



CODA

Building the delay-analysis system for Europe



ICAO Business Class Symposium 14 – 16 October 2014, Montréal Yves De Wandeler - CODA manager

CODA – Air traffic delays from all causes



- Origins of CODA a voluntary system
- Regulation move to mandatory reporting
- Delay codes the need for standardisation
- Data collection a central point in Europe
- Delay and related indicators improving performance







Starting Point

The voluntary system

CODA Origin & Objective



Origin

 Set up following ECAC Ministers' requirement after a period of severe delays in the 90's, and operated by EUROCONTROL.

Objective

 "To provide policy makers and managers of the ECAC Air Transport System with timely, consistent and comprehensive information on the air traffic delay situation in Europe".

Definitions



Delay*

the time lapse which occurs when a planned event does not happen at the planned time

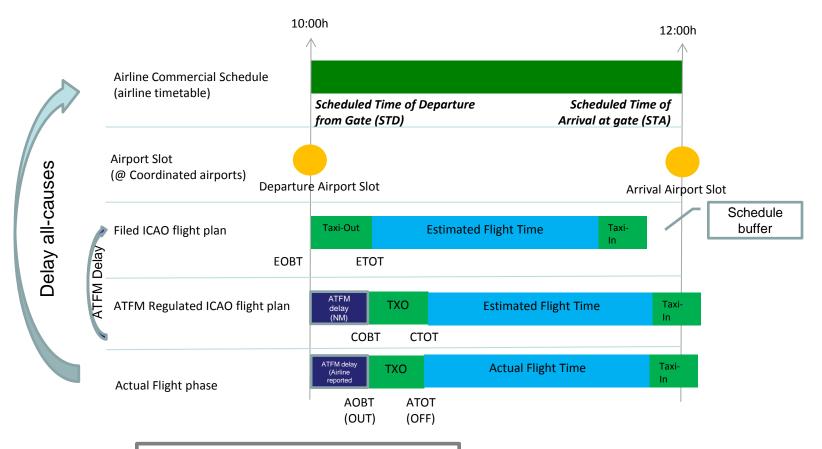
Delay Measurement*

 for an airline, delay measurement and cause assignment take place on the ramp



^{*}EUROCONTROL Trends in Air Traffic; A Matter of Time: Air Traffic Delays in Europe (on www.eurocontrol.int/coda)

Measuring ATFM delays & delays all-causes



ATFM delay: CTOT-ETOT

Delay all-causes: OUT-STD



Original CODA system



- First printed reports January 1997
- ATFM Data from Network Manager (then CFMU), and aggregated delay cause data from IATA and AEA
- Concentration on ATFM delay as data complete, and quickly available. ATFM reports within 10 days of month end
- 7-page text analysis
- Airline data many weeks after month end, so full reports often take up to two months to produce. Consistent and reasonably comprehensive, but not timely
- Output publicly available on internet
- Initial development and operation supported by an Advisory Group including CAA and Industry Trade Associations



Subsequent developments



- CODA product generally well received, and recognised as providing an independent analysis.
- More information now required. PRU recommendation that EUROCONTROL Agency develop proposals for a more comprehensive system.
- Aggregated data and printed reports limited speed of production.
- Solution:
 - Comprehensive data set received on voluntary basis direct from airlines (primary source of delay cause data)
- Enhanced CODA proposal prepared. Development started Summer 2001. First ECODA report - June 2002.
- Detailed data collection direct from airspace users (and airports)



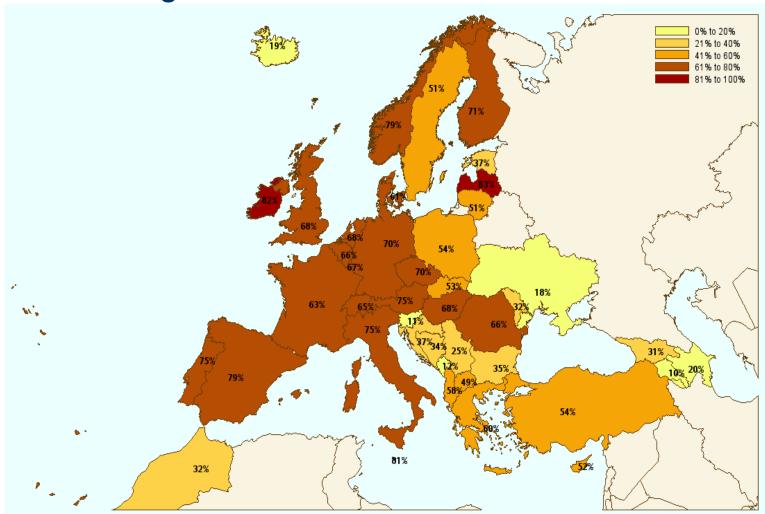
'Voluntary' reporting



- Feed of flight-by-flight operational data direct from individual airlines since 2003
 - AC-registration
 - Callsign
 - City-pair
 - Scheduled Times, OOOI-Times
 - Delay reasons (IATA delaycodes) and durations...
- Mapping, Matching and Quality Check of data
 - ISO9001:2008 certified (Lloyd's Register)
- > 200 data partners (airlines, ANSPs & airports)
- Data coverage at some airports up to 90% of total IFR flights
- European coverage of IFR flights > 65%
- Baseline: IFR flights



Q2-2014 CODA coverage: 69% of IFR flights





CODA data partners



























































































































































































































Regulation

The move to mandatory reporting

European Commission regulation



- SES Performance Scheme for monitoring air navigation services and network functions, entered into force on 23 August 2010
- Data to be provided for performance monitoring by
 - national authorities, airport operators, coordinators, air carriers
- Data collection delegated to CODA
 - airport operators & air carriers

Data Collection under the Regulation

- ATC Callsign, flight rule & flight type (ICAO flight plan)
- Aircraft Registration & type
- Airport Pair
- Scheduled Times
- Actual Times (Off-Block, T/O, Landing & In-Block)
- Delay Times
- Delay reasons (up to 5 codes)
- Runway
- Parking Stand
- De/anti-icing
- Actual Time of Cancellation
- Voluntary
 - IATA service type
 - IFPS flight plan ID
 - Fuel burn
 - Ramp weight

Items also collected under original CODA voluntary data collection







Delay coding

The need for standardisation

IATA Delay Codes



- AHM730: 74 codes + 6 optional internal
 Airport Handling Manual Worldwide recommended practice
- Primary delay codes

Airline	51 codes
, ,,,,,,	0.0000

Weather 7 codes

Airport 5 codes

En-Route2 codes

Misc.2 codes

Security1 code

Reactionary delay codes 6 codes



Observed delay codes

- Europe and airlines flying to Europe
 - 74 codes + 6 optional internal (IATA standard)
 - 95 codes & NO subcodes
 - 77 codes & 156 subcodes
 - 78 codes & 309 subcodes
- Non-standard codes
 - "translated" to IATA standard codes
 - Agreed convertion table with data provider
- Promote standardisation
 - Working with users of data to promote IATA delay sub-codes
 - ACI-Europe: EAPN (European Airport Punctuality Network)
 - EDAG European Delay Advisory Group
 - IATA, AEA, ERA, ICAO etc





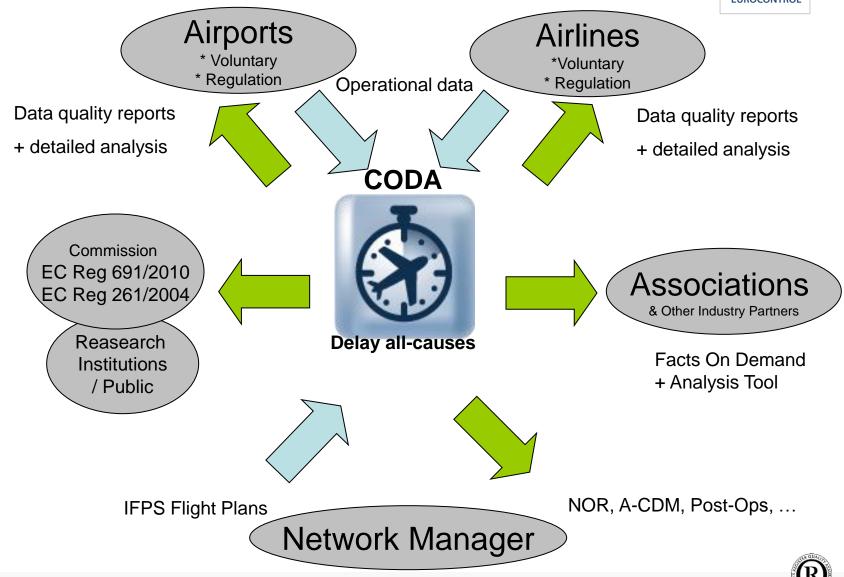


Data collection

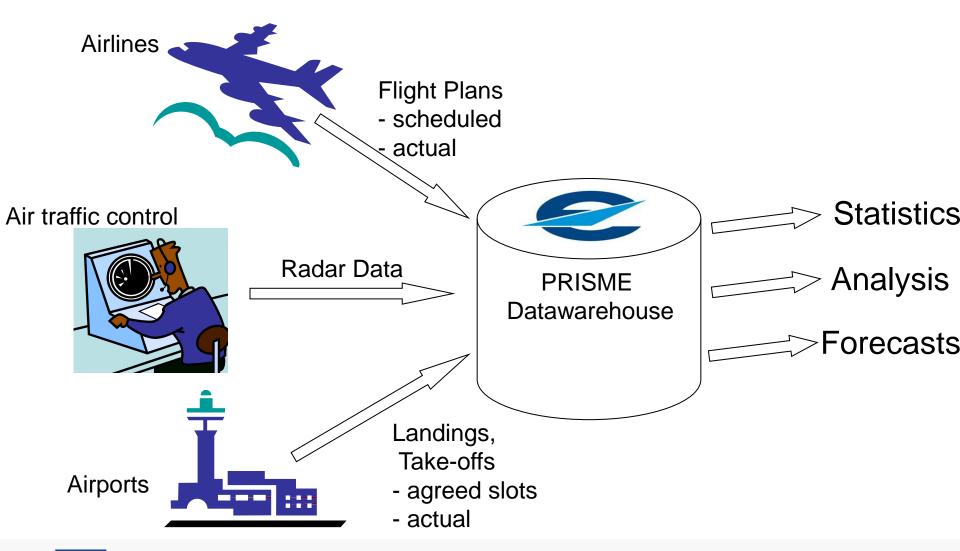
A central point

CODA: Central Office for Delay Analysis





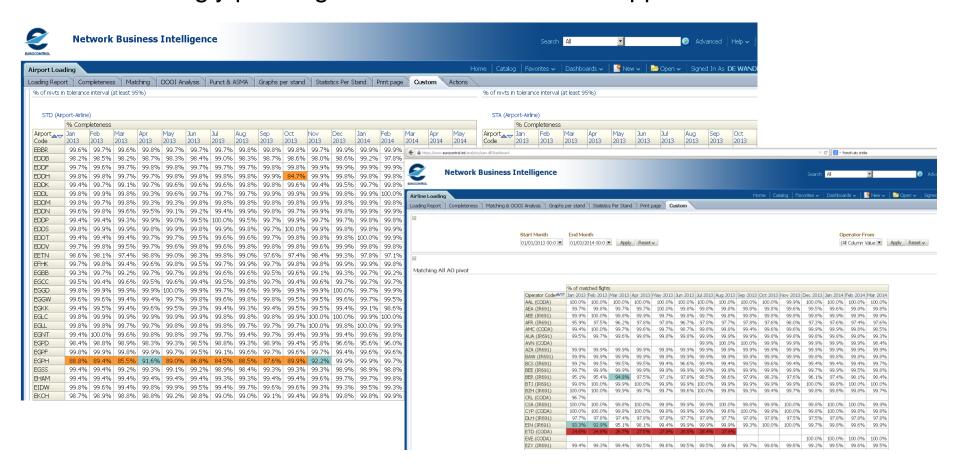
Data on 10 Million flights per year in Europe





CODA Data loading & Monitoring

- Automation is the key
- Increasingly pushing validation back on the supplier









Delay & related indicators

Using the delay data to improve network performance

CODA Metrics



- Departure delays and punctuality
- Arrival delays and punctuality
 - Various thresholds applied
- Excessive early arrivals
- In-depth analysis of delay reasons
- Taxi-time analysis
- CODA scheduling indicators (BTO & DDI-F)
- Reactionary delays, depth of sequence
- First Rotation Delays
- Difference between airline-reported ATFCM delays and Network Manager-recorded ATFCM Restrictions
- Operational cancellations
- Access levels
 - Provider, Industry, general public



CODA Reports



CODA report	Monthly	Quarterly	Seasonal	Yearly
FLAD (First Look at Delays)	X			
CORE (CODA Report for airlines)	Х			
Digest		Х	Х	Х
Taxi-times			Х	
Network Operations Report	Х			

Reminder of principles:

- Provide benchmarks to allow operators to manage their performance
- All-causes delay based on airline (& airport) data
- Delay analysis based on IATA schedule i.e. airport slot vs EOBT or CTOT for ATFCM delays
- Industry driven indicators: scheduling indicators, taxi-times, first rotation restrictions and delays
- Feed-back loop (from post-flight to scheduling phase)
- Report on root cause of delays and not the effect/impact



CODA dashboard





More on "Delay & related indicators" during Session 1:Data and Information





www.eurocontrol.int/coda



