The University of Manchester

Job Description

Job Title:	Research IT Software Engineer (Grade 7)
Grade:	7
Reports to:	Research IT Software Engineering Manager or Research IT Applications Manager (as appropriate)
Responsible for:	The supervision, motivation, technical direction, development, training and mentoring of assigned staff.
Office:	ITS
Date:	September 2014

Overall Purpose of the Job

Working with individual researchers or research groups the role is responsible to provide expertise within the management and support of a portfolio of open and closed source research applications, languages and software systems including site licensed products.

Responsible for the specification, design or modification of software systems to meet research needs. The identification of concepts and their translation into implementable design. The retention of compatibility with current architectures, and the adherence to appropriate standards within constraints of cost, security and sustainability. The design, creation, testing and documenting of new and amended programs in accordance with agreed standards.

The RSE will also be involved in the training of researchers (esp. PGRs and RAs) in one or more aspects of computationally intensive research systems, applications and languages.

The role will be responsible for undertaking assignments across project and/or service functions as required.

Key Responsibilities, Accountabilities and Duties

Dependent upon assignment:

- Takes responsibility as needed for the detailed specification and modelling of recommended solutions using resources, standards, methods and tools as required. Maintains links with appropriate counterparts within both software engineering and service delivery functions and plays a full part in bringing systems to implementation as detailed by organisation policies and methods.
- Carries out assignments, alone or as part of a team, applying knowledge, skills, and experience. Demonstrates an understanding of the issues of

interest to the client organisation and proposes viable solutions within the scope of own expertise, taking into account the needs of those affected.

- Collaborates with, and facilitates stakeholder groups, as part of formal or informal consultancy agreements. . Facilitates groups to optimise time, effort and success for fact finding and agreement of a solution.
- Produces high quality deliverables in terms of both content and presentation.
- Reviews product release notices, academic research and other learned publications to identify emerging technologies in areas of interest to the organisation. Questions technology providers and researchers to better understand their areas of expertise.
- Recognises needs outside own area of knowledge, and how these areas relate. Requests and works effectively with additional expertise as necessary.
- Takes a leading technical role in systems development projects, both within systems design and in interfaces with other stages of development. Evaluates and undertakes impact analysis on major design options.
- Specifies and designs large or complex systems, covering for example: objectives, scope, constraints (such as performance, resources etc.), hardware, network and software environments, main system functions and information flows, data load and implementation strategies, phasing of development, requirements not met, and alternatives considered.
- Ensures all work is documented using the appropriate standards, methods and tools, including prototyping tools where appropriate. Ensures that designs take full account of specified requirements and constraints, including any potential safety-related aspects, and are appropriate to the target implementation and support environments.
- Assesses software packages on their ability to meet all or parts of specified requirements and advises colleagues and management on their technical suitability.
- Teaches, instructs and/or trains students in relevant knowledge, techniques and skills using appropriate methods, equipment and materials. The students are likely to be of differing levels of ability and to have some understanding of the application of IT.
- Provides expert advice in some or all aspects of the programming methods, tools and/or standards used in the organisation.
- Reviews and constructively criticises own ideas and those of others.
- Keeps in close touch with and contributes to current developments in the technical specialism within employing organisation, own industry and professional and trade bodies. Is fluent at articulating best practice and is a recognised authority in the technical specialism.

- Promotes the application of the technical specialism within employing organisation and closely associated organisations, such as customers, suppliers and partners, and actively campaigns for appropriate action.
- Writes, or contributes to, articles and papers and speaks at conferences, user groups, or specialist subject groups on topics involving the technical specialism. Plays a leading role in special interest groups concerned with the technical specialism.
- Following HR policy and standards, determine individual learning and development requirements and facilitate the creation and management of a balanced development plan for each member of staff managed to reflect both short to medium-term business objectives and take into account individuals' longer-term aspirational goals.
- Ensures that the performance of staff managed is appraised and assessed in accordance with agreed standards, procedures and timetables and that the results of assessments are correctly reported back to those being appraised.
- In consultation with more senior management and taking account of Research specific solutions and architectures agrees appropriate design standards, methods and tools and ensures they are applied effectively.
- Identifying and deploying suitable methods and techniques for the development of research solutions. Includes identifying and testing suitable third party software from diverse sources including open source research code and commercial libraries.
- Post holders are required to familiarise themselves with the University's Equality and Diversity policies and to actively support these wherever possible.
- Demonstrates and leads a commitment to the IT Services Values of: One IT Team, Enabling Others and Customer First. Proactively working to ensure the appropriate behaviours are embedded and maintained in support of the identified values.
- Be aware of and work within the constraints of the University Health and Safety, Data Protection, and Confidentiality policies, bringing to the attention of management any issues arising.
- Actively work to ensure knowledge sharing amongst colleagues to avoid single point of failure.
- To undertake such other duties as may be required from time to time commensurate with the level of responsibility of the role.

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Person Specification

Essential Knowledge, skills and experience

Qualifications and Experience

- Previous relevant work experience and a degree/professional qualification or substantial experience in a similar role.

Skills and Competencies

- Academic Knowledge: Knowledge and practical understanding of academic subject areas for example, statistics, numerics, finite element modelling, visualization etc.
- Consultancy or Technical Specialism: Specialist knowledge and skills in one or more functions, technologies or industries.
- Business Proposals: Methods and techniques for preparing and presenting business cases, invitations to tender and statements of requirements both orally and in writing.
- Infrastructure Architecture: The frameworks and principles on which networks, systems, equipment and resources are based.
- Project Planning and Control Techniques: Methods and techniques associated with planning and monitoring progress of projects.
- Product Evaluation and Selection: The analytical comparison of IT products against specified criteria to determine the best solution to the business need.
- Information Capture Techniques: The selection and application of information gathering methods, tools and techniques which are appropriate to the information required and the sources available.
- Application Development Methods, Techniques and Standards: Organised and documented sets of techniques, intended to facilitate the structured development of applications.
- Analytical Thinking: Acquiring a proper understanding of a problem or situation by breaking it down systematically into its component parts and identifying the relationships between these parts, selecting the appropriate method/tool to resolve the problem and reflecting on the result, such that learning is identified and absorbed.
- National/International Standards: Standards associated with IT practice nationally and internationally.
- Programming Languages: A set of codes and syntax (supported by software tools) which enable the unambiguous translation of specified functionality into "source code" for the creation of computer programs.

- Proof of Concept and prototyping: Performing a proof of concept or prototyping exercise to demonstrate or evaluate the feasibility and potential benefits of applying a particular technology, product or toolset to meet a business need.
- Standards Writing Techniques: Principles, methods and techniques for documenting standards such as programming standards, quality standards, health and safety standards etc.
- Structured Reviews: Methods and techniques for structured reviews, including reviews of technical diagrams, test plans, business cases and any other key deliverables.
- Design principles: Principles and practice of good system design.
- Development styles: Understanding and application of different development styles.Operational/Service Architecture: Knowledge of the IT infrastructure (hardware, databases, operating systems, local area networks etc.) and the IT applications and service processes used within own organisation.
- Conceptual Thinking: Acquiring understanding of the underlying issues in complex problems or situations by correctly relating these to simpler or better understood concepts, models or previous experiences.
- Interacting with People: Establishing relationships and maintaining contacts with people from a variety of backgrounds. Effective and sensitive communicator in different societies and cultures.
- Decision Making: Making decisions at the appropriate time, taking into account the needs of the situation, priorities, constraints and the availability of necessary information.
- Flexibility: Taking account of new information or changed circumstances and modifying understanding of a problem or situation accordingly.
- Initiative: Being proactive, taking action and anticipating opportunities.

Desirable Knowledge and Skills

Skills and Competencies

- Budgets: Principles, methods, techniques and tools for the preparation and monitoring of budgets to minimise costs and ensure cost-effectiveness.
- Organisational Awareness: Understanding the hierarchy and culture of own, customer and supplier organisations and being able to identify the decision makers and influencers.
- Leadership: Identifying goals and objectives, and motivating and leading others towards their achievement.