



2018
World ATM Congress



SESAR
walking
tours

EUROCONTROL Stand



User Driven Prioritisation Process

Problem statement

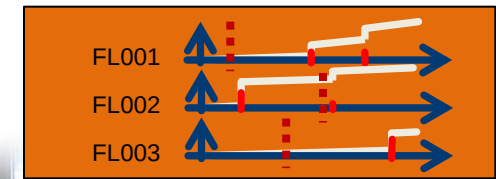
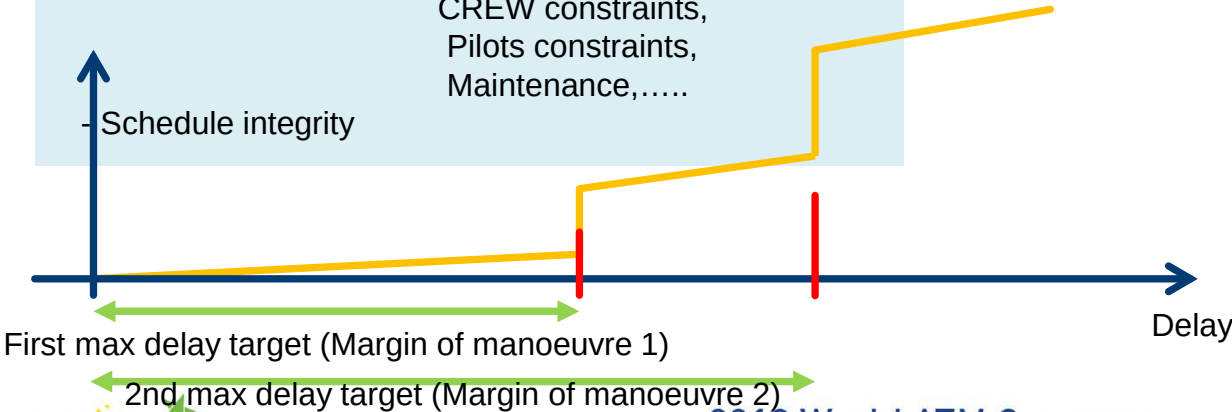
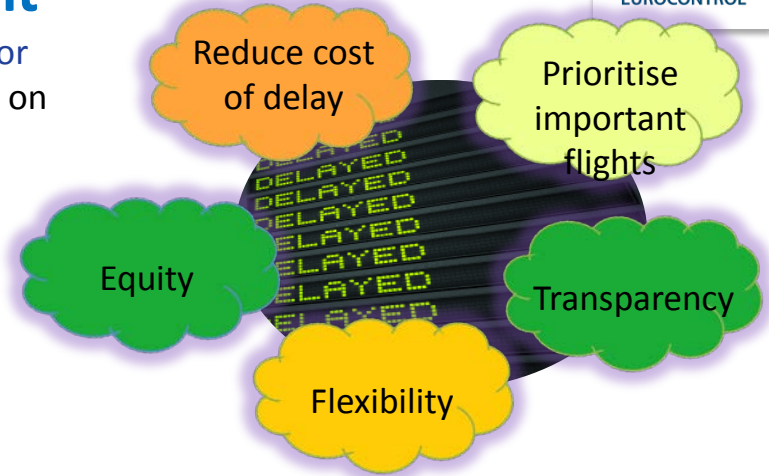
In order to maintain safety, the Network Function impose delays or other measures on certain flights before departure => limitations on AUs operations. Problem:

- For ATFM, all flights are equal
- For AUs, every flight is **unique** :

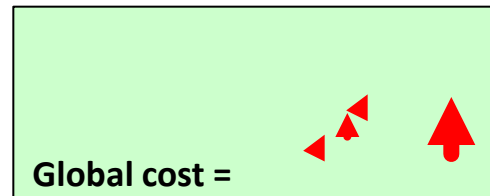
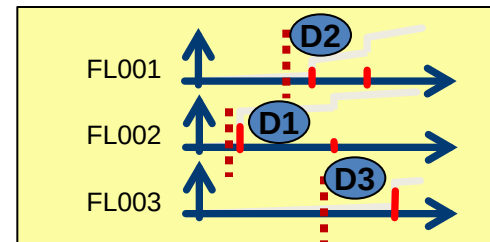
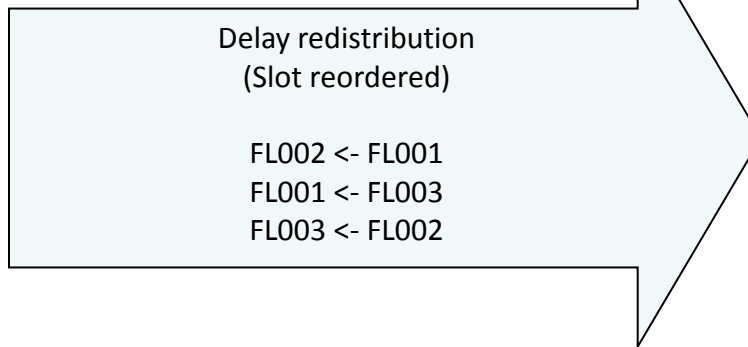
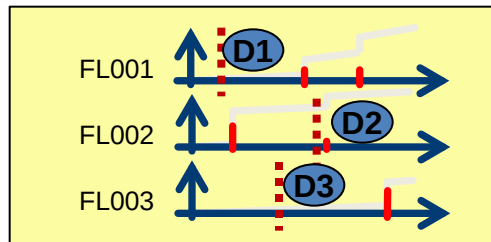
Each flight has its own non-linear cost structure due to :

- Passengers flow: Transit, VIP, Rotations, ...
- Resources managmt : Curfew, CREW constraints, Pilots constraints, Maintenance,.....

- Schedule integrity



User Driven Prioritisation Process - UDPP – brings to Airspace Users the flexibility they need to reduce their cost of delay



UDPP features: FDR, SFP, Margins

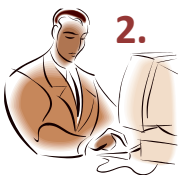
- **FDR:** Fleet Delay Reordering
 - value (from 1 to xxx) to reorder AU's flights
 - B (to keep the Baseline delay)
 - S (to UDPP-Suspend a flight = put it last in Constraint)
- **SFP:** Selective Flight Protection
 - Protect Flights
- **MARGIN :** Margins of Manoeuvre
 - **Time Margins** (AU operational constraints : not_before / not_after)
 - The system optimises reordering

All based on Equity Rules

UDPP in the ATM collaborative process



1. The **Network/Airport « FMP »** detects a hotspot and **triggers UDPP**



2. **AUs** may reorder/protect their own flights with UDPP using a what-if in the UDPP Server that **takes account of other constraints on flights** in the Network

3. When satisfied, each **AU** independently commits. This updates the flight in the Network

4. At **cut-off time**, the **AUs** can't prioritise anymore. The **Network/Airport « FMP »** accommodate the new situation

CDG capacity reduction 16:00-18:00

Flight List @ 07:00

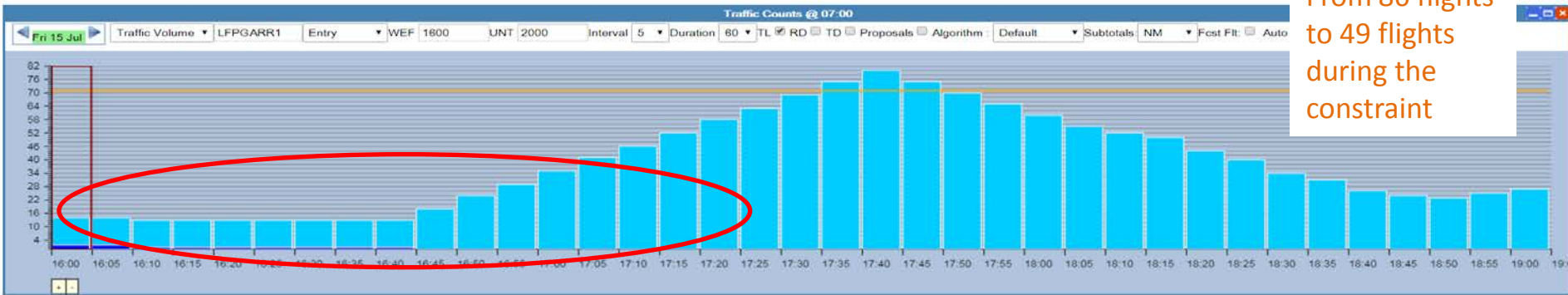
Fri 15 Jul Aerodrome: LFPG Traffic: Load Arrival: WEF 1600 UNT 1800 proposals: Airlines Compare To: Fcst Filt: Alg: NM Auto Refresh: never GO

ENTF	EXIT	#H	LS	ARCID	ATYP	ADES	RM	T	ARF	IOBT	LV	U	E/COT	X	S	CL	TOBT	TSAT	TT	A/TOT	DELAY	E/CATA	R	Opf	W	MSG	REGUL+
17:06C	17:08			FDX5279	MD11	OMDB	LFPG	N820FE	I	340	15-10:00		10:38C						0		"28"	17:08C		A		LFPG975	
17:11C	17:11			FPO118H	B733	LICA	LFPG	FGIXT	I	360	15-14:20		14:57C						5		"31"	17:11C		A		LFPG975	
17:16C	17:16			OMA131	B788	OOMS	LFPG	A40SY	I	430	15-09:45		10:31C						0		"36"	17:16C		A		LFPG975	
17:20C	17:20			KLM25P	B738	EHAM	LFPG	PHBXF	I	230	15-15:45		16:39C						15		"40"	17:20C		A		LFPG975	
17:25C	17:25			LOT335	E170	EPWA	LFPG	SBLJK	I	380	15-14:30		15:24C						10		"44"	17:25C		A		LFPG975	
17:30C	17:30			AFR561X	A318	LDZA	LFPG	FGUGB	I	380	15-15:02		15:55C						5		"48"	17:30C		A		LFPG975	
17:35C	17:35			LBT302	A320	DTMB	LFPG	TSINQ	I	380	15-14:00		15:08C						15		"53"	17:35C		A		LFPG975	
17:40C	17:40			AFR1375	E190	ENGM	LFPG	FHBLC	I	380	15-14:45		15:53C						10		"56"	17:40C		A		LFPG975	
17:40C	17:40			AFR1789	A319	LBSF	LFPG	FGRHL	I	380	15-14:05		15:09C						5		"53"	17:40C		A		LFPG975	
17:41C	17:41			BEE4409	E190	EGCN	LFPG	GFBEG	I	290	15-15:35		16:34C						10		"49"	17:41C		A		LFPG975	
17:42C	17:42			UZB251	B752	UTTT	LFPG	UK75701	I	380	15-09:55		10:53C						0		"48"	17:42C		A		LFPG975	
17:43C	17:43			EZY318Z	A319	LFMN	LFPG	GEZDV	I	340	15-15:35		16:30C						8		"47"	17:43C		A		LFPG975	
17:43C	17:43			VLG82UY	A321	LEBL	LFPG	ECMH8	I	360	15-15:15		16:13C						15		"47"	17:43C		A		LFPG975	

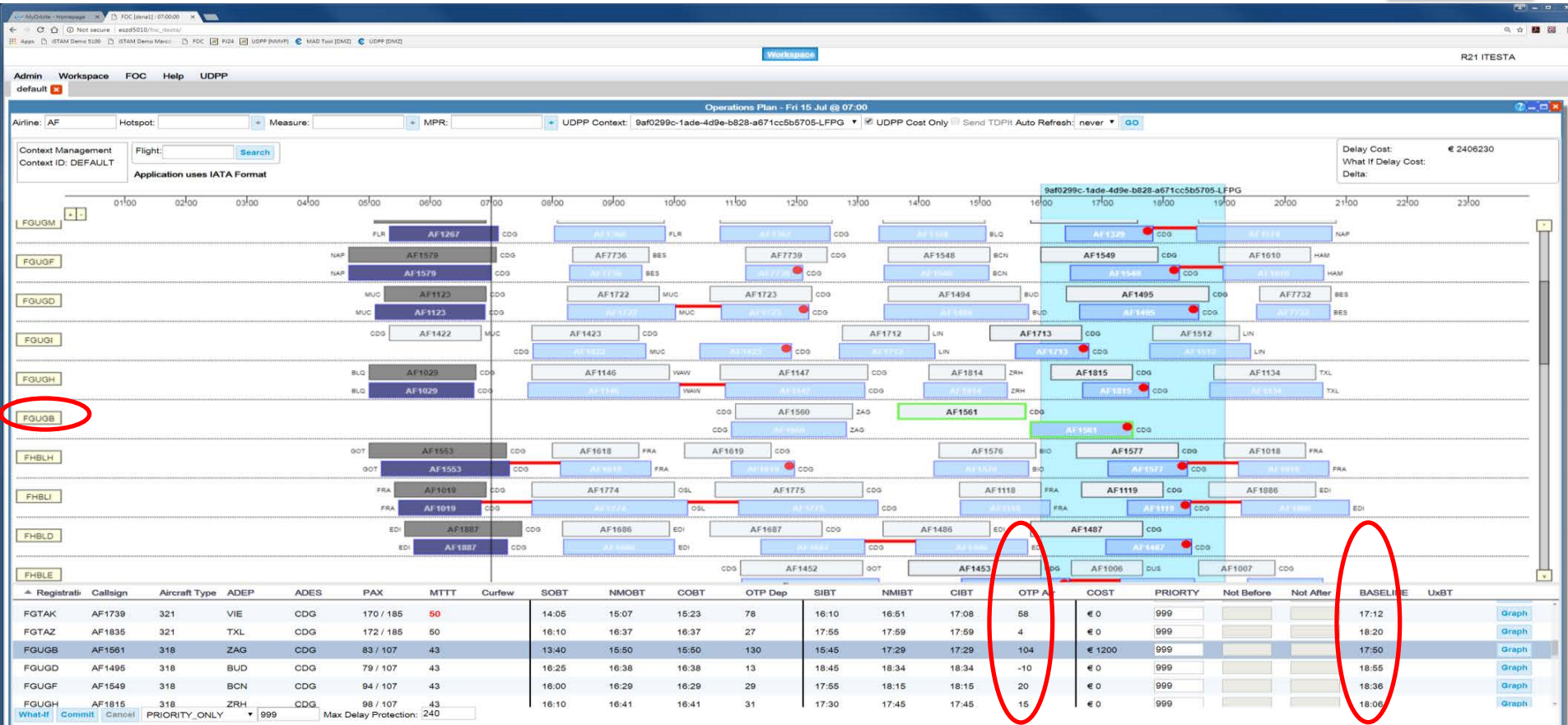
Details Map Traffic Volumes Impact Assessment Regulation Risks AOWIR Op Log FPL History Measure Add Measure Remove Quick Info DPI API

49 Flights

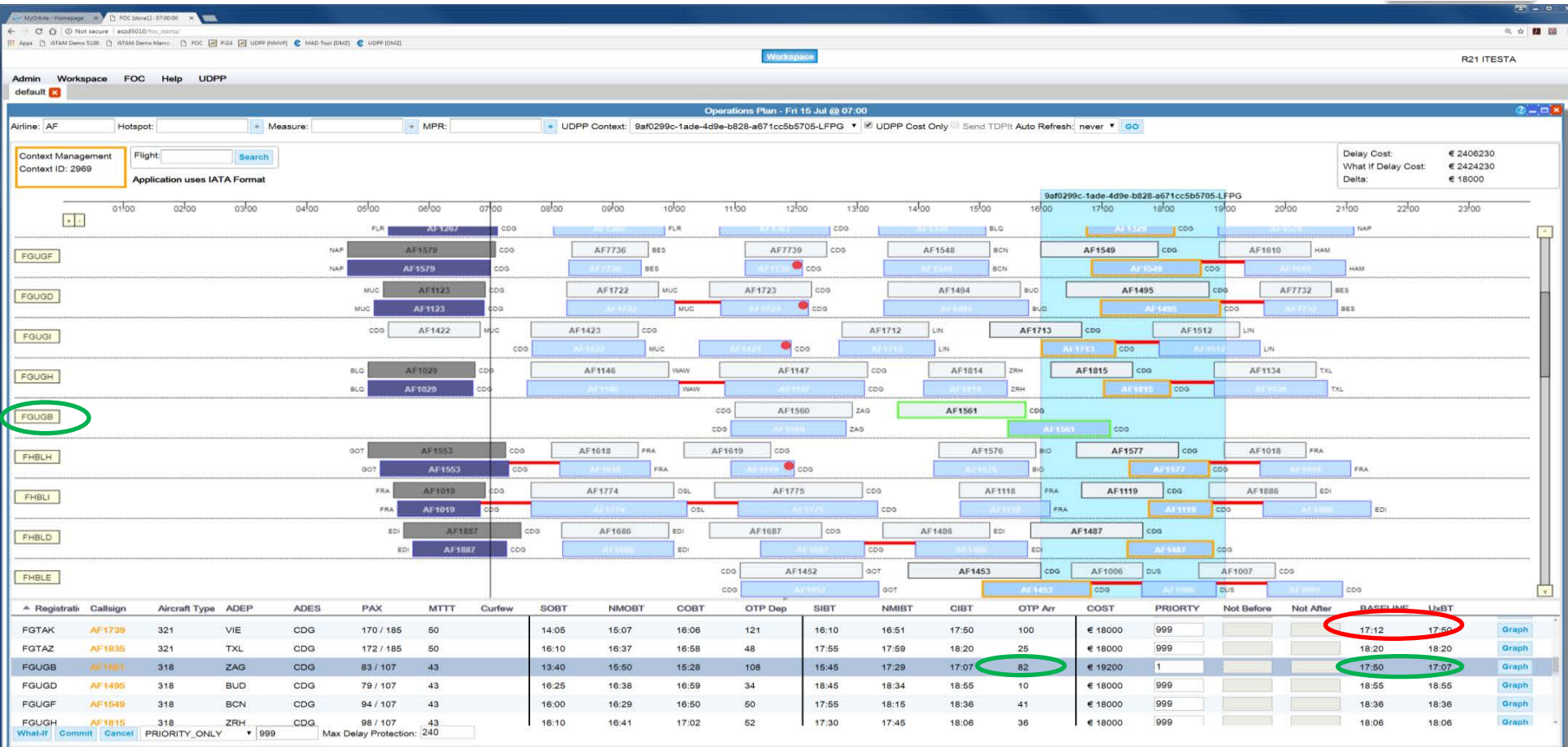
From 86 flights
to 49 flights
during the
constraint



FOC Position – Regulation View



FOC Position – Prioritisation - What-If View



Expected Benefits for Airspace Users

- Improvements :
 - Strategic – more time to plan and act
 - Can prioritize (reorder) the whole affected fleet at once
 - Prioritization can be done during seasonal planning
 - Airspace users have compensation when cancellations are made
- Expected performance impacts:
 - Reduced costs of delay for airspace users
 - Improve passengers experience : Fewer missed connections, best anticipation
 - No negative impact on runway capacity



UDPP brings flexibility for Airspace Users to reduce their cost of delay in coordination with ATM stakeholders

Validated in SESAR for current operations :

- Enhanced ATFM slot-swapping: initial deployment (EUR 4900– the average cost saved per single ATFM slot swap)
- UDPP departure: DFlex at Paris-Charles de Gaulle

Innovative UDPP prioritisation in SESAR2020 elaborated with AUs for pro-active flights repositioning in Capacity Constrained Situation (Departure – En-route – Arrivals) in coordination with Network and in the Network CDM in future Trajectory-Based Operations environment.

- New prioritisation methods : Reordering (FDR), Protecting (SFP), Margins (*new*)
- Validation V2 with **Airports + Network** in 2018 - V3 in 2020-21

AtoSTHALESAIRBUSENAIRe