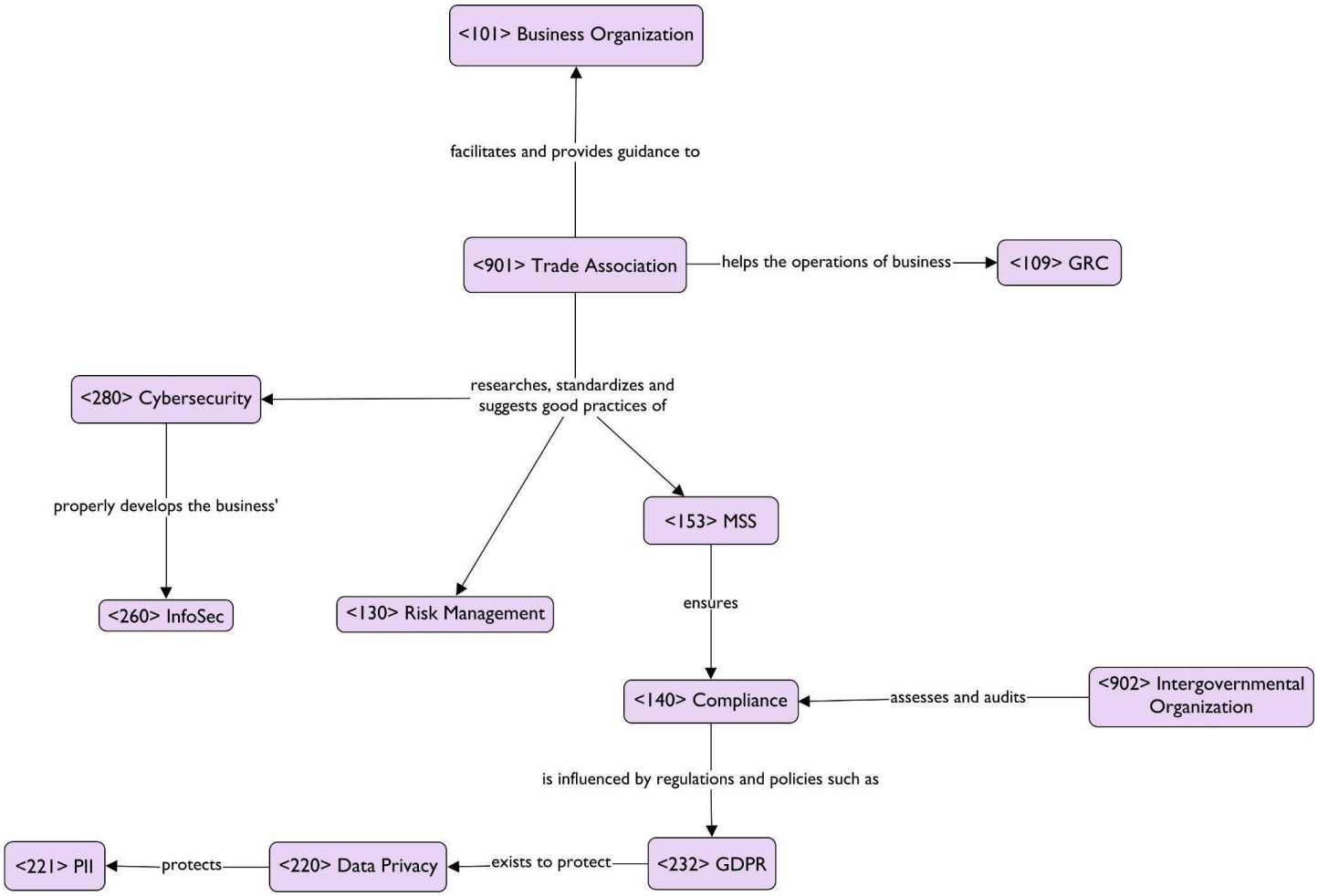
## 1 – Concept Map




| Concept | Definition (one sentence per concept) |
| --- | --- |
| <901> Trade Association | A Trade Association is a 'not-for-profit organization' made up of a collection of companies and/or individuals with common interests or who work in the same industry.<br>They act as a representative body for the industry they represent, putting forward the collective view and position of its members. As the 'industry voice', trade associations speak on behalf of their members to government, agencies, regulators, the media and other opinion formers.[1] |
| <902> Intergovernmental Organization / IGO | Entity involving two or more nations with the goal to work on issues of common interest.[2] |

## 2 – Description of the topic and its context

**Information Management** in the context of airline businesses can be studied, analyzed and implemented in three different main categories: Passenger Services, Airline Operations and Aircraft Control. In all of these areas, there has to be a certain degree of data management quality and standards, whether it be for security, privacy or even just efficiency reasons[3]. Not only that, as airlines progress and modernize their IT technology components, it's expected that several internal components will interact with a variety of information systems outside airline digital security perimeter, consequently expanding the airline's **attack surface**.

Independently of the travel market an airline specializes in, such as domestic, international or regional, **InfoSec** is regarded as one of the most crucial aspects of the digital side of business operations, especially when it involves the most important **stakeholder** of an airline's service: **the passenger**. In fact, it's around this stakeholder that most airlines build their **business model**, with the only exception being cargo carriers. Some of the most popular models include Full Service Carriers, completely attuned to passenger's needs for a higher quality of user experience, and Low-Cost Carriers, which have a simplified operating model in order to guarantee affordable and cheaper air travel options. But in the end, in all of these models, the necessary information management requirements end up holding the same priority and importance for **business goals**, making it so that proper standards for internal **data management** and for **data exchange** between airlines become much more important.

This is where the International Air Transport Association, **IATA**, becomes an important stakeholder for airline carriers. As a Trade Association, IATA exercises different functionalities and plays the role of a **business facilitator** in the industry, with a prominent influence in the area of data management and **cybersecurity standards** for airlines[4]. This includes but is not limited to disseminating **guidelines**, **best practices**, **standards** and aiding in the **compliance of several regulations**, such as **GDPR policies** or global Environmental Sustainability targets. Not only that, IATA facilitates the collaboration between airline business entities, enabling the development of **data standards** and **frameworks** to ensure the consistent and accurate exchange of information among airlines, travel agents, airports and other noteworthy stakeholders, such as the International Civil Aviation Organization (**ICAO**), an intergovernmental entity whose focus is on the regulatory and technical aspects of civil aviation[5], which includes regulations on passenger **Personally Identifiable Information (PII)**.

Thus, IATA ends up providing essential aid for the quality standards of aviation data handling throughout all **GRC operations**. The most prominent example of a Compliance issue most airline carriers face is the regulatory compliance of **data privacy policies**[6] for all the countries the airline conducts business in, especially regarding new surging industry standards which include biometric facilitation for passengers[7]. IATA enables businesses to more easily assess and manage their **IT strategy** regarding the **data retention** of the PII of their passengers, thus helping business conduct. Other examples of important GRC issues that IATA helps airlines tackle are Cybersecurity requirements, such as **Risk Assessment** and **data breach emergency response**, through the guidance of groups such as the Cyber Management Working Group (**CMWG**), established by IATA to assess industry needs and provide appropriate instruction[8].

Information management brings forth several IT related issues that airlines will always have to take into account. Whether to prevent external access and tampering, to maintain passenger confidentiality requirements, to enable ease of communication and exchange of information, or even to just facilitate the integration of new technology and policies into already built systems, airlines will always have to face a rapidly evolving climate, making it so trade associations and organizations ready to play the role of facilitator and IT advisor that much more important for the business market, as they can play an integral role in the proper development of business operations.

## 3 – Main challenges in relation to the use of IT

The airline industry faces a unique set of challenges in managing information. To ensure smooth operations and maintain passenger trust, it is imperative to tackle the following obstacles:

First, airlines often rely on a multitude of systems and applications to manage various aspects of their operations, including reservations, inventory, crew scheduling, and maintenance. However, integrating these disparate systems and ensuring their **interoperability** remains a significant hurdle. Lack of standardized data formats, incompatible technologies, and legacy systems can hinder the flow of information across different departments, leading to **inefficiencies** and **delays**. As we studied, Amazon had this very issue in integrating its HR systems[9]. Hence the need for **standardization**, which is a role certain associations like IATA can exercise.

With increasing **digitalization** and **interconnectivity**, the airline industry is becoming an attractive target for **cyberattacks**. The potential consequences of a cyberattack are severe, ranging from unauthorized access to passenger data to disruption of flight operations. Airlines must invest in **robust cybersecurity** measures, including encryption, firewalls, intrusion detection systems, and **employee training programmes** to counter evolving threats and maintain data integrity and confidentiality. IATA helps out in this front by providing airlines with a multitude of workshops, conferences, online courses and personnel training programs.

Harnessing the power of **data analytics** and **business intelligence** is crucial for airlines to improve decision-making, optimize operations, and enhance customer experiences. However, extracting meaningful insights from large datasets and applying them in a timely manner poses a challenge. Airlines need sophisticated **analytical tools** and skilled **data scientists** to unlock the full potential of their data and gain a competitive edge in the industry, once again showing how important proper information management is to this industry.

The volume and variety of data, integration issues, privacy concerns, cybersecurity threats, operational resilience, and the need for data analytics are among the key hurdles that airlines must overcome for effective data handling. By addressing these challenges and implementing **robust information management strategies**, airlines can enhance operational efficiency, improve customer experiences, and stay ahead in an increasingly competitive industry. With the right approach and investment in technology and talent, the skies of information management in the airline industry can be navigated successfully.

## 4 – Examples of initiatives, projects, or products

One notable case of information management projects in the airline industry involves the International Air Transport Association (IATA) collaborating with the International Coordinating Council of Aerospace Industries Associations (ICCAIA) on the **Aircraft Cyber Security eXchange Restricted FORUM** (rFORUM). This initiative aimed to assist airlines in comprehending the risks associated with the introduction of new technologies. By fostering **communication** and **collaboration** between airlines, Original Equipment Manufacturers (OEMs) and Design Approval Holders (DAH), the rFORUM aimed to **address cybersecurity concerns in the aviation industry**. This cooperative effort allowed airlines to voice their apprehensions and share insights with industry experts, facilitating a better understanding of the challenges and ultimately leading to more secure and resilient aviation systems.

On the topic of successful implementations, Singapore Airlines provides an example with their **1Point** system[10]. This innovative initiative revolutionized the passenger experience by **integrating various services** into a single platform. From flight booking and check-in to in-flight entertainment and post-flight services, the 1Point system streamlined and personalized the entire journey for passengers, therefore also streamlining the business' information management requirements for said passenger services. The implementation of the 1Point system showcases the **benefits of seamless integration** and **improved customer experiences**. By consolidating multiple services and simplifying processes, Singapore Airlines not only enhanced passenger satisfaction but also **optimized operational efficiency**. This successful implementation demonstrates the value of investing in customer-centric technologies and prioritizing the end-user experience.

On the other hand, there have been instances where the implementation or usage of certain technologies resulted in failures. One such example is the **data breach incident** faced by Hong Kong airline **Cathay Pacific**. The airline experienced a significant **breach of customer data**, which not only **compromised sensitive information** (**PII**) but also damaged the company's reputation[11]. This incident demonstrated the importance of robust cybersecurity measures and the need for organizations to prioritize **data protection**. The aftermath of the breach highlighted the significance of timely detection, swift response, and effective communication to mitigate the negative consequences of such events. Companies across various industries can learn from Cathay Pacific's experience by investing in robust **cybersecurity frameworks** and establishing **proactive measures** to safeguard customer data. Overall, this case is a prime example of the importance of business **risk assessment** and **incident response** in the industry of aviation.

The implementation and usage of technologies, projects, and products can lead to both successes and failures. The collaboration between IATA and ICCAIA through the rFORUM demonstrates how proactive measures can help identify and address risks associated with new technologies. Additionally, the Singapore Airlines 1Point system showcases the benefits of seamless integration and customer-centric technologies. Conversely, Cathay Pacific's data breach incident highlights the repercussions of inadequate cybersecurity measures and the importance of prioritizing data protection. By learning from these real-life cases, organizations can better navigate the complexities and challenges associated with implementing and utilizing various aspects of their operations.

## 5 – References

[1] What is a Trade Association? - The voice at the heart of the industry [Online] - https://www.property-care.org/us/trade-association

[2] Intergovernmental Organizations (IGOs) [Online] - https://hls.harvard.edu/bernard-koteen-office-of-public-interest-advising/about-opia/what-is-public-interest-law/public-service-practice-settings/international-public-interest-law-practice-setting/intergovernmental-organizations-igos/#:~:text=The%20term%20intergovernmental%20organization%20

[3] (2023, May 26) IATA - Threat and Security Risk Management, Emergency Response Planning, Aviation Security [Online] - https://www.iata.org/en/publications/newsletters/iata-knowledge-hub/what-you-need-to-know-about-aviation-security/

[4] IATA - Aviation Cybersecurity: IATA's Role [Online] - https://www.iata.org/contentassets/e55ae27b2fc34343a1143fca5129c8dd/aviation-cyber-security-position.pdf

[5] About ICAO [Online] - https://www.icao.int/about-icao/Pages/default.aspx

[6] (2022, September 15). IATA - Data Privacy Laws and Regulations [Online] - https://airlines.iata.org/analysis/airlines-seek-better-data-privacy-regulations

[7] (2021, December 16). IATA - Cyber Regulations, Cybersecurity Strategy and Industry Initiatives [Online] - https://airlines.iata.org/2021/12/16/taking-cybersecurity-next-level

[8] Aviation Cybersecurity Fact Sheet [Online] - https://www.iata.org/en/iata-repository/pressroom/fact-sheets/fact-sheet--cyber-security/

[9] Dave Zielinski (2021, November 8). Amazon's Troubles Hold Lessons on HR Tech, Employee Experience [Online] - https://www.shrm.org/resourcesandtools/hr-topics/technology/pages/amazon-hr-tech-employee-experience.aspx

[10] Singapore Airlines Picks Salesforce For Major Revamp Of Customer Case And Knowledge Management System [Online] - https://www.singaporeair.com/en_UK/es/media-centre/press-release/article/?q=en_UK/2021/April-June/ne1021-210406

[11] Michael Cowley (2020, March 13). Cathay Pacific's data breach fine and what companies can learn from it [Online] - https://insights.integrity360.com/cathay-pacific-data-breach-fine