

Q&A: Jaya Baloo talks quantum computing, cybersecurity in financial institutions



By [Evan-Lee Courie](#)

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Jaya Baloo has been working internationally in information security for nearly two decades. In the last few years, she has been named CISO of the Year, Top 100 CISOs globally, and Top 100 Global Security Influencers.



Jaya Baloo, chief information security officer at KPN Telecom

Her focus has been on secure network architecture where her work has ranged in areas from lawful interception, VoIP and mobile security, to designing national MPLS infrastructures, ISP architecture, as well as quantum communications networks. She has worked for numerous telecom providers, Verizon and France Telecom among others, and currently works for KPN Telecom in the Netherlands where she is the chief information security officer (CISO). As a faculty member of Singularity University and a member of various infosec boards, she is always inspired about how much more there is to learn.

We chat to Jaya Baloo ahead of the Singularity U Exponential Finance Summit, taking place on 29-30 May 2019 at the Cape Town International Convention Centre.

Could you tell us more about who you are?

I am someone with a passion for security and innovation. I'm happiest when I can marry these two with a foundation of

secure and private enablement. I believe that security and privacy are at the core of all cool innovation.

▣ **How did you get into the field of information security?**

I was fascinated with computers, the internet and security from a very young age.

My first job was working at a bank, working with their top customers, dealing with export cryptography problems.

I soon learned that if you had really good cryptography, you were not allowed to export it outside of the USA. The USA did not want the rest of the world to have the same level of security that was afforded inside the USA. Cryptography was treated as a weapon and this really piqued my interest! It was considered dual-use technology as it could be used for good or bad. This is where my interest in the field started.

▣ **How would you describe quantum computing?**

A quantum computer uses properties of quantum mechanics to perform computation.

Quantum computing is something that will help us solve some of the biggest scientific challenges we have today and a very necessary part of solving challenges we can't yet conquer with high performance computing.



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We have scientific questions that require much greater computing power than what is at our disposal today. We need quantum computing to answer these questions e.g. with very large data sets.

▣ **How is quantum computing distinct from traditional digital computing?**

In traditional computing we are familiar with Moore's Law, which allows us to improve our computer power while decreasing costs every 18 months. However, we are in a place where Moore's Law is waning and we see the effects of Amdahl's Law where you actually can keep increasing processors but your actual computing power starts gradually declining. A regular computer uses bits, a two-state system which represents a zero or a one.

“ Quantum computing makes use of qubits (quantum bits) which can be a zero and one at the same time! This gives us more possibilities to write information on than regular bits. When combined with other qubits through a process called entanglement, it drastically improves the amount of raw data computing power we can work with. When you add lots of qubits to each other, you have exponentially more computing power. ”

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■ **What's the biggest trend we are seeing in cybersecurity this year?**

■ **What is the biggest cybersecurity myth at the moment?**

Our inability to resolve known vulnerabilities across the world...We can't fix them quickly enough.

■ **What effect does quantum computing have on cybersecurity?**

The biggest effect it has is on cryptography. Quantum computing can solve some of the biggest cryptographic challenges that we have, which are the root of how we do security.

Quantum computers can also solve maths problems much more quickly. What would take traditional computing millions of years to solve can be done by quantum computing in a few seconds!

■ **What should companies do to safeguard their networks and data in 2019?**

Understand your networks! As networks have grown organically and inorganically, you need to understand if you have got the basics in place. Artificial intelligence solutions are often used to detect complex problems, but it all starts with getting the basics right.



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■ **I heard you're a Singularity U Faculty member. Could you tell us more about this and how did you get involved?**

Singularity is a huge source of inspiration as it brings together super intelligent, accomplished people from various fields to think about the global challenge that affects us all.

I was asked to be part of the Dutch Faculty in 2017 which was a huge honour. I then went to the USA for training at the NASA campus, which was amazing.



Jaya Baloo speaking at a previous Singularity University Summit.

■ **In May, you will be speaking at the Singularity U Exponential Finance Summit. What can we expect from you?**

I will be speaking on cybersecurity for financial organisations - specific opportunities and threats and the impact of these. I will also be discussing the biggest hacks that we have seen lately that have an impact on finance, and modern financial issues and worries and what we can do about these.

Find out more about the [Singularity U Exponential Finance Summit](#).

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