Post Details	Last Updated 02/11/2016	
Faculty/Administrative/Service Department	Faculty of Engineering & Physical Sciences (FEPS) Institute for Communications Systems (ICS)	
Job Title	5GIC Systems Architect	
Job Family	Technical and Experimental	Job Level	6
Responsible to	5GIC Director	
Responsible for (Staff)	Manages the 5GIC researchers, developers and testbed staff who are members of the 5GIC Testbed Team.	

Job Purpose Statement

Responsible for providing Systems Architecture strategy and individual contributor designs for the evolving ICS/ 5GIC Network activities for next generation 5G networks.

Responsible for project managing the migration of network research work from academic concept level to Proof of Concept (PoC) demonstrations with the reporting Network Testbed team.

Key Responsibilities This document is not designed to be a list of all tasks undertaken but an outline record of the main responsibilities (5 to 8 maximum)

1. Developing Network Architecture concepts.
2. Monitoring commercial and academic technical evolutions in the networks industry, with a focus on 5GIC Academic and partner interests in sync with the 5GIC director, 5GIC SAB and Program manager.
3. Monitoring applicable networks standards organisations (3GPP, ETSI, IETF, IEE) in sync with the 5GIC director and the 5GIC SSG used on Architecture NGP, SDN, NFV and MEC.
4. Managing the Testbed Team to realise PoC demonstrations of network research and demonstrate and validate them on the 5GIC testbed
5. Supervise the strategic evolution of the 5GIC testbed and its related step-out testbed facilities.
6. Provide a key point of contact with industry contributors in the area of 5G networks.
7. Progress responsibilities 1-6 for the technology areas of: Next Generation Architectures and Protocols, Wireless, Cellular and Fixed access networks above the physical layer.
8. Represent and present the work from 1-6 at conferences and 5GIC workshops and where appropriate contribute to standards and journal papers.

N.B. The above list is not exhaustive.

All staff are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities Policy.
- Work to achieve the aims of our Environmental Policy and promote awareness to colleagues and students.
- Follow University/departmental policies and working practices in ensuring that no breaches of information security result from their actions.
- Ensure they are aware of and abide by all relevant University Regulations and Policies relevant to the role.
- Undertake such other duties within the scope of the post as may be requested by your Manager.
- Work supportively with colleagues, operating in a collegiate manner at all times.

Help maintain a safe working environment by:

- Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand.
- Following local codes of safe working practices and the University of Surrey Health and Safety Policy.

Elements of the Role

This section outlines some of the key elements of the role, which allow this role to be evaluated within the University's structure. It provides an overview of what is expected from the post holder in the day-to-day operation of the role.

Planning and Organising

- The post holder will be responsible for managing the 5G Test-bed Team and its associated test programme based on the state of the art 5GIC Test Bed and other associated regional step-out testbed facilities.
- Work with the Testbed team, academics at 5GIC and partners to prioritise and schedule PoC and validation work on the test-bed infrastructure of the 5GIC.

- Project manage the Network Architecture and Testbed work at the ICS/5GIC. This will involve dealing with teams of specialists made up of both University technical staff and service support staff from industry partners and SMEs.

- Maintain the activities of the Test-bed team under the current set of procedures that have been produced for the team and the Share-point sites operated by the team

- Host a Network Architecture team meeting for the 5GIC for researchers and partners in the field on a regular 3 monthly basis

- Support the 5GIC WA1 (Content and Context) team, 5GIC Workshop and monitor and coordinate with the WA6 (RAN Architecture) team.

- The post holder will operate a milestone plan for himself/herself and the Network Testbed Team, track tasks per team member on a task plan and operate a regular twice weekly scrum with both the testbed team and any assigned researchers who own research projects that he and the testbed team are currently supporting to PoC stage.

Problem Solving and Decision Making

- The post holder is expected to operate with a high degree of autonomy, with minimum referral to the 5GIC Director and COO, operating with only milestone level guidance input and reporting back to these managers on a regular and periodic monthly basis.

- The post holder will resolve potential conflicts in individual technical projects to maintain alignment with overall 5GIC-Researcher/ SME/ LEP strategy. This will potentially require resolution of technical issues whilst recognising and being sensitive to pressures on individual technical and research staff.

- The post-holder must be capable of making difficult decisions on how best to allocate available resources to individual companies or particular research projects to best fit with changing strategic priorities with guidance from the 5GIC Director and COO.

Continuous Improvement

- The post holder must be able to develop the 5G Test-bed team to ensure staff keep abreast of latest technical developments, emerging standards and industry priorities emerging from the 5GIC Strategy Advisory Board.

- The post holder must work with the testbed manager to ensure that the 5G test beds are maintained in a high degree of working order and that they develop in line with the likely rapid evolution of 5G technology and parallel evolution of the 5GIC, UoS test-bed.

- The post holder will develop a streamlined programme management and reporting mechanism to cope with the 5G Test-bed step-out R&D programme with the guidance of the 5GIC Director (for testbed and network architecture design sign-off) and the COO (for strategic testbed evolution)

- Connections between 5GIC, regional step out test facilities and other related national initiatives will continue to expand in future. SME partners are also likely to play an increasing role in the future alongside corporate partners and other research institutes. The post holder will maintain a coherent forward strategy for all of these developments.

Accountability

- The post holder will manage the 5G Network Architecture strategy and all of the 5GIC test-bed facilities to deliver first class outputs to industry partners and to research funding bodies. The post holder will be expected to do this with limited supervision, following strategic review by the Director of 5GIC.

- The post holder will be responsible for managing the operations and technical development staff responsible for the day to day running of the Test-bed facilities. This is a technically demanding aspect of the role and the post holder will be accountable for technical decisions in this area.

- The post holder will also ensure that the 5G Test-bed step-out facilities are delivered within allocated budgets for each new agreed phase of the testbed evolution, as agreed with the 5GIC Director and COO.

Dimensions of the role

In addition to managing the 5GIC Testbed Team, the post holder will work particularly closely with:

5GIC Program Manager

Leader of Work Area 1- Content & User/Network Context

Leader of Work Area 6 - System Architecture & Coexistence

Leader of Work Area 7 - Testing & Verification

The post holder will oversee the equipment and resource planning to ensure that the finances are efficiently and effectively managed per agreed testbed project.

Supplementary Information *You may wish to include some information here that has not been captured in the other sections of the form, but still has a significant impact on the size of the job. This may include details such as for example the importance in some roles to influence, develop and change the motivation and behaviour of people.*

- The candidate will be involved with projects from UK EPSRC and EU research programs which will increasingly favour high quality research programmes with the capacity for significant economic impact and the 5G IC is considered as an exemplar in this regard.

Person Specification This section describes the sum total of knowledge, experience & competence required by the post holder that is necessary for standard acceptable performance in carrying out this role.

Qualifications and Professional Memberships	
Relevant degree in Communications, Electronics Engineering or Computer Science and a substantial industry track record in leading highly skilled multi-disciplinary teams, An industry track record in producing world class IPR and/ or products and/or standards outputs.	E E
Relevant PhD or membership of a chartered engineering/ physics or computing institute.	D
Professional Project Management Qualification and skills e.g. Agile, Waterfall methods, WBS, Task planning, Scrums etc.)	D

Technical Competencies (Experience and Knowledge) This section contains the level of competency required to carry out the role (please refer to the Competency Framework for clarification where needed and the Job Matching Guidance).	Essential/ Desirable	Level 1-3
writing software in a in a variety of modern software programming languages (C++/ C#/ Java)	E	3
A detailed understanding of 3GPP network specifications and have been exposed to common standards from the IEEE and the IETF so that they are readily able to discuss their understanding to a detailed level (architecture diagrams, entity functionality and call flows between and detailed protocol, understanding) LTE: AS(Handover, Mobility, Broadcast) NAS(EMM, ESM), RRC Wi-Fi: 802.11a to ac, TCP functions such as slow start, SCTP, SIP, IMS	E	3
Working knowledge of standard Software development with experience of formal tools in the field including a working knowledge of the key elements of modern development practice: Scenario definition, Use Cases, Requirements, User Story derivation and Test case workflow: Unit, Functional and System tests. (Rational Rose, Tau, UML, Code Quality, code metrics etc.).	E	2
Be conversant in 5G industry developments including NGP, NFV/ SDN and MANO.	E	2
Be experienced in putting together both new Project Bids and Technical presentations on work completed or in progress, in Journal/ Conference and Management/Executive Briefing formats.	E	2

This is an extremely demanding technical role. All of the skills below are desirable but a successful candidate will be expected to have at <u>least</u> two:		
Experience of installation and commissioning of communications equipment from a variety of vendors, including Network equipment using CLI and OMC interfaces (e.g. Cisco IOS, TR069, SNMPv2,3/MIBs, CLI, MMI)	D	n/a
Experience of practical Cellular Network Optimisation techniques. e.g. load generators, device emulation, tracing tools.	D	n/a
Experience of Linux and Windows operating system configuration and management.	D	n/a
Practical experience of scripting development (e.g. PERL, PYTHON)	D	n/a
Basic practical lab skills, including computer module, cable and basic electronics assembly.	D	n/a

Operational hands-on experience of working with Antennas and passive RF devices (circulators, couplers, attenuators etc.).	D	n/a
Operational knowledge of GSM, UMTS and/ or LTE RAN and/or CN	D	n/a
Mobile test experience (batch testing, formal compliance testing etc.)	D	n/a
Have worked on or have working knowledge of Self Organising Networks (SON) based optimisation systems.	D	n/a
Working knowledge of outdoor communications testing including facets such as: drive testing, antenna towers arrangements, field measurements.	D	n/a
Experience of configuration and management of VM systems for Linux and Windows systems, e.g.: VM-ware or Virtual-BOX etc.	D	n/a
A good working knowledge of the Further Education and Higher Education sector and/or Knowledge, understanding & application of European Commission Framework in project preparation, execution and reporting	D	n/a
Special Requirements:		Essential/ Desirable
Must be prepared to travel throughout the UK (typically once every 1-2 months) and travel internationally (typically once every 1-2 months).		E
Must be able to drive and have own car for "local" business travel <100miles		E
Must be able to accommodate occasional flexible working hours to provide and/or arrange step-out test-bed maintenance support when there are urgent and essential issues, within 1-2 days of a query. This may include occasional evening and/ or weekend maintenance support as required and agreed with the 5GIC Testbed Management team.		E
Core Competencies		Level 1-3
Communication		3
Adaptability / Flexibility		3
Customer/Client service and support		1
Planning and Organising		3
Continuous Improvement		2
Problem Solving and Decision Making Skills		3
Managing and Developing Performance		2
Creative and Analytical Thinking		3
Influencing, Persuasion and Negotiation Skills		2
Strategic Thinking & Leadership		2

This Job Purpose reflects the core activities of the post. As the Department/Faculty and the post holder develop, there will inevitably be some changes to the duties for which the post is responsible, and possibly to the emphasis of the post itself. The University expects that the post holder will recognise this and will adopt a flexible approach to work. This could include undertaking relevant training where necessary.

Should significant changes to the Job Purpose become necessary, the post holder will be consulted and the changes reflected in a revised Job Purpose.

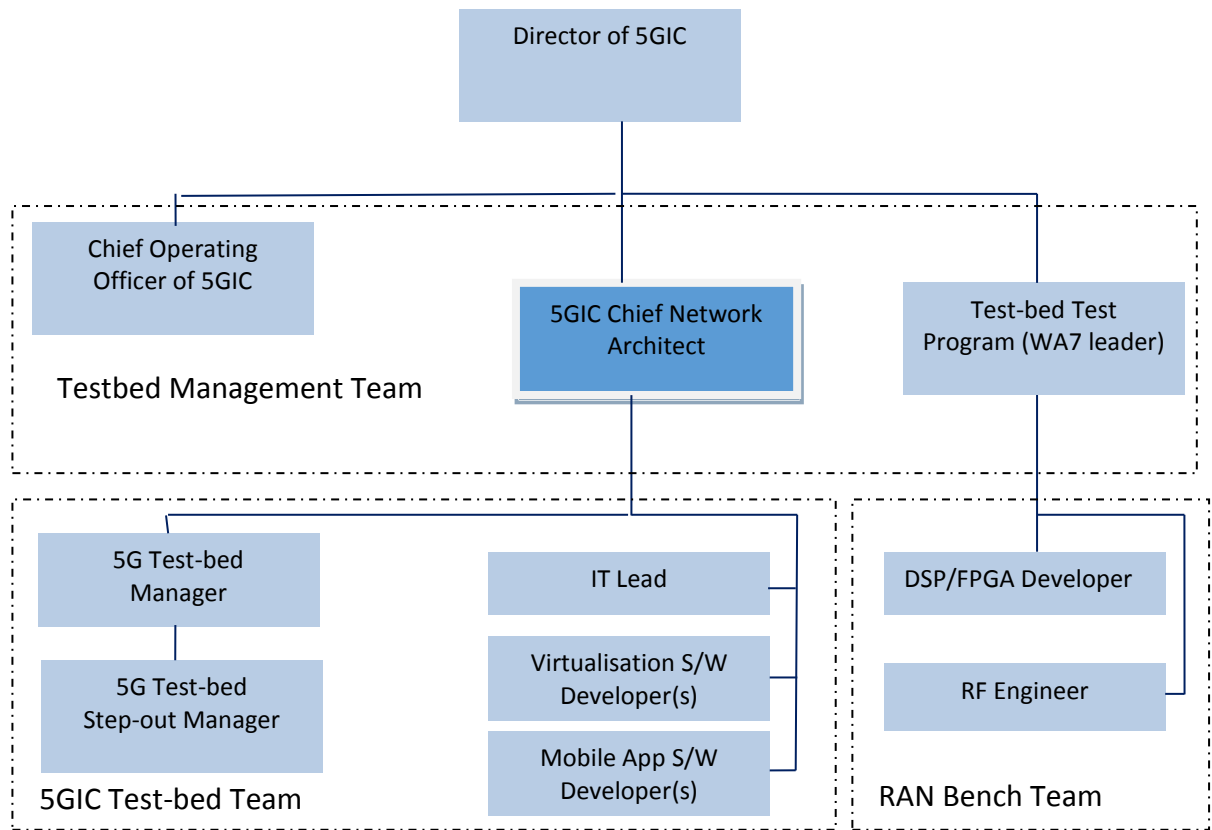Organisational/Departmental Information & Key Relationships

Background Information

The University of Surrey ranks in the top15 of UK University league tables. The Faculty of Engineering and Physical Sciences has within it a number of leading research groups one of which, the Institute for Communications Systems, has consistently ranked as Europe's leading academic research organisation in the field of mobile telecommunications and internet technologies.

Surrey has now been successful in winning £multi-million bids to HEFCE UKRPIF and Catalyst in securing the 5G Innovation Centre and Innovation Gateway programmes respectively. The University has also been awarded additional funding from the Enterprise M3 Local Enterprise Partnership to provide additional support both of these programmes. The objective is to create the world's foremost academic research and innovation centre in future mobile communications and internet technologies and in the use of telecom network "Virtualisation" and use of "Big Data" in developing advanced technologies.

The Chancellor of Exchequer Philip Hammond said in his Autumn Statement on 23rd November 2016, "My ambition is for the UK to be a world leader in 5G. That means a full-fibre network; a step-change in speed, security and reliability," The Surrey 5GIC will play a significant role in the delivery of that national ambition.

Department Structure Chart

Relationships

Internal

The post holder will primarily liaise with members of the 5G project team(s) as well as other researcher and PhD staff within ICS. The post holder will have regular contact with the University IT and Facilities team to coordinate the IT expansions.

External

The post holder will liaise regularly with the 5G partners and SMEs which will require significant technical and project management skills with the ability to deal at CTO level.

The post holder will represent 5GIC at high level technical and standards meetings in the UK and some equivalent meetings abroad and must have strong personal credibility in these scenarios.