IFATCA
INTERNATIONAL FEDERATION OF AIR TRAFFIC CONTROLLERS' ASSOCIATIONS
63nd ANNUAL CONFERENCE
15 – 19 April 2024, Singapore

Agenda Item: C.6.12.1* **INFORMATION PAPER** **WP No:161**
IFATCA'24

ANACNA's approach to VFR capacity

Presented by ANACNA

SUMMARY

This Information Paper reports a study on the time used by ATCOs in LICC TWR (Catania, Sicily) for handling IFR and VFR traffic.

Those times are used in a controller workload assessment to identify the impact of VFR traffic compared to IFR.

1. INTRODUCTION

1.1. This information paper presents a comparison of the ATCO's workload in handling IFR or VFR traffic in controlled airspace. Such comparison is based on the concept of Time on Task (ToT) which represents the time necessary to accomplish all actions related to the provision of the Air Traffic Control Service, Flight Information Service, and Alerting Service.

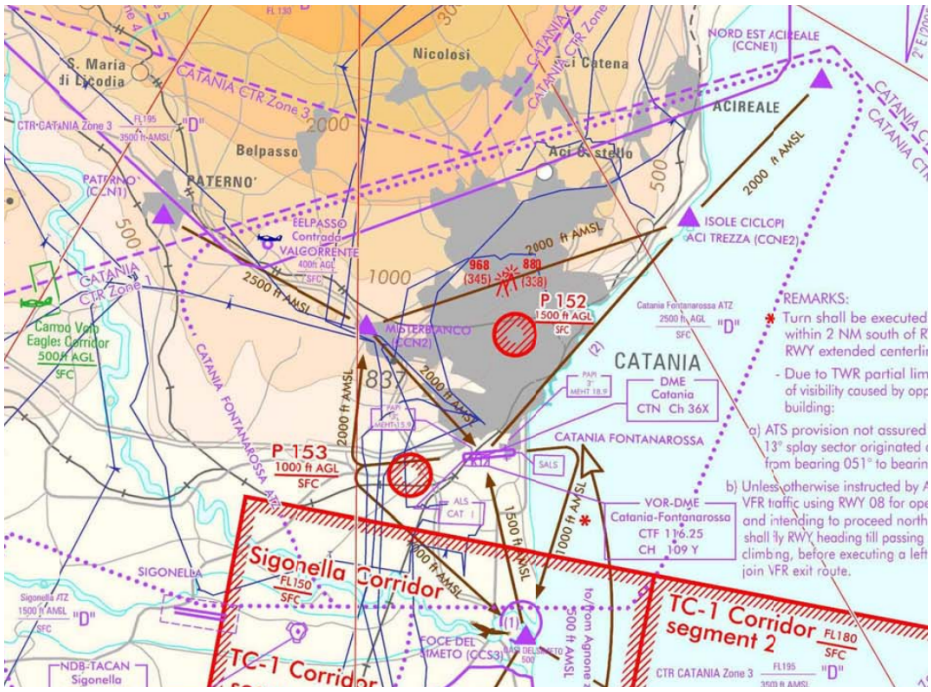
1.2. Data samples used in the analysis have been collected in Catania Fontanarossa Airport (LICC) in 2018. ANACNA would like to publicly thank all colleagues involved in the data collection and analysis for their outstanding work.

2. DISCUSSION

2.1. Catania Fontanarossa Airport (LICC) is located a few miles south of Catania city with the sea on the east side and mountain Etna on the north side.

2.1.1. LICC ATZ has a vertical limit of GND/2500 ft AGL and about 15NM of lateral extension. It is embedded in Catania CTR which is a military CTR managed by Sigonella Air Force Base.

2.1.2. Approach Control Service to aircraft from and to LICC ATZ is provided by Sigonella APP. LICC ATC Unit provides Aerodrome Control Service with ATS Surveillance in LICC ATZ using three different operative positions: tower (TWR), ground (GND) and coordinator (COO).



Catania Fontanarossa ATZ[1]

2.2. General considerations on capacity

Note: references, definitions and additional information on concepts reported in the following paragraphs are available in Appendix I of this paper.

2.2.1. Air Traffic Flow Management (ATFM) is based on the notion of "declared capacity" (or "ATC capacity", or "capacity") which is a measure of the ability of the ATC system or any of its subsystems or operating positions to provide service to aircraft during normal activities. This ability is expressed as the number of aircraft entering a specified portion of airspace in a given period of time and ATCO's workload is the primary element to be considered in establishing such number.

2.2.2. ICAO DOC 4444 – PANS ATM states that the appropriate ATS authority should assess and declare the ATC capacity for control areas, for control sectors within a control area and for aerodromes. Guidelines on factors to be considered in the process of assessing the capacity are reported in ICAO DOC 9971 "Manual on Collaborative Air Traffic Flow Management (ATFM)".

2.2.3. However, there are two critical elements to be highlighted:

a) ATFM applies only to IFR;

b) Aerodrome capacity does not explicitly consider ATM factors

2.2.4. Air traffic flow management is an enabler of ATM efficiency and effectiveness and it is established to enable ANSPs to effectively provide the required service

[1] Extract from AIP Italia, AD2.LICC 5-1 (AIRAC 01/23)

based on the current and projected operational needs[2]. ATFM requires coordination among aviation stakeholders (aerodromes, ANSPs, airspace users) and, despite being the concept general and applicable to all traffic, from the information nowadays available it applies only to IFR. VFR traffic is momentarily not subject to ATFM measures. The main reason is related to the predictability of IFR traffic deriving from all obligations to be fulfilled by them: for example, flight plan submission, parking permission, and fees.

2.2.5. The second important aspect to be considered is the absence of ATM factors as a factor affecting aerodrome capacity.

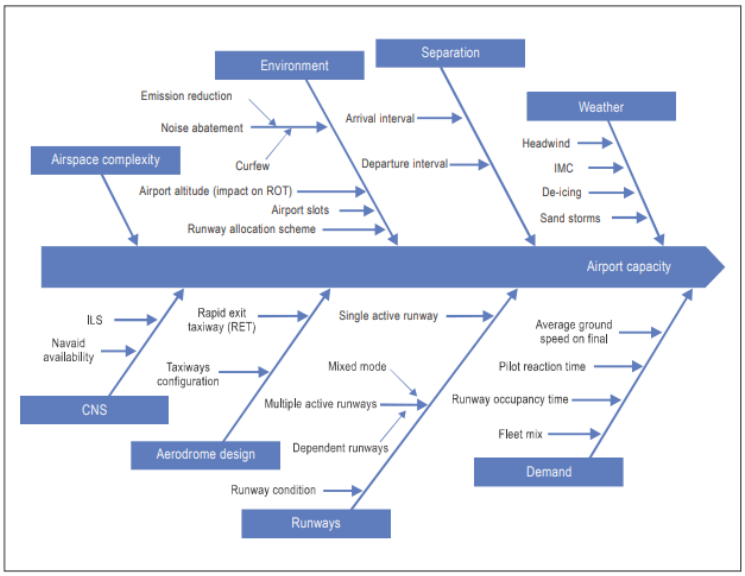


Figure II-3-2. Factors affecting airport capacity

The ATM capacity of an airport is normally defined as the total number of movements that an airport can handle during a given period of time, and the diagram above clearly identifies the airport layout as the main item to be considered. ICAO DOC 9971 - 3.1.5 “Airport capacities” does not refer to factors such as human factors, workload, and conflict management that are used in determining Airspace capacity instead (see Appendix I, 1.4). Furthermore, there is no evidence these ATM factors are considered in Airspace complexity. This implies that ATCO’s workload, a predominant item of the declared capacity, might be underestimated or not considered at all.

2.2.6. Considering the two aspects above, it is understandable how the management of VFR traffic from TWR ATCOs might generate situations of high and unexpected workload, especially in IFR peak periods.

2.3. Workload assessment

Note: references, definitions, and additional information on concepts reported in the following paragraphs are available in Appendix I of this paper. Data collected in LICC are presented in Appendix II.

[2] ICAO DOC 9971, Part II, 1.2 ATFM service

2.3.1. Time is the main finite resource ATCOs have to handle and it affects different cognitive aspects and the decision-making process. For these reasons, time is also the basic aspect to be considered in establishing ATC capacity.

2.3.2. The methodology used to collect data in LICC is based on the Controller Workload Assessment model. This model breaks down the controller workload into a set of definable and measurable tasks (i.e., coordination, handling flight data, radio frequency, communications, and conflict management)[3]. The total amount of time that is necessary to complete all actions related to a single task can be called "time on task (ToT)".

2.3.3. ATS provision from LICC requires different tasks in accordance with ATCO's operative position and type of operation. ToT for each task was collected from 5 different types of operations (IFR arrival, IFR departure, VFR arrival, VFR departure, and VFR crossing) and from 3 ATCO's operative positions (GND, COO, and AIR).

2.3.4. ATCO's workload for the ATS provision from a specific operative position is the sum of all ToT required by the type of operation.

Example

Action	Execution time (sec)		
	GND	COO	AIR
VFR DEPARTURE			
Task: Flight data management			
Flight list check	2	5	5
Task: Procedural conflict detection			
Strip checks by VRP	2	5	5
RDR screen check	//	4	5
Task: Visual acquisition			
Visual acquisition	3	5	5
Task: Radio communications			
First comm (check-in)	10	//	8
Taxi instructions/Take off clearance	8	//	6
Strip marking	20	//	10
VRP/RHP report	4	//	4
Instructions/traffic information	5	//	16
Task: Coordination			
Internal-external coordination	6	20	4
Info acquisition from AOIS	//	50	//
Assistance to VFR	//	//	15
RDR monitoring	//	5	5
Total	60	94	88

Table 1: VFR Departure values

[3] ICAO DOC 9971, Part II, 3.1.7 Capacity determining methods

The ATCO operating the COO position has spent 94 seconds (workload) handling a VFR Departure operation. 9 seconds (ToT) out of 94 have been used for the task of procedural conflict detection.

2.3.5. Table 3 reports the aggregate results of the analysis. Full data are available in Appendix II.

	TOTAL			ADAPTED (-10%)			GLOBAL LICC
	GND	COO	TWR	GND	COO	TWR	
VFR DEP	60	94	88	54	85	79	218
VFR ARR	20	82	105	18	74	95	186
VFR CROS	0	46	110	0	41	99	140
IFR DEP	49	45	43	44	41	39	123
IFR ARR	23	14	40	21	13	36	69

Table 2: Workload

2.3.6. Before continuing to evaluate the results, some considerations need to be made:

a) Data reported in Appendix II have been collected from a limited number of samples. Despite they might not constitute a significant scientific sample, LICC ATCOs report that situations used to extract data were "low complexity mean situations" and data are significant.

b) Connected to a), VFR values are highly dependable on the path followed by the traffic, on weather conditions, on the need for ATS provision, and the pilot's ability/experience. LICC ATCOs report that situations used were "low complexity mean situations".

c) Data have been collected by timing ATCO's actions. All tasks are measurable but it has to be considered that different tasks/actions might be carried on at the same time by the same person (for example radio communication and visual acquisition). Furthermore, considering the workload for the entire ATC Unit, the same task might be done at the same time by different ATCOs.

d) Considering c), a correcting factor of -10% is applied (Table 2, ADAPTED column).

2.3.7. As a first consideration, clearly Table 2 indicates the importance and the impact of data availability and standardization in lowering the workload for IFR operations (instrument procedure for both ARR and DEP, electronic support for data acquisition (FDP/AOIS), standardized push-back and taxi procedures, pilot's professionalism). For the VFR part, on the contrary, visual acquisition and data acquisition are the most time-consuming actions and they are associated with the very limited predictability of VFR operations.

2.3.8. Considering the global LICC ATS Unit, it can be stated that the workload for VFR management is generally double, with a peak of three times, the one related to IFR management.

2.4. Capacity assessment

2.4.1. Values reported in Table 1 and Table 2 are associated with specific tasks and operations. In addition to these observable and discrete tasks, there are other tasks and elements associated with the provision of ATS that cannot be precisely measured. For example, these non-observable tasks might be continuous radar monitoring/visual scanning, planning future actions, the amount of mental reasoning a controller uses, and the controller's recuperation time.

2.4.2. Controller's recuperation time represents a fundamental aspect to be considered in ensuring a safe provision of the services (see Appendix I 1.3 DORATASK approach). For this reason, workload assessment models consider also non-observable tasks as a buffer in establishing an acceptable workload threshold. Thus, ATC capacity represents the maximum number of traffic whose workload does not exceed this acceptable workload threshold.

2.4.3. Non-observable tasks are, by definition, hardly measurable. Used by EUROCONTROL, the CAPAN method (CAPacity ANalysis)[4] provides values to link quantitative workload values (numbers/seconds) to qualitative workload values (heavy load, light load, etc.). It is based on the percentage of time used to complete discrete tasks in an hour.

Threshold	Interpretation	Recorded Working Time during 1 hour
70 % or above	Overload	42 minutes +
54 % - 69 %	Heavy Load	32 - 41 minutes
30 % - 53 %	Medium Load	18 - 31 minutes
18 % - 29%	Light Load	11 - 17 minutes
0 % - 17 %	Very Light Load	0 - 10 minutes

Table 3: Workload Thresholds

2.4.4. Considering the Heavy Load, this method assigns at least 18 minutes in an hour to non-observable tasks, including controller recuperation time.

2.4.5. Using this information and the declared airport capacity for LICC (25 IFR departures and/or arrivals), Table 5 provides data on the expected workload level associated with an increasing number of VFR operations. Furthermore, there will be a comparison between the service provision using three or two operative positions (OP) to describe how the workload for each operative position varies.

2.4.6. The process used to create Table 5 is reported below.

Note: if not specified, the second is the measurement unit

Step 1: determine VFR and IFR workload mean values

Values in Table 4 have been developed considering generic VFR and IFR operations. VFR and IFR workloads express the mean value of the most demanding operative position for all operations of the same category.

[4] See Appendix I - 1.5. DESCRIPTION OF THE CAPAN METHOD

OPERATIONS	3 OP (TWR, GND, COO)		2 OP (TWR+GNG, COO)	
	PEAK	MEAN	PEAK	MEAN
VFR DEP	85 (COO)	93	133 (TWR+GND)	115
VFR ARR	95 (TWR)		113 (TWR+GND)	
VFR CROS	99 (TWR)		99 (TWR+GND)	
IFR DEP	44 (GND)	40	83 (TWR+GND)	70
IFR ARR	36 (TWR)		57 (TWR+GND)	

Table 4: VFR and IFR mean values

Step 2: calculate the maximum IFR working time (IFR WT) for 25 IFR/h

3 OP → 25x40=**1000** 2 OP → 25x70=**1750**

Step 3: calculate the VFR WT related to the number of VFR operations

Example: 3 OP and 6 VFR → 6x93=**558**

Step 4: determine the total WT (TOT WT) adding the max IFR and VFR WT.

Example: 1000+558=**1558**

Step 5: compare the total WT with the working time intervals (Table 3) to determine the qualitative work values.

LIGHT: 0-1044 *MEDIUM: 1044-1908* *HIGH: 1908-2520* *OVERLOAD: >2520*

Example: ***1558 → medium***

N° VFR	3 OP (TWR, GND, COO)			2 OP (TWR+GNG, COO)		
	WT IFR (40)	WT VFR (93)	TOT WT	WT IFR (70)	WT VFR (115)	TOT WT
1	1000	93	1093	1750	115	1865
2	1000	186	1186	1750	230	1980
.....	.....	.....	.....	.....	.....	.....
6	1000	558	1558	1750	690	2440
7	1000	651	1651	1750	805	2555
.....	.....	.....	.....	.....	.....	.....
9	1000	837	1837	1750	1035	2785
10	1000	930	1930	1750	1150	2900
11	1000	1023	2023	1750	1265	3015
.....	.....	.....	.....	.....	.....	.....
16	1000	1488	2488	1750	1840	3590
17	1000	1581	2581	1750	1955	3705

Table 5: WT

2.5. Considerations

2.5.1. Table 5 provides an overview of the workload expected concerning the number of VFR operations. Before commenting on the table, it is worth to remind that data used for the analysis are data collected in "low complexity mean

situations". Therefore, values in Table 5 should be considered the best-case scenario in the provision of ATS.

2.5.2. Complexity is influenced by several factors as the positions of traffic and consequently the necessity to provide separation/traffic information, weather conditions, CNS equipment availability and reliability, ground operations (vehicles, tows, runway inspections), as well as by human performances (controllers, pilots, ground staff).

2.5.3. Consequently, operations with a complexity factor higher than those used for the data collection are not rare and they can lead to a dramatic drop in the working time availability for handling VFR operations.

2.5.4. Table 5 also shows how the increased number of operative positions has a positive effect on the workload and consequently on the possible number of VFR operations. This effect is well known and it is a basic measure used to maintain workload levels below the acceptable thresholds.

2.5.5. ….

2.6. Considerations on the Controller Workload Assessment Method

2.6.1. The proposed Controller Workload assessment is a very simple but powerful tool. It can be applied in any ATC/ATS unit without any particular notion and it can provide a general picture of the ATC/ATS unit in terms of workload in pre-determined situations (for example considering the maximum number of IFR).

2.6.2. Data derived from the observation can be used for several purposes. For example, they can be used by the ATCO in supporting the decision-making for traffic acceptance and in prioritizing operations. Or they can simply be used to support the request for additional operative positions.

3. CONCLUSION

3.1. Airport capacity is determined considering mainly the aerodrome layout and the ground services available. ATS provision seems not to be considered. Thus the impact on ATCOs workload might be underestimated.

3.2. To evaluate the ATCO's workload related to the ATS provision in relation to the airport capacity, expected traffic volumes and conventional situations, the Controller Workload assessment proposed in the paper is a simple and effective tool.

3.3. Results from Catania Fontnarossa Airport (LICC) show that LICC ATCO's workload related to VFR operations is up to three times higher compared to IFR operations. Several factors can be considered in explaining this discrepancy and the predictability introduced by standardized procedures and technologies used to manage IFR traffic is for sure one of the main workload mitigating factors.

4. DRAFT RECOMMENDATIONS

4.1. Member Associations (MAs) are encouraged to conduct a Controller Workload assessment analysis and share their results within IFATCA.

4.2. It is recommended this paper should be accepted as an information paper only.

5. REFERENCES

5.1. ICAO DOC 4444 – PANS ATM (sixteenth edition, 2016 - am. 10)

5.2. ICAO ANNEX 11 Air Traffic Services (fifteenth edition, July 2018 - am. 52)

5.3. ICAO DOC 9426 ATS planning manual (first edition, 1984 - am. 4)

5.4. DOC 9971 Manual on Collaborative Air Traffic Flow Management (ATFM) (third edition, 2018)

5.5. CAPAN METHOD, EUROCONTROL (link)

-=END=-

APPENDIX I - Regulatory framework

1. Regulatory Overview

The following paragraphs report extracts from various documents to explain the concept of capacity and its relation with the controller's workload.

Note: *sentences and words underlined or in **bold** in the following documents' extracts are not present in the original version of the documents. They are an elaboration of the author to highlight connections and references to the subject. Unnecessary elements have been removed and replaced by "…".*

1.1. ICAO DOC 4444 – PANS ATM (sixteenth edition, 2016 - am. 10)

Chapter 3 ATS SYSTEM CAPACITY AND AIR TRAFFIC FLOW MANAGEMENT

3.1 CAPACITY MANAGEMENT

3.1.1 General

3.1.1.1 The capacity of an ATS system depends on many factors, including the ATS route structure, the navigation accuracy of the aircraft using the airspace, weather-related factors, and controller workload. Every effort should be made to provide sufficient capacity to cater to both normal and peak traffic levels; however, in implementing any measures to increase capacity, the responsible ATS authority shall ensure, in accordance with the procedures specified in Chapter 2, that safety levels are not jeopardized.

3.1.1.2 The number of aircraft provided with an ATC service shall not exceed that which can be safely handled by the ATC unit concerned under the prevailing circumstances. In order to define the maximum number of flights which can be safely accommodated, the appropriate ATS authority should assess and declare the ATC capacity for control areas, for control sectors within a control area and for aerodromes.

3.1.1.3 ATC capacity should be expressed as the maximum number of aircraft which can be accepted over a given period of time within the airspace or at the aerodrome concerned.

Note.— The most appropriate measure of capacity is likely to be the sustainable hourly traffic flow. Such hourly capacities can, for example, be converted into daily, monthly or annual values.

3.1.2 Capacity assessment

In assessing capacity values, factors to be taken into account should include, inter alia:
…
c) controller workload, including control and coordination tasks to be performed;
…
f) any other factor or element deemed relevant to controller workload.

1.2. ICAO ANNEX 11 Air Traffic Services (fifteenth edition, July 2018 - am. 52)

Chapter 1. Definitions

Air traffic flow management (ATFM). A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilized to the maximum extent possible and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.

Declared capacity. A measure of the ability of the ATC system or any of its subsystems or operating positions to provide service to aircraft during normal activities. It is expressed as the number of aircraft entering a specified portion of airspace in a given period of time, taking due account of weather, ATC unit configuration, staff and equipment available, and any other factors that may affect the workload of the controller responsible for the airspace.

1.3. ICAO DOC 9426 ATS planning manual (first edition, 1984 - am. 4)

Appendix C Techniques for ATC Sector/Position Capacity Estimation

2. SUMMARY OF THE "DORATASK" APPROACH

2.1 The proposed DORATASK work centred on the assessment of the workload carried by the radar controller, summing the time spent on routine and conflict resolution (observable) tasks on the one hand, and planning (non-observable) tasks on the other. In addition to these two interrelated elements of the controller's tasks, there was a third element - a "recuperation" time. This was a minimum proportion of time not allocated to specified tasks (observable or non-observable) but considered essential for the safe operation of the sector. The controller's time, therefore, is divided between observable tasks, non-observable tasks and periods of recuperation. Although the workload was determined by the sum of the time spent in observable tasks and non-observable tasks, the capacity is considered as the level of workload which leaves the controller a safe margin for recuperation.

2.2 Observable tasks are those which can readily be recorded and timed by an outside observer; examples include radiotelephony (RTF) and telephone communication, strip marking and direct-voice-liaison coordination. Routine tasks, for a particular aircraft, are those which must be carried out even if there are no other aircraft in the vicinity. In order to get from "A" to "B", all aircraft need to contact ATC to be given certain headings and flight level clearances and be handed off to the next sector. The sequence of instructions routinely given to an aircraft will be virtually fixed by the route it takes through the sector and by its origin and destination. The routine workload was, therefore, assessed by assigning aircraft to one of a set of standard flight profiles through the sector; associated with them were fixed sequences of tasks and, hence, a task execution time.

…

2.5 Non-observable tasks are those which are carried out almost continuously by the busy controller in parallel with the observable tasks, and which cannot generally be directly recorded or timed by the observer. These tasks, which include monitoring the radar screen and planning future actions, are, however, critical to the business of the sector controller. The non-observable workload was determined by calculating, for each aircraft within the sector area, how many strips it produces and how many other strips already present on the boards must be checked against it when it is first given to the radar controller. This number of checks was then multiplied by a "time per strip check" to give the total non-

observable workload. The time for a strip check was not considered as a duration time for a physical task but as a factor calculated when the model was calibrated to reflect the time taken by the whole planning task. The latter was the main aspect of DORATASK which required more detailed research. This kind of workload would be increased significantly during a peak flow of traffic.

1.4. DOC 9971 Manual on Collaborative Air Traffic Flow Management (ATFM) (third edition, 2018)

Part II - AIR TRAFFIC FLOW MANAGEMENT (ATFM)

3.1.4 Airspace capacities

3.1.4.1 The capacity for an airspace sector (terminal or en-route) is defined either as an entry count (maximum number of aircraft entering an airspace sector in a given period of time) or a maximum occupancy count over a specific time period (e.g., 15 minutes).

…

3.1.5 Airport capacities

…

3.1.5.2 The ATM capacity of an airport is normally defined as the total number of movements that an airport can handle during a given period of time. The ATM capacity is based on:

a) arrival and departure acceptance rates;
b) runway(s) in use and mode of operations (mixed or segregated arrivals/departures);
c) required separation;
d) aircraft speed;
e) fleet mix;
f) runway occupancy time; and
g) aerodrome infrastructure (e.g., availability of parking stands, congestion on the movement area)

…

3.1.7 Capacity determining methods

3.1.7.1 It would be extremely complex to establish a universal rule to calculate capacity. Capacity can be affected by so many variables and external considerations that standardization is simply not possible. It is therefore up to each ANSP to decide how to determine its capacity by choosing from either basic methods based on observation or highly sophisticated mathematical models.

3.1.7.2 In any case, capacity limits may be assessed using feedback from control staff, incident reports where heavy workload is a factor and real-time observations. Post-operations analysis and monitoring provide essential feedback and can be of great use to refine capacity determination.

…

3.1.7.6 There are two schools of thought on how to assess and establish ATC sector capacity: mathematical occupancy and complexity models, and controller workload assessment models. In both cases, it is essential that the capacity calculated using these models be validated by other means (e.g., real-time observations, real-time simulations).

3.1.7.7 Mathematical occupancy and complexity models take account of:

a) traffic profile: cruise, climb, descent;
b) traffic mix: light, heavy, speed mix;
c) number and types of typical ATC interventions;
d) sector flight times; and
e) default workload per flight.

3.1.7.8 Controller workload assessment models break down the controller workload into a set of definable and measurable tasks for which average execution times are defined. These tasks include coordination, handling flight data, radio frequency, communications and conflict management. Since the amount of mental reasoning a controller uses cannot be measured, an acceptable workload threshold is normally established and capacity is assessed to be at the point where this threshold is reached. Such models require intensive participation by the control staff in establishing task execution workload metrics.

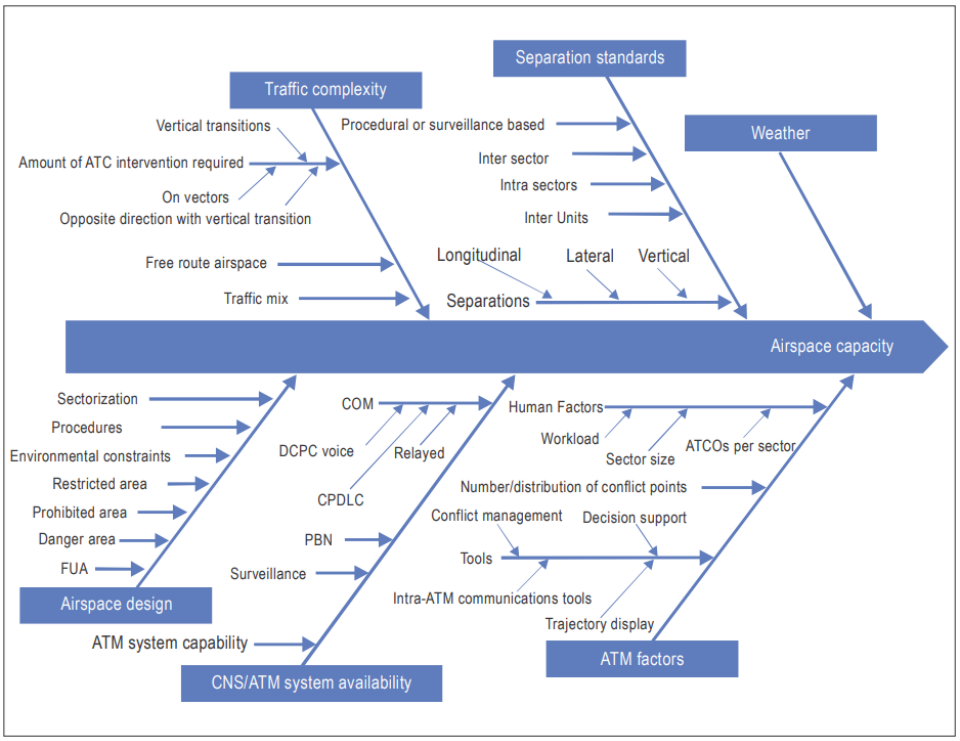


Figure II-3-1. Factors affecting airspace capacity

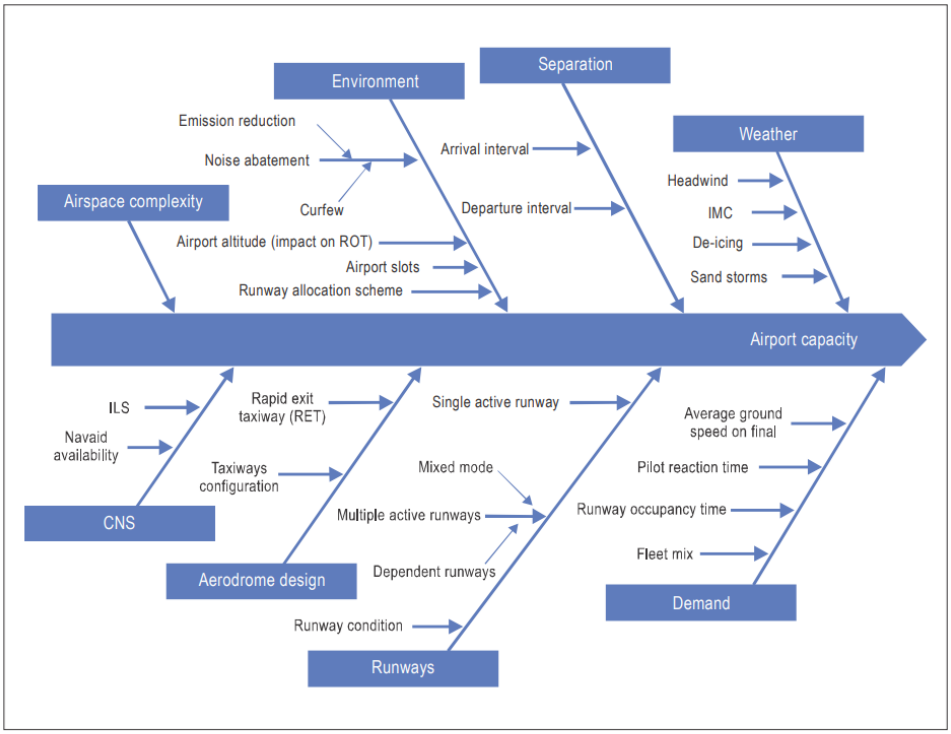


Figure II-3-2. Factors affecting airport capacity

1.5. DESCRIPTION OF THE CAPAN METHOD[5]

1.1.1. CAPAN Method Workload Thresholds

The CAPAN Method produces values representing the loading in the simulated control positions. These values are used in determining the sector capacities are crucial for the CAPAN Method.

The determination in modelling of qualitative values (heavy load, light load, etc.) from quantitative values (numbers) is always one of empirical experimentation and is a function of the “realism” or “fidelity” of the model being used to the real world that is being simulated. The thresholds used by the ATC Capacity Analyser have been validated and calibrated by several Real Time simulation studies.

The quantitative threshold values used and their corresponding qualitative interpretations are:

5 https://www.icao.int/EURNAT/Other%20Meetings%20Seminars%20and%20Workshops/Global%20ATFM%20Manual%20Coordination%20Team/TELCON%202%20on%201%20May%202012/explanation%20CAPAN.doc

Threshold	Interpretation	Recorded Working Time during 1 hour
70 % or above	Overload	42 minutes +
54 % - 69 %	Heavy Load	32 - 41 minutes
30 % - 53 %	Medium Load	18 - 31 minutes
18 % - 29%	Light Load	11 - 17 minutes
0 % - 17 %	Very Light Load	0 - 10 minutes

Figure 6-1 – Workload Thresholds

It is important to note that the ATC Capacity Analyser records those workloads associated with identifiable control tasks defined to the model. It does not for example, records a specific task for general radar surveillance of traffic within a sector, nor are recuperation times recorded. The 70% threshold corresponds to 42 minutes measured working time in one hour, leaving 18 minutes time available for other tasks not defined within the model and also for general recuperation.

…

Appendix II - Data Samples

Action	Execution time (sec)		
	GND	COO	AIR
VFR DEPARTURE			
Task: Flight data management			
Flight list check	2	5	5
Task: Procedural conflict detection			
Strip checks by VRP	2	5	5
RDR screen check	//	4	5
Task: Visual acquisition			
Visual acquisition	3	5	5
Task: Radio communications			
Fist comm (check in)	10	//	8
Taxi instructions/Take off clearance	8	//	6
Strip marking	20	//	10
VRP/RHP report	4	//	4
Instructions/traffic information	5	//	16
Task: Coordination			
Internal-external coordination	6	20	4
Info acquisition from AOIS	//	50	//
Assistance to VFR	//	//	15
RDR monitoring	//	5	5
VFR ARRIVAL (NO FPL)			
Inbound list check	2	//	3
Strip marking	5	15	8
Task: Procedural conflict detection			
Strip checks by VRP	2	3	3
RDR screen check	//	3	4
Task: Visual acquisition			
Visual acquisition	3	5	10
Task: Radio communications			
Fist comm (check in)	//	//	8
Taxi instructions/ ATZ entry clearance	5	//	5
VRP report	//	//	5
ATC clearance/altitude report	//	//	5
Aerodrome traffic circuit	//	//	18
Transferring to GND	//	//	8
Task: Coordination			
TWR/GND	3	//	3
External coord	//	25	//

Parking management	//	25	//
COO support to GND/TWR	//	3	//
Task: RDR			
Monitoring	//	3	5
Traffic info for converging A/C	//	//	20
VFR CROSSING			
Flight list check	//	2	3
Strip marking	//	//	8
Task: Procedural conflict detection			
Strip checks by VRP	//	2	4
RDR screen check	//	2	4
Task: Visual acquisition			
Visual acquisition	//	2	4
RDR screen check	//	4	8
Task: Radio communications			
Fist comm (check in)	//	//	3
ATZ entry clearance	//	//	15
ATC clearance/holding instruction	//	//	13
RWY/final crossing clearance	//	//	18
Check-out	//	//	7
Task: RDR			
Monitoring	//	3	3
Traffic info for converging A/C	//	//	20
Task: Coordination			
External coordination	//	31	//
IFR DEPARTURE			
Task: Flight data management			
Flight list check	3	//	3
EOBT and AO release	4	//	3
FLP reading	3	//	3
Task: Procedural conflict detection (GND)			
Conflicting push-back/taxing aircraft	5	//	2
Task: Visual acquisition			
Visual acquisition	//	2	4
Task: Coordination			
Internal-external coordination	10	43	5
Task: Radio communications			
Fist comm (check in)	6	//	4
Taxi-out instructions/Take off clearance	4	//	5

Taxi-in instructions	9	//	5
Check-out	5	//	4
Task: RDR			
Monitoring	//	//	5
IFR ARRIVAL			
Task: Flight data management			
Flight list check	2	2	2
Parking management	2	2	2
FLP reading	2	//	2
Task: Procedural conflict detection (GND)			
Conflicting push-back/taxing aircraft	5	//	2
Task: Visual acquisition			
Visual acquisition	2	//	3
Task: Radio communications			
Fist comm (check in)	3	//	5
Taxi-in instructions	4	//	5
Check-out	//	//	6
Task: Coordination			
Internal-external coordination	3	10	3
Task: RDR			
Monitoring	//	//	10