



ICAO

UNITING AVIATION

ICAO Air Cargo Data

Unlocking the True Value of Trade



Mr. Cortney Robinson

Ms. Jessica Díaz de León

Economic Development (ECD), Air Transport Bureau,
International Civil Aviation Organization (ICAO)

TRB Trade and Transportation Committee

14 May 2019



History

The **Chicago Convention** established the core principles permitting international transport by air among its Signatory States, and it furthermore prescribed the need for **a new multilateral agency** to oversee its development and ongoing amendment.

By 1945 this agency was formalized as the **International Civil Aviation Organization**, or '**ICAO**', Headquartered in Montréal, Canada. In 1947, ICAO became a **Specialized Agency of the United Nations**.



Mission and Role

These 12,000+ ICAO provisions subsequently permit States to develop national civil aviation regulations—including economic—which are globally harmonized.

And these harmonized regulations in turn support the safe, secure and efficient operation of **more than 100,000 worldwide commercial flights**, each and every day.



Aviation Development

ICAO is also actively engaged in fostering aviation development, which refers to a wide range of infrastructure, regulatory, human resources, training, and related assistance and capacity-building activities.





ICAO

UNITING AVIATION



Global Standards – The Key to Safe, Orderly Aviation Growth

WHY GLOBAL REGULATION AND MANAGEMENT IS NEEDED

Global Traffic Forecast

- Air traffic is predicted to **double** in the next 15 years
- Our collective responsibility is to **support the aviation system to *safely* realize this growth**

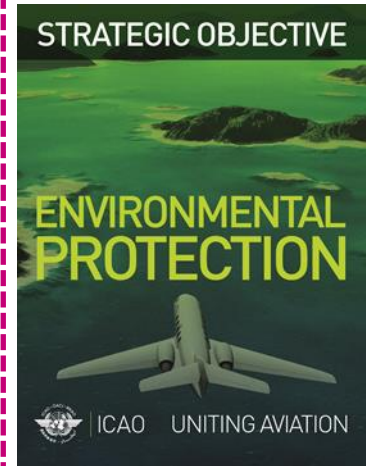
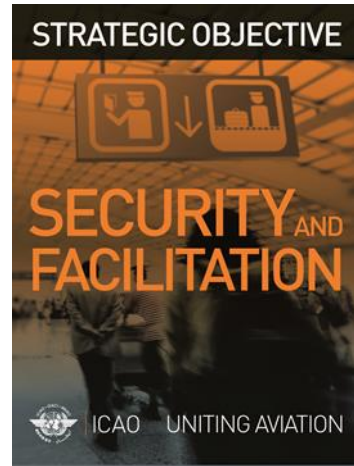
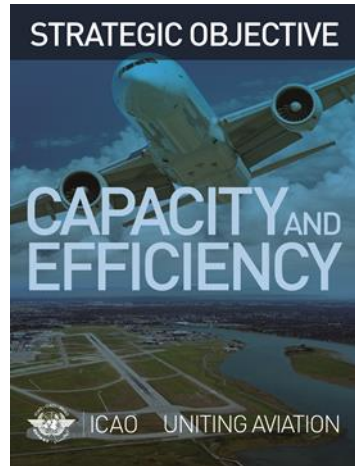




Global Standards – The Key to Safe, Orderly Aviation Growth

HOW ICAO SERVES THE COMMUNITY

Vision: Achieve the sustainable growth of the global civil aviation system





Safety: Enhance global civil aviation safety

Air Navigation Capacity and Efficiency: Increase capacity and improve efficiency of the global civil aviation system

Security & Facilitation: Enhance global civil aviation security and facilitation

Economic Development of Air Transport: Foster the development of a sound and economically-viable civil aviation system

Environmental Protection: Minimize the adverse environmental effects of civil aviation activities

ANB

ATB

ICAO and the United Nations Sustainable Development Goals (SDGs)

Read more at: <http://www.icao.int/about-icao/aviation-development/Pages/SDG.aspx>

ICAO STRATEGIC OBJECTIVES

SAFETY

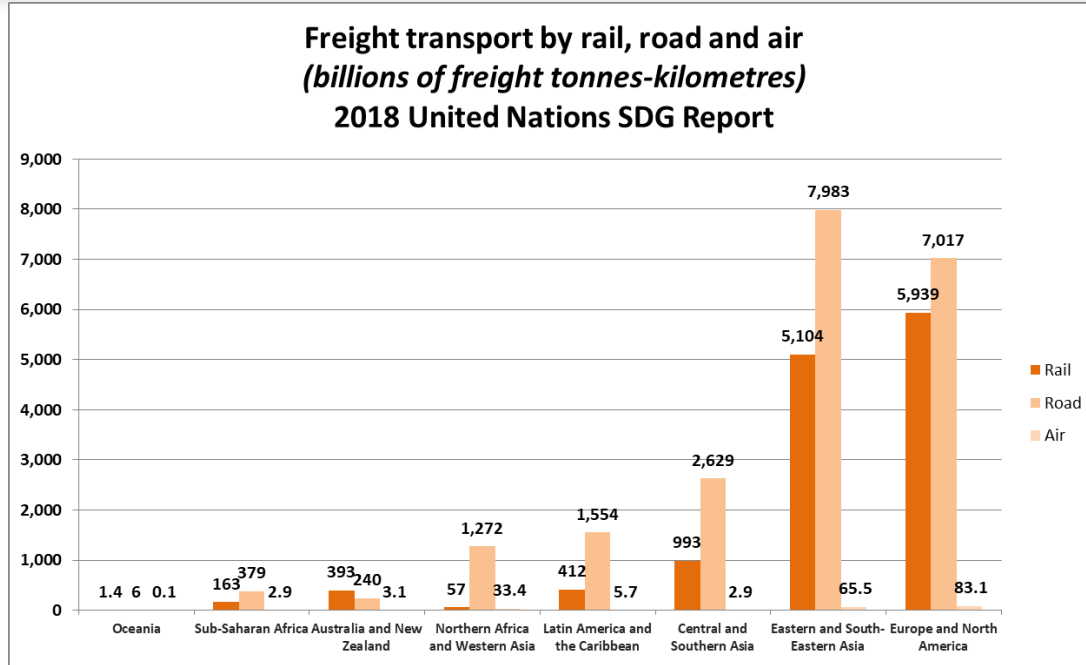
CAP/EFF

SEC/FAL

ECON
DEV

ENV

Goal	Description	SAFETY	CAP/EFF	SEC/FAL	ECON DEV	ENV
Goal 1	End poverty in all its forms everywhere				●	
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture					
Goal 3	Ensure healthy lives and promote well-being for all at all ages	●		●	●	●
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	●	●	●	●	●
Goal 5	Achieve gender equality and empower all women and girls	●	●	●	●	●
Goal 6	Ensure availability and sustainable management of water and sanitation for all					
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all					●
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all			●	●	
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	●	●		●	●
Goal 10	Reduce inequality within and among countries	●	●	●	●	●
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable					
Goal 12	Ensure sustainable consumption and production patterns				●	●
Goal 13	Take urgent action to combat climate change and its impacts		●		●	●
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development					
Goal 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss			●		●
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels			●		
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	●	●	●	●	●



ICAO is working within the UN SDGs framework on improving inter-modality of freight operations and enhancing efficiencies through development of cross-border infrastructure

ICAO is a custodial agency responsible for the global indicator (passenger and freight volumes by mode of transport) of the **SDG target 9.1** – Develop quality, reliable, sustainable and resilient infrastructure with a focus on affordable and equitable access for all.



ECONOMIC DEVELOPMENT BRANCH (ECD) FUNCTIONS

- A part of the Air Transport Bureau, ECD:
 - fosters the development of an economically-viable civil aviation system;
 - enhances its economic efficiency and transparency;
 - facilitates access to funding for aviation infrastructure and other investment needs; and
 - guides technology transfer and capacity building to support the growth of air transport and for the benefit of all stakeholders.



ADAP/2 (March 2017) main outcomes:

- Develop **Aviation Satellite Account (ASA)** methodological framework
- Customize and update **ICAO long-term traffic forecasts**
- Develop methodologies to collect, process and analyze **Big Data**
- Develop a new Form to collect **aviation licensed personnel** data by **gender**
- Develop **forecasts of licensed aviation professionals** for the Next Generation of Aviation Professionals (NGAP) programme
- Finalize **re-engineering** of **ICAO Statistics Programme** by 2018
- In collaboration with ANC Panels, develop **guidelines** on the use of ICAO data and tools; and develop **indicators** and **metrics** for performance monitoring



Montreal Convention framework for Aviation Data Analysis

- The need for complete and reliable aviation statistics was foreseen by the framers of the Convention on International Civil Aviation and the obligation to file statistical information with ICAO is set out in Article 67:

“Each contracting State undertakes that its international airlines shall, in accordance with requirements laid down by the Council, file with the Council traffic reports, cost statistics and financial statements showing among other things all receipts and the sources thereof”.

- Articles 54 and 55, which outline the functions of the Council of ICAO, also make several references to the collection and dissemination of information.



A39-15: Consolidated statement of continuing ICAO policies in the air transport field

Appendix D: Aviation data and statistics

- *Whereas* the Council has adopted a policy of management by objective which requires collection of pertinent data, statistics and analysis to measure the performance of the Organization as a whole and of its constituent parts in meeting the Strategic Objectives of the Organization;
- *Whereas* ICAO's role in processing and disseminating aviation data and statistics allows States to use it as a significant tool for the safe and orderly growth of international civil aviation services that are operated soundly and economically; and
- *Whereas* ICAO has continued its effort to make the processes involving aviation data and statistics efficient and effective through the development of a set of electronic tools in order to answer to the evolving needs of Member States;



ICAO Statistics Programme

- Consists of the collection, validation and verification of the Air Transport Reporting Forms (ATRs)
- **Air cargo traffic** performed (freight and mail) is collected, either as a summary figure and/or deeper granularity, such as: origin and destination, traffic by flight stage, capacity utilization, revenues and operated fleet
- KPIs for air cargo, reported and calculated



ORGANIZACIÓN DE AVIACIÓN CIVIL INTERNACIONAL
 FORMULARIO DE INFORMACIÓN DE TRANSPORTE AÉREO
 TRÁFICO DE LOS TRANSPORTISTAS AÉREOS COMERCIALES

Persona: Ernesto Pleites
 Organización: Avianca
 Teléfono: 57 15877700 Ext. 1624
 Fax:
 Correo-e: ernesto.pleites@avianca.com

Estado: Colombia
 Línea aérea: Avianca

Mes o meses: Diciembre
 Año: 2016

Código DACI	Descripción	Unidad	SERVICIOS EXCLUSIVAMENTE DE CARGA			
			(Incluidos en las columnas de datos c y d)			
			Clasificados por etapa de vuelo			
		Internacional	Interior	Internacional	Interior	
a	b	c	d	e	f	
VUELOS DE PAGO REGULARES						
1010	1. Kilómetros recorridos	000	9.804	5.061		
1020	2. Salidas de aviones	número	2.882	12.379		
1030	3. Horas de vuelo	número	13.649	13.926		
1040	4. Pasajeros transportados	número	424.294	1.310.738	--	--
1050	5. Toneladas de carga transportadas	número	5.968	6.341		
1060	6. Pasajeros-kilómetros efectuados	000	1.649.170	572.271	--	--
1070	7. Asientos-kilómetros disponibles	000	1.911.316	690.674	--	--
1080	8. Coeficiente de ocupación - pasajeros	%	86.28%	82.86%	--	--
1091	9. Toneladas-kilómetros efectuadas					
1091	a) pasajeros (incluido el equipaje)	000	164.917	57.227	--	--
1092	b) carga (incluido el expreso)	000	28.719	3.433		
1093	c) correo	000	0	0		
1094	d) total (9a a 9c)	000	193.636	60.660		
1100	10. Toneladas-kilómetros disponibles	000	229.358	82.881		
110	11. Coeficiente de utilización en peso	%	84.43%	73.19%		
VUELOS DE PAGO NO REGULARES						
2010	12. Kilómetros recorridos	000	0	0		
2020	13. Salidas de aviones	número	31	280		
2030	14. Horas de vuelo	número	62	524		
2040	15. Pasajeros transportados	número	0	0	--	--
2050	16. Toneladas de carga transportadas	número	0	281		
2060	17. Pasajeros-kilómetros efectuados	000	0	0	--	--
2070	18. Asientos-kilómetros disponibles	000	0	0	--	--
2091	19. Toneladas-kilómetros efectuadas					
2091	a) pasajeros (incluido el equipaje)	000	0	0	--	--
2092	b) carga (incluido expreso)	000	0	0		
2093	c) correo	000	0	0		
2094	d) total (19a a 19c)	000	0	0		
2100	20. Toneladas-kilómetros disponibles	000	0	0		
VUELOS SIN REMUNERACIÓN						
2330	21. Horas de vuelo	número				

INTERNATIONAL CIVIL AVIATION ORGANIZATION
 AIR TRANSPORT REPORTING FORM
 ON-FLIGHT ORIGIN AND DESTINATION
 COMMERCIAL AIR CARRIERS

Scheduled and Non-Scheduled Services (Revenue) - International Operations

Contact person: Soyoon Park
 Organization: Asiana Airlines
 Tel: 82-2-2669-5080
 Fax: 82-2-2669-5070
 E-mail: soyoonpark91@flyasiana.com

State: _____
 Year: 2018-4Q
 Air carriers: Asiana Airlines

Reporting Period (check X)

1st quarter (Jan-Feb-Mar)
 2nd quarter (Apr-May-Jun)
 3rd quarter (Jul-Aug-Sep)
 4th quarter (Oct-Nov-Dec)

Traffic type (check X)

Scheduled
 Non-Scheduled

CITY-PAIR		REVENUE TRAFFIC			Air Carriers Included* (by code)
From	To	Passengers (Number)	Freight (Tonnes)	Mail (Tonnes)	
a	b	c	d	e	
AXT	ICN	337	0	0	
ALA	ICN	7347	4.524	0	
ATL	ICN	0	3141.837	0	
BKK	ICN	44678	807.381	0	
BCN	ICN	11832	277.609	0	
PEK	CJJ	1493	0	0	
PEK	ICN	36308	873.934	277.793	
PEK	PUS	12178	0	0	



**INTERNATIONAL CIVIL AVIATION ORGANIZATION
AIR TRANSPORT REPORTING FORM
TRAFFIC BY FLIGHT STAGE (TFS)
Scheduled Services (Revenue) - International Operations**

Contact person: Soyoon Park
Organization: Asiana Airlines
Tel: 82-2-2669-5080
Fax: 82-2-2669-5070
E-mail: soyoonpark91@flyasiana.com

State: REPUBLIC OF KOREA
Airline: Asiana Airlines (OZ)
Year: 2018

Stations		Type of aircraft	Number of flights	Capacity available		Revenue traffic		
From	To			Passenger seats (number)	Total payload capacity (tonnes)	Passengers (number)	Freight (tonnes)	Mail (tonnes)
a	b	c	d	e	f	g	h	i
AXT	ICN	A321-200	7	1,197	21	999	-	-
ALA	ICN	A330-300	167	47,460	1,837	37,029	16	-
AKJ	ICN	A321-200	7	1,026	18	899	-	-
ATL	ICN	B747-FRT	128	-	12,800	-	11,278	-
ATL	SEA	B747-FRT	7	-	2,300	-	1,258	-
BKK	ICN	A330-300	188	53,590	2,057	46,000	1,172	-

FORMULARIO D

FLOTA Y PERSONAL - TRANSPORTISTAS AÉREOS COMERCIALES

Persona contacto: Mario Diaz
Organización: Avianca
Teléfono: 57 1 5877700 ext (503) 2247-2266
Facsimile:
Correo-e: mario.diaz@avianca.com

Estado: Ecuador
Transportista aéreo: Aerogal
Ejercicio finalizado el: 2018

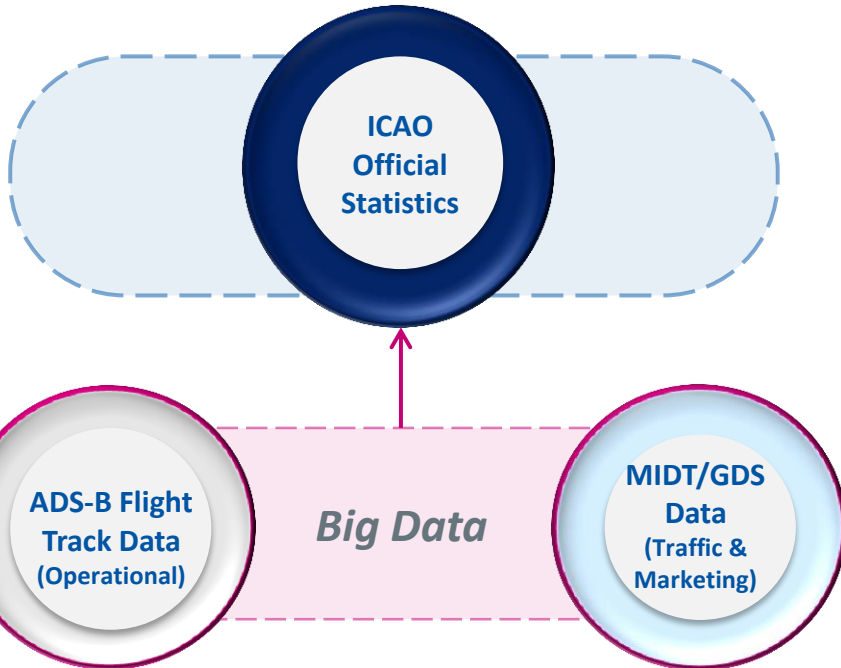
Parte I - FLOTA

Aeronaves en la flota, por tipo		Número de aeronaves de cada tipo			Capacidad de las aeronaves				Utilización de las aeronaves durante el año									
Fabricante y modelo	Código de uso o versión*	Cambios durante el año			Número de asientos de pasajeros instalados	Promedio de la capacidad de carga de pago (toneladas)	Promedio de MCTM (toneladas)	Número de salidas de aeronaves			Horas de vuelo realizadas			Kilómetros recorridos			Total de aeronaves-días disponibles	
		A principios de año	Adquiridas	Retiradas				A fines de año	Vuelos de pago		Todos los vuelos (total)	Vuelos de pago		Todos los vuelos (total)	Vuelos de pago			Todos los vuelos (total)
									Regulares	No regulares		Regulares	No regulares		Regulares	No regulares		
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
A319-112	P	4	0	0	4	120			7615	76	7691	11111	157	11268	5619566	94320	5713886	
A320-214	P	6	0	0	6	150			12036	37	12073	19565	76	19641	10103956	31440	10135396	

The need for Big Data

For the first time, a low cost and high efficiency opportunity exists toward gaining insights from the big data that cannot be done using localized data sets:

- Informed policy making
- Meet Strategic objectives
- Give States what they needed
- Improve coverage to nearly 100%
- Reduce costs





ICAO is working on new data projects:

- ADS-B
- UNCTAD
- UN COMTRADE Database Trade Statistics
- Traffic Forecasts



Big Data & the United Nations

- A transformative tool for official statistics;
- Potential to improve accuracy and reducing costs for official statistics;
- UN Global Working Group to:

*"provide a strategic vision, direction, and a global programme on big data for **official statistics**, to promote practical use of sources of Big data for official statistics, while finding solutions to their challenges, and to promote capacity building and sharing of experiences in this respect."*





UN Global Working Group (GWG) on Big Data for Official Statistics:

ICAO is a member of GWG Task Teams

GWG Task Teams

1. Advocacy and Communications
2. Linking Big Data and SDGs
3. Access and Partnerships
4. Training, Skills, and Capacity Building
5. Cross-Cutting Issues
6. Mobile Phone Data
7. Satellite Imagery
8. Social Media Data



The report of the GWG was prepared in accordance with Economic and Social Council decision 2015/2016 and past practices.



- **Member States**
 - Australia, Brazil, China, Dominican Republic, Ethiopia, France (ENAC), India (CAA), Poland, Portugal, Turkey, United Kingdom (CAA), United States (FAA, US DOT) etc.
- **United Nations Statistical Commission (UNSC)**
 - Aviation Satellite Account to measure the economic benefits of air transport, Global indicator for SDG Target 9.1
- **World Health Organization (WHO)**
 - Provision of traffic flows and intermediate stops of passengers originating from Zika affected regions
- **Universal Postal Union (UPU)**
 - Sharing with ICAO Big Data of e-commerce and mail transport, as well as joint research on e-commerce
- **United Nations Conference on Trade and Development (UNCTAD)**
- **United Nations Trade Statistics (UN-COMTRADE)**
 - Sharing with ICAO on global and Member State international trade by other modal transportation and by commodity.
- **World Tourism Organization (UNWTO)**
 - Sharing with ICAO on tourism statistics
- **World Bank**
 - Exchange of economic and aviation indicators
- **International Transport Forum (ITF at OECD)**
 - Traffic forecasts, competition analysis
- **ICM, University of Warsaw**
 - Competition analysis (direct vs indirect flights) by using MIDT, Air Transport Optimizer Tool by using ADS-B
- **Airports Council International (ACI)**
 - Joint collection of airport statistics, airport charge
- **AACO (Arab Air Carriers Organization)**
- **AFRAA (African Airlines Association)**
- **ALTA (Latin American and Caribbean Air Transport Association)**
 - Exchange of regional traffic statistics



UN International Trade Statistics Database (COMTRADE)

- Over 170 reporter countries/areas provide the United Nations Statistics Division (UNSD) with their annual international trade statistics data
- Data transformed into the UNSD standard format with consistent coding and valuation
- Largest depository of international trade data (3 billion data records since 1962)
- ICAO, Turkish DGCA and the General Directorate of State Airports Administration, are collaborating in data visualization and data analysis by mode of transportation. Underlying the economic importance of air cargo in the international trade.



What UN COMTRADE Provides

- Data detailed by commodities/service categories and partner countries
- Commodities are classified according to Standard International Trade Classification (SITC) [1962-1988] the Harmonized System (HS) [1988 and beyond]
- Time series of data for reporter countries starts as far back as 1962 and goes up to the most recent completed year



UN COMTRADE Data Enables...

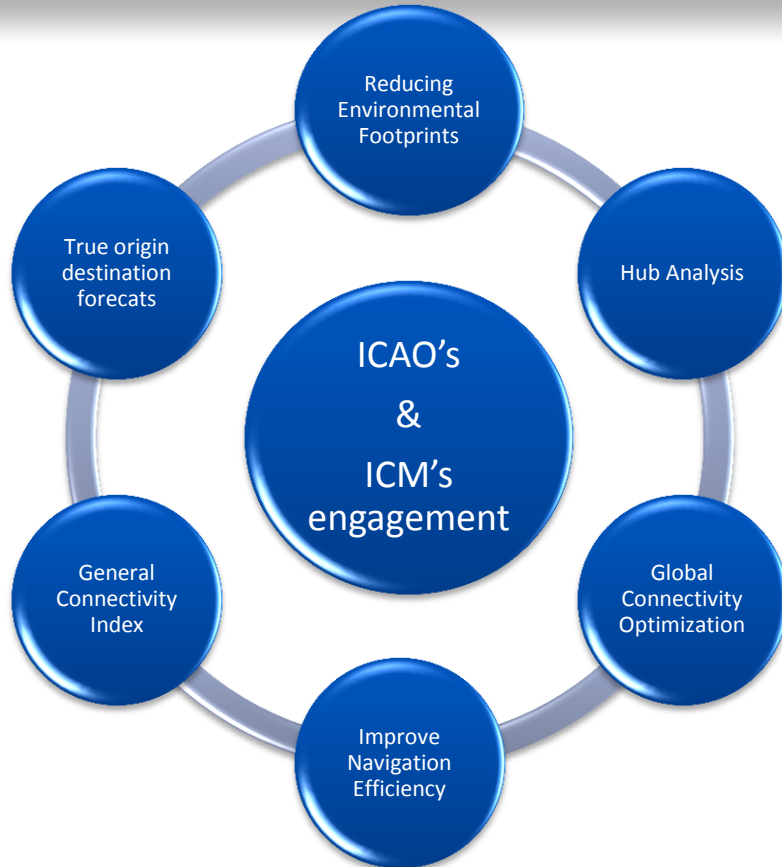
Detailed tracking of commodity and other international trade flows:

- with a high degree of granularity;
- by value and weight;
- by mode of transportation;
- from provenance;
- to destination.

This is the **only** data source providing a complete picture allowing analysis of **international** trade flows across all modes.



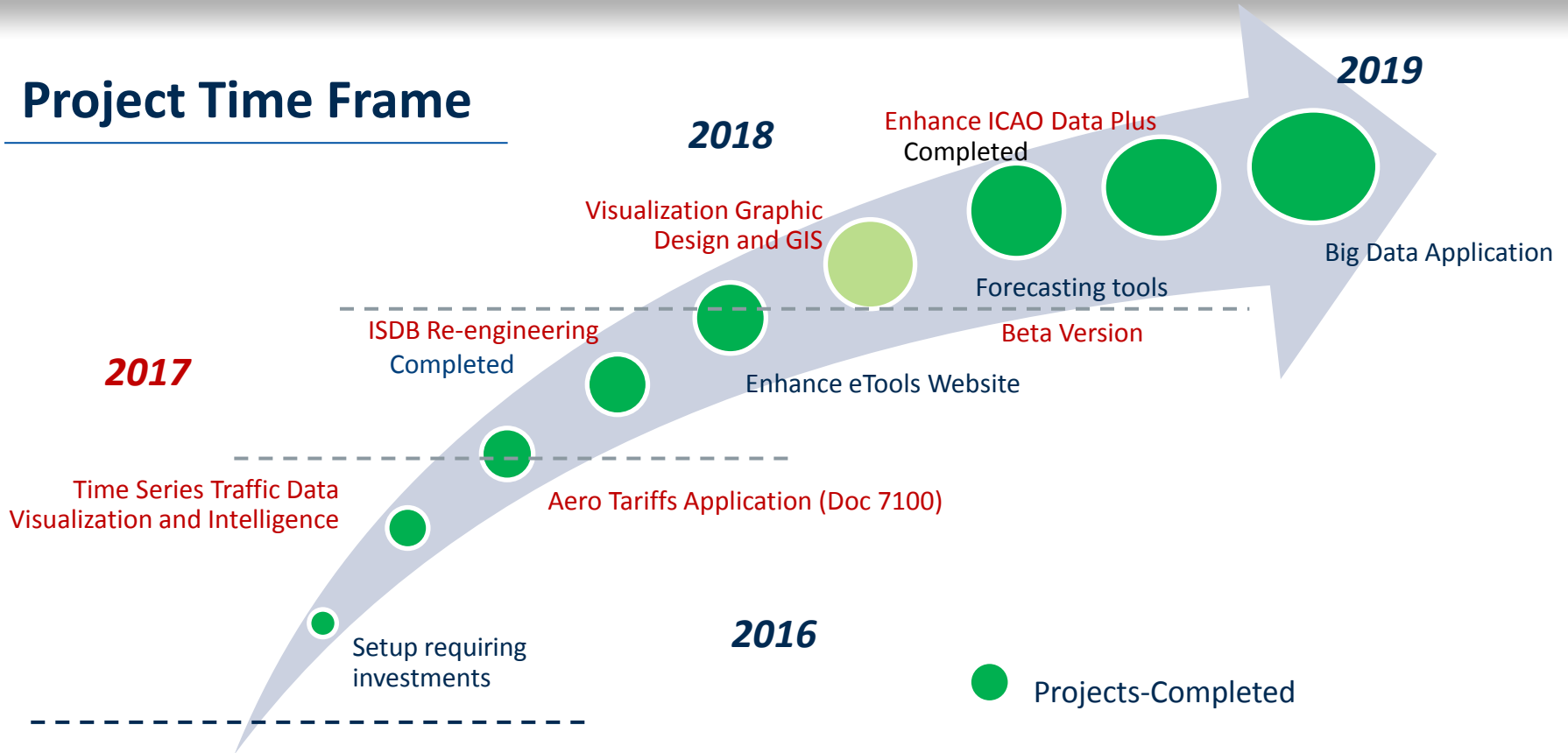
Air Transport Diagnostics Project Purpose



Using latest technologies, ICM and ICAO are working on Air Transport Diagnostics Project.



Project Time Frame





OUR PRODUCTS



ICAO Data+



GATO



WASA



Traffic Forecast



Aero Tariffs



Cost Benefit



GIS



Consulting Service



ENV Tools

ICAO DATA +

Home Apps Pricing Contact

Secure a Competitive Advantage in your Market

Credible, Unique, and Complete Data for Aviation Professionals and More!

- Industry Organizations
- Route Planners
- Consultants
- Economists
- Governments
- Strategic & Financial Analysts
- Academics & Researchers
- Environmental Associations

INTRODUCING ICAO'S NEW DATA PLUS WEB PLATFORM

ICAO Data +

Air Transport Monthly Monitor



ECONOMIC DEVELOPMENT JAN 2016: Air Transport Monthly Monitor

World Results and Analyses for NOV 2015. Total scheduled services (domestic and international).

Air Transport Bureau
E-mail: ecd@icao.int

<http://www.icao.int/sustainability/Pages/Air-Traffic-Monitor.aspx>

GLOBAL KEY FIGURES

NOV 2015
(versus NOV 2014)

RPK ▲ +5.9% ASK ▲ +4.2% FTK ▼ -1.2% LF: 78% ▲ +1.3 pts

OUTLOOK* - DEC 2015

(versus DEC 2014)

ASK ▲ +6.5% * Source OAG

PASSENGER TRAFFIC

Revenue Passenger-Kilometres - RPK

World passenger traffic grew by +5.9% YoY in November 2015, lower than the strong result recorded in previous month. This slowdown was impacted by the marginal growth in Europe of +1.5%, mainly due to the temporary affect of Lufthansa strike and Paris attack. Key domestic markets like India, China, and United States continued to show strong growth, with a particular robust growth of +25.1% in India. Despite moderate economic growth, overall passenger traffic demand remained strong supported by the significant fall in oil price and lower fares.



International Traffic vs. Tourist Arrivals

International passenger traffic grew by 5.6% in November 2015 compared to the same period of last year, -2.0 percentage points lower than the growth in the previous month. International traffic growth was impacted by the Lufthansa strike and Paris attack, while travel demand remained strong in most of the regions.

International tourist arrivals* are expected to follow a similar monthly trend.

CAPACITY

Available Seat-Kilometres - ASK

Capacity worldwide increased by +4.2% in November 2015 YoY, -1.5 percentage points lower than the October 2015 capacity growth (+5.7%). The expansion of capacity is expected to accelerate in December 2015, in response to the passenger traffic demand.



Load Factor - LF

The passenger Load Factor reached 78.0% in November 2015, a significant improvement of +1.3 percentage points from the LF recorded in the same period last year. Both international and domestic LFs have improved.

Air carriers were able to better match capacity with demand, as a result, traffic growth outpaced the capacity increase by 1.7 percentage points.



FEATURES	IATA – Aviation Charges Intelligence Center	RDC – Airportcharges.com	ICAO – Aero Tariffs
Calculation	Airport charges	Airport Charges	Airport and Flight Route Air Navigation Charges
Benchmarking	Scenarios	Airports per Month	Airports , Years growth (coming soon)
Simulation	Yes	Yes	Yes
Pre-calculated data	Yes	Yes	Yes
Data	~900 airports	2300+ airports	1100+ airports (cover 80% world passenger traffic and Capital airport)
Source		Research	States /AIP*/ACI reports
Download reports	PDF	PDF - Excel	PDF - Excel
ANC	200 countries No calculation	En-route	Flight Route (with FIRs*) 5 types of Charge/ API
Subscription Fee	USD 7650, 4100	EURO 8700	USD 2500 each module, 3800 bundle
Other	Fuel Charges (additional subscription)	System integration (additional charge)	Scheme of Charges (free with subscription)

*AIP/ACI: Aeronautical Information Publication; ACI: Airports Council International

*FIR: Flight Information Region



ICAO

UNITING AVIATION

Traffic Forecast – Competitive Analysis

Product	ICAO Forecasting Tool	IATA Passenger Forecast	Euro-control - STATFOR
Model	Economic model (GDP, cost of travel) Decision from CAEP/ADAP	Economic model (GDP, Demographics, Living Standards)	IFR flight movements
Granularity	World, Region, Route Area, Country (International, Domestic), Airport (coming soon)	World, Region, Country	World, Region, Country (Europe)
Parameters	Passenger (number, ASK, RPK, PLF), Cargo, Fleet, Personnel	Passenger (number)	Passengers
Updates	Annual	April and October	Annual / every 3 yrs.
Time Frame	30 years	20 years	7 year / 20 year
Output	Web tool (Excel, PDF)	Web tool (PDF reports)	Dashboard
Price	Bundle-\$7500, Passenger-\$4200, Cargo, Fleet, Personnel: \$1450 each	\$15,000 1-yr x 1-5 users (\$500 for each G20 country, \$2500 for individual report)	For STATFOR User Group members.

Dominican Republic Air Transport Case Study

New Dominican Republic aviation connectivity case study to shine spotlight on economic planning and growth benefits



As part of ICAO's continuing efforts to assist Small Island Developing States (SIDs), the Director of ICAO's North American, Central American and Caribbean (NACC) Office, Mr. Melvin Cintron (fourth from right), was joined by officers from the ICAO Air Transport Bureau and civil aviation officials and key stakeholders from the Dominican Republic yesterday to forge the parameters of a new air transport case study to quantify the economic and social benefits of aviation connectivity in the Dominican Republic.

- Demonstrate that a country's political will and commitment to establishing aviation as a national priority can drive economic development to the country
- Quantify the economic and social benefits from civil aviation to Dominican Republic, using data and analysis of the past two decades
- Provide a more relevant and accurate representation of the "before" and "after" effects on the economies and sustainable developments of Small Developing Island States (SIDS)

Advanced collaboration through Industry High Level Group (IHLG)



AVIATION BENEFITS

2017



Aviation Benefits Report

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What are opportunities for collaboration?

- MoUs with academic institutions through which ICAO provides data and the institution assists with analysis
- ICAO Scientific Review
- Next Generation of Aviation Professionals Program
- ACRP (see our problem statements 1 and 2)





DISCUSSION



Questions to: crobinson@icao.int

THANK YOU!