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FAIR

12 | MARCH
2024

14

Session 4

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Digital information management and data exchange: moving people and goods better and faster

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Session 4:

Digital Information Management and Data Exchange – Moving People and Goods Better and Faster

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Digital Information Management and Data Exchange

Moving People and Goods Better and Faster

- 2024 - ICAO's Year of Facilitation!

- Digitizing global cross-border transactions while still maintaining trust
  - *The challenges*
  - *The opportunities*

- Innovation as a driver of the future of facilitation

- ICAO's potential role in elaborating, supporting uptake of global models
  - *Can ICAO's experience advancing its model for global traveler facilitation (air mode) inform a new approach to movement of goods?*

- Parting thoughts

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Panel Speakers

Amar More

CEO and Co-Founder, Kale Logistics Solutions

Jordi Vicens Obrador

Deputy Director, Logistics Analysis and Operational Simulation, ADM Aéroports de Montréal (ADM)

Adam Lemmon

Labs Director, North America, MATTR

Peter Warms

Business Development Manager, Global LEI Foundation

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Amar More

CEO and Co-Founder

Kale Logistics Solutions

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Amar More
President & CEO

- Domain Co-ordinator for **Cross Border Management** at **United Nations** Centre for Trade Facilitation and Electronic Business (UN/CEFACT), Geneva

- On the **panel of experts for trade facilitation** at UN/CEFACT, Geneva

- Board member of **The International Air Cargo Association** (TIACA), Miami

- Chaired Asia Pacific region on the executive committee on **International Port Community Systems Association** (IPCSA), UK

- Member of **National Council** for Logistics with Chartered Institute of Logistics and Transport, India

- Empaneled with several **governments globally** on conceptualizing trade facilitation initiatives to usher in "Ease of Doing Business" using digital technology.

Innovative Next Generation Airport Cargo Community System (ACS)

Agenda

1   **The issues and improvement opportunities**

2   **The solution – The Airport Cargo Community System**

3   **What's in it for the Airports?**

Key Issues concerning the air cargo

- o **Operational Inefficiency**
    - – Trucks arriving in bunches at the cargo terminal
    - – Trucks / Cargo waiting at the airport due to the paperwork needed
    - – No advance information to handlers at the airports about the number of trucks and cargo expected
    - – Trucks for whom cargo is not ready increasing the queues at the airport
- o **Sustainability Challenges**
    - – On average 120 copies of paper per shipment
    - – Cargo stays on the ground for 85% of the total transportation time waiting for paperwork
    - – Same cargo data is reflected and created on multiple documents
- o **Opaqueness in operations**
    - – No single location to get the consolidated and near real-time shipment status
    - – Increases inventory and storage costs
- o **Security loopholes**
    - – No information of Truck/truck Drivers & cargo therein in advance to the airport or handlers
- o **Unavailability of reliable Data**
    - – Unavailability of real-time and reliable data on cargo for strategic decision-making
- o **Unattractiveness to cargo customers**
    - – Loss of cargo customers to competing airports due to inefficiency
- o **Compliance with global best practices and standards**
    - – Best practices mentioned in ICAO Annex 9, Recommended Practice 4.17.2, though *UN/CEFACT Recommendation #33* on establishing Single Window not adhered to

The current state of the air cargo industry

The Airport Cargo Community System (ACS) significantly enhancing Cargo throughput

What is an ACS?

▪ *ACS stands for an Airport Cargo Community System. It is a common platform promoted by the airport to facilitate digital interactions between the different links involved in the air cargo business including truckers, freight forwarders, customs brokers, GHAs, airlines, exporters, importers, customs, and other regulatory authorities, as well as chambers of commerce and other supply chain participants.*
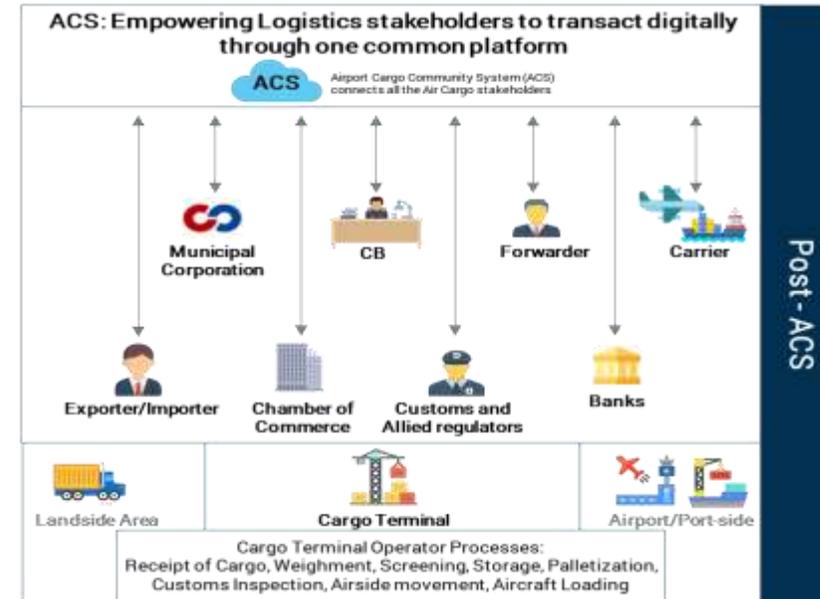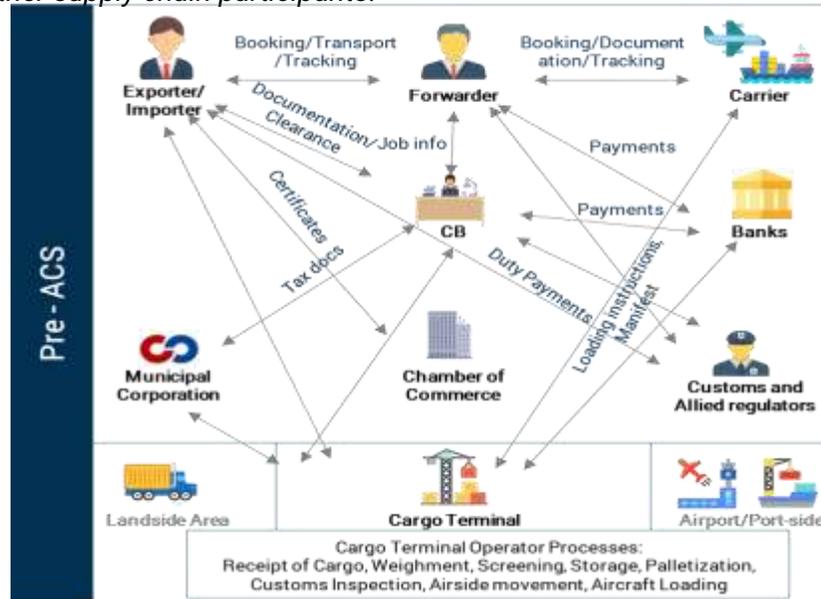
ACS – addressing the concerns and improvement areas in air cargo – Key Highlights

A web portal like **https://www.cargobyblr.in/UI/UpliftLogin.aspx** for the air cargo stakeholders at the airport that enables

1. Paperwork to be completed online before coming to the airport
2. Booking an appointment for trucks to come to the airport
3. Exchanging data on the system as opposed to on paper – eliminating several paper copies
4. Source of visibility for the shipment
5. Several other value-added digital services to the community
6. Potential e-marketplace for further optimization of air cargo
7. No duplication of work for stakeholders and customers – portal to have backend connectivity with stakeholder systems
8. Next-gen Mobile app and AI engine

Demand Generation Benefits
- Attract more cargo to the airport
- Connect with Seaport and partner airport for generating more business

Supply Chain Resiliency benefits
- Keep the cargo ops going remotely by facilitating the documentation through cloud
- reducing paper which is known to transmit viruses and infections

Marketing benefits
Create an image of a tech-savvy airport & provide a better customer satisfaction

Planning Benefits
Reliable and near real time cargo data for decision-making pertaining to:
- Infrastructure planning
- Understanding of end customers & partner airports

Economic Benefits
- Revenue generation potential through the digital services rollout to the community without significant investments and ongoing costs
- The potential economic impact of _**$100 per ton of cargo handled**_ on an annual basis

Compliance Benefits
Compliance to the best practices prescribed in
- ICAO Annex 9, Rec. Pr. 4.17.2,
- UN Recommendation #33,
- US CBP Green Trade Initiative

Sustainability Benefits
- Potential _**4,000 gms of CO_2 emissions / ton saved**_ annually
- Potential _**3 trees**_ to be saved _**per thousand tons of cargo**_ annually by reducing paper
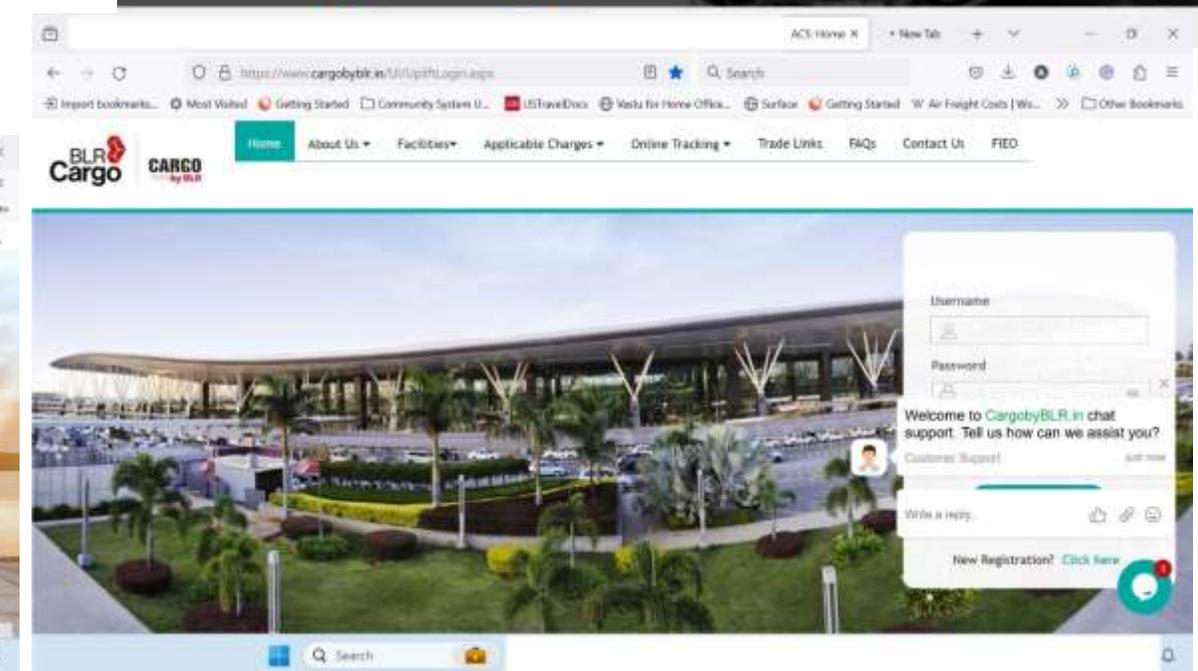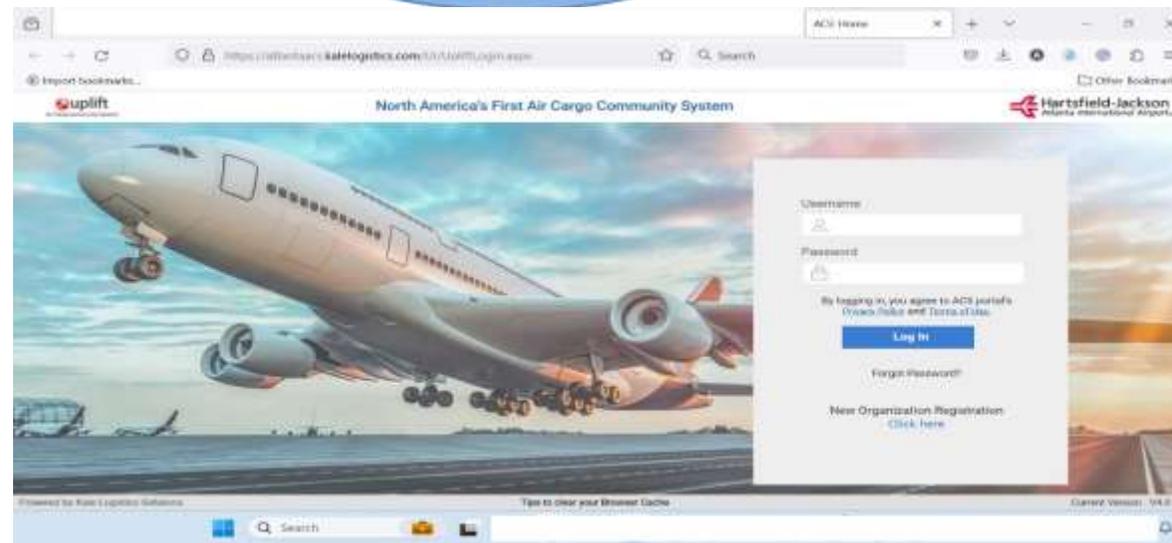
Security Benefits
- Advance information on Truck Drivers and cargo to be available with the airport and handlers
- Compliance to initiatives like electronic consignment security declarations, Pre-loading advance cargo information etc.
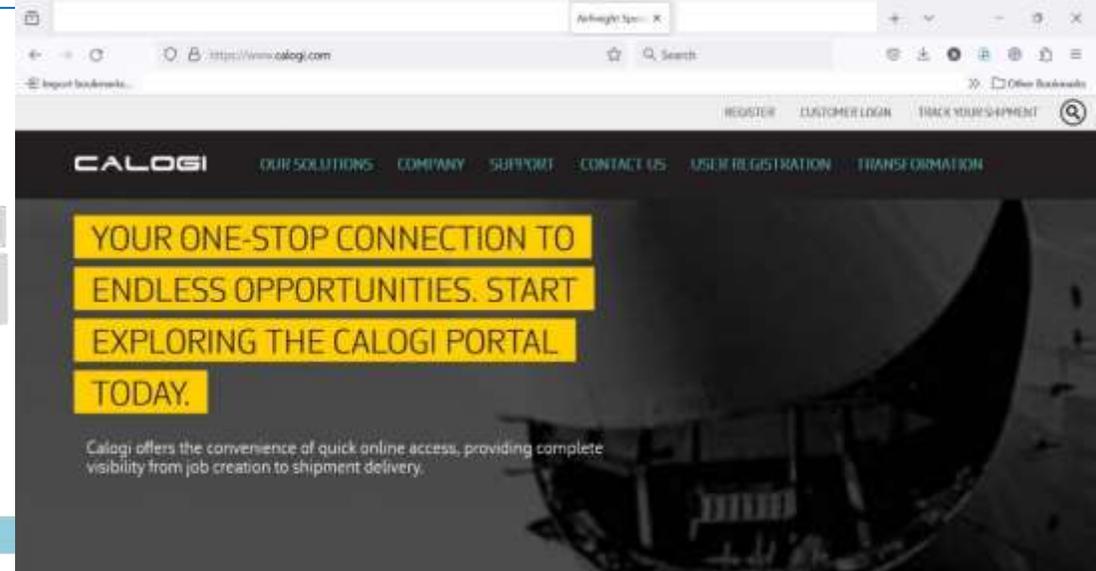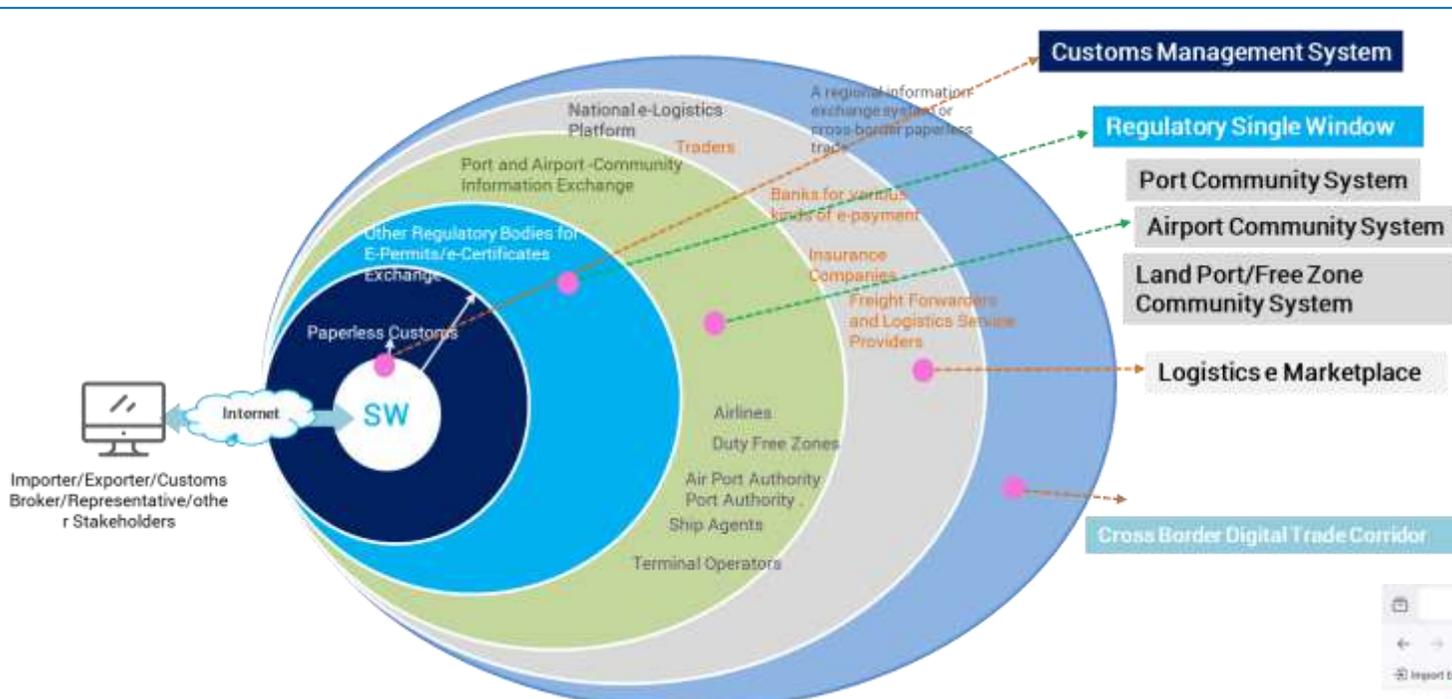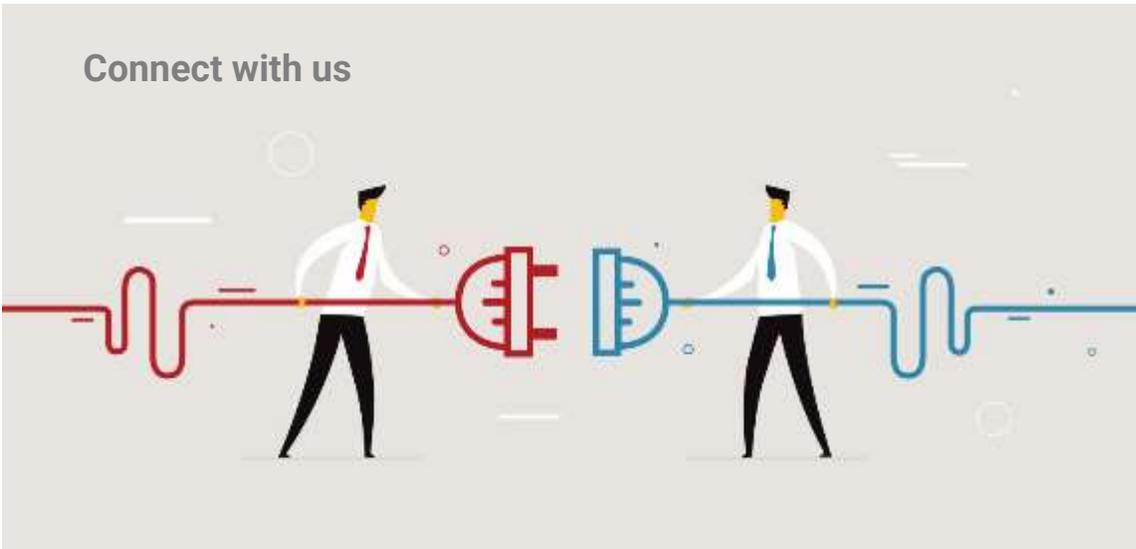
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Digital Information Management & Data Exchange

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Importance of Digital Information

Accurate information

Digital information allows accurate and timely transmission of data between aviation systems
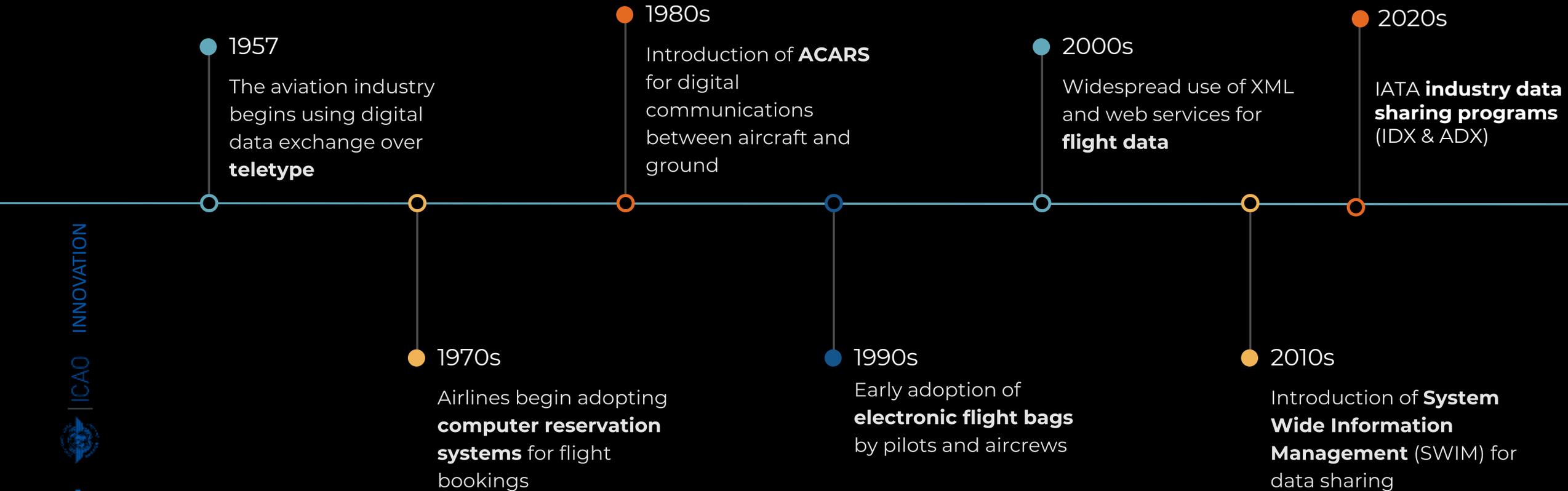
Efficient operations

Digital information enables efficient flight planning, aircraft maintenance, and airport operations

Enhanced safety

Digital information provides pilots and air traffic controllers with complete and up-to-date situational awareness

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Digital information is crucial for aviation operations and safety in the modern world.

History of Data Exchange

1957

The aviation industry begins using digital data exchange over **teletype**

1970s

Airlines begin adopting **computer reservation systems** for flight bookings

1980s

Introduction of **ACARS** for digital communications between aircraft and ground

1990s

Early adoption of **electronic flight bags** by pilots and aircrews

2000s

Widespread use of XML and web services for **flight data**

2010s

Introduction of **System Wide Information Management** (SWIM) for data sharing

2020s

IATA **industry data sharing programs** (IDX & ADX)

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Challenges

Integration across disparate systems

Integrating data and systems across airlines, airports, air navigation service providers, and other aviation stakeholders **presents technical and organizational challenges.**

Data quality and integrity

Ensuring **high quality, timely and trustworthy data** across highly interconnected systems is critical but difficult to achieve.

Cybersecurity risks

With **increasing digitalization** comes **greater vulnerability to cyber attacks**, requiring robust cybersecurity strategies.

Legacy systems

Upgrading or replacing legacy systems can be costly and disruptive, making transition to newer technologies slow.

Regulatory compliance & Governance

Navigating **different national regulations around data management** adds **complexity** for global aviation companies.

Talent gaps

Aviation faces talent shortages in high-demand **digital skills** like data science, cybersecurity and systems integration.

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Future Outlook

Digital information management and data exchange using connected systems and automated processes **will continue** to transform aviation in the future. Seamless **integration** across platforms, **predictive analytics**, and AI-enabled **decision making** will drive efficiency, safety, and **innovation** across the industry.

Airport Digital Twins are key to achieve **efficient operations** and to **support airport master planning**.

Therefore, **building interconnected comprehensive data lakes** (and relying on IoT) **will be critical** to be able to feed and maintain Digital Twins for **different processes**: passenger, BHS and stands/runway operations.

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Benefits

Reduced Errors & Better Operational Efficiency

Faster Information Sharing & Decision Making

Optimized Infrastructure & Improved Safety and Security

Lower Costs & Environmental Sustainability

Improved Passenger experience

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Conclusion

1 — Improve data quality from the start

2 — Upgrade data collection systems and processes

3 — Standardize data formats and metadata

4 — Establish data exchange partnerships

5 — Leverage automation for data analysis and insights

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Labs Director, North America

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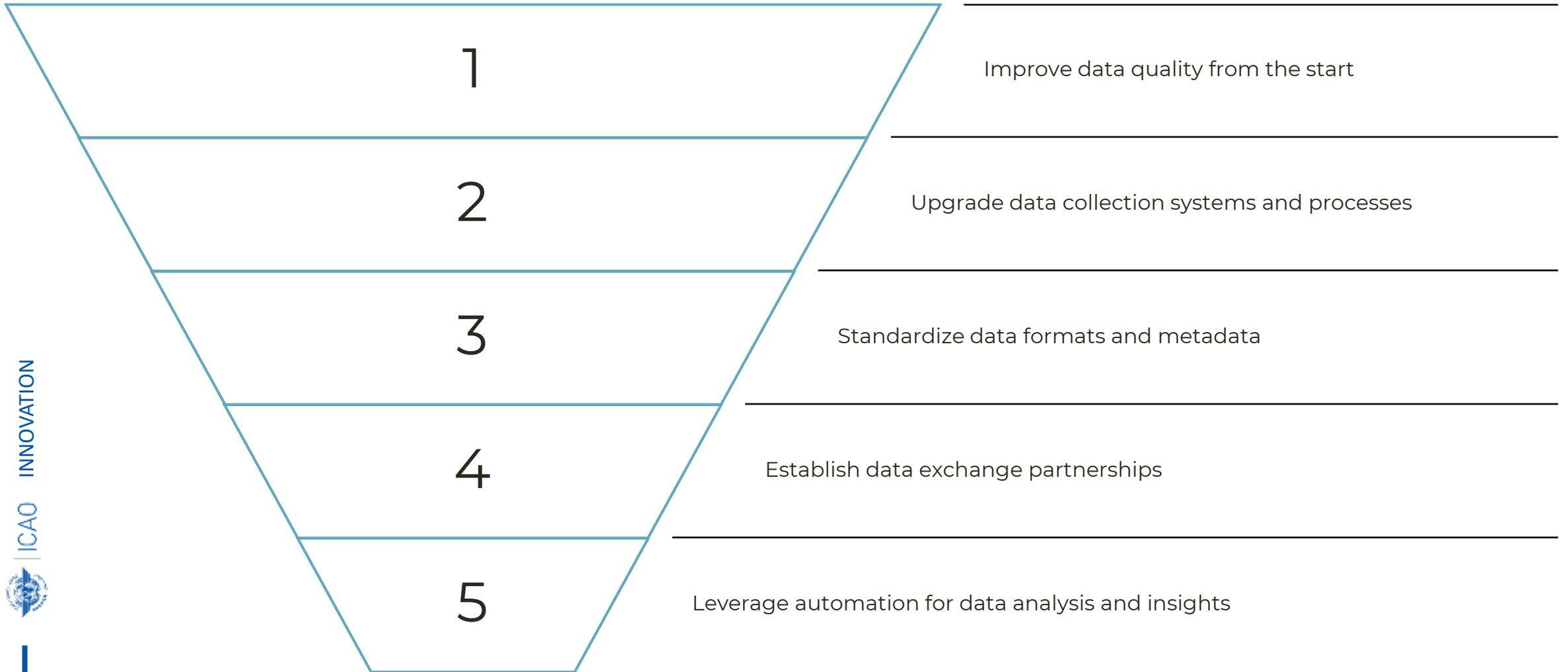
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Pillars to Establish Digital Trust in Aviation

Session 4: Digital information management and data exchange:
moving people and goods better and faster

OVERVIEW

Trust Landscape and Challenges

Longstanding problem, amplified digitally

Extends far beyond credentials

The Trust Lifecycle

Layered approach

Enabling high assurance journeys & supply chains

Role of Trust Anchors

Opportunities in Aviation

Increase levels of assurance and mitigate security risks

Reduce costs and losses of paper-based processes

Increase efficiencies and throughputs

A Vital Role for ICAO

Primary Trust Anchor

Extend trust registry expertise and capabilities into personnel and cargo

Creating trust, especially across borders, is a longstanding problem, only amplified digitally, which requires much more than just credentials.

Passenger

Information authentic?

Right person?

Who signed off?

Can we trust them?

Meet our requirements?

Personnel
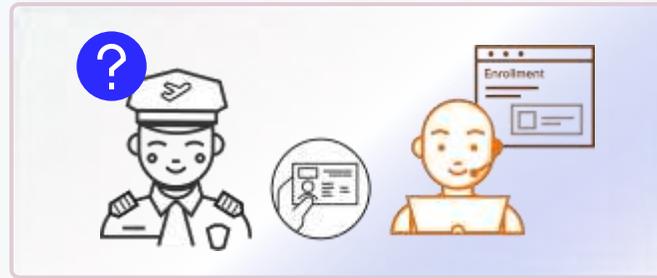
Information authentic?

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Cargo
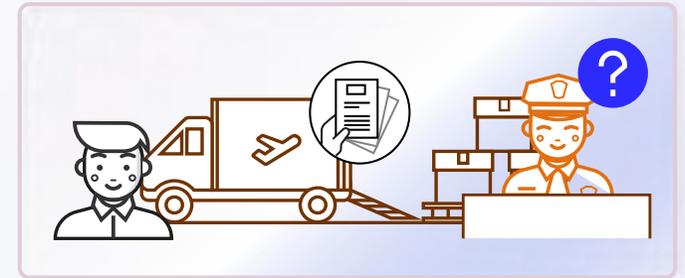
Many Entities and Identities
Consignor? Freight Forwarder? Trucking? Driver?

Relationships and Authorizations
Consignor > Freight Forwarder > Trucking > Driver

Documentation
Chain of custody verification as documentation changes hands

By serving all layers of the trust lifecycle **high assurance journeys and supply chains** can be created.

Ecosystem Assurance

Information Assurance

Authentication Assurance

Identity Assurance

Proximity Assurance

Binding Assurance

Ecosystem Lifecycle

Information Lifecycle

Authentication Lifecycle
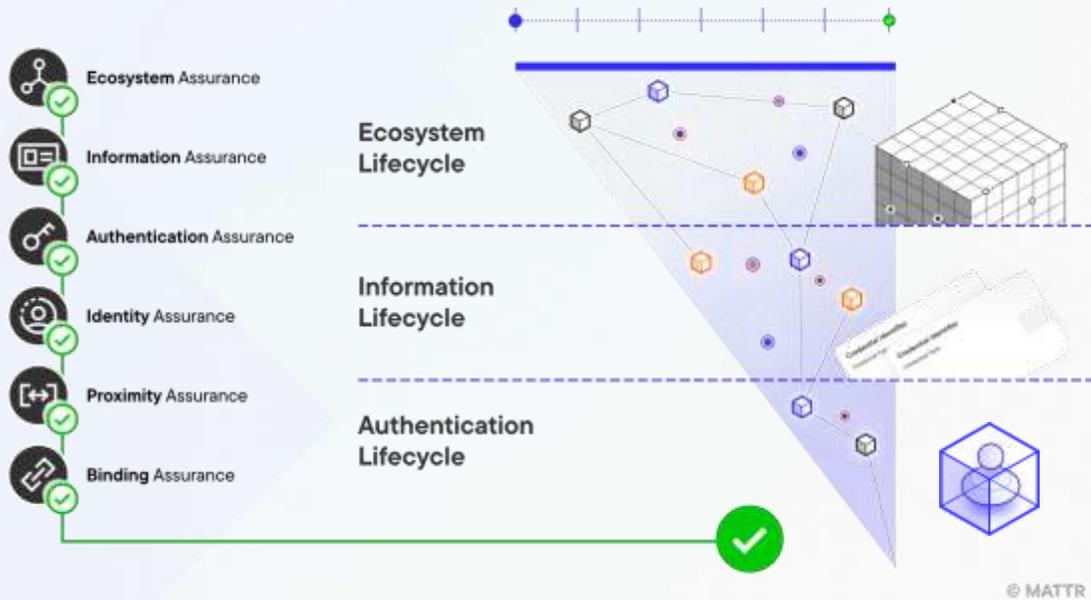
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Passenger

ICAO Passenger Public Key Directory (PKD)

Standards

ISO   OpenID   W3C®   IETF

Partners

SILICON VALLEY INNOVATION PROGRAM   Homeland Security   STATE OF CALIFORNIA DMV Department of Motor Vehicles   Service NSW

Trust establishment opens many opportunities in Aviation, amplified digitally.

Personnel
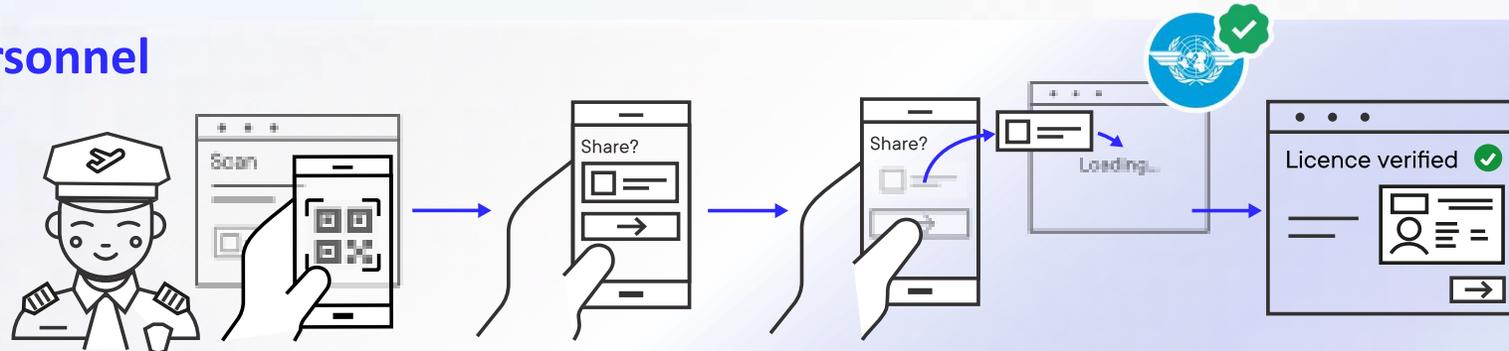
ICAO Electronic Personnel Licenses (EPL)

Aviation Security Trust Framework (ASTF)

Cargo
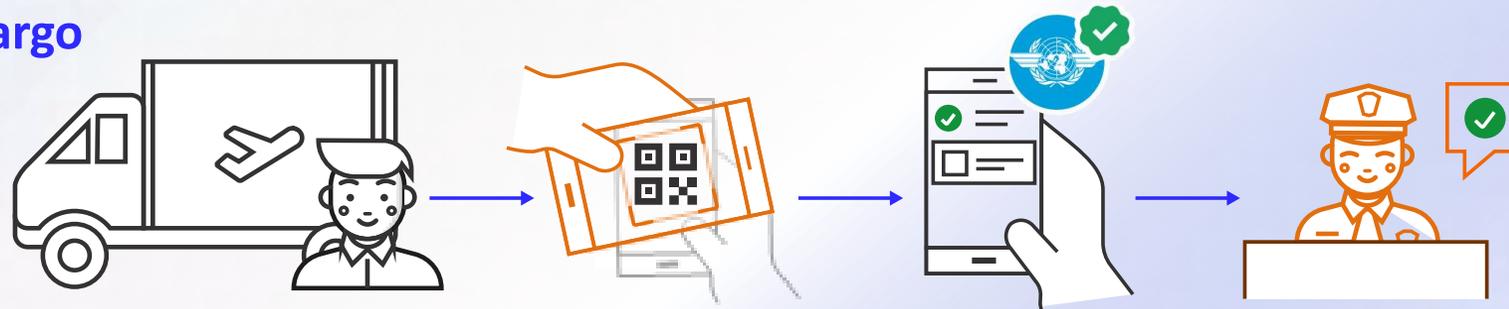
Digital Product Passports

WCO-ICAO Guidelines on Alignment of the Customs AEO and RA/KC Programmes

Many opportunities exist for ICAO to enable digital trust across Aviation, increasing safety and security.

Challenges

Creating trust is a longstanding problem; amplified digitally; requires more than credentials.

Trust lifecycle is layered; ecosystem, information and authentication.

Serving all layers is required to create high assurance journeys and supply chains; trust anchors play a vital role.

Opportunities

Establish a global, **multi-purpose, trust registry** (extend passenger PKD reputation and expertise to personnel and cargo).

Serve as the ultimate **trusted source of truth governing ecosystem participation**, E.g. EPL issuers or appropriate authorities for cargo safety and/or security

Define and enforce appropriate **trust registry governance structures** (PKD baseline)

Empower ecosystem participants with **tools, guidelines and expertise to innovate and modernize** their operations while adhering to ICAO provisions

Continue progress with the **alignment of ICAO KC/RA and WCO AEO** by expanding into the **digital realm.**

Benefits

Increase assurance and mitigate cargo security risks along the supply chain.

Reduce costs and losses due to paper-based processes.

Increase efficiencies and throughputs across various aviation supply chains.

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GLEIF, LEI & vLEI

- Organizational Identity

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The Global LEI Foundation (GLEIF)

In 2011, the G-20 leaders supported "**the creation of a global legal entity identifier (LEI) which uniquely identifies parties to financial transactions**."

- GLEIF is a not-for-profit Swiss foundation, founded by the Financial Stability Board (FSB).

- GLEIF is overseen by the Regulatory Oversight Committee (ROC) with
  - **68 regulators** and
  - **24 observers**
  - from **50 countries**

- GLEIF Board has **15 independent directors.**

- **38 Partners** for LEI issuing (**LOUs**) and growing

- **> 2,569,091 issued LEIs** to date

- GLEIF Engagement:
  - **International Chamber of Commerce, Digital Standards Initiative**
  - **U.S. Customs and Border Protection, Global Business Identifier**
  - **UN/CEFACT**

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The Legal Entity Identifier (LEI)

- The LEI is a life-long identifier **owned** by the respective legal entity.

- It points to the associated reference data.

- The LEI is an ISO standard **ISO 17442.**

- **280** rules and regulations

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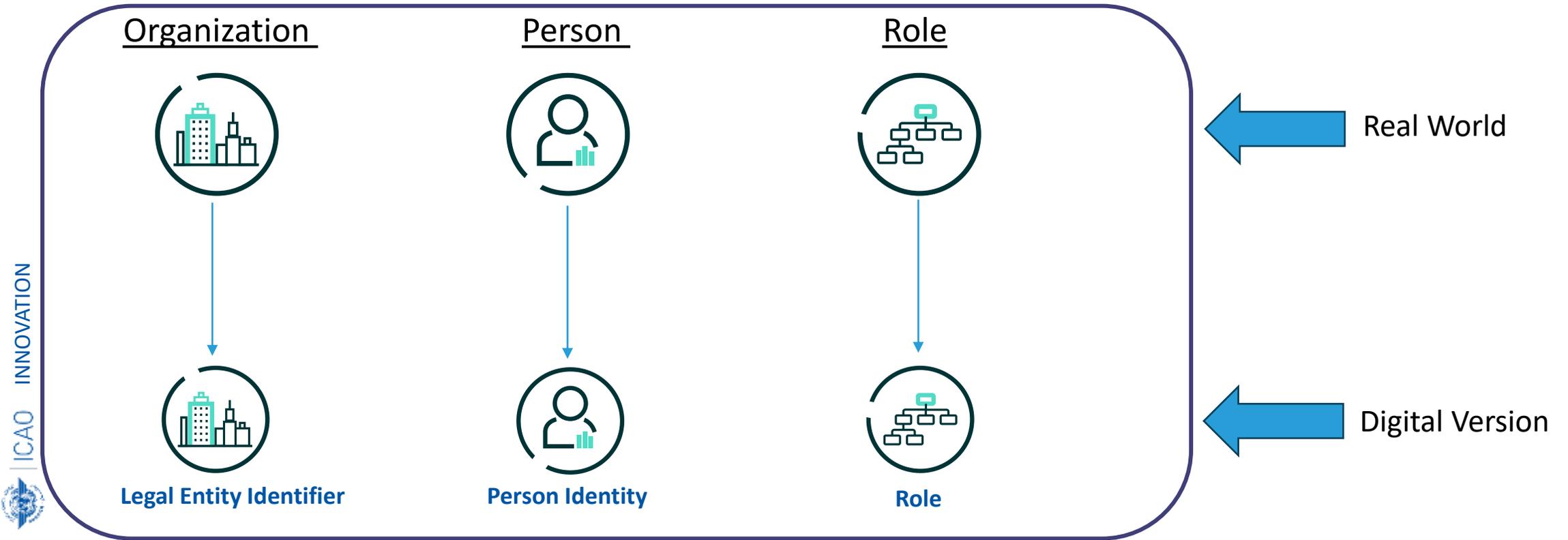
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The Verifiable LEI (vLEI)

The need for a more secure, verifiable organizational identity – "Never trust, always verify"

- *The ability of a person or thing to prove their authority to represent an organization outside (and even inside) the boundaries of that organization.*

- Organizational Identity ultimately is about being able to verify the identity of an organization and the people that represent the organization

- With the verifiable LEI (vLEI) , this can be done with Organizational Credentials
  - securely, with certainty and end-verifiability

- The vLEI ecosystem and infrastructure delivers Zero Trust Architecture for Organizational Identity using Organizational Credentials

- Multi-signature, weighted threshold requirements and pre-rotation of keys

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Representing the connection among Organizations, Persons and Roles

vLEI: Cryptographically binds the person in their role to their organization

Organization

Person

Role

Real World

Digital Version

Legal Entity Identifier

Person Identity

Role

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European Banking Authority (EBA) Reporting

Private sector reporting to the public sector

- EBA has secured the participation of 17 banks for a pilot

- Upon conclusion of a successful pilot:
  - EBA would announce decision to use the vLEI for Pillar 3 reporting
  - Implement Pillar 3 reporting for the total 600 banks reporting entities and plan to migrate other EBA reporting frameworks to use vLEI for the identification, authentication, authorization, security and management of users in charge of submitting these frameworks

- Potential use cases for vLEI: Client on-boarding/KYC, supply chain, bills of laden, telecom, annual reports, regulatory reports, etc

EBA Data Submitter
(vLEI ECR)

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