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Project Title:	Stochastic Modelling of System Performance for Large-Scale Systems (and System-of-Systems)
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Department:	Computer Science

Project Description:

There is currently much UK government and industry thinking towards the integration of existing complex computer-based systems, including those in the military domain, using open network platforms, standards and technologies. A key problem in the development and deployment of such systems will be the determination of emergent performance properties of the complex system itself and ultimately as part of combined system-of-systems (SoS) scenarios.

The new project will build on current work in the Systems Engineering Innovation Centre (SEIC) and in Loughborough University Computer Science Department in the form of:

- A deterministic real-time system performance modelling framework for assessing overall timing behaviour of large-scale systems, including schedulability and resource utilisation analysis;
- A stochastic performance modelling approach for open network platforms based on the use of discrete-time queuing network theory.

In addition to the development of mathematical techniques to provide a suitable performance modelling solution, the project will contribute to the ongoing SEIC development of a performance modelling toolset that can help engineers of large-scale real-time systems to develop models to analyse performance of their target system and related SoS scenarios throughout their life-cycle.