Supporting European Aviation

EUROCONTROL

Continuous Climb and Descent Operations in Europe: Successes, Challenges, and Way Forward

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UC Davis Aviation Noise & Emissions Symposium 2020

FOUNDING MEMBER SESAR JOINT UNDERTAKING

NETWORK MANAGER


G-BFFW

Average time in level flight for all arrs / deps in 2017 European CCO / CDO TF

340K tonnes/yr

1.1 million tonnes/yr

150 million/yr for airspace users

Presentation overview:

- Previous situation
- Challenges to improve
- Actions
- Successes and failures
- Next steps

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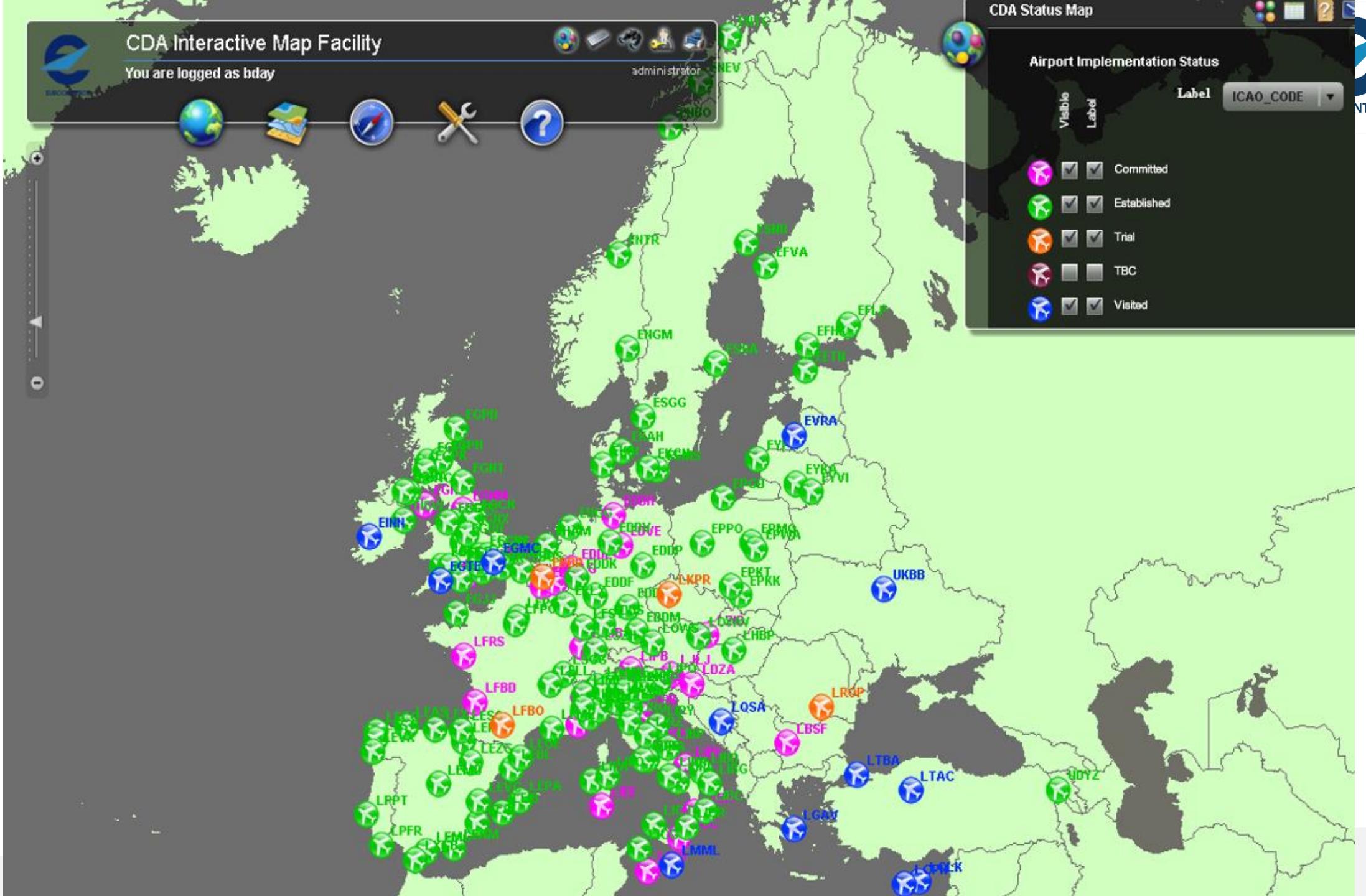
European Joint Industry Action Plan (2009)


CDA Interactive Map Facility
You are logged as bday
administrator
CDA Status Map
Airport Implementation Status
Label
ICAO_CODE
Visible
Label
Committed
Established
Trial
TBC
Visited
ENTR
EFVA
ENGM
ESGG
EVRA
EGPD
EGNT
EIMN
EGMC
EGTE
EDDP
EPPO
EPKT
EPKK
UKBB
LKPR
LFRS
LFBD
LFBO
LQSA
LBSF
LTBA
LTAC
LGAV
LRQP
LPPT
LPFR
LMML

So far, so good……

- Previous situation
- Challenges to improve
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Challenges to improve

- Frankfurt meeting
- Different measurements
- Regulatory requirements
- Bloated statements
- No performance improvement
- The ‘blame’ culture

Challenges

- The European Network Manager (NM)[1] used to have a target of 200 Continuous Descent Operations (CDO) airports by 2013
- CDO ‘implementation’ defined as a CDO procedure in the AIP (Aeronautical Information Publication)
- This does not provide information on what was flown, how much flown, fuel saved….

➔There is no definition of a “CDO” as a measurement of performance

- This led to misunderstandings, misinformation and no performance improvement

[1] EUROCONTROL is nominated as the Network Manager until 2029

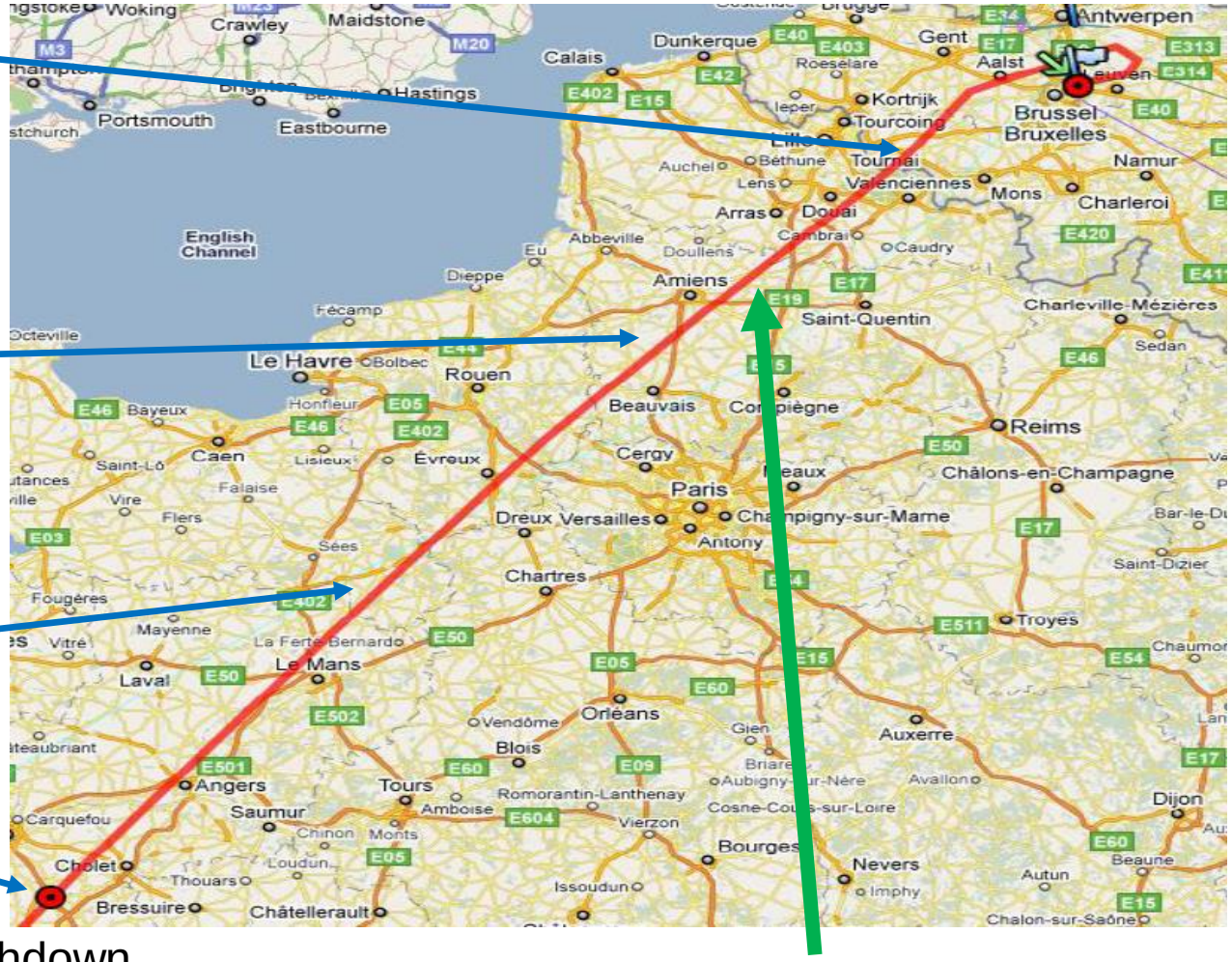
Challenges to improve - vertical constraints for flights into Brussels Airport

Aircraft required
by ATC
at FL180

Aircraft forced down
again by ATC to FL180
at 163Nm (nautical miles)
from touchdown

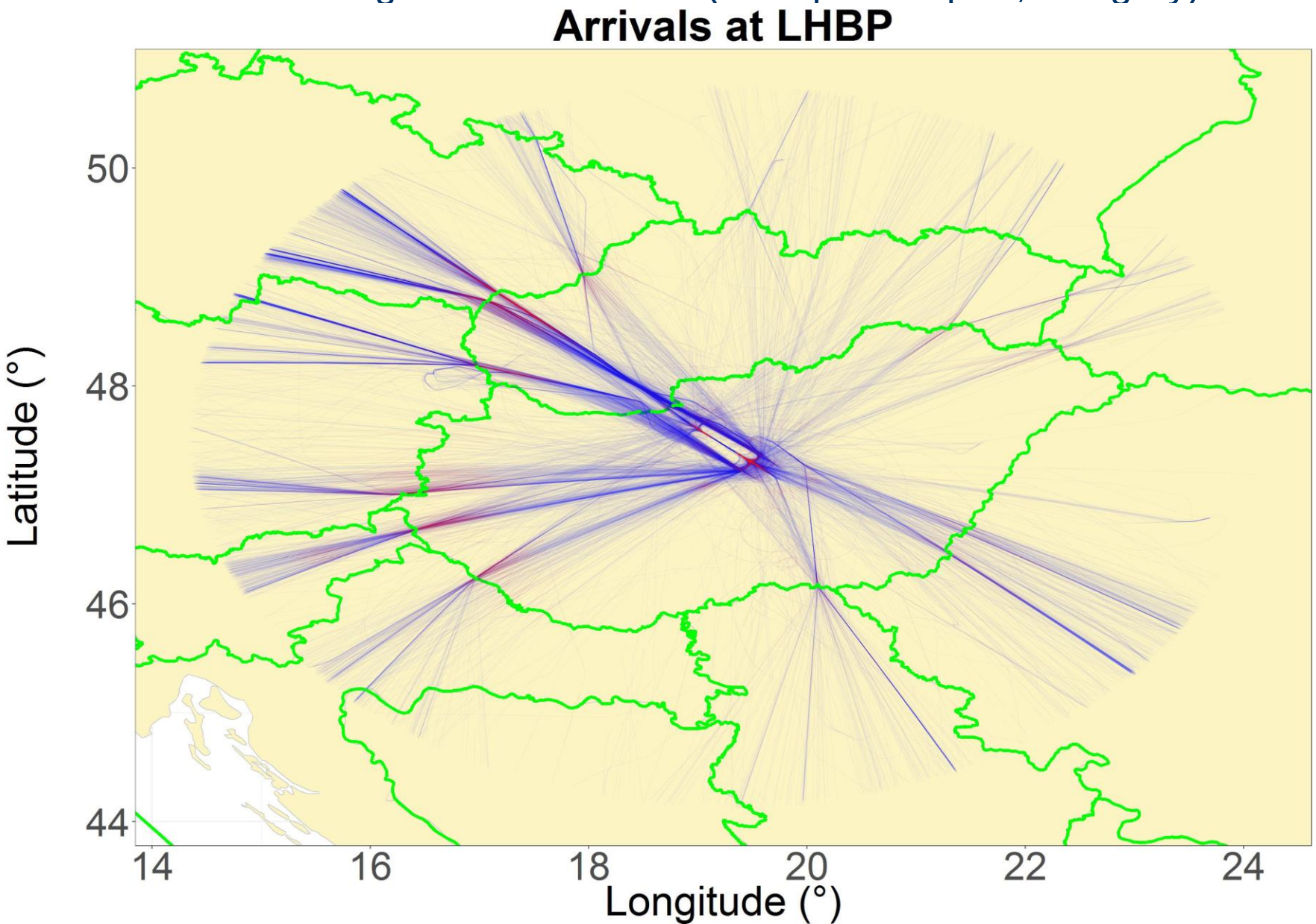
Aircraft forced down
again by ATC to FL330
at 251Nm from touchdown

Aircraft forced down
by ATC from FL390 to
FL370 at 368Nm from touchdown



Optimum Top of Descent (ToD) point – 130nm from touchdown

Challenges to improve – Letters of Agreement (LoAs) between ATC sectors causing inefficient intermediate level segments into LHBP (Budapest Airport, Hungary)



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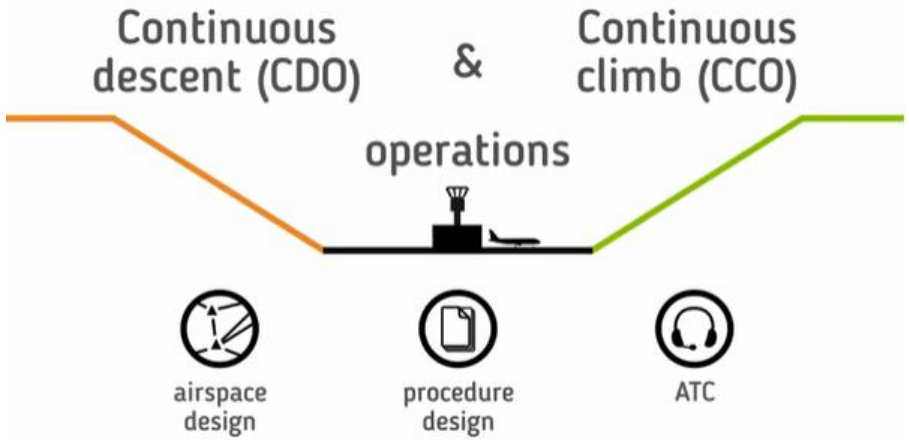
Actions (1):

- In 2015, a Task Force on CCO/CDO was established by EUROCONTROL
- The Task Force delivered a set of Stakeholder recommended definitions and parameters in order to enable a harmonised European measurement of CCO/CDO execution.
- Outcomes included:

  - A harmonised definition of both a noise and a fuel CDO;
  - A harmonised definition of both a noise and a fuel CCO; and,
  - A harmonised set of metrics and parameters for CCO / CDO measurement relating to average time in level flight.

Actions (2):

- To help inform Stakeholders of the outcomes of the CCO / CDO Task Force, an animation was developed which can be accessed at https://www.eurocontrol.int/articles/continuous-climb-and-descent-operations



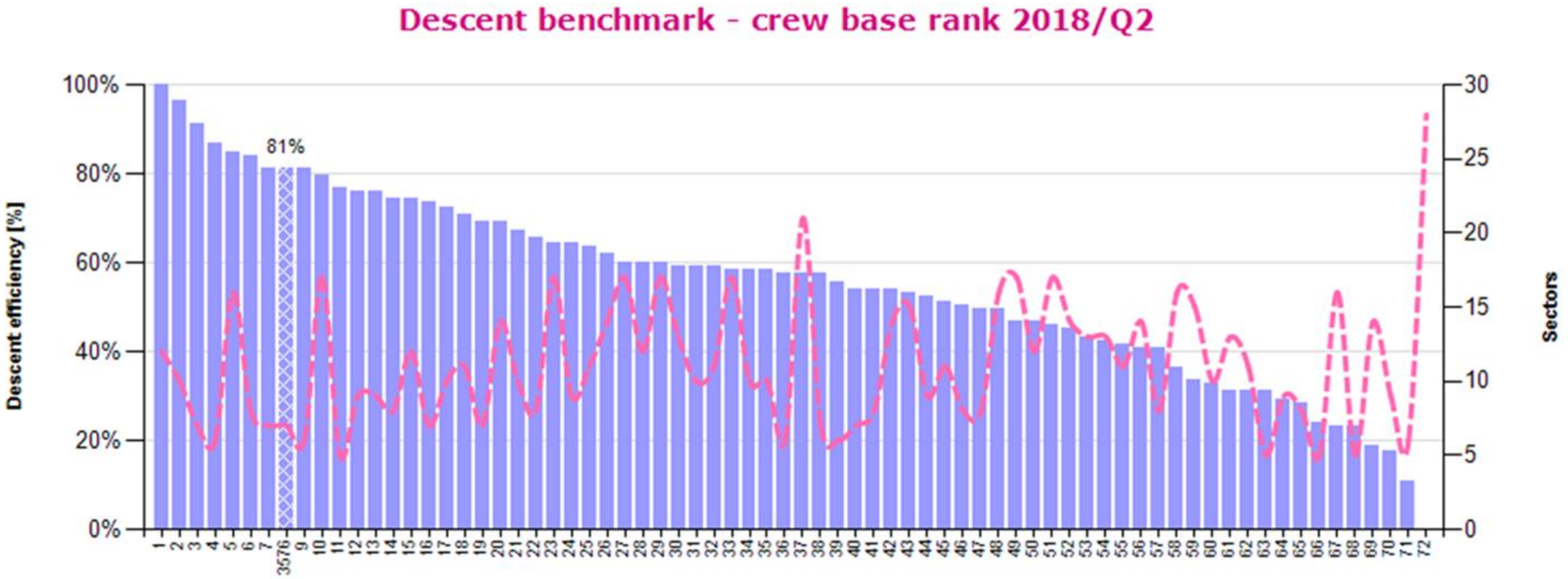
- Stakeholders are being encouraged to use the harmonised definitions and parameters of the TF when measuring CCO / CDO especially when measurements are presented at the international level in order to allow a harmonised comparison of performance.

CCO / CDO TF activities (1):

- Development of CCO / CDO Performance tables
- Update of the European Route Network Improvement Plan (ERNIP) - Part 1: European Airspace Design Methodology – Guidelines
- ATCO training guidelines / ATCO refresher training on aircraft energy management
- Pilot training guidelines
- LoA (Letter of Agreement) review

CCO / CDO TF activities:

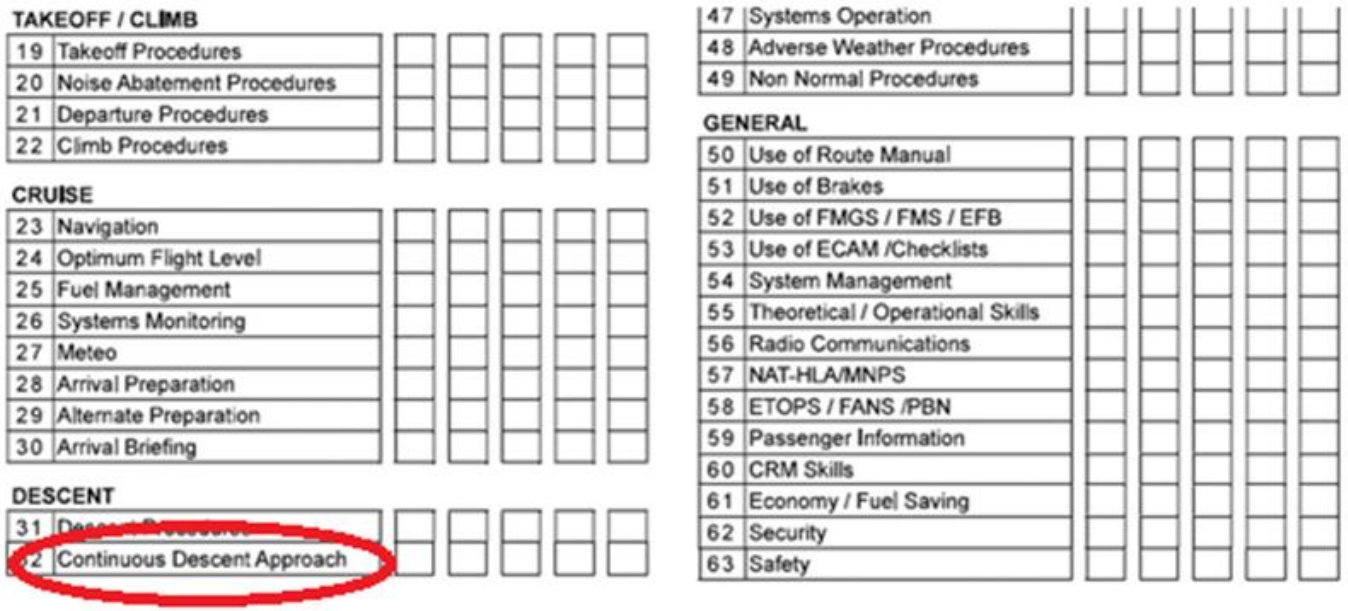
- Development of CCO / CDO Performance tables



Performance monitoring breeds performance improvement

CCO / CDO TF activities:

Air Traffic Control Officer (ATCO) training guidelines / ATCO refresher training on aircraft energy management



	TAKEOFF / CLIMB
19	Takeoff Procedures
20	Noise Abatement Procedures
21	Departure Procedures
22	Climb Procedures

	CRUISE
23	Navigation
24	Optimum Flight Level
25	Fuel Management
26	Systems Monitoring
27	Meteo
28	Arrival Preparation
29	Alternate Preparation
30	Arrival Briefing

	DESCENT
31	[illegible]
[illegible]	Continuous Descent Approach

47	Systems Operation
48	Adverse Weather Procedures
49	Non Normal Procedures

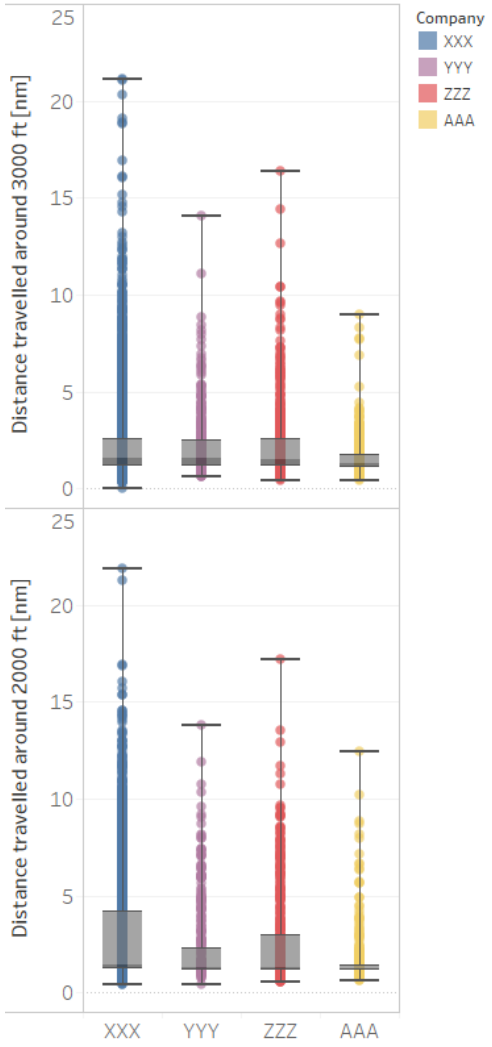
	GENERAL
50	Use of Route Manual
51	Use of Brakes
52	Use of FMGS / FMS / EFB
53	Use of ECAM /Checklists
54	System Management
55	Theoretical / Operational Skills
56	Radio Communications
57	NAT-HLA/MNPS
58	ETOPS / FANS /PBN
59	Passenger Information
60	CRM Skills
61	Economy / Fuel Saving
62	Security
63	Safety

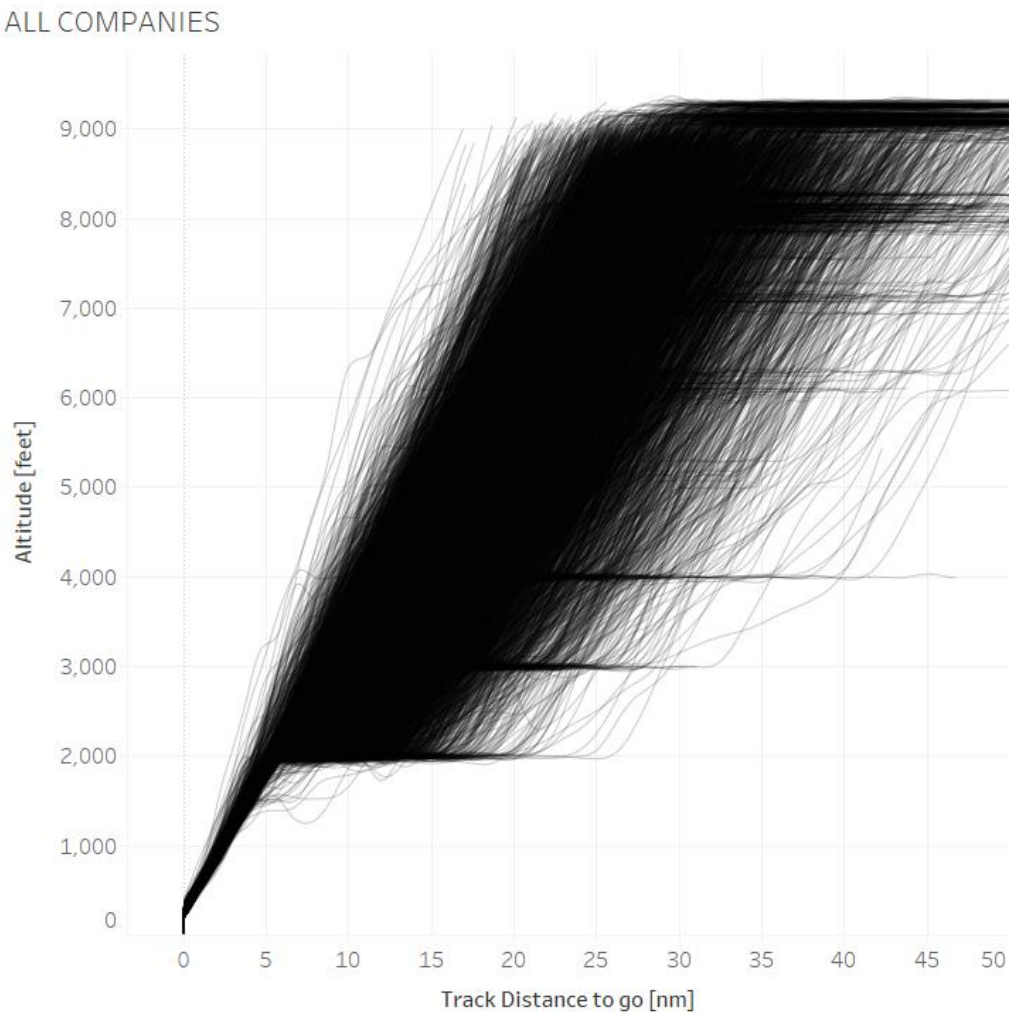
- Integrated mentality
- Demonstrated by pilots moving between airlines

CCO / CDO TF activities (2):

- AIP harmonized material
- Airline engagement
- Airline performance monitoring and pilot feedback
- Airline Standard Operating Practices (SOPs)
- Collaboration

Performance of different airlines



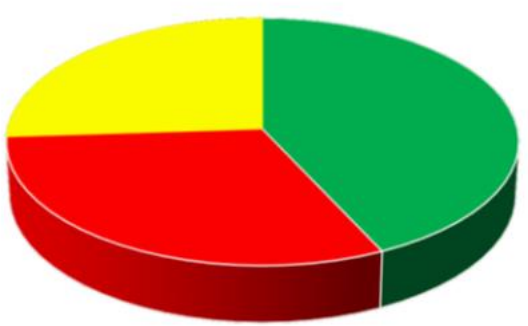


RANK	AIRLINE	[s]
1	NAX	43
2	IBK	46
3	BTI	48
4	KLM	56
5	NVR	57
6	AUI	60
7	BLX	64
8	NTJ	65
9	SAS	66
10	SWR	71
11	LOT	71
12	DLH	77
13	FIN	79
14	BAW	91
15	QTR	93
16	APF	97
17	THY	103
18	AFR	104
19	AUA	106
20	BER	108
21	EWG	118
22	VKG	129
23	AFL	130
24	PNX	162
25	DFL	329

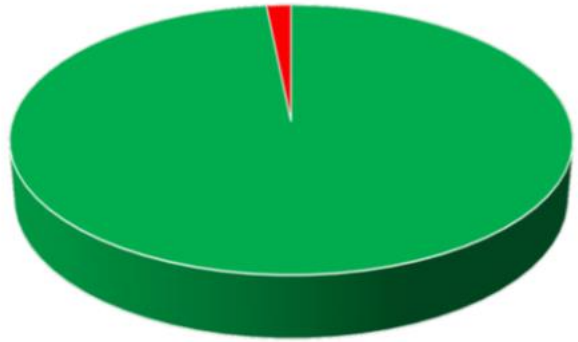
CCO / CDO TF activities:

Collaboration

Generic high level – Collaborative Environmental Management (CEM)



Red = non-compliance more than 200 ft = 31
Green = error free = 43 %



Green = Error-free incl. waypoint and altimeter tolerance 98%

Focused – operational procedures e.g. The High Transition Operations (HTO) Project, Germany

All stakeholders

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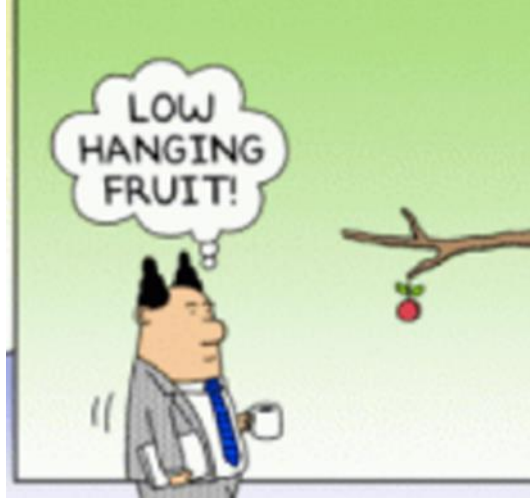
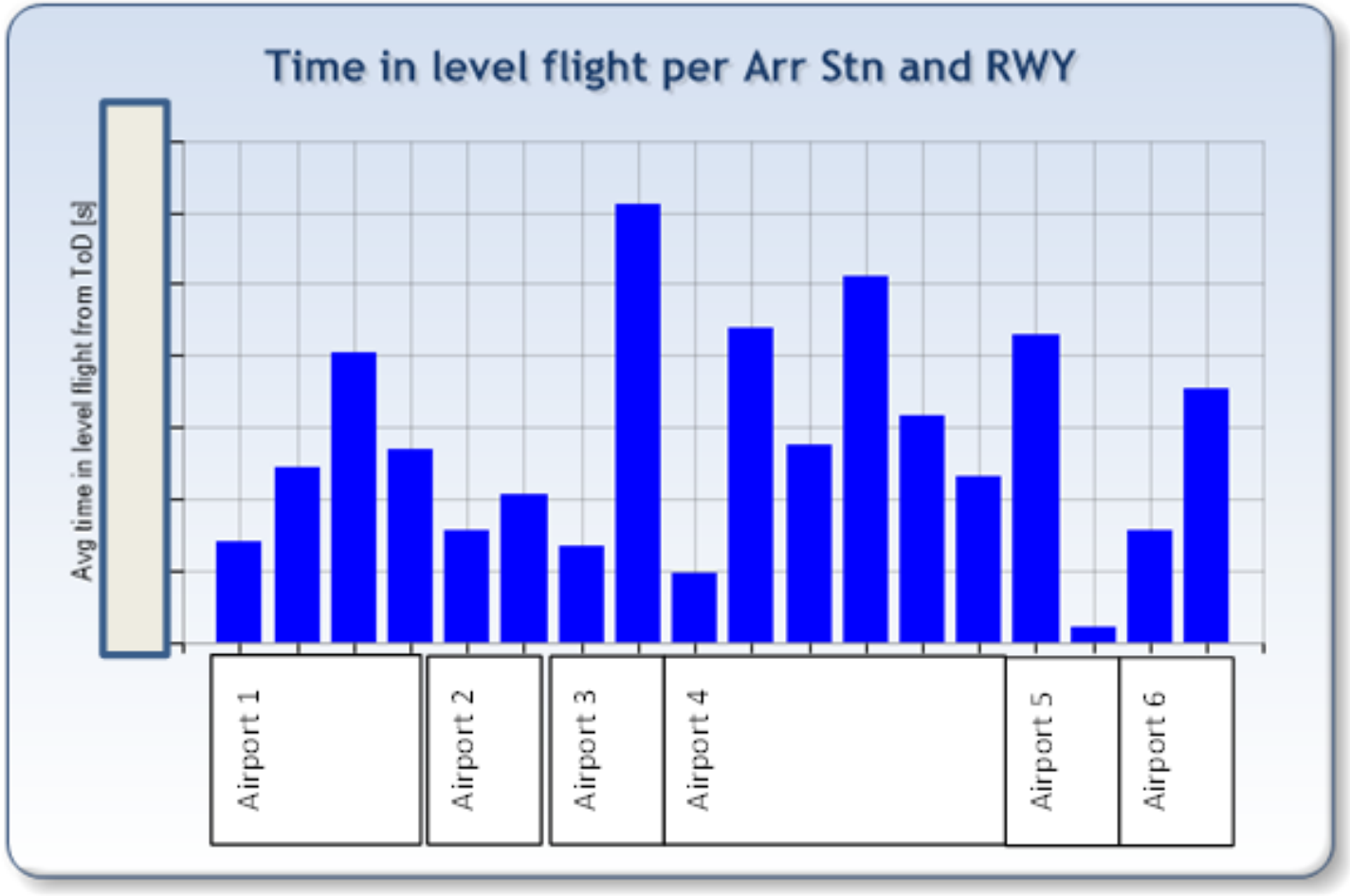
- Performance improvement
- LoA review
- CDO from FL360 in core European airspace



Performance improvement



CDO from FL360 in core European airspace

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EUROCONTROL
European CCO/CDO Action Plan
SUPPORTING EUROPEAN AVIATION
SESAR
NETWORK MANAGER

Next steps

May 2020

Questions?