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## Quantum threats and opportunities: The future of cybersecurity

In association with



As quantum technology evolves, the cybersecurity landscape is undergoing a seismic shift, redefining how we protect digital assets. Once a theoretical concept, quantum computing is rapidly becoming a reality with profound security implications. This event will explore the dual-edged impact of quantum technology on cybersecurity, addressing both threats and opportunities. Quantum systems pose a significant risk to traditional encryption (potentially rendering it obsolete) while also driving advancements like quantum-resistant algorithms and quantum key distribution (QKD) that offer unprecedented data security.

We'll examine the latest research and breakthroughs in quantum security, covering the risks of quantum decryption, the race for post-quantum cryptography, and practical QKD applications. Experts from industry and academia will share actionable insights to help organisations prepare for the quantum future. Whether you're in cybersecurity, technology, or business, this event provides essential guidance to navigate the challenges and opportunities of the quantum era.

All SASIG events operate under the Chatham House Rule, and there is no charge to attend. Refreshments will be kindly provided by our hosts.

**Wednesday 5 March 2025**

**3.30pm to 7pm**

**Guildford, Surrey**

## Chair

**Professor Ioana Boureanu Carlson** Director of Surrey's Centre for Cybersecurity Research, University of Surrey

**Dr Andrew Rogoyski** Innovation Strategy Lead, The Surrey Institute for People-Centred AI, University of Surrey

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**3.30pm**      **Registration and networking**

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**4pm**            **Welcome and introductions**

**Dr Andrew Rogoyski** Innovation Strategy Lead, The Surrey Institute for People-Centred AI, University of Surrey

**Professor Ioana Boureanu Carlson** Director of Surrey's Centre for Cybersecurity Research, University of Surrey

**Steve Coburn** Director, Surrey Cyber Security Cluster

**Danny King** Managing Director, The SASIG

**4.15pm**            **Critical infrastructure in the quantum era: Raising awareness and enabling a seamless transition to post-quantum cryptography**

**Dr Sana Belguith** Lecturer in Cyber Security, The University of Bristol

As quantum computing advances, the security of critical infrastructure faces unprecedented challenges. This session will explore the UK's readiness to transition to post-quantum cryptography, assessing current vulnerabilities, industry preparedness, and government initiatives. We will gain insights into the steps required for a smooth migration, including risk mitigation strategies, regulatory considerations, and the importance of early adoption. By fostering awareness and proactive planning, this discussion aims to equip organisations with the knowledge to safeguard their systems against emerging quantum threats.

**4.40pm**            **Quantum computing: Why is it different and why is it important?**

**Dr Peter Waggett** Research Director, IBM

Quantum computing represents a revolutionary leap in how we approach complex problem-solving. Unlike classical computing, which relies on Von Neumann architectures, quantum computing leverages unique principles like entanglement and superposition. These capabilities allow us to model and simulate real-world problems that were previously unsolvable. However, with this power comes the need for robust security measures. In this session, Peter will discuss quantum computing's potential to break current encryption methods makes the development of post-quantum encryption not just important, but essential for protecting sensitive data.

**5.05pm**      **The holy grail of cryptography: Quantum security for private data processing**  
**Daniel Gardham** Lecturer in Secure Systems, University of Surrey

In this session, Daniel will explore fully homomorphic encryption – often hailed as the ‘holy grail of cryptography’ – and its potential to revolutionise private data processing. This breakthrough extends its impact to fields like AI, blockchain, and e-voting, broadening the possibilities for cryptographic applications while addressing critical privacy and security challenges.

**5.30pm**      **Secure computing on a quantum computer and the threats of QML**  
**Rahul Tyagi** CEO, SECQAI

Quantum computing promises to revolutionise many industries, whilst access to quantum systems will remain difficult for many. As most quantum organisations focus on a cloud-only strategy, how can organisations securely compute in these quantum cloud systems? With the increasing ability of classical machine learning algorithms to design new approaches to known, will quantum machine learning open up a whole new avenue in cryptanalysis?

**5.55pm**      **Q&A session**

A closing Q&A session, where you'll have the chance to share your thoughts, ask questions, and get answers from our speakers regarding their sessions.

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**6.20pm**      **End of meeting and networking**

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# About



## The Security Awareness Special Interest Group (SASIG)

SASIG is a subscription-free networking forum, membership now represents thousands of organisations of all sizes from across the world and from all sectors, public and private. Its 10,700+ membership is drawn from CIOs, CISOs and their staff with responsibility for cybersecurity within their organisations. Professionals from other disciplines (risk, HR, legal, supply, etc.) and representatives from government, law enforcement and academia are also being increasingly welcomed at events. The Chatham House Rule is strictly enforced and universally respected at all meetings, and vendors and the Press are routinely excluded. Thus, the level of debate is extraordinarily revealing and rewarding.

SASIG has a members' website at [www.thesasig.com](http://www.thesasig.com). Please register here for membership.

## With thanks to our Supporters...



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