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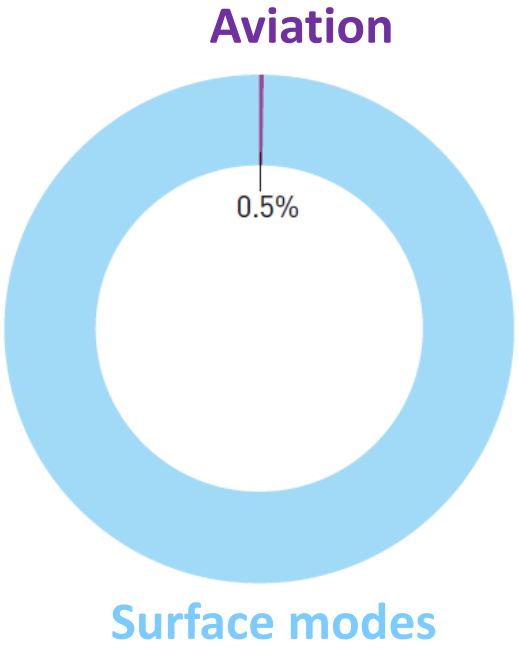
UNCTAD E-Commerce Week –
New Solutions in International Transport and Trade Facilitation

Sainarayan A
Chief Aviation Data Analysis, Air Transport Bureau,
International Civil Aviation Organization

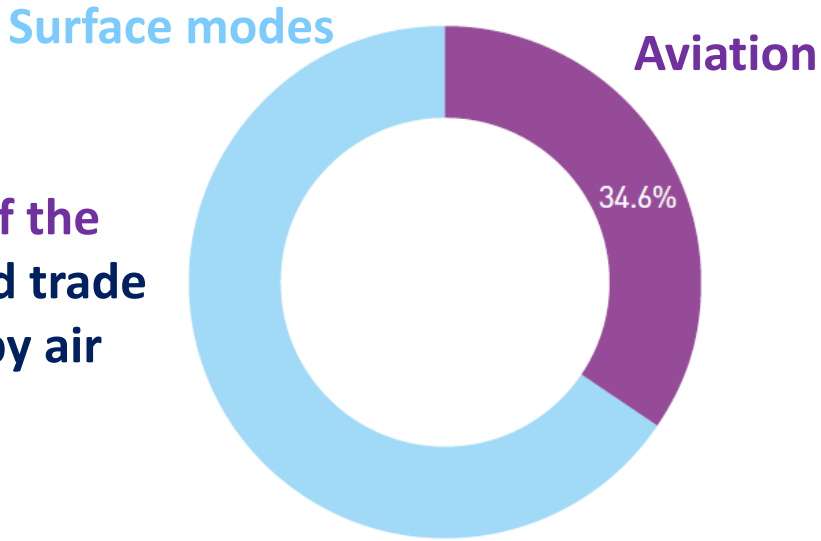
World International Cargo Shipment

Volume of world international cargo shipment



One third of the value of world trade is shipped by air

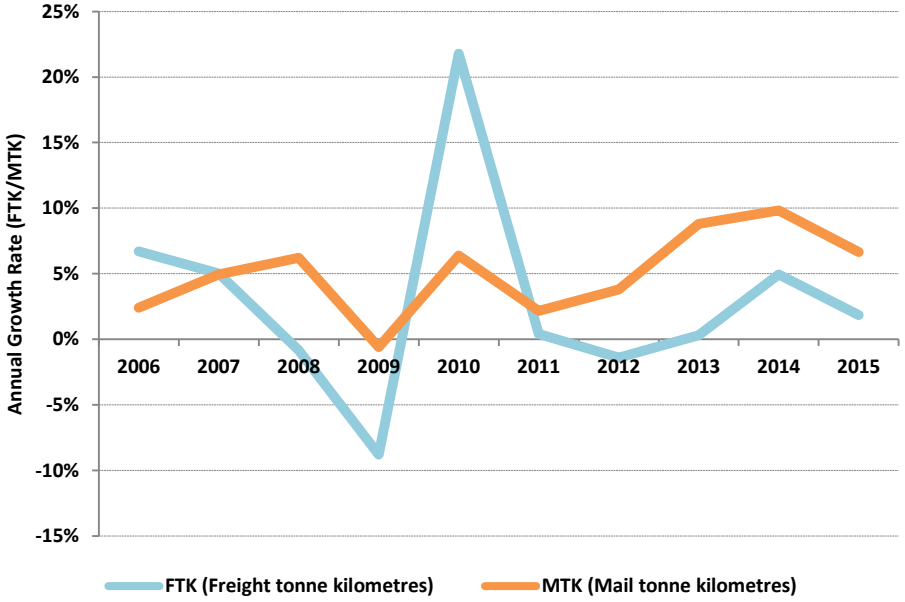
Value of world international cargo shipment



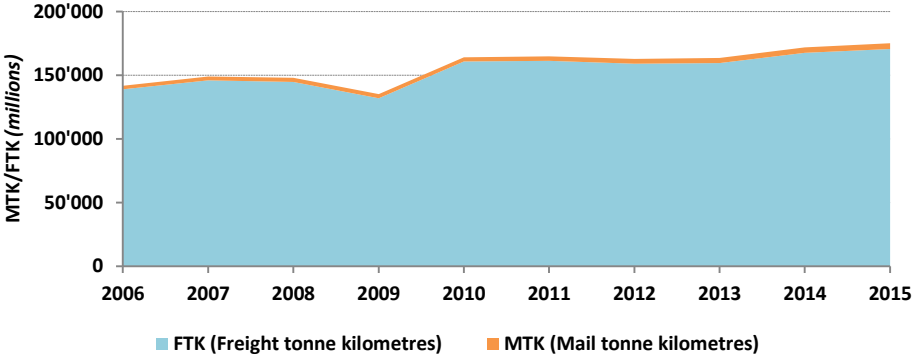
***Source**: Air Transport Action Group (ATAG), 2016*

Air Cargo Overview

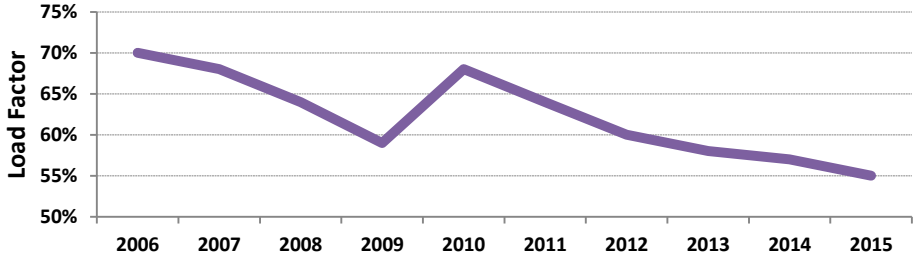
Freight and Mail Annual Growth (Two Ways, Annual Growth Rate FTK/MTK)



Cargo Breakdown (Two Ways, FTK/MTK)



Cargo (Mail+Freight) Load Factor



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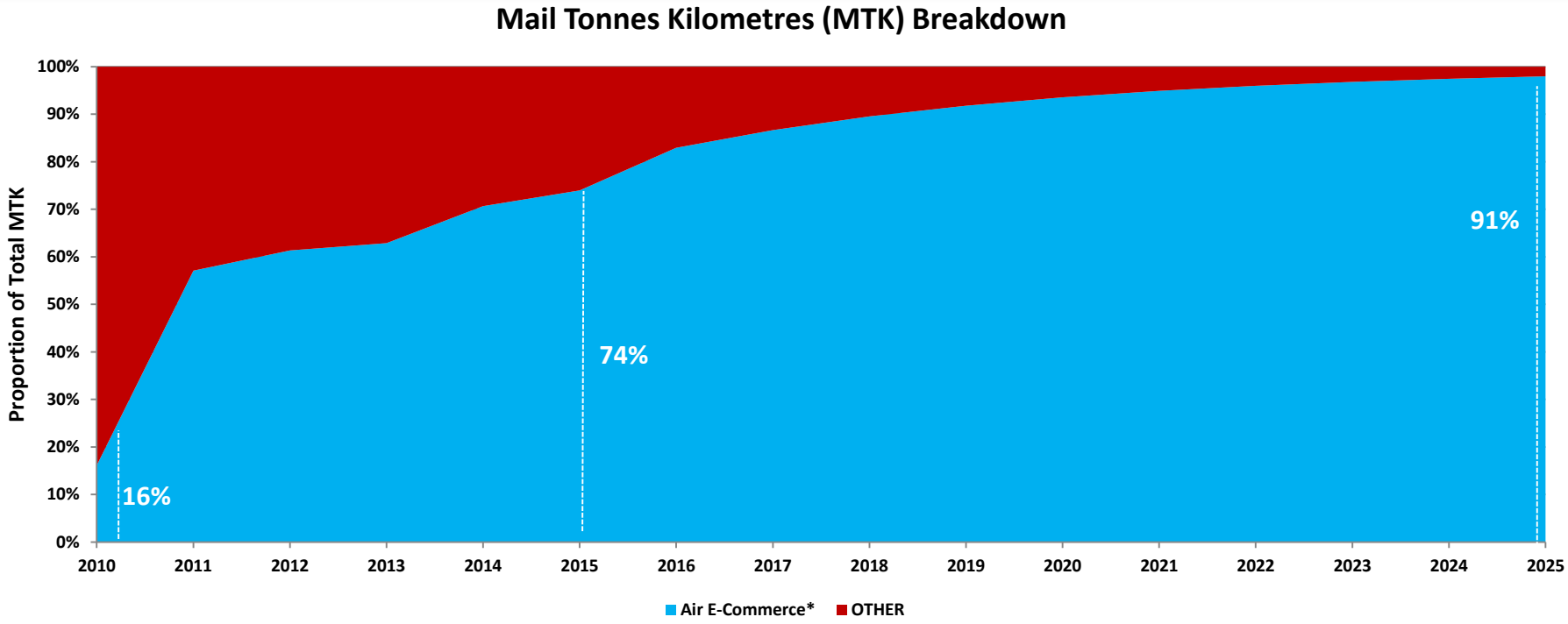
Mail Tonnes Kilometres (MTK) Breakdown



- E-commerce share of MTKs grew from 16% to 74% between 2010 and 2015 and is estimated to grow to 91% by 2025

* Air E-Commerce is estimated assuming parcels traveling a distance of above 1000 kilometres are delivered by air

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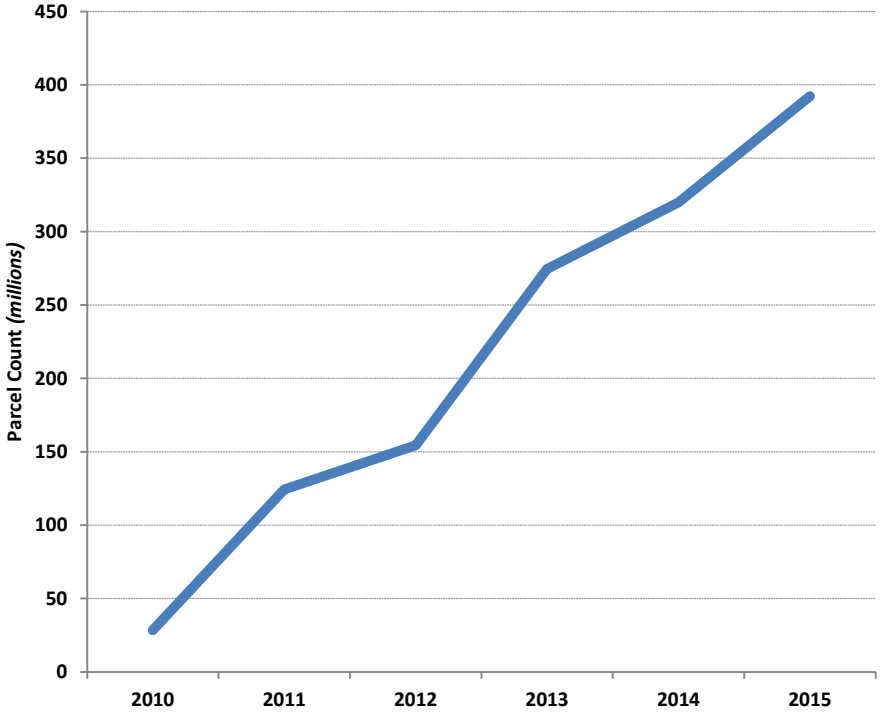
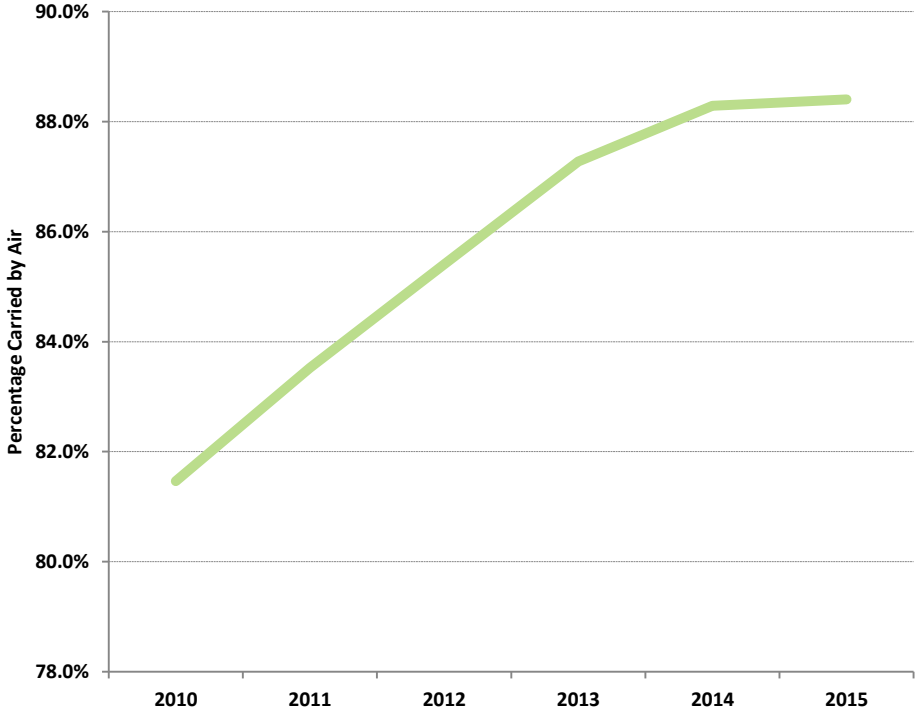
Global Air E-Commerce Activity Growth

Global Air E-Commerce Activity (Two Ways, Parcel Count)



Percentage of E-Commerce Parcels Carried by Air (Two Ways, Percentage Carried by Air)



* Air E-Commerce is estimated assuming parcels traveling a distance of above 1000 kilometres are delivered by air

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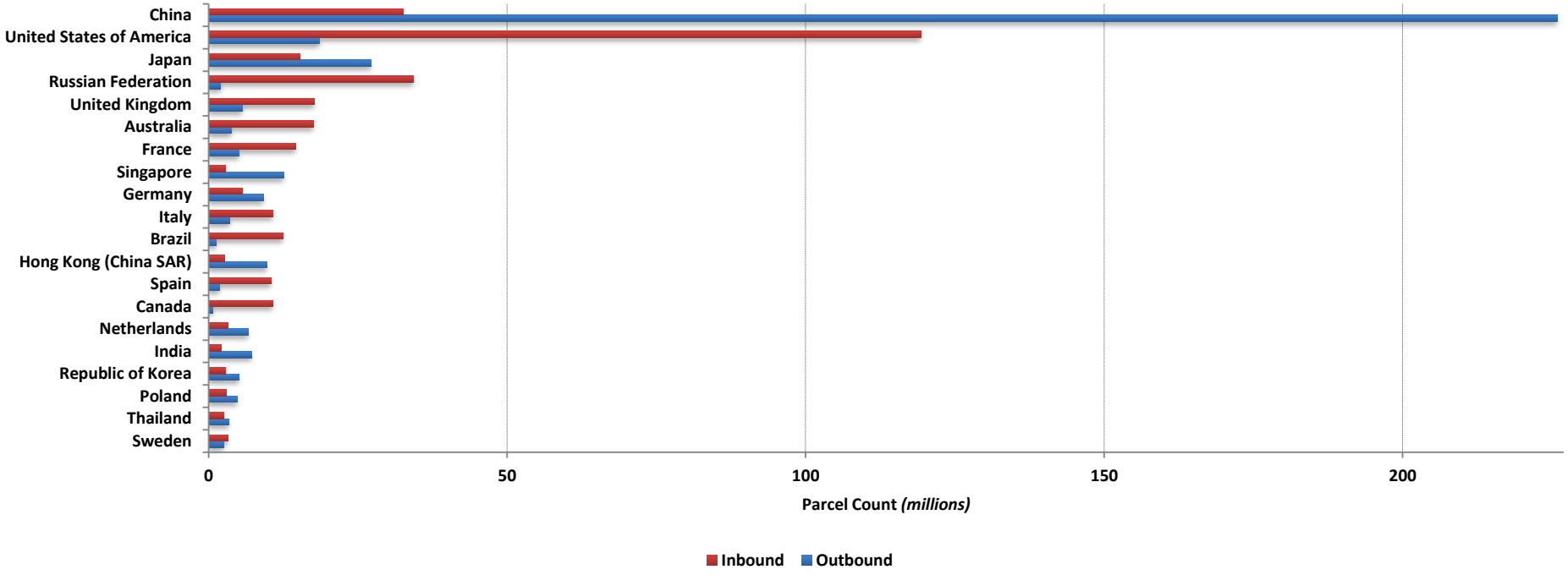
Air E-Commerce Activity by Country 2015

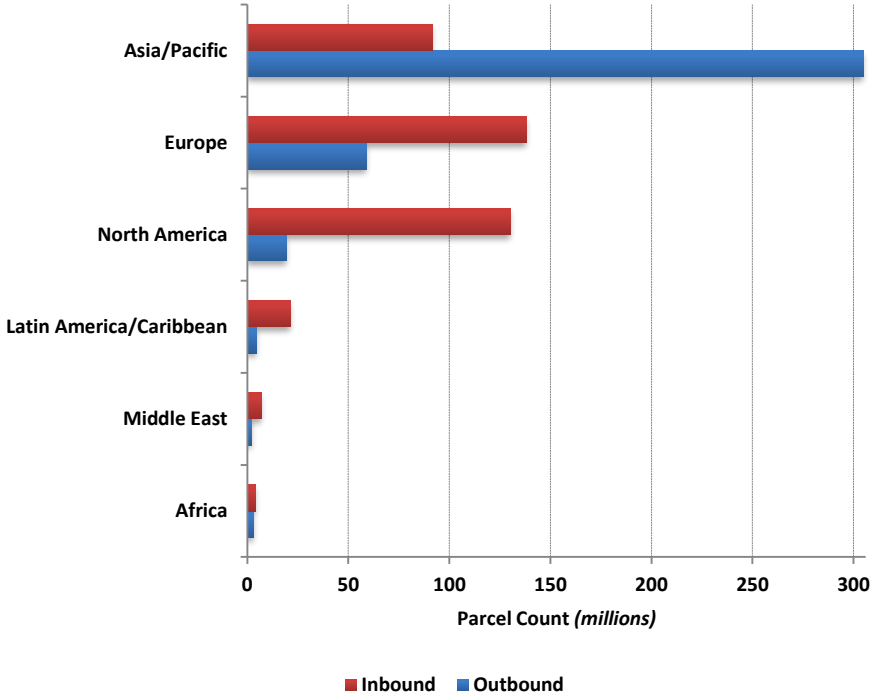
Top 20 Countries by Air E-Commerce Activity* 2015
(One Way, Parcel Count)



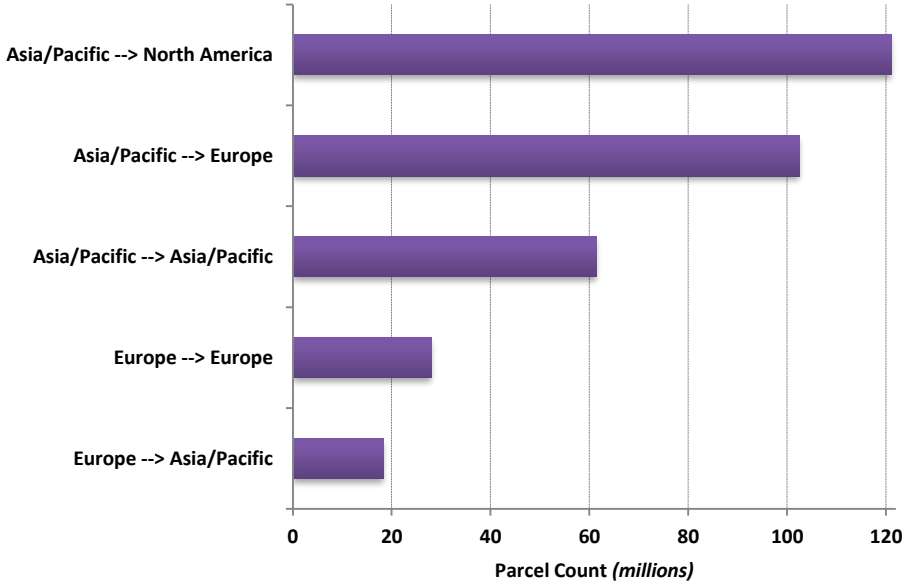
* Activity is measured in terms of parcel count

Regional Air E-Commerce Activity 2015

Regional Air E-Commerce Activity 2015 (One Way, Parcel Count)

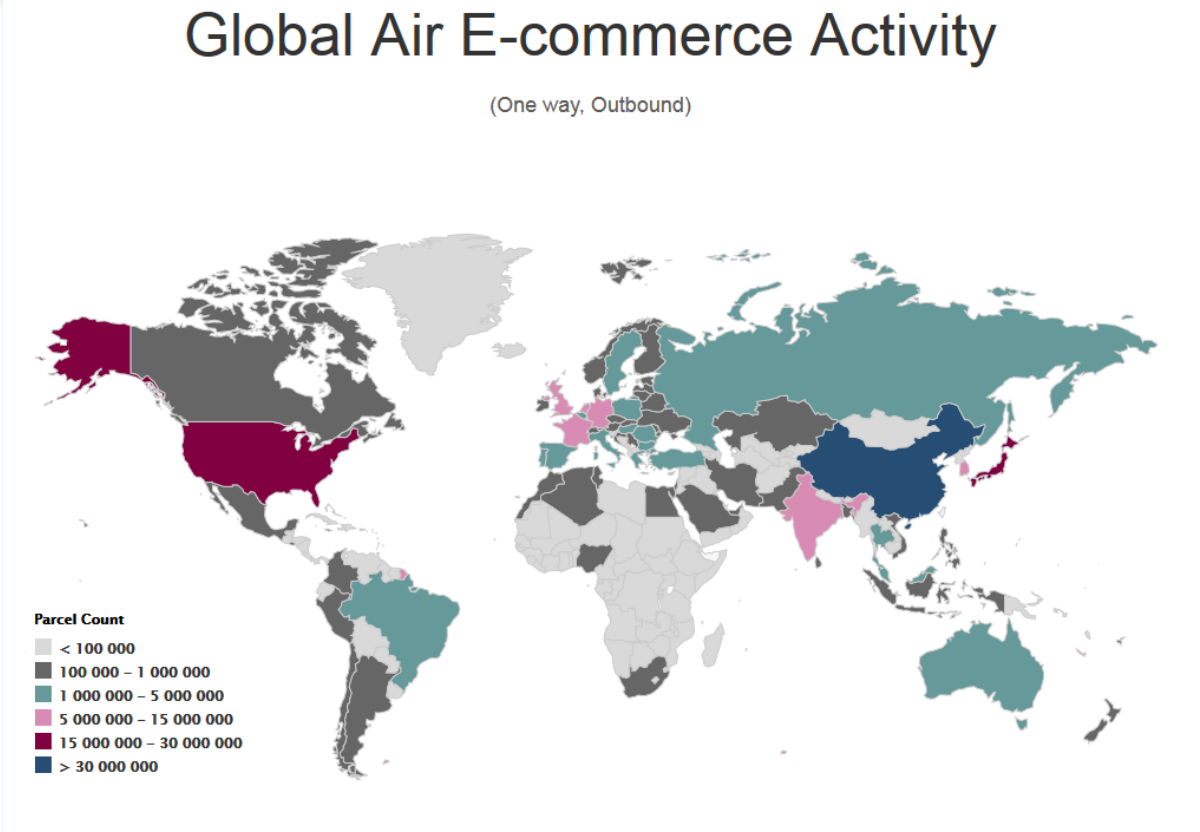


Top 5 Region Pairs by Air E-Commerce Activity 2015 (One Way, Parcel Count)

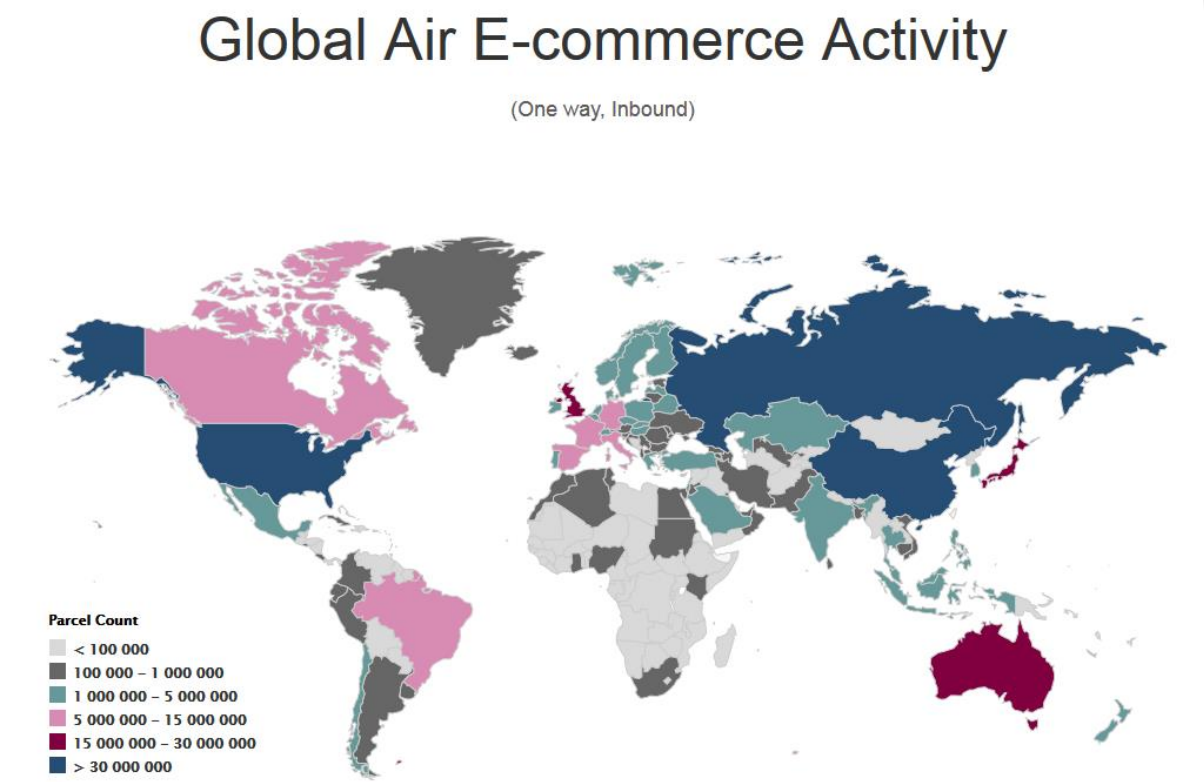


- Top 5 region pairs account for 84% of total B2C air E-commerce activity

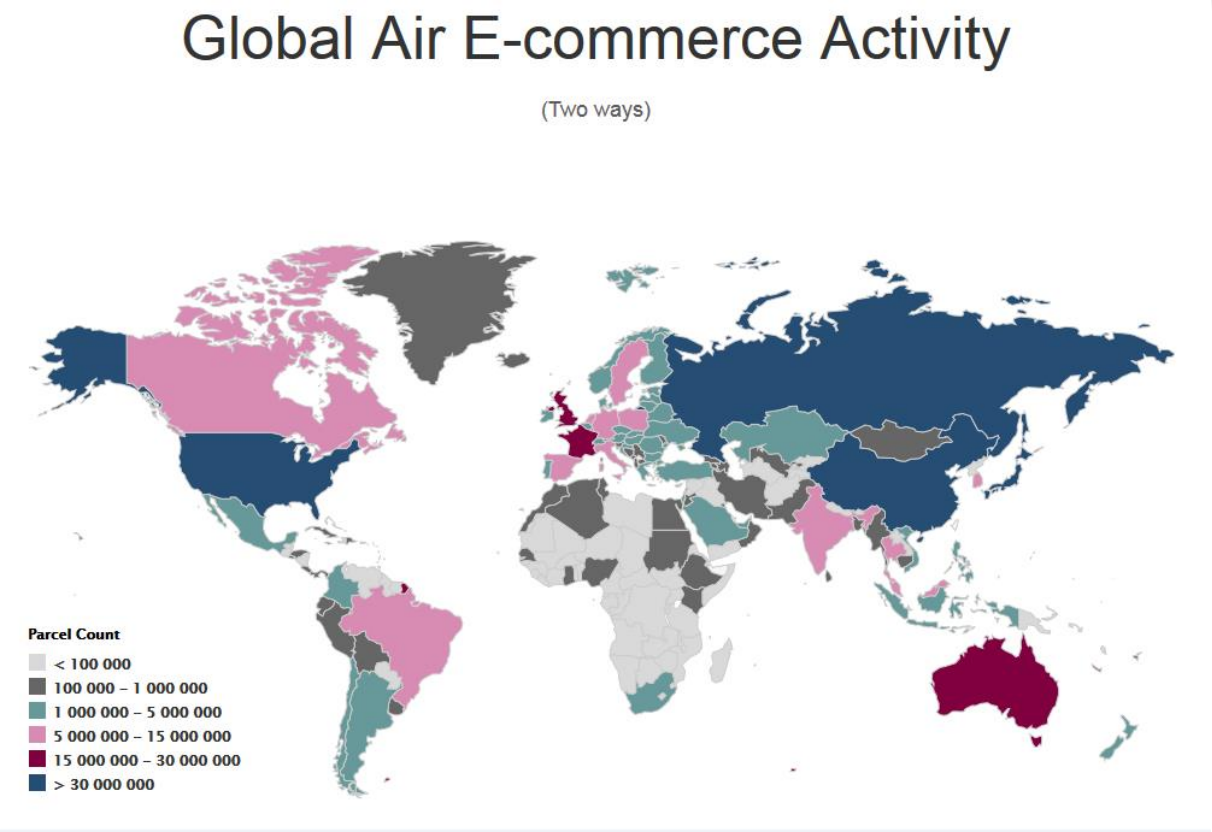
Global Outbound Air E-Commerce Activity Map 2015



Global Inbound Air E-Commerce Activity Map 2015

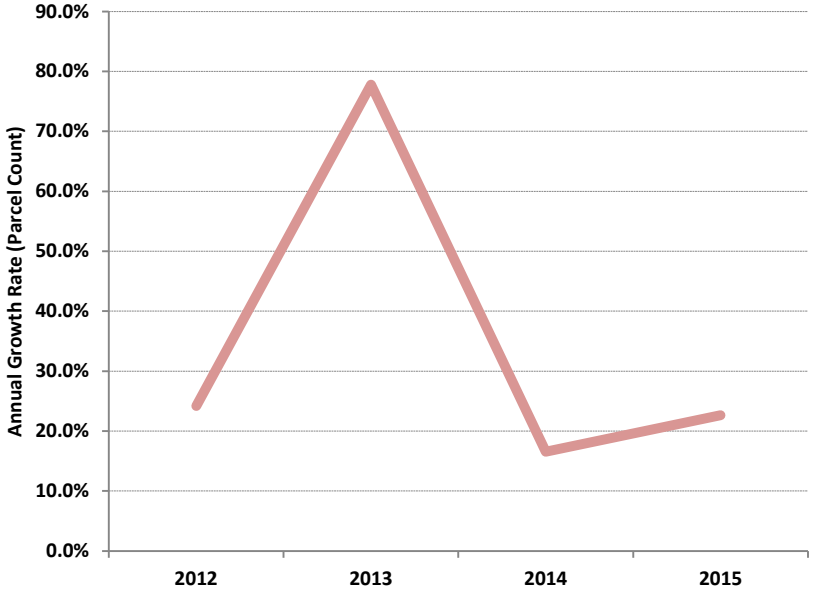


Global Air E-Commerce Activity Map 2015

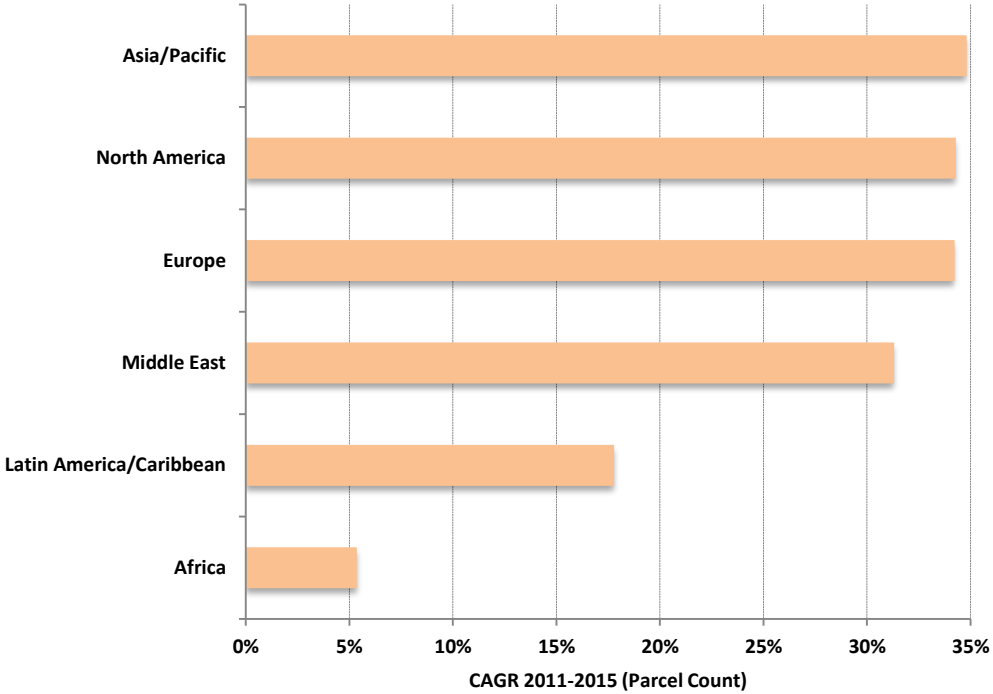


Global and Regional Air E-Commerce Activity Growth

Global Air E-Commerce Activity Annual Growth (Two Ways, Parcel Count AGR)

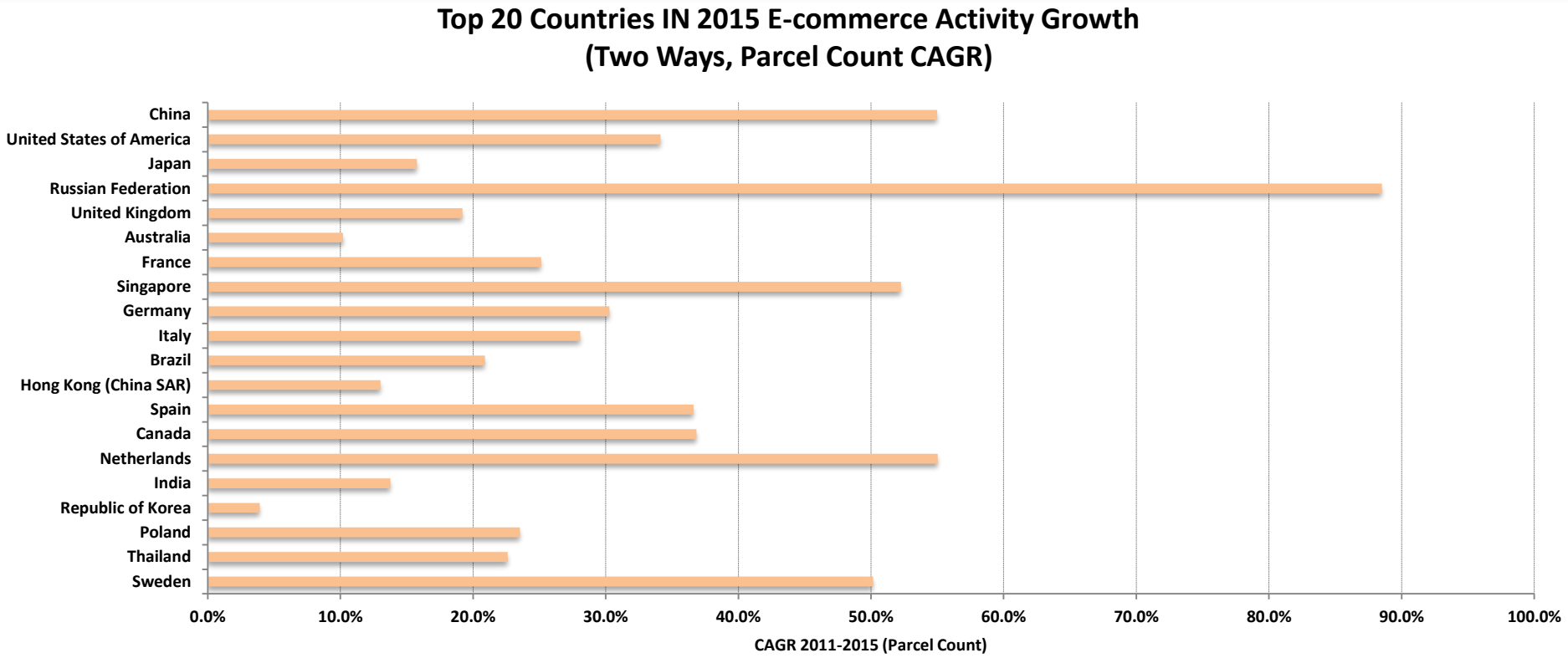


Regional Air E-commerce Activity Growth (Two Ways, Parcel Count CAGR)

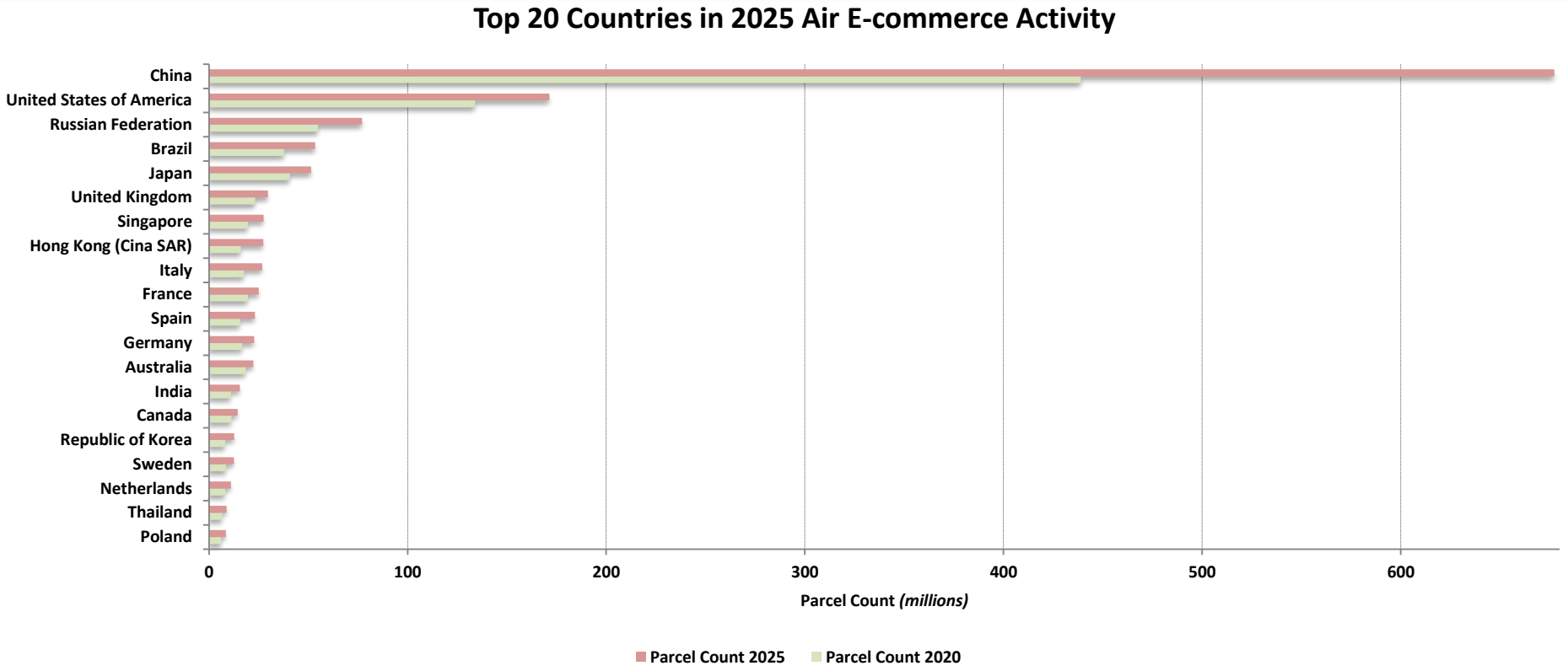


- Global CAGR (Compound Annual Growth Rate) for the period 2011-2015 was 33.3%

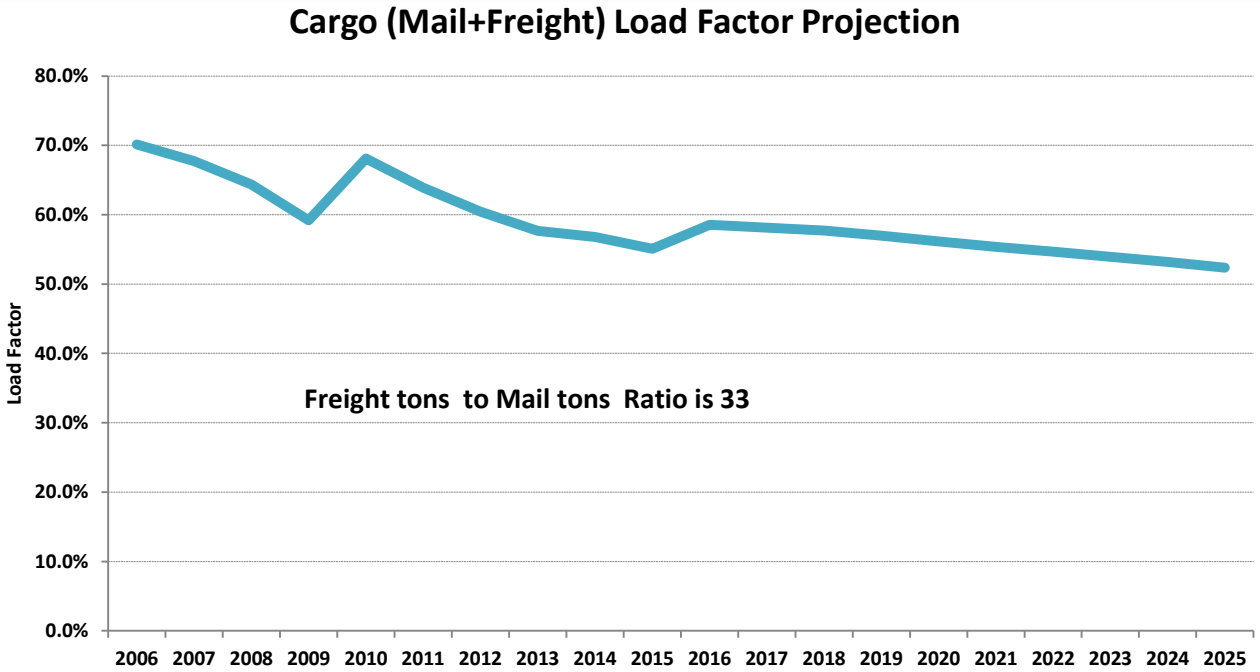
E-Commerce Activity Growth by Country



E-Commerce Activity Projection BY Country



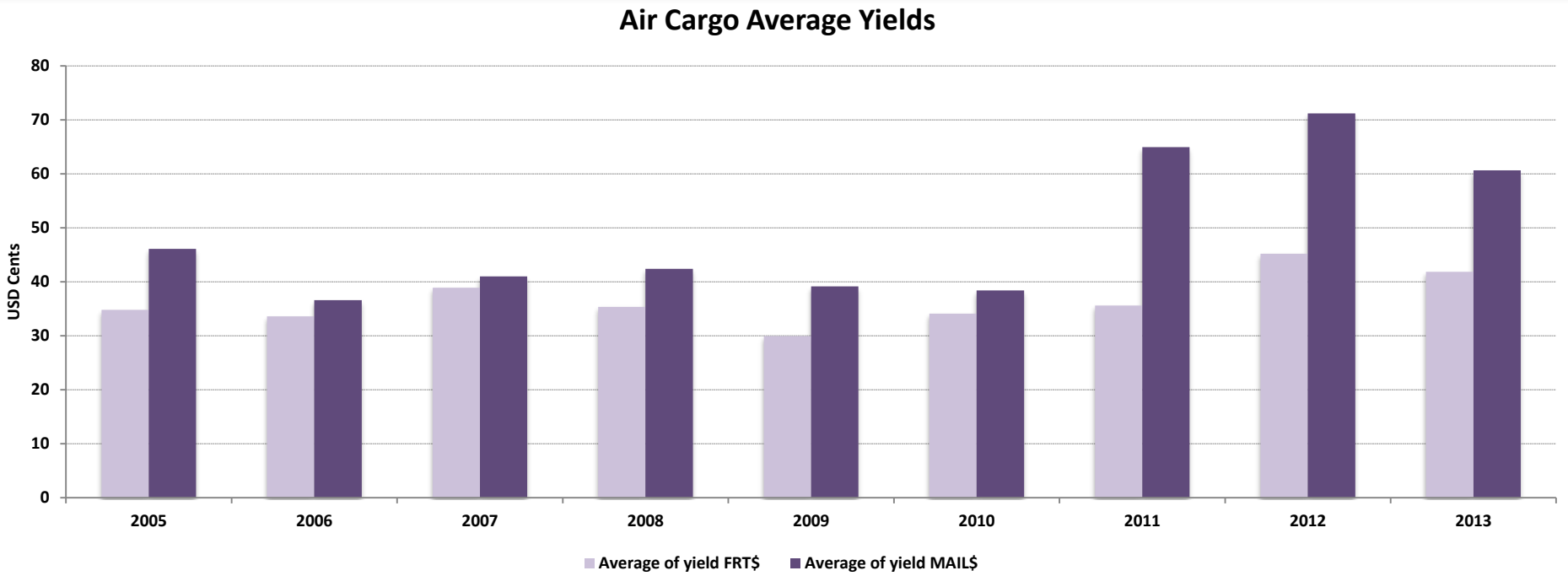
Capacity



- Despite growth in e-commerce forecasted air cargo capacity is enough to accommodate increasing e-commerce shipments. The main challenge is optimization of the existing network

- The cargo hold on a 777-300ER is so roomy that a passenger airline can hold 7,120 cubic feet (202 cubic meters) of freight, 25 percent more than a four-engine 747-8 jumbo can take beneath its cabin.

Air Cargo Average Yields



- Mail has a significant higher yield than freight. This will created a preference for airlines to increase mail in their cargo mix.

Challenges Faced by Air Industry

- E-Commerce Bullish Growth
  - Global B2C E-Commerce sector is expected to hit 2.4 trillion $ globally by 2020

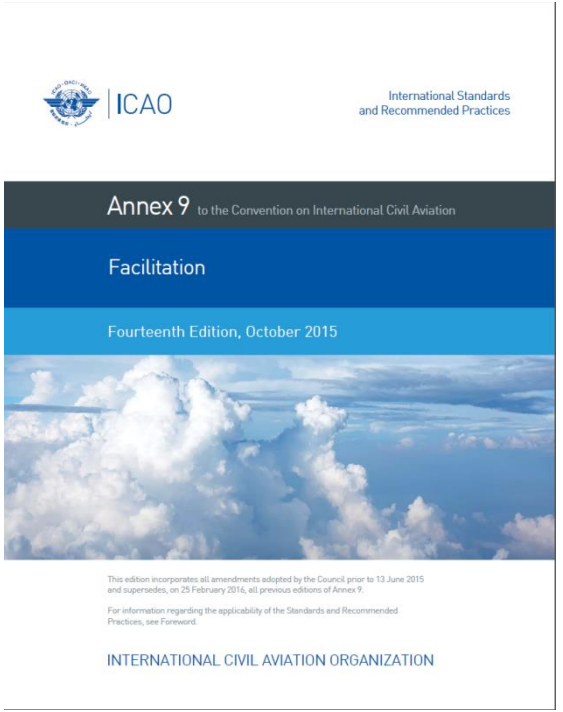
Challenges Faced by the Industry

- Safety and Facilitation
- Security
- Infrastructure and processing Gaps
- Improving Connectivity
- Optimization of Current Network
- Customs Revenues

Solutions

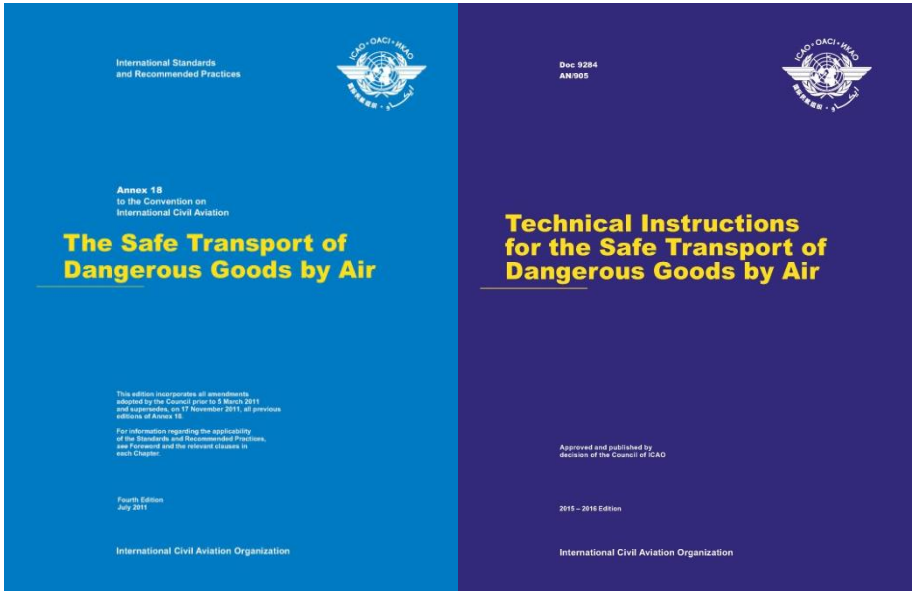
Promoting E-freight

- Montreal Convention 1999
  - Article 3 and 4 of the Montreal Convention 1999 enables electronic documents
- Amendments to Annex 9
  - Single Window
  - Advance Cargo Information
  - Air Cargo Community Systems
- Cooperation with the Global Partnership for Sustainable Transport (GPST)
  - Attended the High Level Political Forum (HLPF) 2016 in UN Headquarters
  - Invited to joined the Experts Group on the GPST Global Transit Document (GTRD)



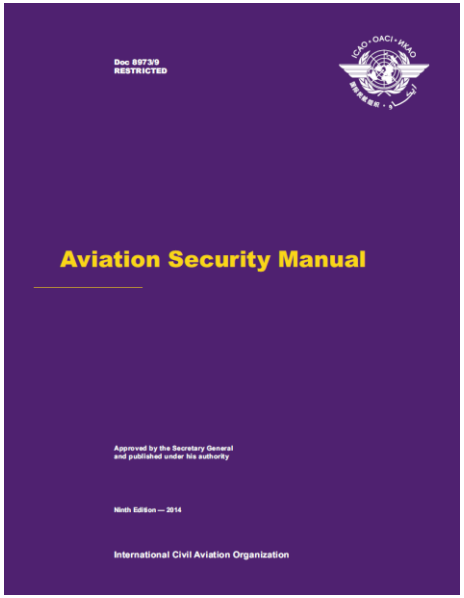
Air Cargo Safety — Dangerous Goods

- Threats to air cargo safety
  - What we transport
  - How much we transport
  - Risks posed
- Lithium batteries
  - Fire involving lithium batteries may exceed capability of cargo fire protection systems
  - Prohibition on passenger aircraft
  - Development of performance-based package standard by SAE
  - Need for additional operational controls



Air Cargo Security

- The secured supply chain regime is regulated by Annex 17
- ICAO has also developed guidance material on air cargo security (Aviation Security Manual, Doc. 8973/9)
- Development of Joint AEO/Regulated Agency (RA) Pilot Programme
- Joint Working Group on Advance Cargo Information (JWGACI)
- Working Group on Air Cargo Security (WGACS)
- Global Survey on Air Cargo Security



Improving Infrastructure and Processes

- increased investment and service levels are needed to improve the processes and infrastructure
- Ramping up handling processes and special mobile squads recover the shipments at the airline's hub to guarantee fast pick-up and delivery
- Quick transfers of shipments in order to make shipments cost-effective
- logistic companies such as Team Worldwide perform the services of consolidating and sorting shipments itself, instead of having these services performed by the airline
- Some of the new initiatives by air express operators include auto-sorters, parcel lockers, 'On-the-Move' (OTMs) handheld devices, mobile point of sales (MPOS) solution, mobile wallet, retail point of sales (POS), Cash on Delivery (COD), reverse logistics with various value-adds such as 'open' and 'cash return', preferred time of delivery, innovative delivery options, mobile service center and parcel shops, which have paved the way for business

Infrastructure Investment

- **Public-Private Partnership (PPP)**

The case studies on PPP have been prepared by the ICAO Secretariat based on material available.

http://www.icao.int/sustainability/Pages/im-ppp.aspx

- **Partnership with ITF-OECD**

ICAO cooperates with ITF-OECD on joint research and is invited to join the Working Group on Private Investment in Infrastructure of ITF-OECD.

ICAO World Aviation Forum (IWAF)

IWAF is designed to identify needs, facilitate the funding and financing required to accelerate the implementation of international civil aviation global standards and policies in support of the No Country Left Behind (NCLB) initiative.
The Second IWAF will be held on 26 September 2016 in Montreal.

Airports Infrastructure

- Airport Economics Manual (Doc 9562)

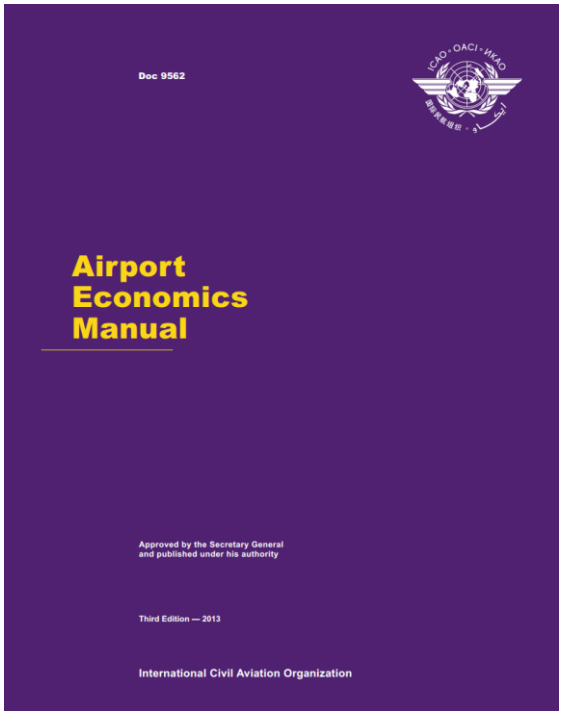
In response to requests from States for guidance aimed at improving the efficiency and cost-effectiveness of their airport operations, ICAO has developed the Airport Economics Manual (Doc 9562).

- Analysis Report: State of Airport Economics

ICAO, in collaboration with the Airports Council International (ACI), has developed the analysis report entitled “State of Airport Economics”.

- Joint Meeting Airport Economics Panel and Air Navigation Services Economics Panel(AEP-ANSEP)

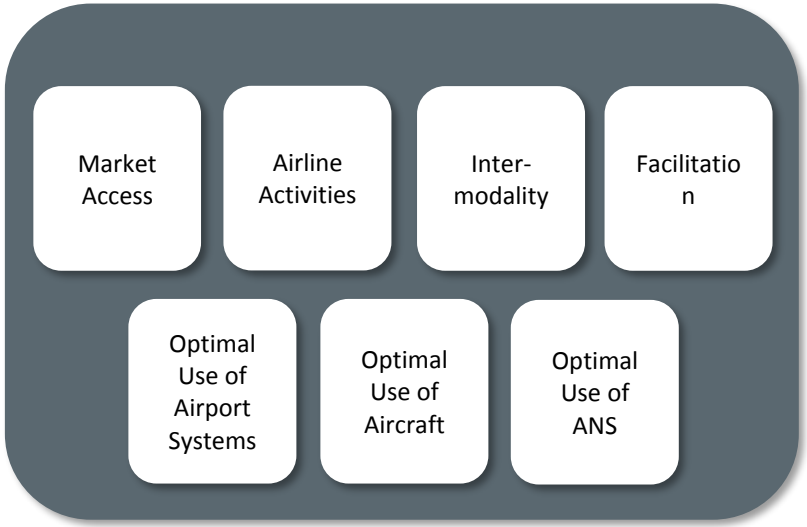
Examination of funding and financing issues related to infrastructure development



Definition of Connectivity in Air Transport

Movement of passengers, mail and cargo involving **the minimum of transit points**

- which makes trip as short as possible
- with optimal user satisfaction
- at the minimum price possible



Improving the Network Connectivity

- **ATConf/5**

Air cargo and, in particular, all cargo operations should be considered for accelerated liberalization.

- **ATConf/6**

There was broad support for ICAO to play a leadership role in facilitating further liberalization, and some support for ICAO to develop a multilateral agreement specifically focused on air cargo.

- **Guidance Material**

ICAO has developed guidance to facilitate air cargo liberalization, such as the model clauses for inclusion in air services agreements (in the form of an annex on air cargo). The model clauses, which were endorsed by ATConf/5, have been included in the ICAO Template Air Services Agreement (TASA) for optional use by States.

- **The Working Group (WG) of the Air Transport Regulation Panel (ATRP)**

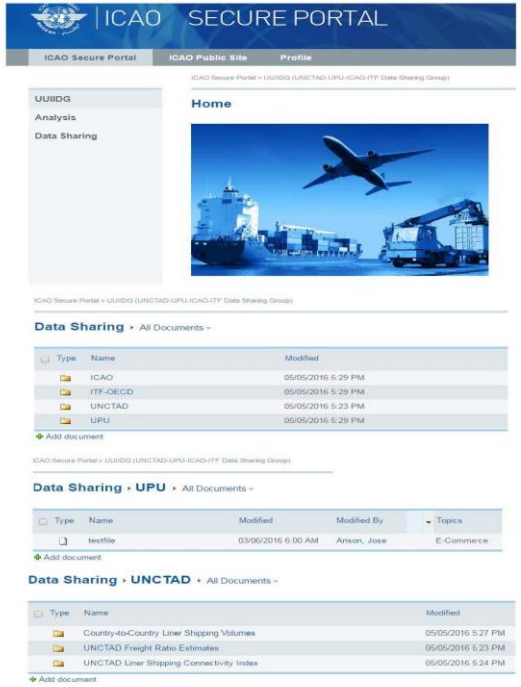
The WG is tasked to develop an international agreement for the liberalization of market access and air carrier ownership and control. The expected outcome will cover an article on the liberalization of air cargo transport.

ICAO Air Services Negotiation Event (ICAN2016)
5 - 9 December 2016, The Bahamas

Venue Year	Dubai, UAE 2008	Istanbul, Turkey 2009	Kingston, Jamaica 2010	Mumbai, India 2011	Jeddah, Saudi Arabia 2012	Durban, South Africa 2013	Bali, Indonesia 2014	Antalya, Turkey 2015
Number of participating States	27	52	39	65	62	73	78	95
Number of bilateral meetings held	100	200	200	340	350	485	550	588
Number of agreements and arrangements signed	20	60	60	120	130	458	500	450+

- Provide States with a central meeting place to conduct multiple bilateral (regional or plurilateral) air services negotiations or consultations;
- Provide a forum for the participants to learn about current trends, discuss topical issues and exchange experiences, as well as excellent networking opportunities;
- Negotiations between States/regional groups are private in nature, not open to third parties

Data Sharing with Partners – WCO Measurement and Analysis Working Group



UUII Portal Site is a data-sharing platform between ICAO, UPU,UNCTAD and ITF-OECD, where the four organizations share the research reports, as well as the statistics on air cargo transport, maritime shipping and postal services.

This platform also provides a unique forum to undertake the research on e-commerce.

ICAO is a key partner in UNTAD “etrade for all” Initiatives

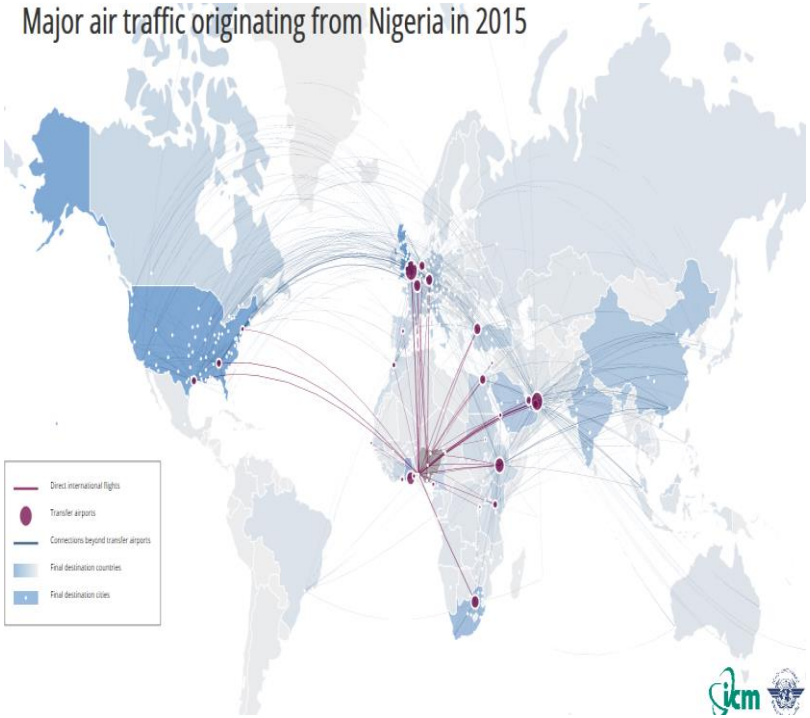
ICAO-ICM Joint Connectivity Project

- The Air Transport Diagnostics Project was launched in 2015 with the Interdisciplinary Centre for Mathematical and Computational Modelling (ICM) of the University of Warsaw. The project is designed to measure the gap between the actual and optimal air route structure, and quantify the impact of competition on air connectivity, by analyzing Big Data of origin and destination passenger demand.

- Actual trade flows gathered from data sharing with UPU/WCO working group can be used as in input to provide holistic network optimization diagnosis and solutions

RESULTS OUTCOME AND PERSPECTIVE

- Focused on global, regional and local coverage
- Provide evaluation of air transport sensitivity/stability factors
- Identify most critical areas for potential efficiency improvement



Benefits of Optimized Network

- Smaller shipments for multiple destinations can be combined into single consolidations. This will save money as higher weight breaks can be achieved
- Shipment deliveries will be more reliable and cost-effective
- Minimum fees can be avoided
- Special attention for smaller shipments
- It is expected that the link of long haul routes to regional belly networks will play a larger role in the future

Global E-Commerce Market Shares

- Global e-commerce market is dominated by a small group of very big players
- Amazon is Building up dedicated freighter capacity, securing deals for 20 767 freighters apiece with Atlas Air and Air Transport Services Group (ATSG)
- ATSG reported that Amazon-related revenue accounted for almost a quarter of total revenue in the first nine months of 2016
- Lufthansa Cargo is holding talks with big E-Commerce players such as Amazon and Alibaba in its continuing effort to focus primarily on the needs of E-Commerce providers and what the carrier can do to meet these.
- If other big players follow suit facilitation and optimization of air cargo processing may become a less challenging task

* Source : Company Reports, Channel Advisor, Internet Retailer

Drones in E-Commerce

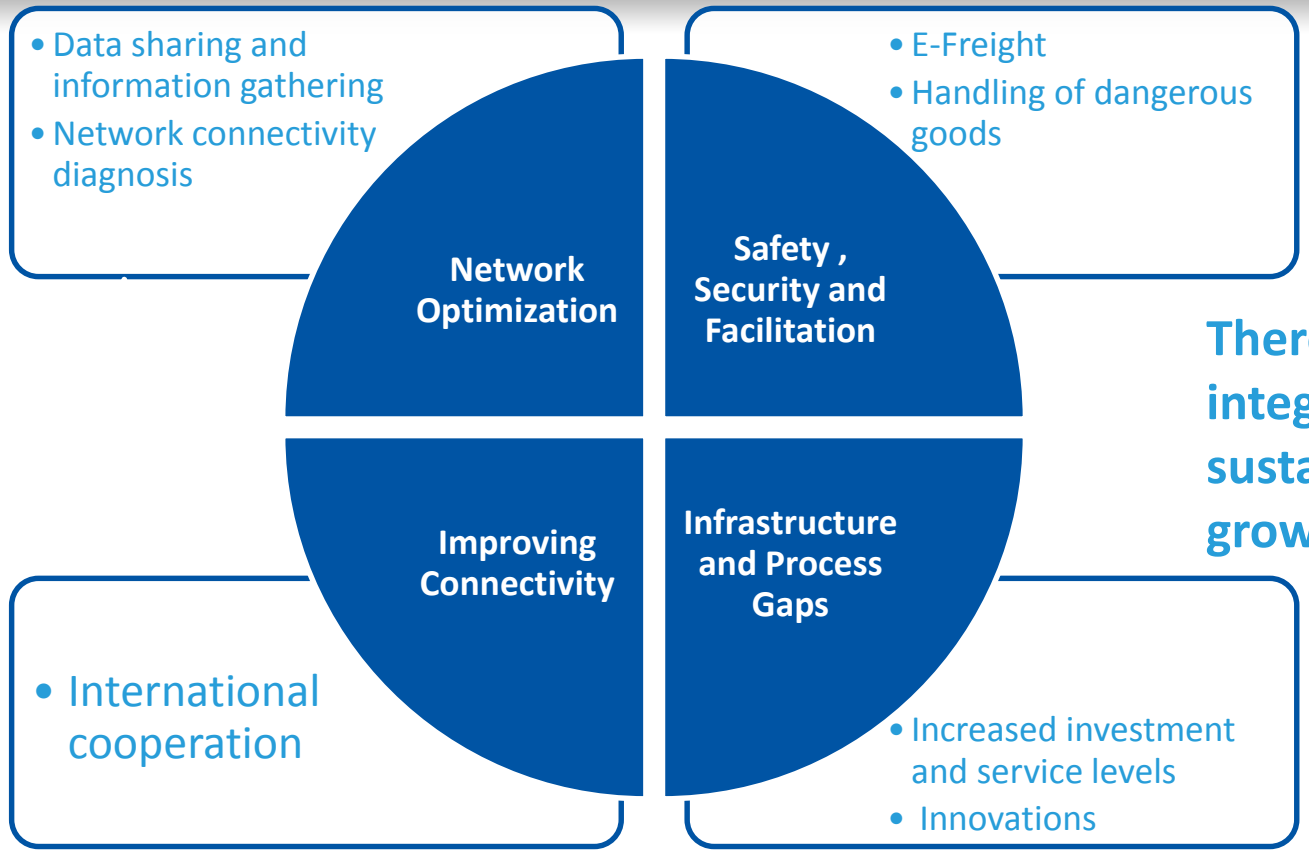
- Drones can provide coverage for places where it is not profitable (or easy) to use traditional methods such as rural areas
- Drones will slash delivery costs to less than 1$ a package by eliminating fuel and labor costs*
- DHL latest generation of parcelcopters have completed more than 100 successful deliveries
- Amazon aims to make drone deliveries available to public, first demo delivery was completed last December
- JD.COM announced the company will build 150 drone launch centers in Sichuan. The company already provides drone deliveries in four provinces of China.
- Alibaba, UPS, and many other e-commerce retailers and integrators are performing trial and mock drone deliveries

* According to a 2015 analysis by ARK Investment Management

ICAO Work on Drones

- Remotely Piloted Aircraft Systems (RPAS) Panel aims to deliver standards for unmanned aircraft to the organization's governing council
- The panel's current focus is on development of standards and recommended practices (SARPs) for adoption by the Council of ICAO related to airworthiness, operations (including RPAS operator certification) and licensing of remote pilots
- The panel plans to complete SARPs for air traffic management and "detect and avoid" requirements for unmanned aircraft in 2020
- ICAO UAS (Unmanned Aerial Systems) tool kit
  - UAS best practices, lessons learned and regulations for your consideration
  - Existing UAS regulations from around the world
  - News related to unmanned aviation and related technology
  - UAS operators, remote pilots and recreational pilots will benefit from the information contained in the toolkit as UAS operations grow in airspace traditionally occupied by manned operations

Solutions – Integrated Approach



There is need for an integrated approach for sustainable e-commerce growth.

谢谢, Xie Xie

Thank You

شكرا, Shukran

Merci

Спасибо, **Spasiba**

Gracias