



SUPPORTING
EUROPEAN
AVIATION

Continuous Capacity and Performance Monitoring (CCPM) in European Airports

State Experience

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This module in a slide

2

What is CCPM?

- An application that allows the monitoring of airport capacity related indicators (and much more!). It is the enabler for the ACAP studies performed by NM Airport Unit.

How does it work?

- Flight data are captured at the airport through different mechanisms (in collaboration with the Airport and/or ANSP) and, then, enriched with NM data.

It provides:

- - Default KPIs
- - User defined KPIs and timestamps
- - Full list of enriched flight data with identification of special events
- - Visualisation module (static and dynamic replays)
- - Reporting module

How much does it cost?

- Currently tool is provided for free by EUROCONTROL to its Member States, equipment costs depends on local implementation, see further slides for the details.

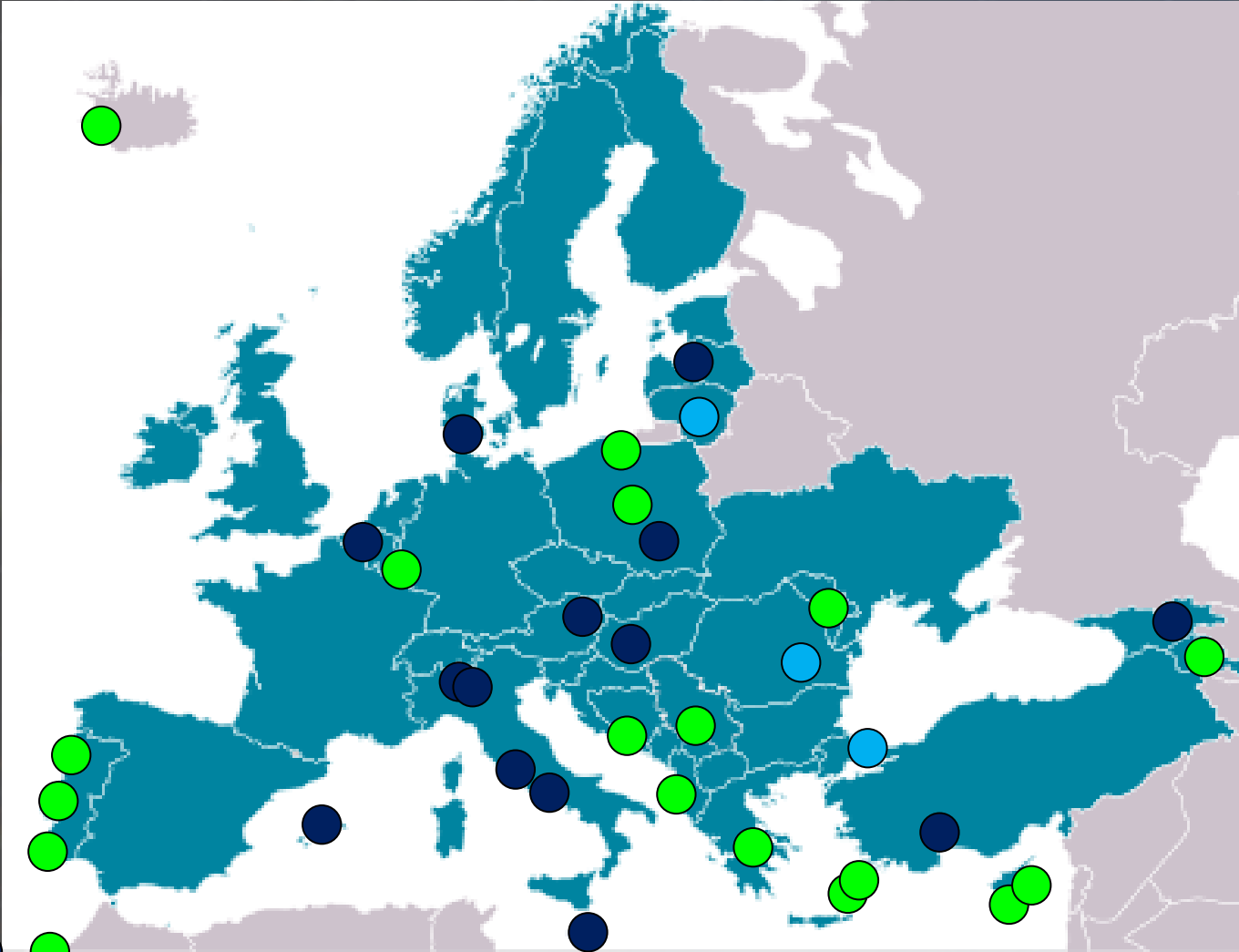
Airports connected

3



Airports under implementation/interests

4



Connected (19)

LIS, LUX, LCA, PFO, RMO, OPO, DBV, EVN, RHO, JMK, WAW, GND, CMN, RAK, TIA, ATH, FAO, BEG, KEF

Under implementation (3)

IST, OTP, VNO

Interests (15)

AYT, CPH, BRU, MLA, MXP, LIN, RIX, TBS, KRK, PMI, VIE, NAP, BUD, FNC, FCO

4

Overview of data processing methods

Data Collection and Storage

5

ADS-B or local
Ground
Surveillance
data & NM data

Data transfer:
currently, every 60
min

Data storage at
secured servers

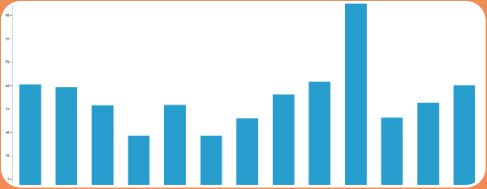
Officially released
December 2022

Creation of a CCPM Exercise

6



ANSP or Airport Focal Point will configure basic Airport layout elements



Based on airport configuration, some metrics are presented to the User: Movements, ROTA, ROTD, Taxi-times, etc.



User may define additional metrics based on detected events



User decides whether information is kept confidential or public

Data Processing

7

The data gathered by the ADS-B Unit are transferred to secured servers and enriched with NM data.

The data processing covers for each flight:

Identification of relevant attributes

Identification of timestamps defined by the User.

Completion of data set with data from NM Data Bases.

Identification of special events such as Return to Stand, Aborted Take-off, etc.

DATE	CALLSIGN	RWY	ARWYT	DRWYT	AC_TYPE	REG	STANDD	STANDA	HP	EP	SID	RLU	RTO	ATO	GA	RTS	APRON	TAXI_OUT	TAXI_IN
2019-07-29	VLG3SA	02	00:01:53		A320	ECMJB		230		UB					FALSE		RAMP_12		TWY_S TWY_T TWY_L
2019-07-29	IBE2601	07L		00:03:53			270		Z8			TRUE	TRUE	FALSE		FALSE	RAMP_14	TWY_Q TWY_J TWY_E TWY_N TWY_T	
2019-07-29	VLG7333	02	00:26:07		A320	ECMQE		310		UB					FALSE		RAMP_16		TWY_S TWY_T TWY_E TWY_L
2019-07-29	VLG644K	02	00:42:42		A20N	ECNDA		292		UB					FALSE		RAMP_15		TWY_S TWY_T TWY_E TWY_L
2019-07-29	AEE713	07L		00:44:32	A321	SXDNF	278		Y5		VERSO2T	TRUE	FALSE	FALSE		FALSE	RAMP_14	TWY_Q TWY_J TWY_E TWY_N	
2019-07-29	EZY79AH	07L		00:53:30			92		Z5			TRUE	TRUE	FALSE		FALSE	RAMP_1	TWY_S TWY_T	
2019-07-29	IBK7AZ	02	00:59:56		B738	EIGBF		118		UB					FALSE		RAMP_2		TWY_S
2019-07-29	VLG3901	02	01:19:43		A321	ECMJR		228		UB					FALSE		RAMP_12		TWY_S TWY_T TWY_L
2019-07-29	ENT7084	02	01:58:03		B738	SPENU		152A		UB					FALSE		RAMP_3		TWY_S
2019-07-29	SDM5732	07L		01:59:52	B744	EIXLJ	124A		Z8		AGENA2T	TRUE	FALSE	FALSE		FALSE	RAMP_2	TWY_S TWY_T	

The CCPM application provides:

- Flexibility for the User to define events
- Default metrics
- User defined metrics for each flight
- Presentation of results: graphics, tables with export function
- Graphical representation of flights → static and dynamic replay
- Report module

How to connect to CCPM

9



Decide how to provide data to the tool:

- Airport/ANSP push surveillance data from their own systems to CCPM server;
- Airport/ANSP decides to purchase an ADS-B unit, installed at Airport premises.



With a data sample EUROCONTROL performs a data assessment to verify coverage and quality.



Once data is shared in CCPM Server permanently, users are registered in the tool and exercise configuration is set.



First overview of indicators: immediate after configuring the airport in the application

Photos of existing installations

10

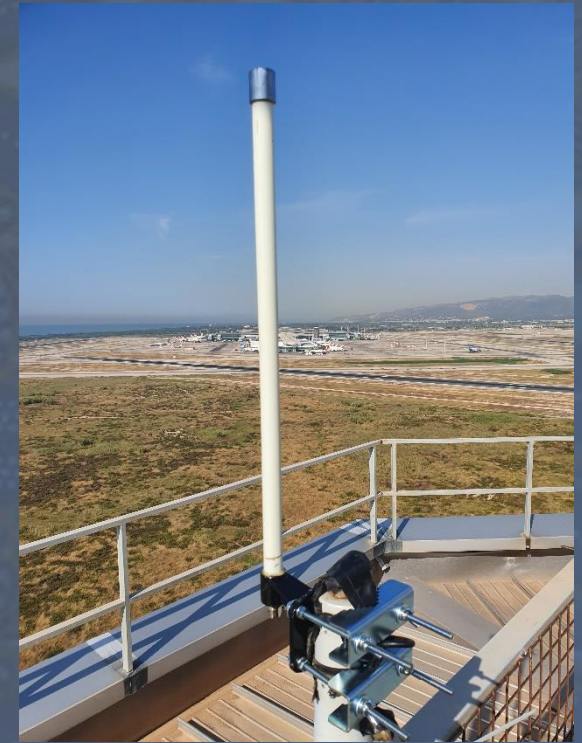
*Example of installation of ADS-B Box
in a technical rack*



*Connection of cables during the
installation phase*



*Installation of the ADS-B antenna in
LEBL in 2019*



12

The screenshot shows the CCPM (Continuous Capacity Performance Monitoring) interface. The main map displays Europe and the Middle East, with various Pilsen locations marked. A pop-up window for 'LPPT (Personal / Shared) LISBON' is open, showing a table of data for Pilsen ID Pilsen268.

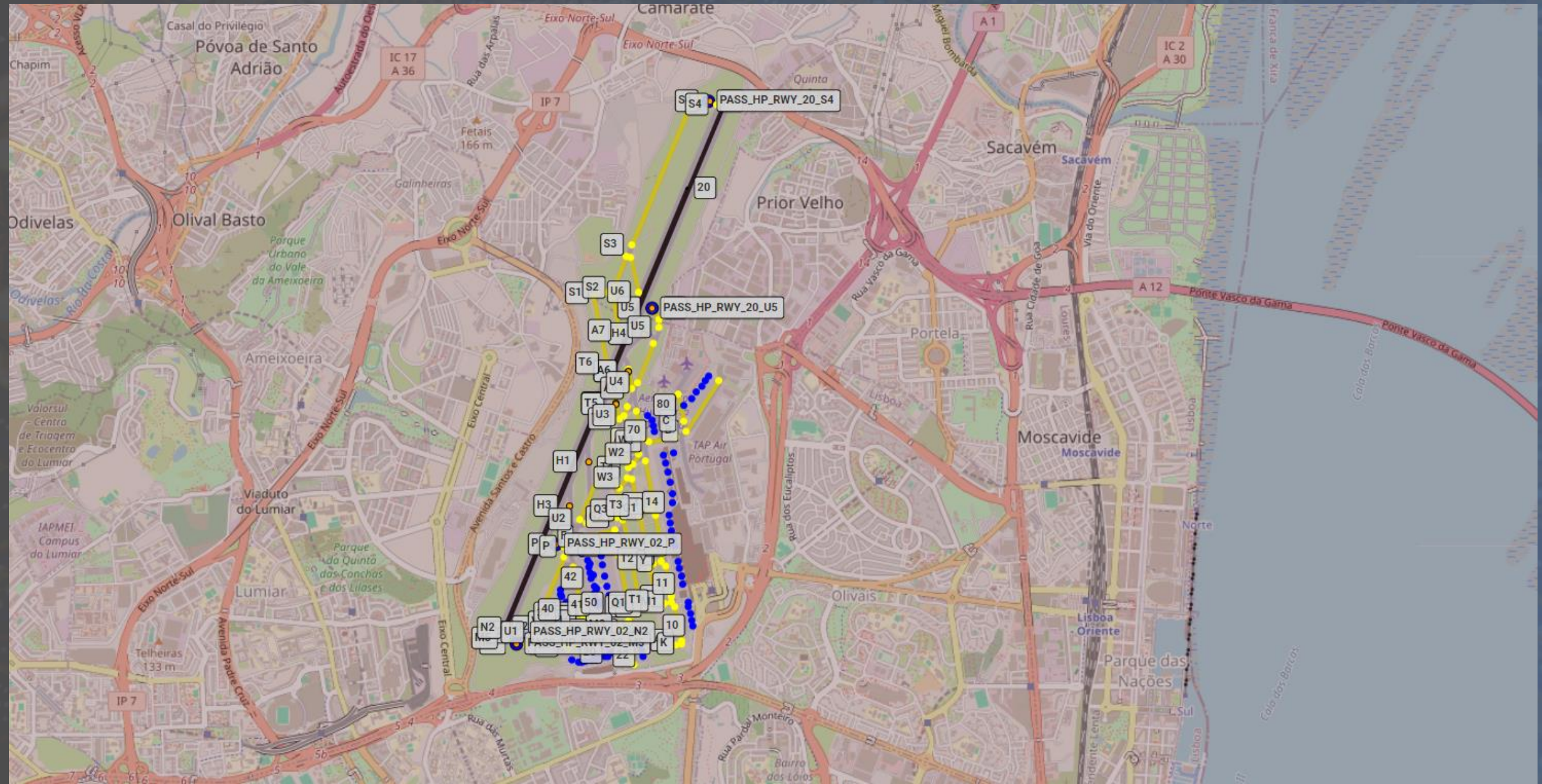
Pilsen ID	Dates	Last received file	Last loaded file	Status
Pilsen268	from 2021-10-08T00:00:00Z	2022-12-02 04:30	2022-12-02 04:30	●

Legend:

- Personal
- Shared
- Personal & Shared

Exercise configuration definition

13



Flight List

CCPM
CONTINUOUS CAPACITY PERFORMANCE MONITORING

Actual Flights

Processing completed for all tracks. Waiting for new data...
Total Flights: 1536 [138248] Arrivals: 772 [69216] Departures: 764 [69032] Go-Arounds: 4 [239] Aborted TO: 2 [76]

MT	DATE	CALLSIGN	STAR	AFIX	ATO_AFIX	ETO_AFIX	RWY	ARWYT	DRWYT	AC_TYPE	SID	REG	STANDD	STANDA	APRON	TAXI_OUT	TAXI_IN	AO	ICAO_WTC	ICAO_WTG
A	2022-11-27	TAP202A	BUSEN5P	BUSEN		05:10:57	02	05:10:43		A21N	CSTXJ			602	60		H4 U4 U3 Q3 F	TAP	MEDIUM	
A	2022-11-27	TAP232Y	BUSEN5P	BUSEN		05:14:50	02	05:18:35		A21N	CSTXD			501	50		H4 U4 U3 Q3 Q2 J	TAP	MEDIUM	
A	2022-11-27	TAP260	BUSEN5P	BUSEN		04:49:36	02	05:28:31		A21N	CSTXG			802	80		H4 U4 U3 A5 W1 B	TAP	MEDIUM	
D	2022-11-27	AFR61VN					02		05:39:03	A320	IXIDA5N	FGKXP	107		10	M1 M2 M3 M4 M5		AFR	MEDIUM	
A	2022-11-27	TAP218	BUSEN5P	BUSEN		05:17:39	02	05:39:53		A21N	CSTXI			603	60		H4 U4 U3 Q3 F	TAP	MEDIUM	
A	2022-11-27	TAP1497	NAKOS9A	NAKOS		05:59:50	02	05:44:36		A20N	CSTVF			805	80		H4 U4 U3 T4 W1 B	TAP	MEDIUM	
A	2022-11-27	TAP1925	XAMAX9A	XAMAX		05:28:50	02	05:51:50		A320	CSTNM			107	10		H4 U4 U3 A5 A4 A3 A2	TAP	MEDIUM	
A	2022-11-27	TAP15C	LIGRA9A	LIGRA		05:46:08	02	05:55:35		A20N	CSTVD			224	22		H4 U4 U3 Q3 Q2 Q1 M2 E	TAP	MEDIUM	
D	2022-11-27	DLH25M					02		06:00:49	A21N	IXIDA5N	DAIEM				Q3 G2 U2 U1 M5		DLH	MEDIUM	
A	2022-11-27	TAP1544	LIGRA9A	LIGRA		05:56:08	02	06:08:19		A20N	CSTVG			104	10		H4 U4 U3 T4 T3 T2 T1 M1 A1	TAP	MEDIUM	
D	2022-11-27	EJU32NB					02		06:10:18	A320	IXIDA5N	OEIJH	401		40	N1 N2		EJU	MEDIUM	
A	2022-11-27	TAP1482	NAKOS9A	NAKOS		05:32:39	02	06:13:30		A21N	CSTJN			225	22		H4 U4 U3 Q3 Q2 Q1 M2	TAP	MEDIUM	
A	2022-11-27	TAP90EH	UNPOT9A	UNPOT		05:42:54	02	06:15:53		A320	CSTNN			125	12		H4 U4 U3 A5 A4 A3	TAP	MEDIUM	
D	2022-11-27	RZO121					02		06:20:09	A21N	BUSEN3N	CSTSG				A2 M1 M2 M3 M4 M5		RZO	MEDIUM	
D	2022-11-27	EJU52ZF					02		06:27:47	A21N	IDBID5N	OEISD	114		11	A2 M1 M2 M3 M4 M5		EJU	MEDIUM	
D	2022-11-27	EJU7321					02		06:36:01	A21N	IXIDA5N	OEISB	116		11	A2 M1 M2 M3 M4 M5		EJU	MEDIUM	
D	2022-11-27	EJU78EC					02		06:41:44	A21N	GANSU6N	OEISG	115		11	A2 M1 M2 M3 M4 M5		EJU	MEDIUM	
A	2022-11-27	TAP1900	TROIA9A	TROIA		06:30:46	02	06:51:51		A320	CSTNR			106	10		H4 U4 U3 A5 A4 A3 A2 A1	TAP	MEDIUM	
A	2022-11-27	TAP1049	EXONA9A	EXONA		06:40:11	02	06:56:37		A320	CSTMW			401	40		H4 U4 U3 U2 U1 L1	TAP	MEDIUM	
D	2022-11-27	TAP434T					02		06:58:25	A21N	IXIDA5N	CSTJP	223		22	E M3 M4 M5		TAP	MEDIUM	
D	2022-11-27	EJU32WP					02		07:06:11	A320	GANSU6N	OEIJR				U1 N2		EJU	MEDIUM	
D	2022-11-27	TAP1926					02		07:08:48	A21N	INBOM5N	CSTXG	802		80	B W1 Q3 G2 U2 U1		TAP	MEDIUM	
A	2022-11-27	TAP23HG	EXONA9A	EXONA		06:44:31	02	07:09:30		A321	CSTJH			115	11		H4 U4 U3 A5 A4 A3 A2	TAP	MEDIUM	
D	2022-11-27	TAP1204					02		07:12:54	A20N	IXIDA5N	CSTVF	803		80	B W1 Q3 G2 U2 U1		TAP	MEDIUM	
D	2022-11-27	TAP127H					02		07:18:44	A21N	IXIDA5N	CSTJJ	405		40	L1 L2 M4 M5		TAP	MEDIUM	

15

CCPM
CONTINUOUS CAPACITY PERFORMANCE MONITORING

REPORT ITEMS

NEW REPORT

GRAPHS:

- Movements
- Busiest Periods
- ROTA
- ROTD
- Taxi In Time
- Taxi Out Time
- Taxi In Distance
- Taxi Out Distance
- Stand Occupancy Time
- Runways in Use
- ATFCM

+ ADD ITEMS

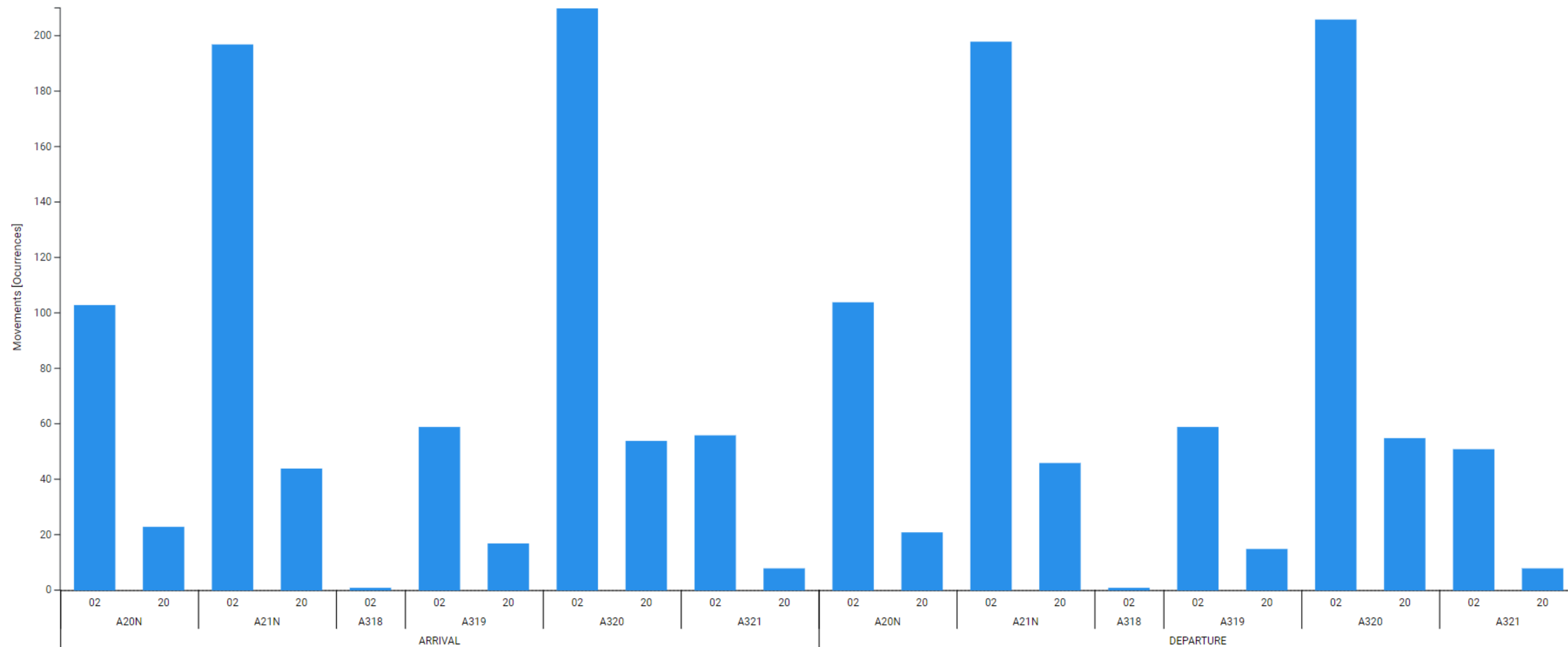
This report does not have any items yet. Select a graph from the lower right corner to add it to the report and start working!



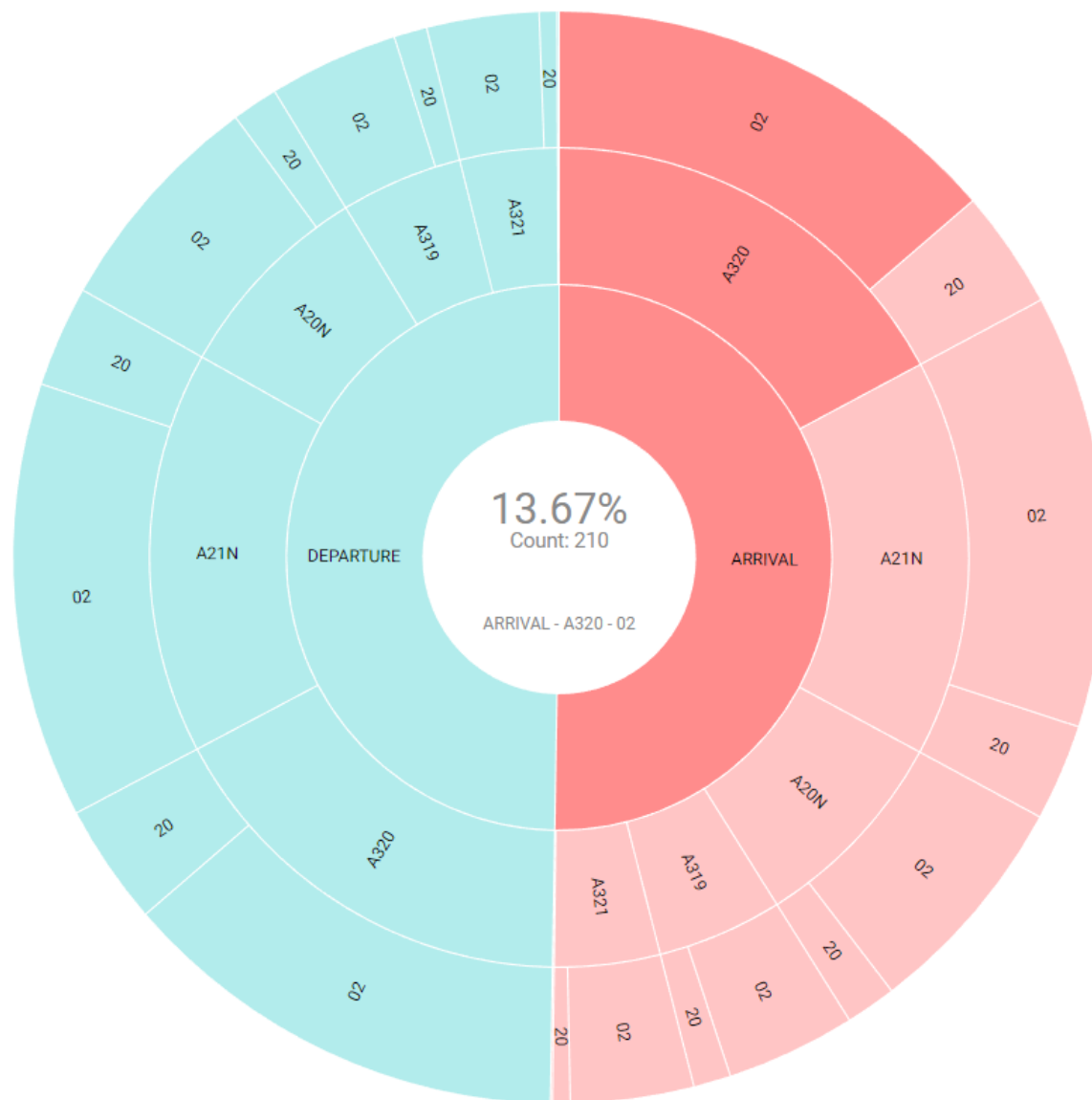
Movements



Movement type / Aircraft type / Runway



Movement type / Aircraft type / Runway

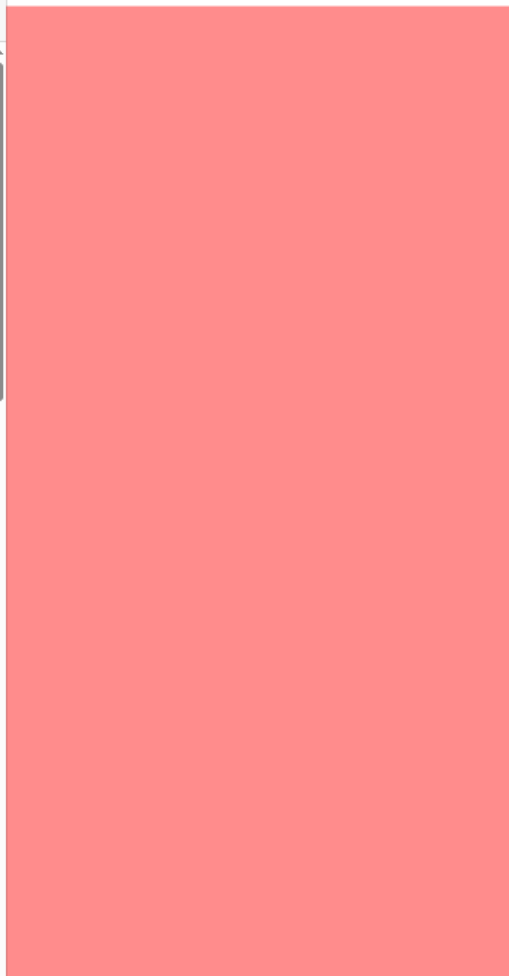


Busiest Periods

Subtitle
Flights from 2024-06-22 09:41:39 to 2024-06-22 10:41:39

Busiest Periods [Occurrences]

Busiest Periods Interval	
Interval (minutes) 60	
Busiest Periods	
2024-06-22 09:41:39 - 10:41:39 (UTC) Movements: 20 Runways: 11	
2024-06-22 09:44:04 - 10:44:04 (UTC) Movements: 19 Runways: 11	
2024-06-15 09:15:09 - 10:15:09 (UTC) Movements: 18 Runways: 11	
2024-06-22 08:59:14 - 09:59:14 (UTC) Movements: 18 Runways: 11	
2024-06-22 09:03:00 - 10:03:00 (UTC) Movements: 18 Runways: 11	
2024-06-22 09:12:59 - 10:12:59 (UTC) Movements: 18 Runways: 11	
2024-06-22 09:15:25 - 10:15:25 (UTC) Movements: 18 Runways: 11	



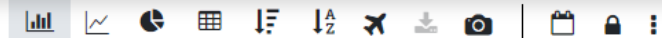
ARRIVAL



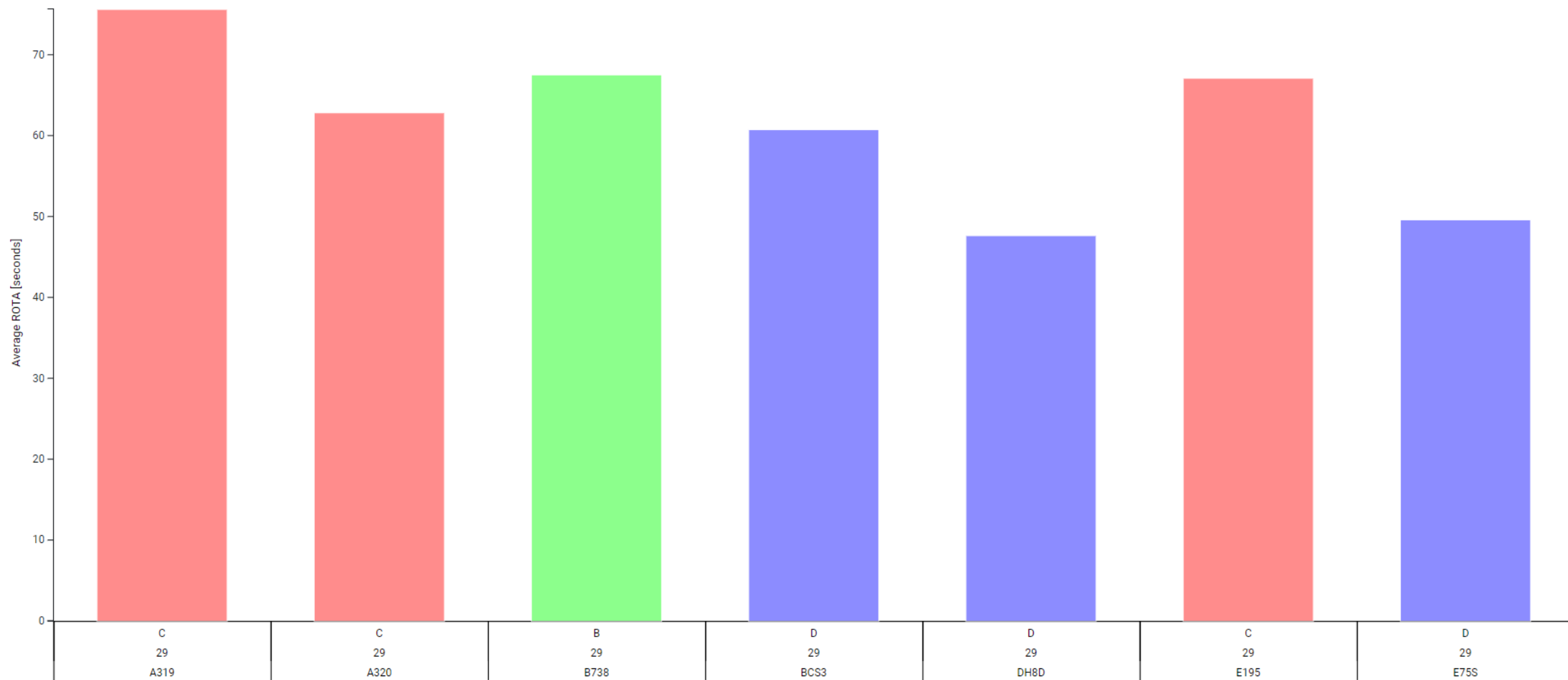
DEPARTURE



ROTA

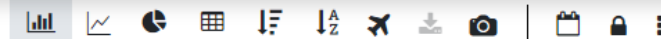


Per AC Type, Runway and Exit Point

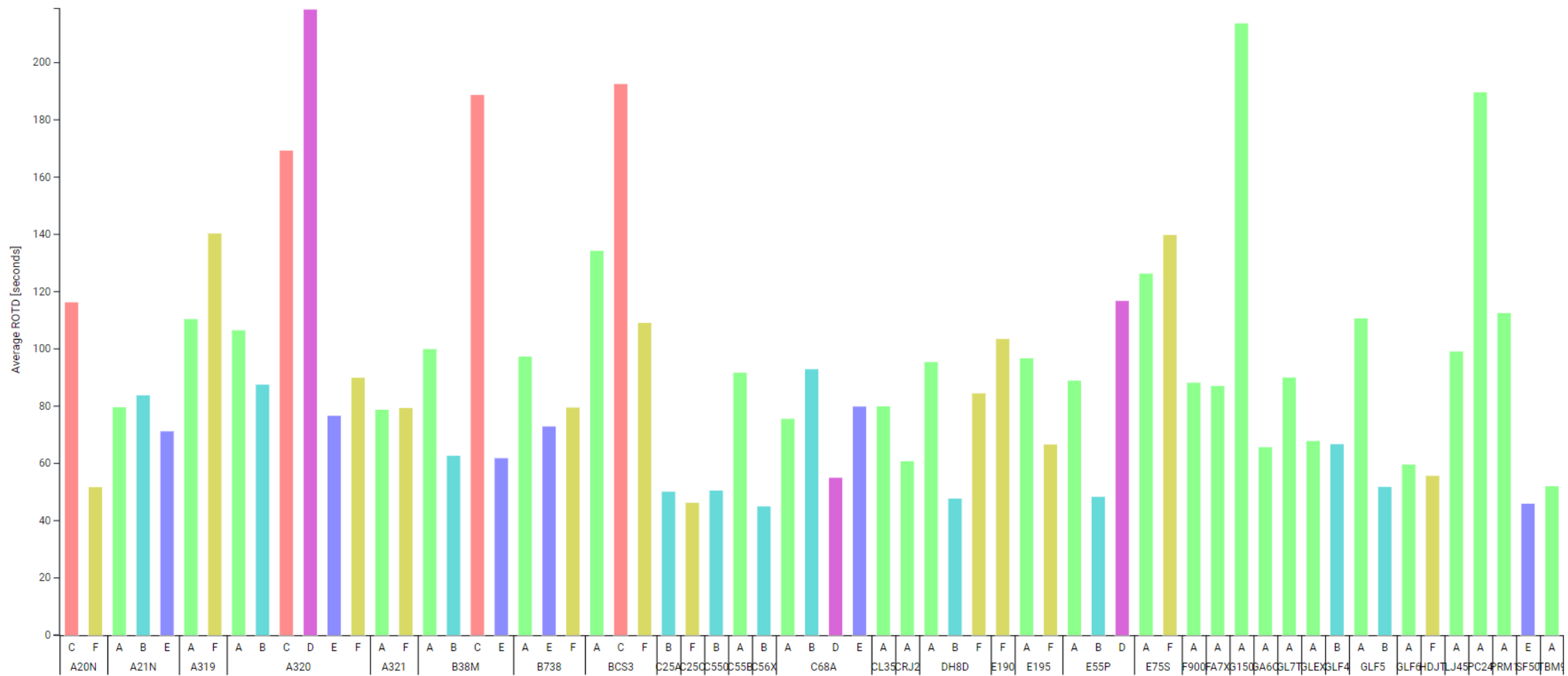




ROTD

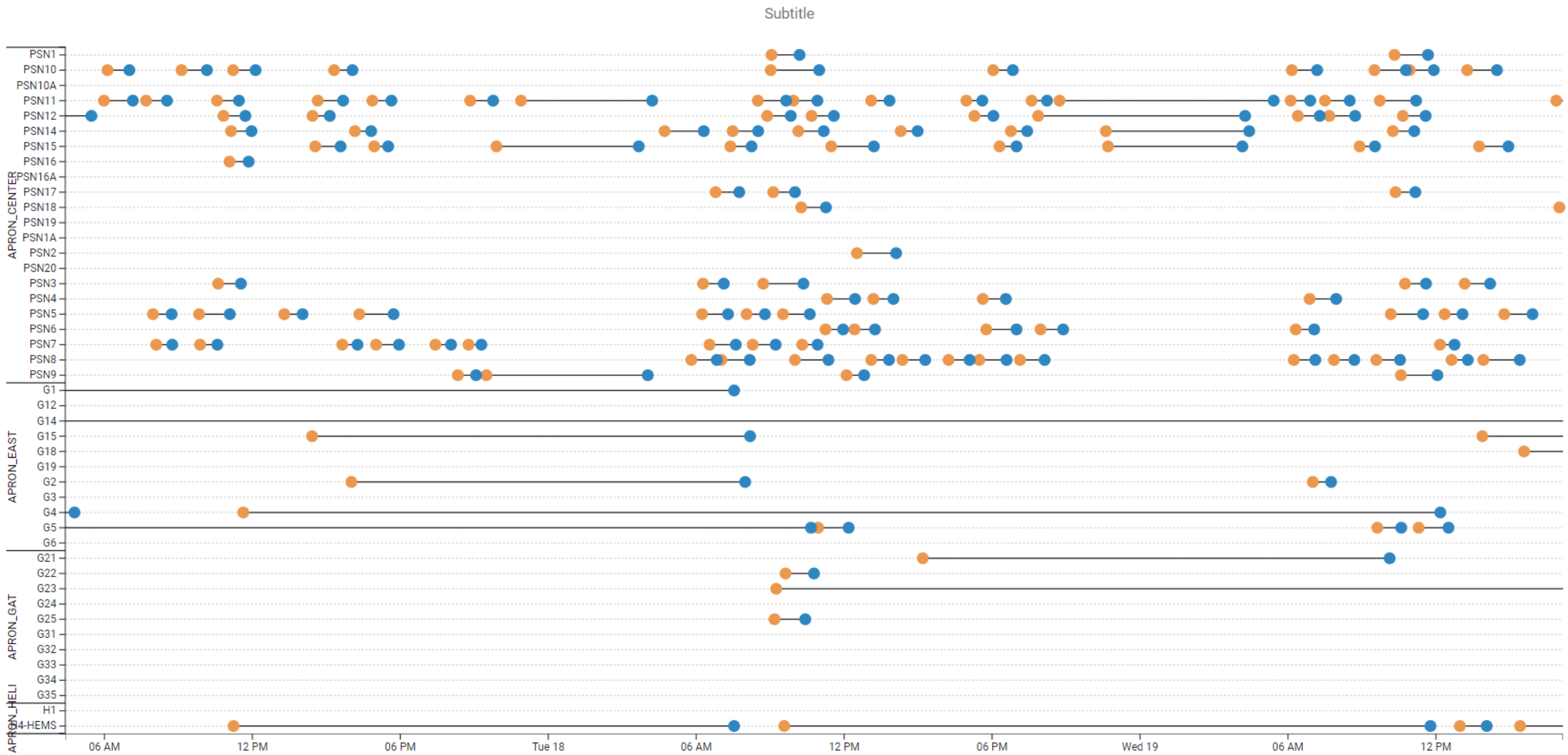


LDDU





Stand Occupancy Time



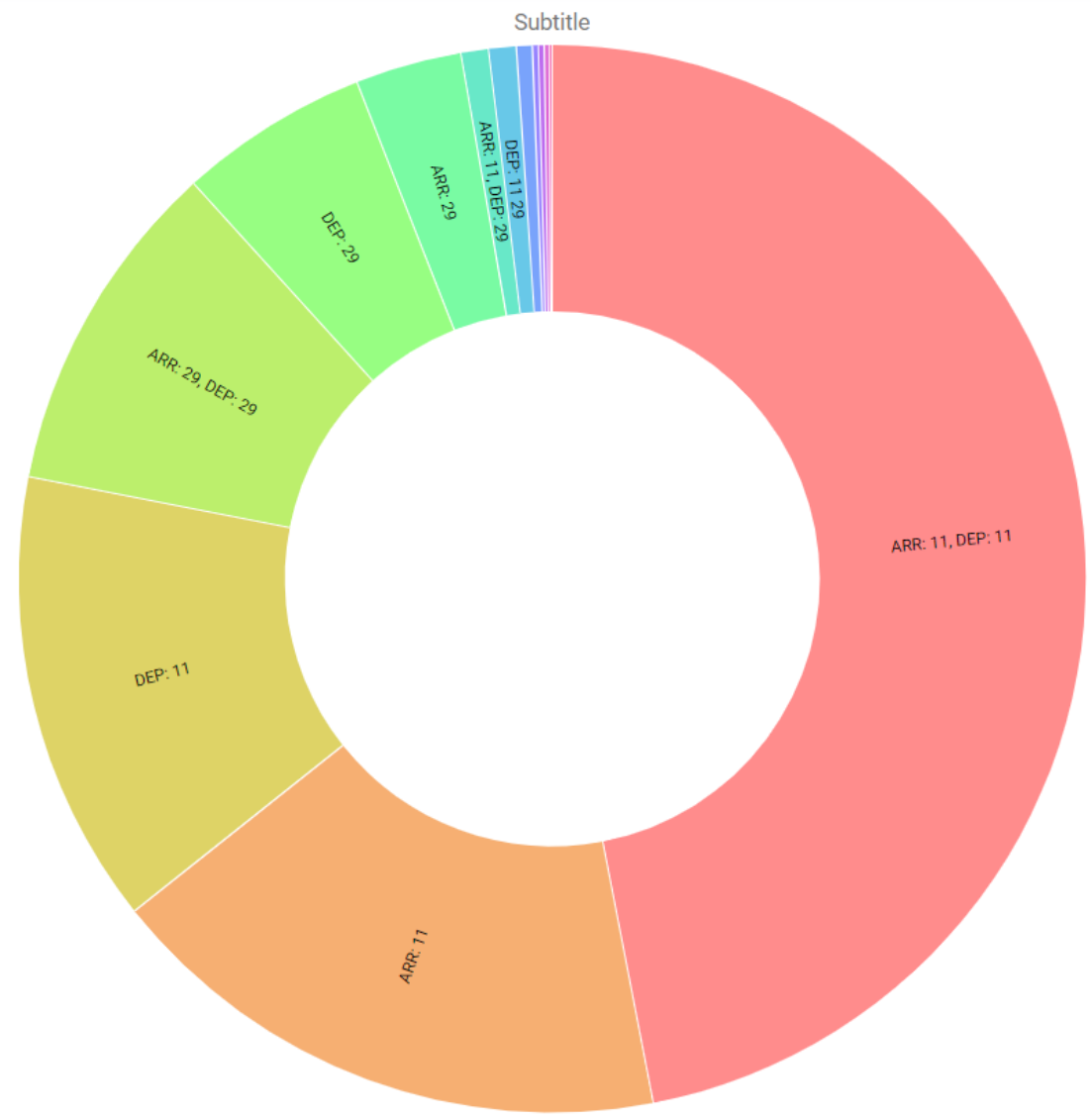
Movements

Runways in Use



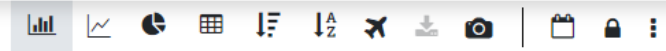
LDDU

Runways in Use Interval Configuration
minutes 15
Runways in Use Grouping Configuration
ARR: 11, DEP: 11
ARR: 11
DEP: 11
ARR: 29, DEP: 29
DEP: 29
ARR: 29
ARR: 11, DEP: 29
DEP: 11 29
ARR: 11, DEP: 11 29
ARR: 11 29, DEP: 29
ARR: 29, DEP: 11
ARR: 11 29
ARR: 11 29, DEP: 11



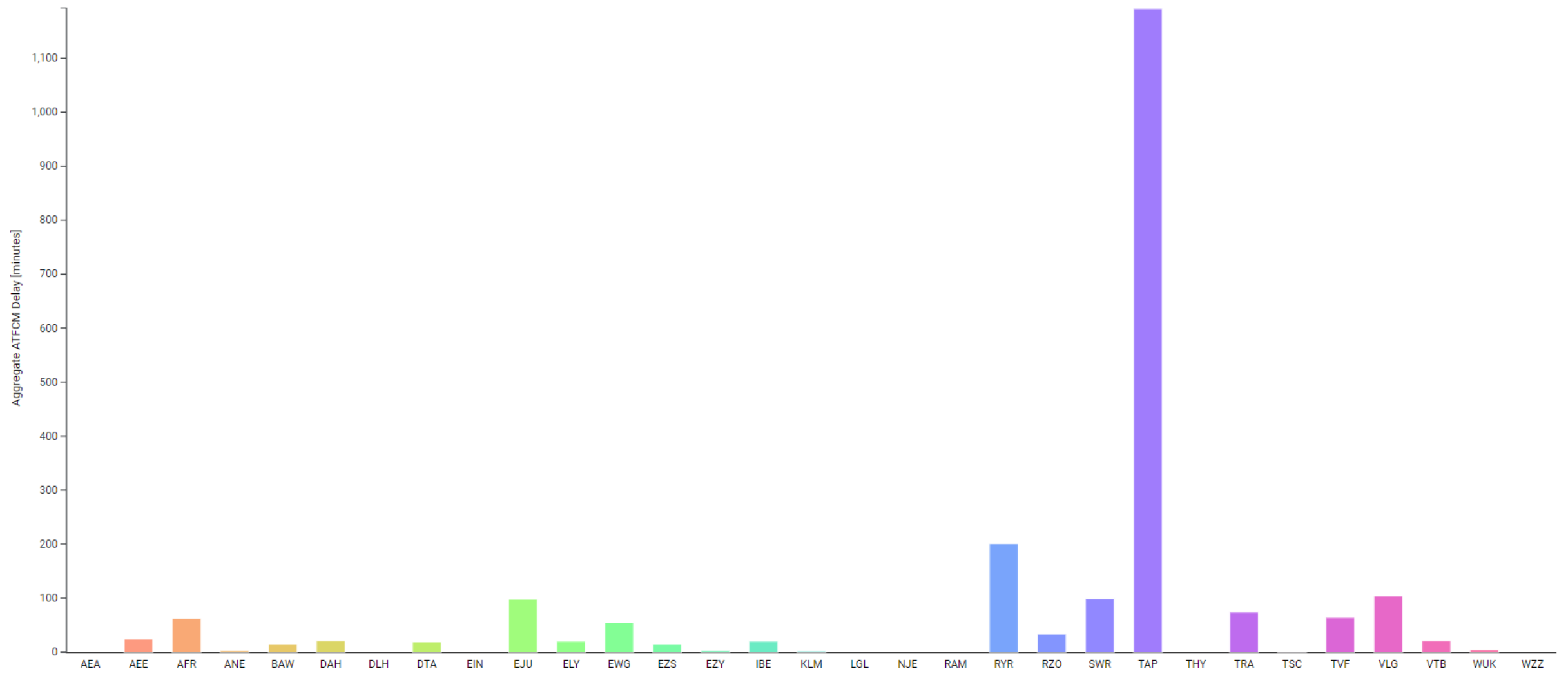


ATFCM



Subtitle

LPPT



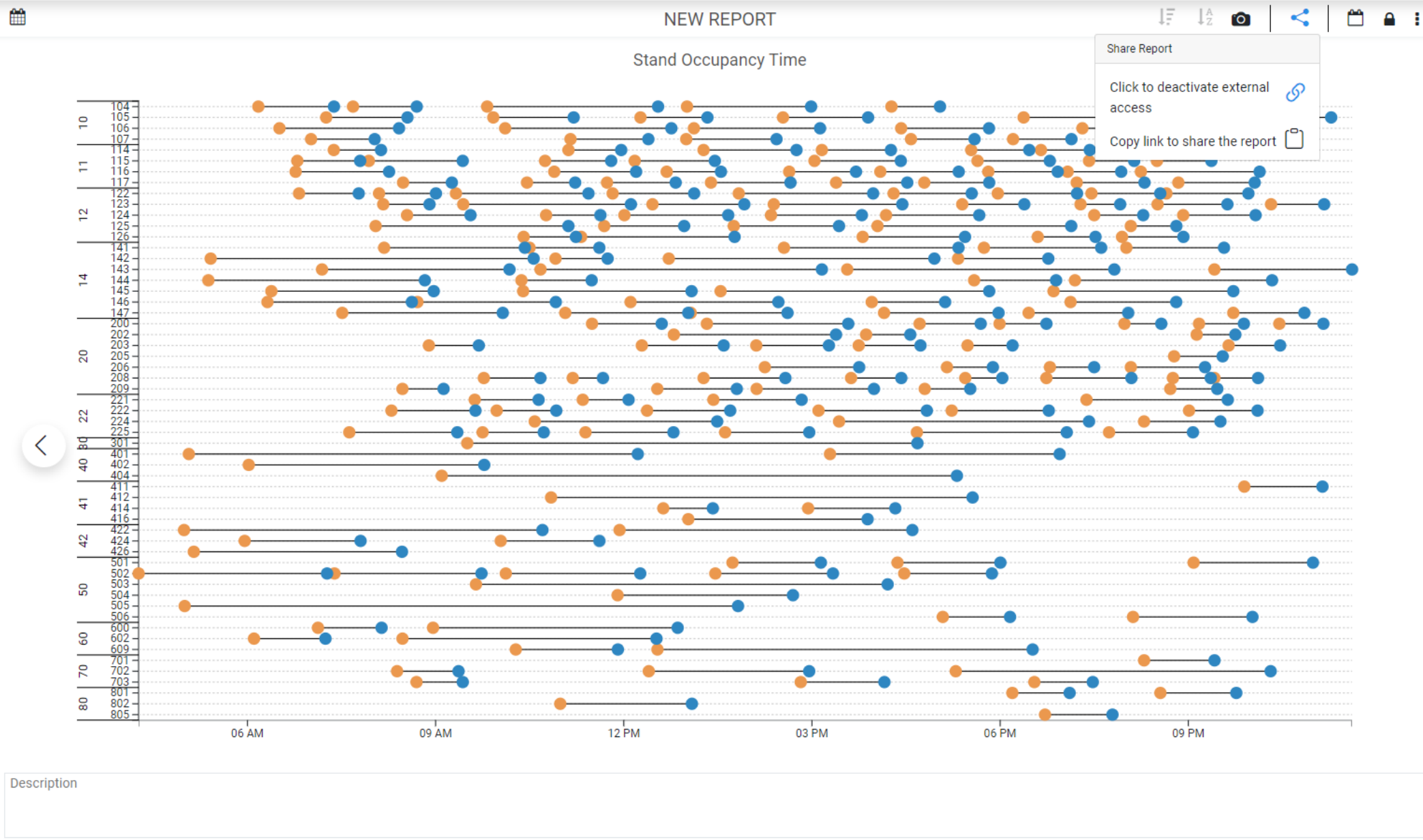
Reports generation

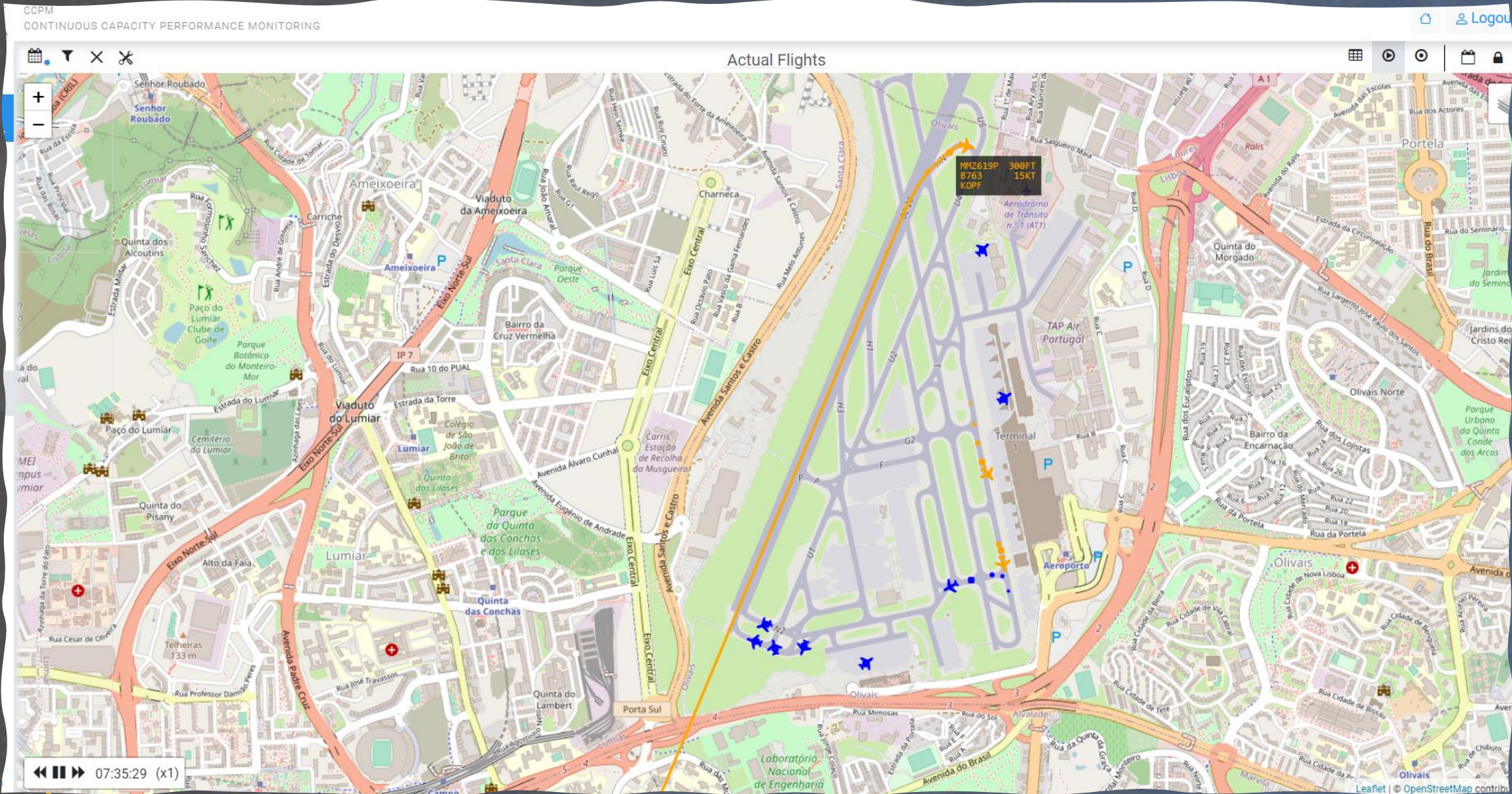
REPORT ITEMS

Movements

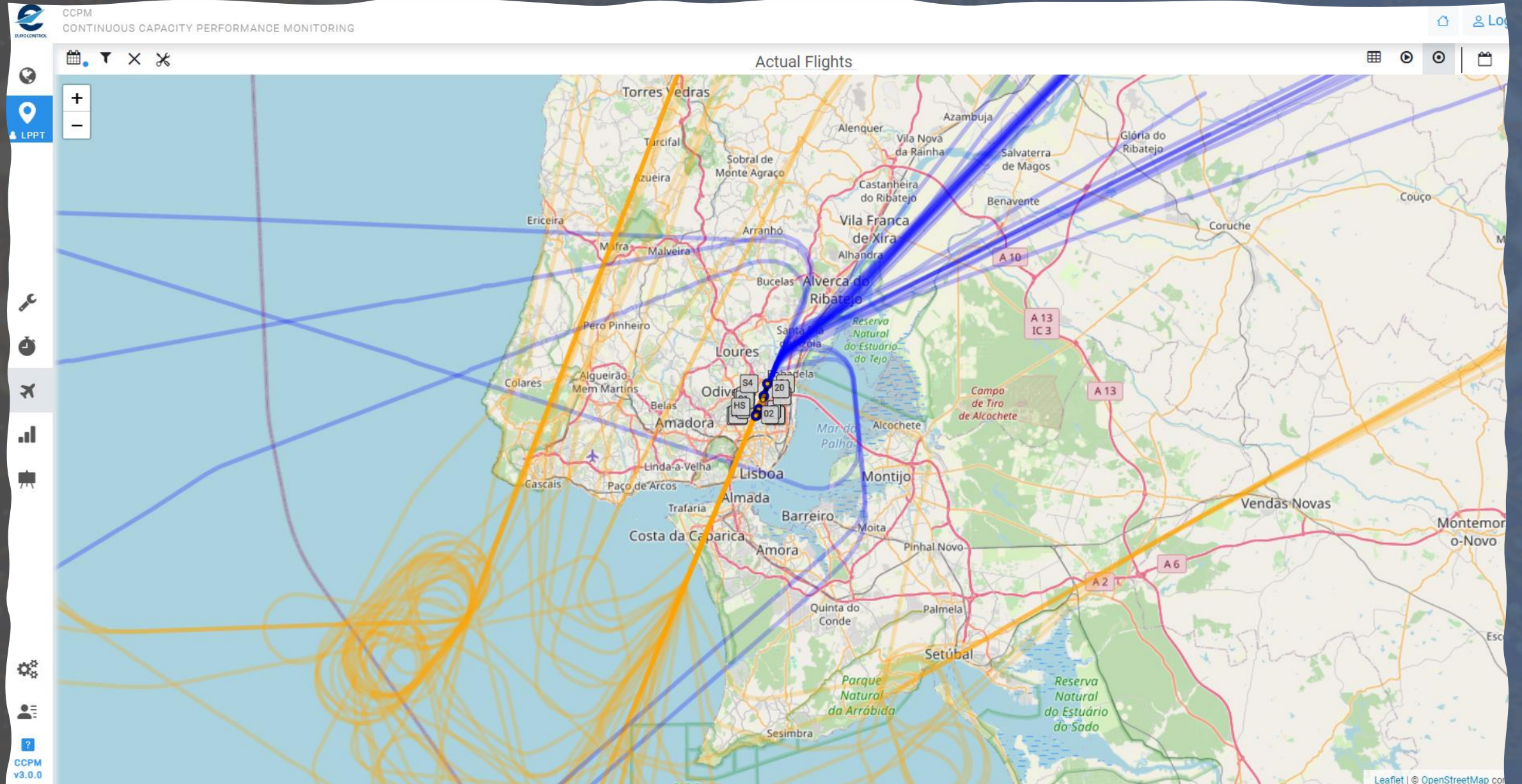
ATFCM

Stand Occupancy Time





26



Thank you.