

NATS - Air Traffic Control

20 March 2023

Andrew Burke
NATS Customer Affairs

What do we do?



Operate Control Centres that manage UK airspace



Provide air traffic control services at airport towers



Provide aviation services to Airlines, ANSPs, Governments and the Military in over 30 countries



Our Business

NATS Services

- › An **unregulated** business
- › **Competing** in the commercial marketplace
- › **Provides ATC services** to airports and aviation related services to UK and International organisations
- › **Customers include** the UK Ministry of Defence, Governments, airports, airlines, wind farms and other airspace users
- › **Supporting customers in over 30 countries across the globe** with a key presence in Europe, North America the Middle East and Asia Pacific

NATS en route (NERL)

- › Operates under licence issued by the UK Government to manage UK upper airspace
- › Subject to economic regulation on prices and revenues by the UK Civil Aviation Authority



Our People



c.4,227

Current NATS employees



1652

Air Traffic Controllers



1176

Others



780

Engineers



619

Air Traffic Service Assistants

Our History

FIRST FULLY DESIGNED
CONTROL TOWER
AT CROYDON AIRPORT

1920



1940

FIRST USE OF RADAR
AND RADIO TO CONTROL
AIRCRAFT

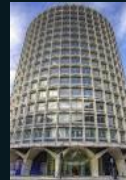
NATCS
ESTABLISHED

1962



WEST
DRAYTON
OPENS

1966



AIRFIELD APPROACHES
INTIGRATED INTO
TERMINAL CONTROL

1993



SWANWICK AREA CONTROL
BECOMES OPERATIONAL

2002



2001

AIRLINE GROUP CHOSEN AS
PREFERRED PARTNER; AG
BUYS 46% OF SHARES, 5%
DEVEISED TO STAFF

COMPLETION OF THE
TWO-CENTRE STRATEGY WITH
CONTROL CENTRES IN
SWANWICK AND PRESTWICK

2010



2007

TERMINAL CONTROL
MOVES TO SWANWICK



There's more than one type of Air Traffic Controller!

There are three types of air traffic controllers, each involved in different parts of a flight. While different countries have varying yet similar terms for the job, overall air traffic controllers typically fall into three general roles responsible for different stages of a flight.

1. Tower controllers

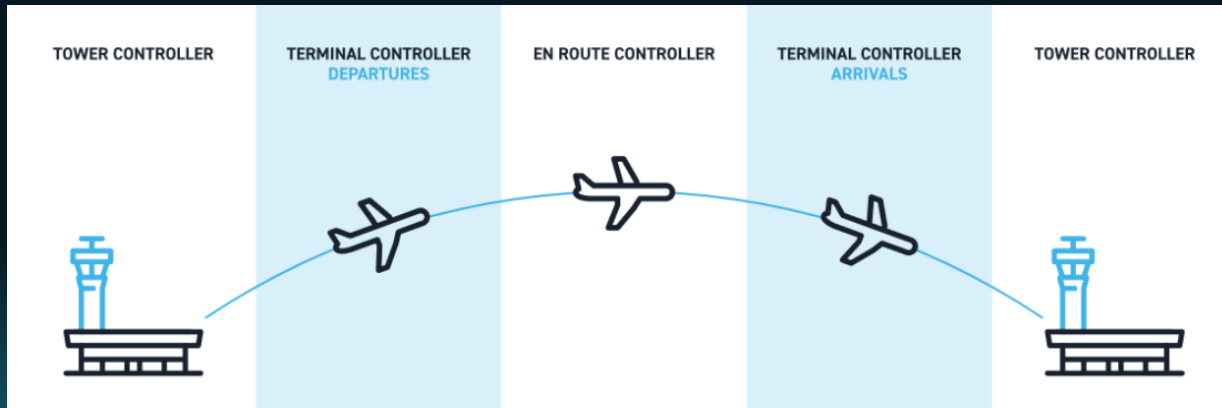
They work inside the tall, glass-covered towers that we see in airports, officially called airport traffic control towers. They manage aircraft movements in and near an aerodrome. Aerodrome refers to any location that can carry out any flight operations regardless of the type of aircraft.

2. Approach and departure controllers

These controllers work in the radar room, managing the flow of aircraft as they arrive and depart from airports.

3. En route controllers

These controllers work at Air Route Traffic Control Centres and use surveillance technology to manage aircraft movements in upper airspace, including continental and oceanic routes



Our Centres



Swanwick Centre

- London Area Control Centre
- London Terminal Control Centre
- London Military Air Traffic Control



SWANWICK CENTRE ● HEAD OFFICE



Prestwick Centre

- Scottish Oceanic Control Centre
- Scottish Area Control Centre



**Corporate & Technical
Centre Whiteley**

- College and Training centre
- Engineering
- AQUILA
- Support functions

Our Locations and ATC Services

NATS

We operate from 3 UK centres, provide ATC services to 15 UK Towers as well as Gibraltar.

- Prestwick Centre
- Swanwick Centre
- Whiteley (Head Office)
- Operated by NATS
- Operated by Aquila



Busiest Day ever:
8,592 movements (5th July 2019)

Busiest Day 2022:
7,475 movements (27th May 2022)



Prestwick Centre

Handles on average
2,905 flights/day

- › Scottish Oceanic Control Centre
- › Scottish Area Control Centre
- › Manchester Area Control Centre



Swanwick Centre

Handles on average
4,634 flights/day

- › London Area Control Centre
- › London Terminal Control Centre
- › London Military Air Traffic Control



Corporate and Technical Centre Whiteley

- › College and Training centre
- › Engineering
- › Support functions

London City Digital Tower



Our airspace...Flight Information Regions

London & Scottish FIRs:

2.66m movements were handled in 2019 (25% of traffic)

Shanwick

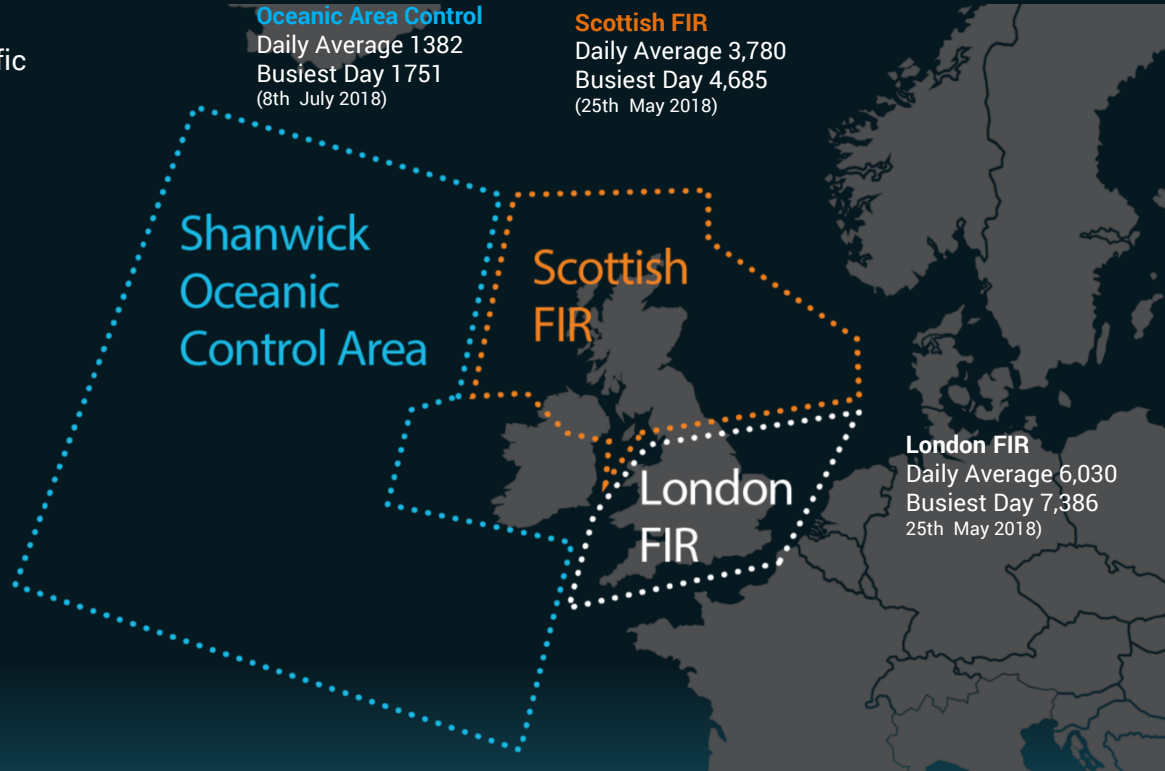
Daily Average 3,862 Movements
 22% of North Atlantic traffic
 Busiest Day 8,863 Movements
 5th July 2019)

Oceanic Area Control

Daily Average 1,382
 Busiest Day 1,751
 (8th July 2018)

Scottish FIR

Daily Average 3,780
 Busiest Day 4,685
 (25th May 2018)



Shanwick AOR

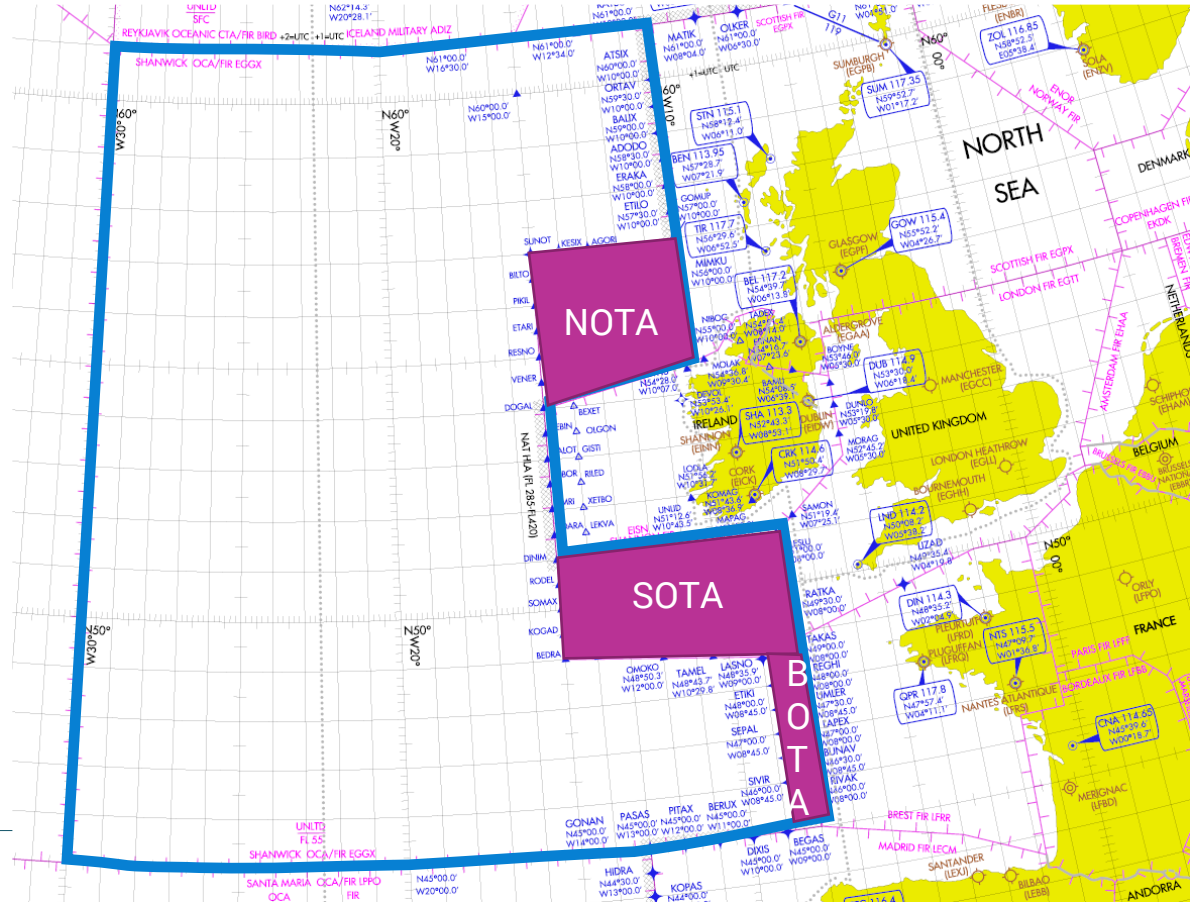
- FL55 - UNL
- Controls the airspace provides an alerting service

Oceanic Interfaces:

- Reykjavik
- Gander
- Santa Maria

Domestic Interfaces:

- Scottish
- Shannon
- Brest
- Madrid



NAT – Oceanic Tracks

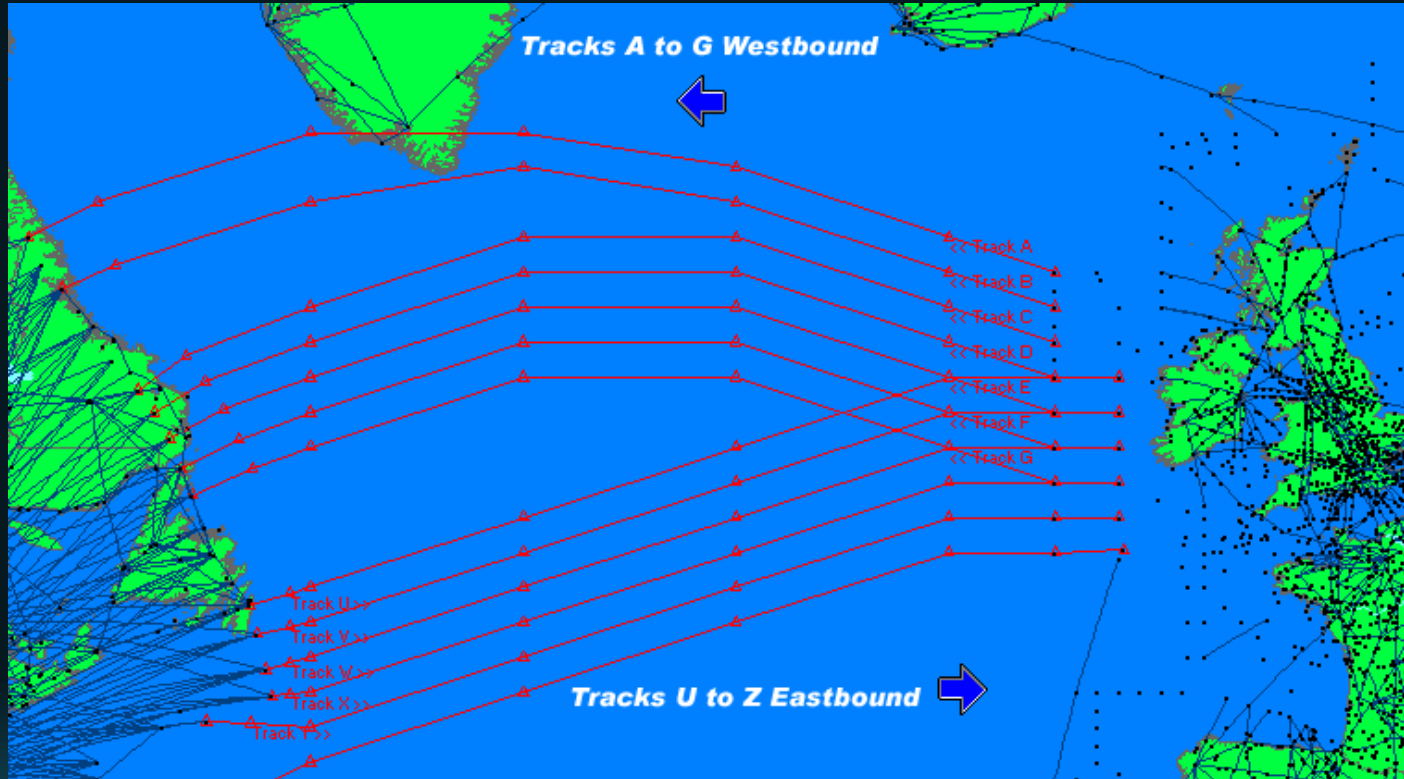
The direction of the Oceanic Tracks has a major impact on the London Area Control operation.

Two track structures are used each day:-

Westbound tracks created by Shanwick OACC

Eastbound tracks created by Gander OACC

These tracks take into account the prevailing winds and weather conditions over the North Atlantic

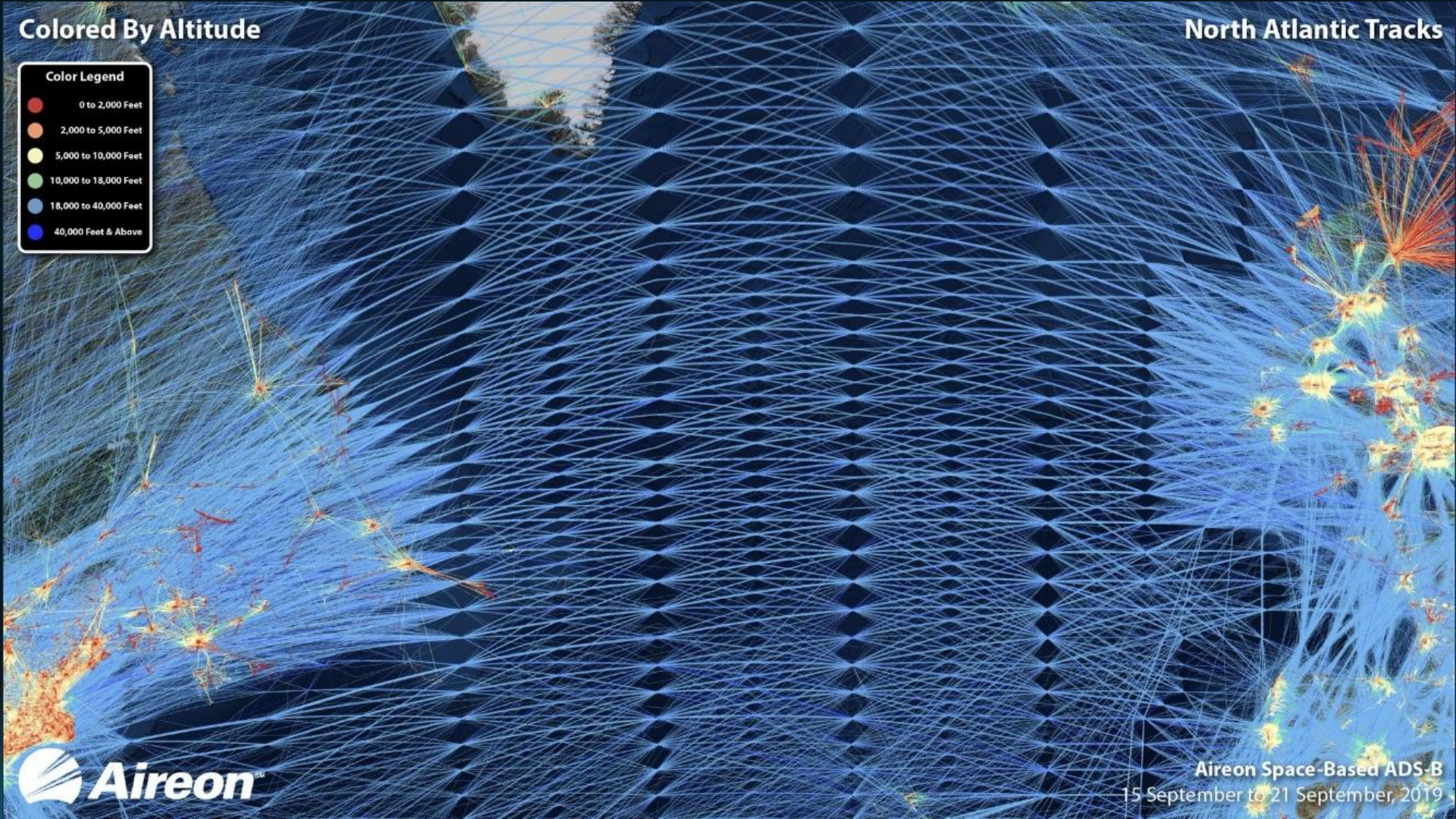


Colored By Altitude

North Atlantic Tracks

Color Legend

- 0 to 2,000 Feet
- 2,000 to 5,000 Feet
- 5,000 to 10,000 Feet
- 10,000 to 18,000 Feet
- 18,000 to 40,000 Feet
- 40,000 Feet & Above



Aireon Space-Based ADS-B
15 September to 21 September, 2019

London Area Control

Controls upper level en route traffic over English and Welsh airspace

Busiest Area Control Centre in Europe

AC Traffic

2019

Daily Average 5,812 movements

Busiest Day 7,018 movements

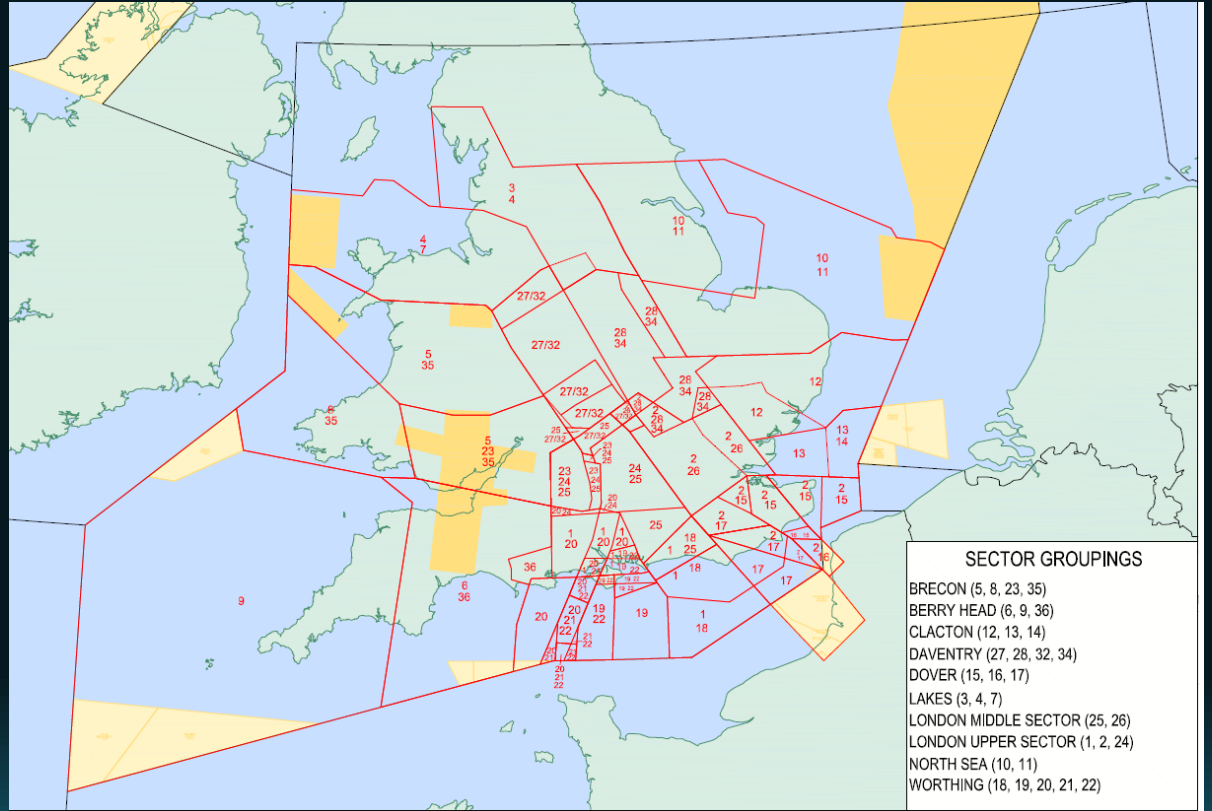
(*busiest day Monday 15 July)

2022

Daily Average 4,878 movements

Busiest Day 6,283 movements

(*busiest day Friday 8th July)



Air Traffic Management in the UK

In UK airspace we handle



2.66 million flights
in 2019

(2.15m 2022)



Over **260** million
passengers

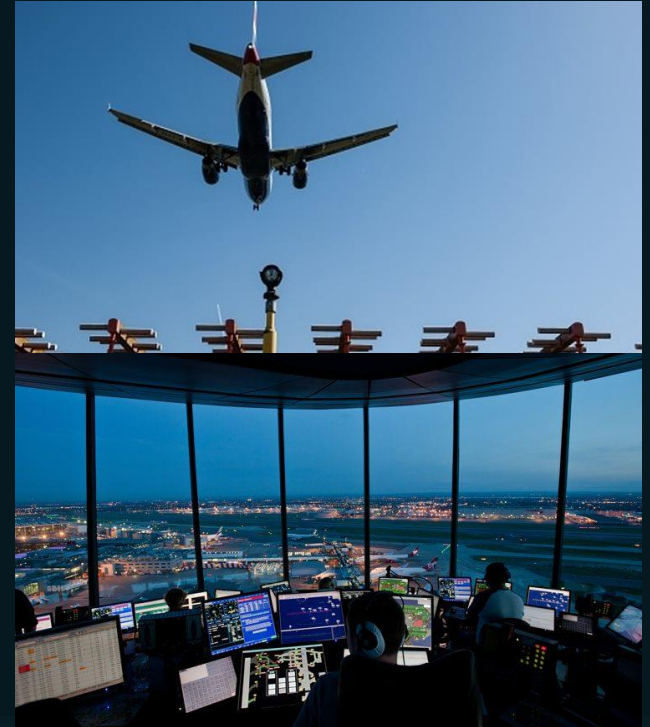
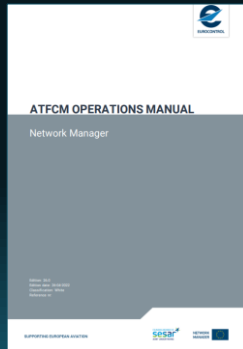


Watch our
UK 24 video



Air Traffic Management in the UK

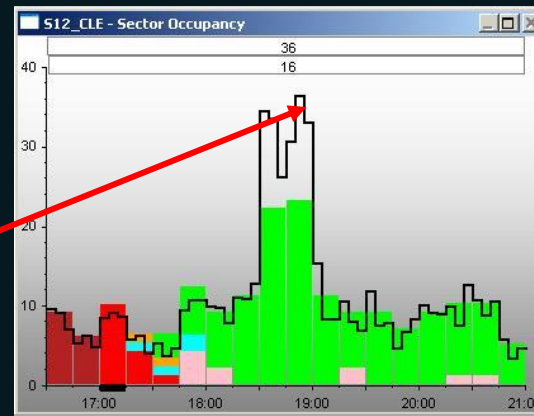
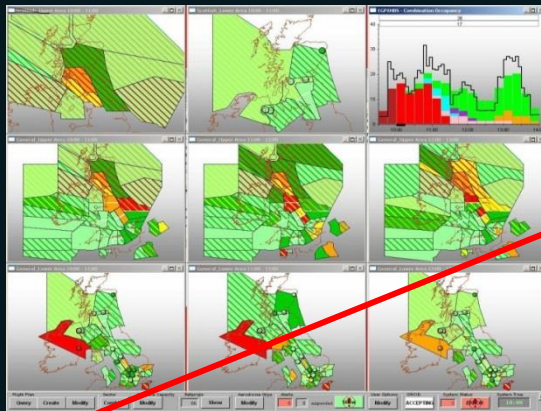
- Air Traffic Flow and Capacity Management (ATFCM) is the management of available capacity and anticipated/requested demand to ensure the optimum use of airspace.
- ATFCM aims to enable flight punctuality and efficiency according to the available resources.
- This is achieved through the collaborative decision making (CDM) process to ensure airspace users are fully engaged in any decisions made



TACTICAL - UK ACM Tools

Traffic Load Prediction Device (TLPD) is the primary tool for NATS UKFMP to determine if intervention is required

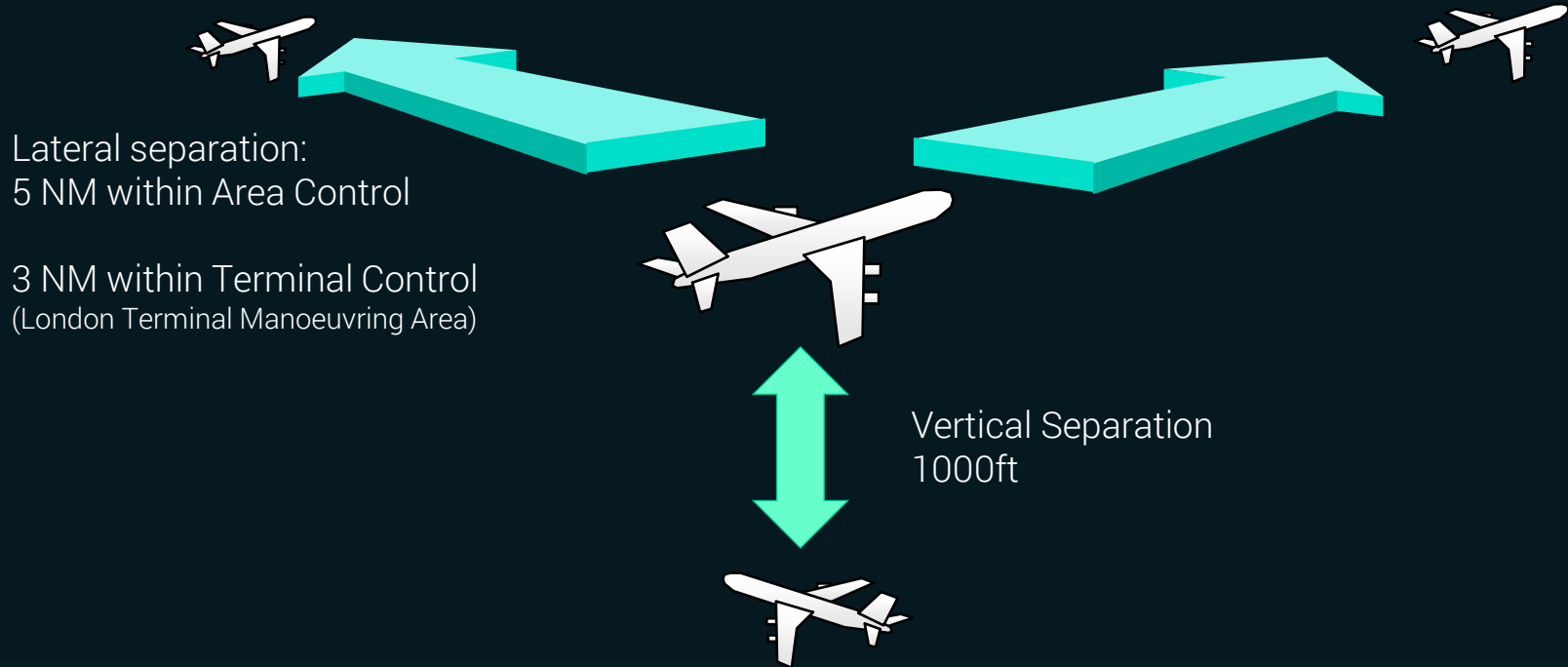
Demand Peaks requiring intervention are visible along with the details of the flights



- Live Radar Data
- DEP Messages
- Slots
- DPI
(Departure Imminent)
- Active Flight Data from
adjacent ACCs
Oceanic Data
- Flight Plan Data

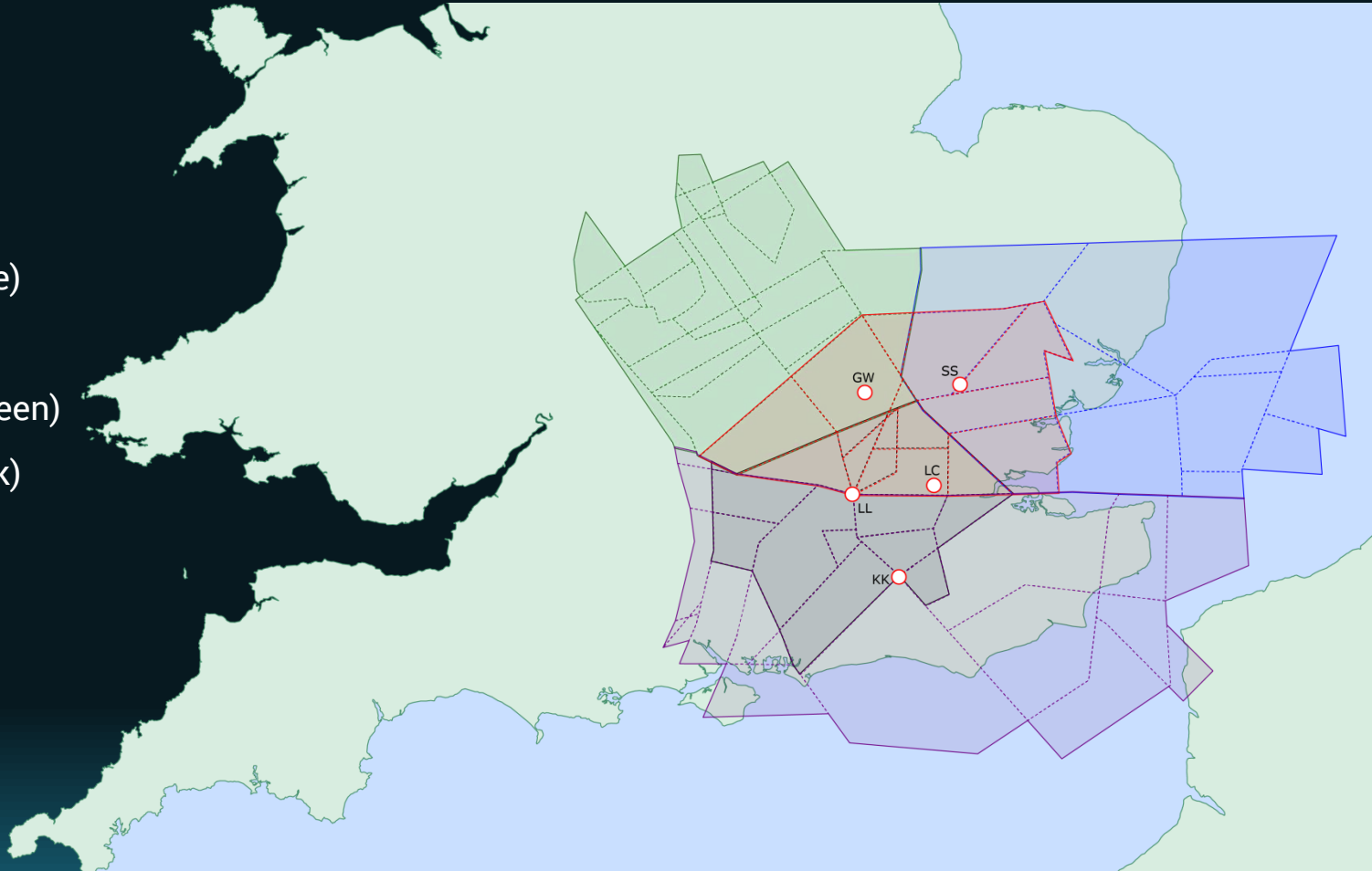
63	Callsign	Type	Sct.Wtg	Entry	Exit	Depart	Arrive	Equip	Route Point -8	Route Point -7	Route Point -6	Route Point -5	Route Point -4	Route Point -3	Route Point -2	Route Point -1
1	AWE751	B752	0.30	1139	1150	EBBR	KFHR	R 8	BULAM 1122	DIBLI 1125	RAPIX 1126	TEBRA 1128	KOPUL 1131	GILDA 1134	LAM 1136	BPK 1137
2	DLH2UT	A321	0.70	1110	1117	EDDF	EGCC	R 8	BULAM 1053	DIBLI 1055	RAPIX 1057	TEBRA 1058	KOPUL 1101	GILDA 1103	LAM 1105	BPK 1107
3	AEU502	B752	0.70	1119	1125	EGKK	BIKF	R 8	D261J 1106	D159J 1107	D159J 1108	LAM 1109	BPK 1111	POTON 1114	BEDFO 1115	EBOTO 1116
4	BEE4KG	D159D	1.70	1121	1131	EGKK	EGNS	R 8	D159D 1109	D159J 1109	LAM 1111	BPK 1113	BPK21 1117	POTON 1118	BPK26 1118	BEDFO 1119
5	SHT2950	B735	1.14	1122	1131	EGKK	EGPF	R 8	D159J 1113	LAM 1114	BPK 1116	BPK21 1119	POTON 1120	BPK26 1120	BEDFO 1121	EBOTO 1122
6	SHT2938	B734	0.70	1134	1146	EGKK	EGPH	R 8	DET31 1122	DET29 1122	ACDRN 1125	D261J 1126	D159D 1127	D159J 1128	LAM 1129	BPK 1131
7	VIR19	B744	0.70	1058	1106	EGLL	KSFO	R 8		EGLL 1050	D271D 1050	D284G 1051	BUR 1052	D358D 1052	D329P 1054	WOBUN 1056
8	BAW285	B744	0.70	1103	1112	EGLL	KSFO	R 8		EGLL 1055	D271D 1055	D284G 1056	BUR 1057	D358D 1057	D329P 1059	WOBUN 1101
9	AAL137	B772	0.70	1104	1112	EGLL	KLAX	R 8		EGLL 1055	D271D 1055	D284G 1056	BUR 1057	D358D 1058	D329P 1059	WOBUN 1102
10	SHT18C	A319	0.70	1104	1114	EGLL	EGPD	R 8		EGLL 1055	D271D 1055	D284G 1056	BUR 1057	D358D 1058	D329P 1059	WOBUN 1102
11	SHT12G	A319	0.70	1105	1114	EGLL	EGNT	R 8		EGLL 1055	D271D 1055	D284G 1056	BUR 1057	D358D 1058	D329P 1059	WOBUN 1102
12	SHT0R	A320	0.70	1105	1114	EGLL	EGPH	R 8 M	EGLL 1055	D271D 1055	D284G 1056	BUR 1057	D358D 1057	D329P 1059	WOBUN 1103	WELIN 1105
13	COA67	B752	0.70	1109	1118	EGLL	KCLE	R 8		EGLL 1100	D271D 1100	D284G 1101	BUR 1102	D358D 1103	D329P 1104	WOBUN 1107
14	BAW193	B772	0.70	1109	1117	EGLL	KDFW	R 8		EGLL 1100	D271D 1100	D284G 1101	BUR 1102	D358D 1103	D329P 1104	WOBUN 1107

ATC keep aircraft safely separated



TC - Sectors

- TC North (Red)
- TC South (Purple)
- TC East (Blue)
- TC Midlands (Green)
- TC Capital (Black)



ExCDS

ExCDS (Extended Computer Display System) is an Electronic Flight Progress strip system

Bringing an electronic interface to TC

The screenshot displays the ExCDS interface with multiple panels for different airports: LOREL, BPK, LAM, and CMB. Each panel shows a list of flight progress strips with columns for flight number, aircraft type, origin, and destination. The interface includes a menu bar at the top, a status bar at the bottom, and a search bar for the CMB INBOX.

LOREL PEND 7

LOREL	1206	RYR74DY	EIOW	EGSS
LOREL	1285	RYR9143	LPRK	EGSS
LOREL	1283	AMC146Y	LFPG	EGSS
LOREL	1291	RYR56EI	EIKK	EGGM
LOREL	1157	EZY454	LGVV	EGGW
LOREL	1155	TOM38G	LEIB	EGSS
LOREL	1152	RYR325C	LEIB	EGSS

BPK PEND 1

BPK	1139	MZ7396	EGGM	L886
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LAM PEND 4

LAM	1158	KLM1033	EIHM	EGLL
LAM	1157	BAW97DN	E00H	EGLL
LAM	1153	DLH13M	E00H	EGLL
LAM	1147	KAC101	ONBK	EGLL

CMB PEND DEP 28

OTHER				
	1154	LMK196	EGSC	EGMD
EGLL				
	1155	SAS806	EGLL	EWOR
	1139	KLM1338	EGLL	EIIB
	1148	KLM1018	EGLL	EIHM
	1159	BAW764	EGLL	EWOR
	1146	BAW5XC	EGLL	EIHM
EGKK				
	1126	TSC123	EGKK	CYVR
	1151	N361BF	EGKK	EKBI
	1147	GREYG	EGKK	EFIK
	1144	BAM163	EGKK	E00H
	1157	BAW015	EGKK	E00H
	1141	AME741	EGKK	KPIT
EGSS				
	1149	RYR714K	EGSS	EKAI
	1143	RYR712K	EGSS	EKAI
	1132	F1N1312	EGSS	EFIK
	1157	BCS982P	EGSS	E00H
EGGM				
	1159	RYR1DM	EGGM	LFSB
	1141	DAAAX	EGGM	HEXK
EGLC				
CLR	1155	NAF53	EGLC	EIHM

LOREL 2

LOREL	1184	MZ110	M030	LFPG	EGSS	F240
LOREL	1143	RYR770	M135	EUPF	EGSS	E180

BPK 4

BPK	1136	150	BAMXC	BPK	EGLL	EIHM	F230
BPK	1134	6A	BCY9117	M330	EGLL	E10M	E180
MATCH	1110	4A	RYR7282	E055	EKBI	F290	

LAM 5

LAM	1143	100	BAW95SR	E00H	EGLL	F240	
SND	1141		BAW2726	M0K	EGKK	EFIK	F330
SND	1145		SAS624	E00H	EWOR	F270	
LAM	1148	100	BAWAX	LAM	EIHM	EGLL	F240
LAM	1147	80	SAS335	LAM	EIHM	EGLL	F240

NE CMB INBOX 0

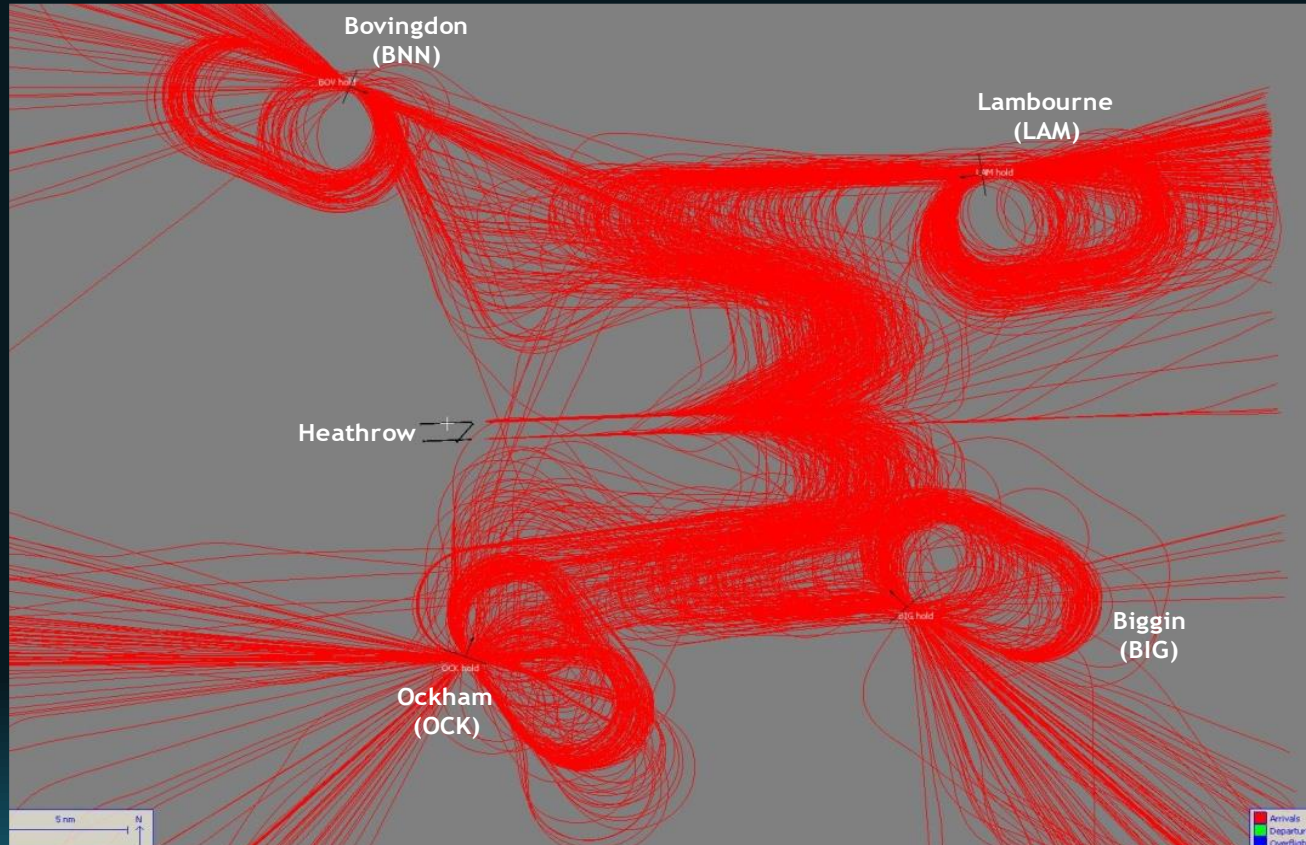
Buttons: NEW, FIND

BB STATUS (NEDEP, LOREL, LAM) (BIN/UNAK/NIN/DEP)

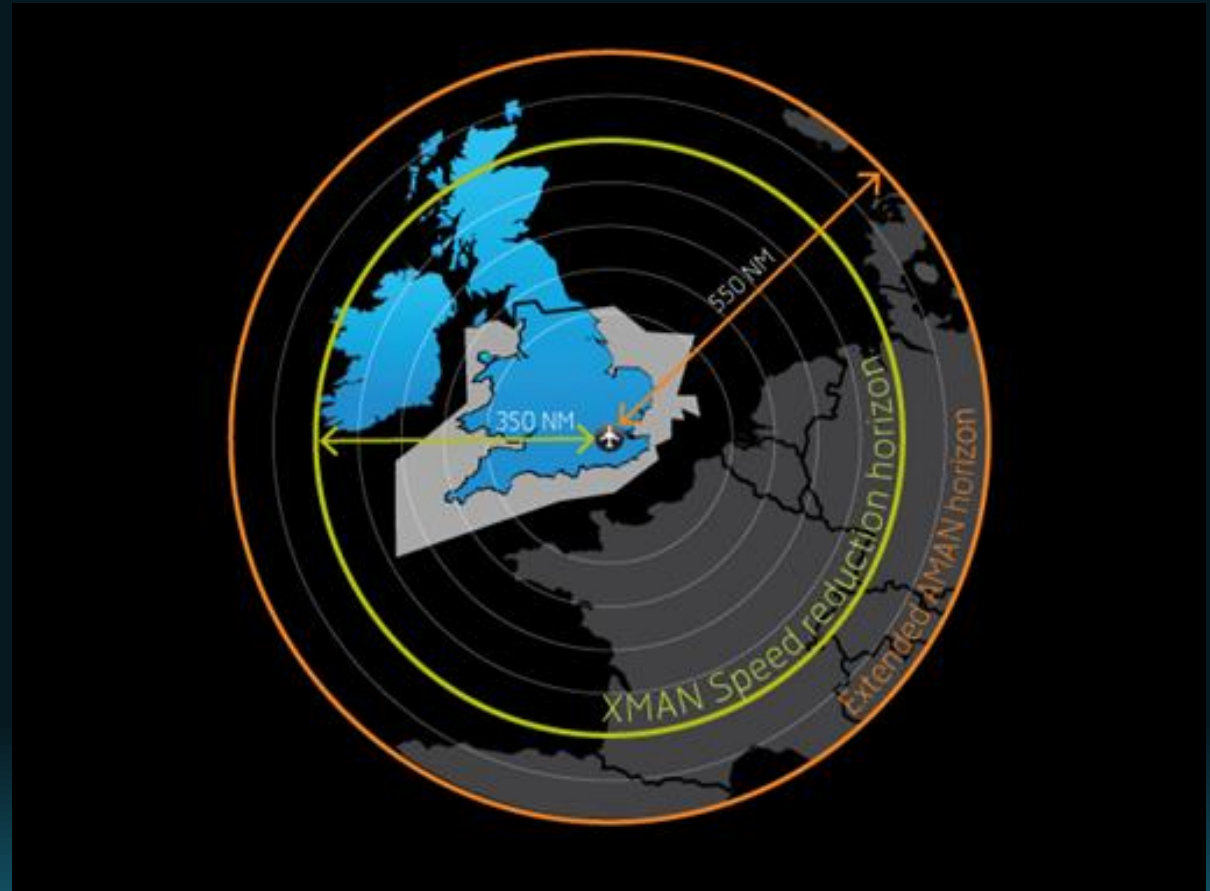
Buttons: PLEX, EDIT, SKIP, OVER FLIGHT, HL, COPY, HIDE, UNHIDE, ASK COORD

XMAN – Cross Border Arrivals Management

Typical Heathrow Stack Holding



XMAN Operational Horizon



Arrival Manager - AMAN



London AMAN TTC 1 22 test17.ppeFAT

EATS IN FORCE Activate EATS

0 / 09R
Max Delay **13**

Time Scale	NonSeq	Landing Rates	Search
09R/3.0 NM	09L/3.0 NM	27R/3.0 NM	27L/3.0 NM
09L/09R:2.0	27L/27R:2.0		

LL

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36	
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06:30	
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09R 09L	

KK

38	P AFR1680 M BIG
36	AAL86 H OCK 0 06:20
35	P BAW709 M BIG
34	ACA864 H OCK 0 06:18
32	DLH7AJ M LAM 0 06:11
32	P BAW935 M LAM
30	BAM11J H OCK 0 06:14
28	DAL6 H OCK +1 06:12
28	BAW963 M LAM +2 06:05
26	P BAW423 M LAM
24	P BAW389 M LAM
24	DAL6 H OCK 0 06:09
22	BAW246 H OCK +9 06:07
22	BAM138 H LAM +11 06:00
20	P KLR1001 M LAM
18	QTR007 H LAM +10 05:58
16	P BWA571 M BNN
14	BAM81V H OCK +11 06:02
12	VIR12E H OCK +11 06:00
12	P DLH9AK M LAM
06:10	P BEL1AH M LAM
08	AIC131 - LAM +11 05:52
06	
04	VIR602 H BIG +12 05:50
04	THA910 H LAM +11 05:47
02	COA34 H OCK +13 05:51
02	UAL948 H OCK +13 05:50
58	UAE7 H LAM +10 05:42
56	BAW40F H OCK +12 05:46
54	BAM54 H BIG +10 05:40
52	COA110 U OCK +10 05:43
52	BAM244 H OCK +9 05:41
50	UAL954 H BNN +10 05:38
48	SAR220 H OCK +11 05:38
46	VIR4 H BNN +10 05:35
44	BAM5CA H BNN +10 05:33
42	BAM881 M LAM +9 05:27
42	
05:40	BAM20R H BNN +8 05:29
38	12 ACA856 H OCK +12 05:28
36	10 BAW32N H OCK +9 05:26
34	08 BAW78 H BIG +3 05:20
32	07 KQA102 H BIG 05:18
30	06 AAL174 H OCK +4 05:21
28	05 ACA822 M OCK 05:20
28	03 QFA31 J LAM 05:11
26	09 SVA113 H LAM 05:09
24	02 BAW72 H LAM 05:08
22	
22	RMY STRATEGY 09L
05:20	
18	
16	
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12	
09R 09L	

LL

38	
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06:30	
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14	
12	
09R 09L	

LL

38	P BAW947L M LAM
36	CYP332 M 0 06:27
34	
32	
06:30	
28	
26	
24	
22	AUA451L M +2 06:23
22	
06:20	
18	
16	SAS523 M +5 06:17
14	
12	
06:10	
08	DLH7AJ M 0 06:11
08	P BAW935 M LAM
06	BAM963 M +2 06:05
06	P BAW423 M LAM
04	P BAW389 M LAM
02	
06:00	
58	BAM138 H +11 06:00
56	QTR007 H +10 05:58
54	
52	P DLH9AK M LAM
52	P BEL1AH M LAM
52	AIC131 - +11 05:52
05:50	
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46	THA910 H +11 05:47
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42	UAE7 H +10 05:42
42	
05:40	
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26	17 BAW881 M +9 05:27
24	
22	13 ETD011 H +7 05:24
22	
05:20	
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14	
12	
09R 09L	

LL

38	P BWA160 M BIG
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06:30	
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24	
22	P SBR31M M BIG
22	
06:20	
18	P BAW303 M BIG
18	P AFR1680 M BIG
16	
14	P BAW709 M BIG
12	
06:10	
08	DAL6 H 0 06:09
06	BAM246 H +9 06:07
06	
04	
02	
06:00	
58	BAM81V H +11 06:02
56	VIR12E H +11 06:00
54	
52	
05:50	
48	
46	VIR602 H +12 05:50
44	
42	BAW40F H +12 05:46
42	COA110 U +10 05:43
05:40	BAM244 H +9 05:41
38	
36	BAM54 H +10 05:40
34	
32	
05:30	
28	
26	16 BAW58L H +7 05:28
24	
22	
05:20	
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09R 09L	

HMI has been started with the specified role TTC

I W E ETFMS TRK FPL MET 05 17

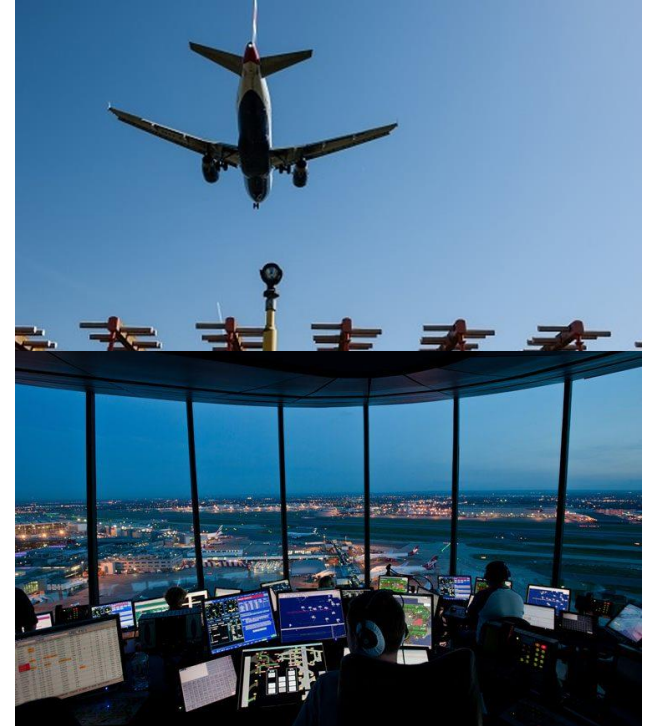
NATS

TBS

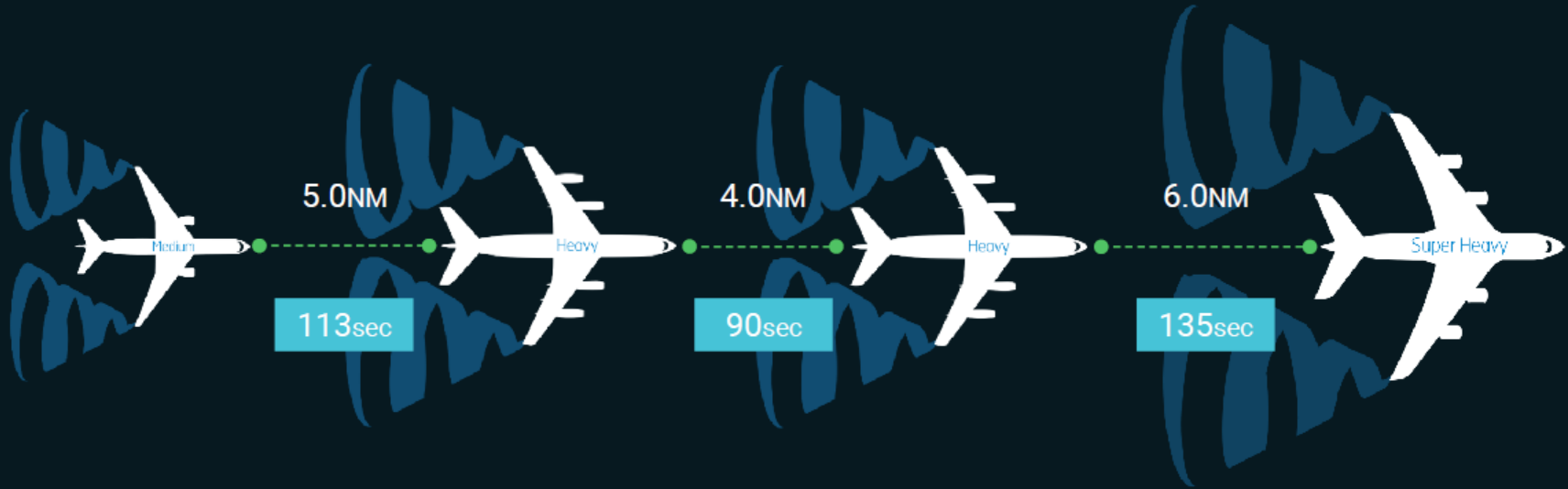


Benefits

- Average tactical capacity gain of 2.2 aircraft landings per hour in all wind conditions
- An improvement of 1.5-2.5% in airport punctuality
- An average saving of over 1,794 seconds per day in arrival separation on final approach - the equivalent to extending Heathrow's operating day by 30 minutes
- 230,000 minutes of annual airborne holding saving
- 62% reduction in wind related ATFM delays
- Improved consistency of ATC spacing on final approach



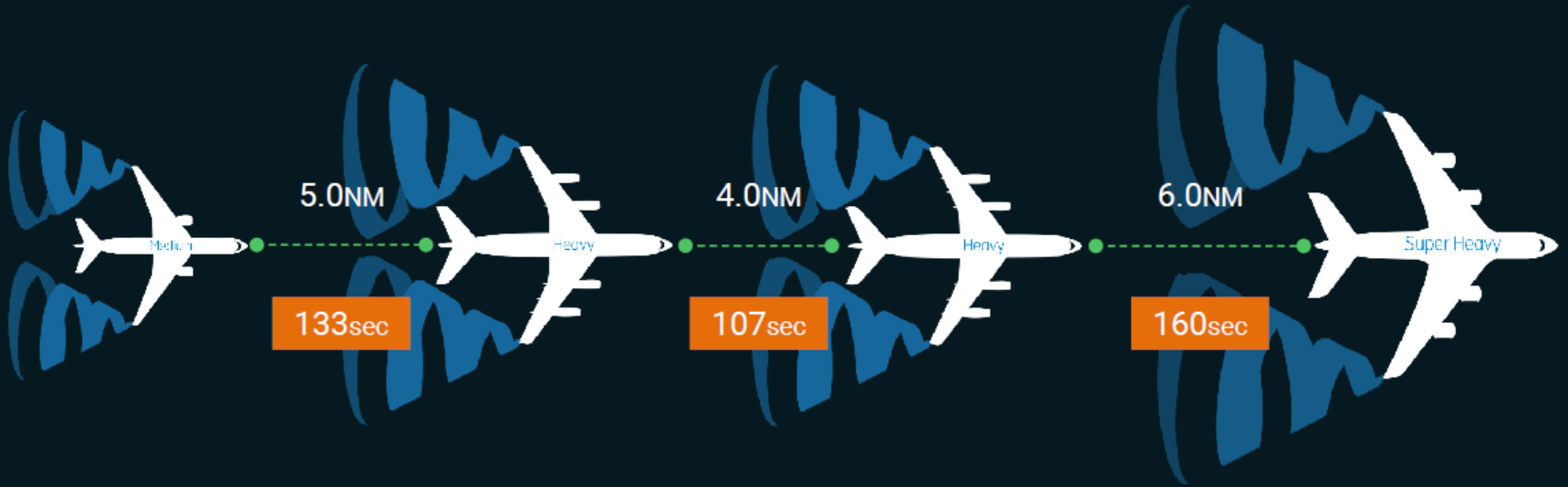
Headwind 5 knots



With standard **distance based separation**
 aircraft are separated by **fixed** distance on final approach based
 on their wake vortex category

Landing rate **40-45**

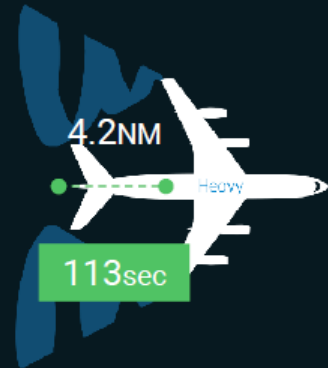
Headwind 35 knots



In stronger headwinds it takes **longer** to cover the distance resulting in a **reduced landing rate**

Landing rate **32-38**

Headwind 35 knots

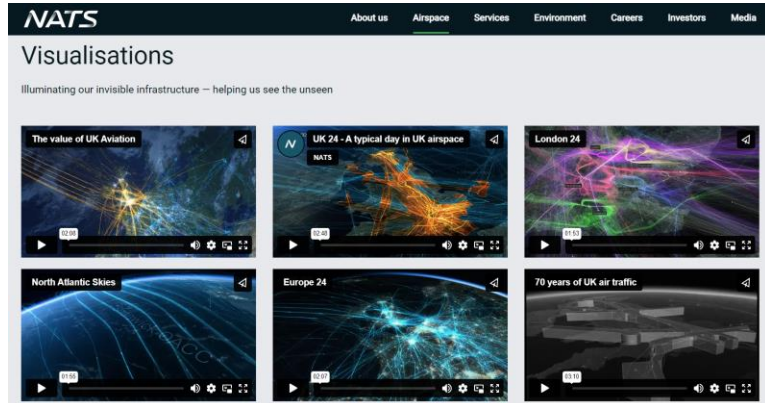
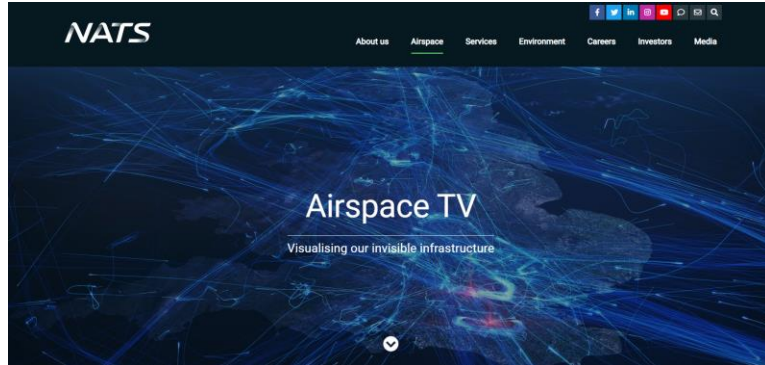


This increases resilience, reducing delay and cancellations

Landing rate 36-40

London Terminal Control – 1Days Traffic






<https://www.nats.aero/airspace/airspace-tv/>

Some homework...


Plane talking



Every year, NATS handles more than 2.5 million flights. Take a journey through the skies, learn the language of aviation and see how NATS Air Traffic Controllers safely guide a real domestic flight from London Heathrow to Manchester.

[GET STARTED](#)Audio: 



06:54:39 121.975 MHz 0/73 messages   

Welcome to Heathrow airport. It's 6:54am.

This aircraft is Shuttle 2 Lima, a British Airways A320. It's finished boarding and ready for take-off.

You're about to see and hear how Air Traffic Controllers guide it through the skies to Manchester.

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