NELSON MANDELA
UNIVERSITY

CYBERSECURITY:
REDUCING THE ATTACK SURFACE

INAUGURAL LECTURE

by

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ABSTRACT

Almost 60% of the world's population has access to the internet and most organisations today rely on internet connectivity to conduct business and carry out daily operations. Further to this, it is estimated that concepts such as the Internet of Things (IoT) will facilitate the connections of over 125 billion 'things' by the year 2030. However, as people and devices are becoming more and more interconnected, and more data is being shared, the question that must be asked is – are we doing so securely?

Each year, cybercriminals cost organisations and individuals millions of dollars, using techniques such as phishing, social engineering, malware and denial of service attacks. In particular, together with the Covid-19 pandemic, there has been a so-called 'cybercrime pandemic'. Threat actors adapted their techniques to target people with Covid-19-themed cyberattacks and phishing campaigns to exploit their stress and anxiety during the pandemic.

Cybersecurity and cybercrime exist in a symbiotic relationship in cyberspace, where, as cybersecurity gets stronger, so the cybercriminals need to become stronger to overcome those defenses. And, as the cybercriminals become stronger, so too must the defenses. Further, this symbiotic relationship plays out on what is called the attack surface.

Attack surfaces are the exposed areas of an organisation that make systems more vulnerable to attacks and, essentially, is all the gaps in an organisation's security that could be compromised by a threat actor. This attack surface is increased through organisations incorporating things such as IoT technologies, migrating to the cloud and decentralising its workforce, as happened during the pandemic with many people working from home.

It is essential that organisations reduce the digital attack surface, and the vulnerabilities introduced through devices connected to the internet, with technical strategies and solutions. However, the focus of cybersecurity is often on the digital attack surface and technical solutions, with less of a focus on the human aspects of cybersecurity. The human attack surface encompasses all the vulnerabilities introduced through the actions and activities of employees. These employees should be given the necessary cybersecurity awareness, training and education to reduce the human attack surface of organisations. However, it is not only employees of organisations who are online. All individuals who interact online should be cybersecurity aware and know how to reduce their own digital and human attack surfaces, or digital footprints.

This lecture emphasises the importance of utilising people as part of the cybersecurity defense through the cultivation of cybersecurity cultures in organisations and a cybersecurity conscious society.

Keywords: cybersecurity, attack surface, cybersecurity culture, cybersecurity awareness