CYBER SECURITY AND RESILIENCE SYMPOSIUM | TOWARDS A RESILIENT AVIATION CYBERSPACE

AMMAN, JORDAN | 15-17 OCTOBER 2019

Integrated Cyber Risk Management

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What is Cybersecurity ?

Cybersecurity Definitions

"The state of being protected against the criminal or unauthorized use of electronic data, or the measures taken to achieve this." (Oxford University Press, 2014)

"The activity or process, ability or capability, or state whereby information and communications systems and the information contained therein are protected from and/or defended against damage, unauthorized use or modification, or exploitation." (DHS, 2014)

"The state of being protected against the criminal or unauthorized use of electronic data, or the measures taken to achieve this." (Oxford University Press, 2014)

Cybersecurity is the collection of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and technologies that can be used to protect the cyber environment and organization and users assets (ITU: 2009)

"Cybersecurity entails the safeguarding of computer networks and the information they contain from penetration and from malicious damage or disruption." (Lewis, 2006)

Cybersecurity is the protection of privacy, integrity and accessibility of data information in the cyberspace. Therefore, Cyberspace is acknowledge as an interaction of persons, software and worldwide technological service (ISO/IEC 27021)

Cybersecurity Definition

- Cybersecurity is a broadly used term, and its definitions are often subjective and not very concise

- Available definitions tend to focus on an external and malicious threat component

- Existing cybersecurity risk assessments at ICAO are inherently based on the notion of a malicious threat component with terrorist characteristics (act of unlawful interference)

– " To choose a definition is to plead a cause"

– (Charles Leslie Stevenson, 1908 – 1979)

- The Secretariat Study Group on Cybersecurity (SSGC) will diligently work to establish a definition for cybersecurity in the context of civil aviation.

- The definition will reflect the notion of interacting processes to make the cyberspace of the aviation ecosystem safe and secure.

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Cybersecurity is a multi-disciplinary domain

- *"A science of cybersecurity offers many opportunities for advances based on a multidisciplinary approach, because, after all, cybersecurity is fundamentally about and adversarial engagement. Humans must defend machines that are attacked by other humans using machines. So, in addition to the critical traditional fields of computer science, electrical engineering, and mathematics, perspectives from other files are needed."* (Chang, F. R. 2012. Guest Editor's Column. *The Next Wave,* 19(4): 1–2.)

Cybersecurity is a multi-disciplinary domain
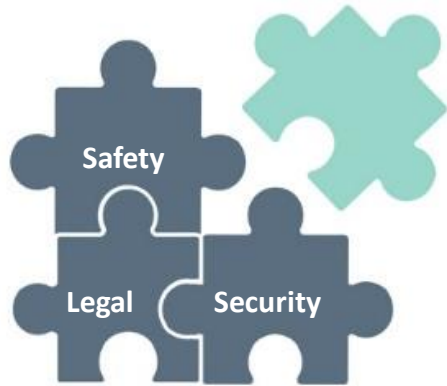
- In aviation, cybersecurity is primarily concerned with the integration of safety and security aspects

- An additional important component is the inclusion of legal instruments

- More domains could be included, but may fall outside the mandate of ICAO (e.g. crisis communication, business continuity)

- **Security:** protection of the system from intentional threats
- **Safety:** improving the resilience of the system in case of unwanted system failures
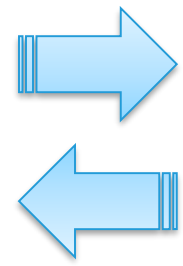
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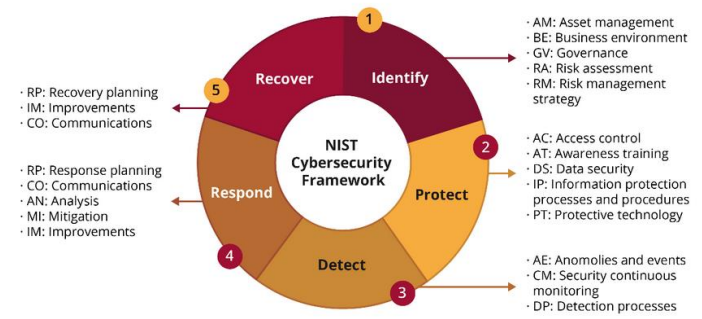# Enterprise Risk Management

Integration of domain specific risk management

ERM

NIST Cybersec Framework

ICAO integrated (cyber) risk management

13th AN Conference

Recommendation 6.2/1 h) ".. Explore the benefits of a unified framework for integrated risk management (safety, security, environment, etc…) taking into account the evolution of ISO management standards

40th Assembly

- Address Cybersecurity through a <u>horizontal, cross-cutting and functional approach</u>

- Governance structure, including: transparency <u>across all aviation domains</u>; bringing the work of the <u>Secretariat Study Group on Cybersecurity (SSGC) and the Trust Framework Study Group (TFSG) under the aegis of an overarching structure</u>; <u>consistency across all relevant Annexes</u> to the Convention on International Civil Aviation

- A40-10 *Addressing Cybersecurity in Civil Aviation*

    – Identify <u>threats and risks</u> from possible cyber incidents

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