical leadership on 3 strategic projects of duration 2 – 6 years.
- Job-holder provides technical leadership and mentoring to 6-12 technical staff on these projects.
- Line management of 1 Principal Consultant.
- Job-holder has responsibility for technical deliverables and quality on projects and sub-projects totalling around £500,000 p.a.

10 Job Context and any other relevant information
- EPCC operates in a very fast-moving, highly technological field and the job-holder has significant responsibility for maintaining our technical leadership.