PRC workshop - "En route Capacity"
Summary of the Workshop
Tuesday 13 October 2020 (WEBEX) 10:00-16:00

Format: <u>Main items presented by the PRC</u>, main inputs from workshop, PRC takeaway :

Important note: the PRC invited several airlines to attend the workshop: Ryanair, Lufthansa, IAG and Turkish Airlines. Despite registrations from Ryanair, Lufthansa and Turkish Airlines, no airline representatives attended the workshop; therefore, the PRC did not hear any first-hand feedback from airspace users.

PRC Vision:

Capacity performance definition: meet user demands at peak times and locations; minimise restrictions on traffic flow; capacity must increase; improvement is reduction in impact of constraints imposed by service providers; any constraints imposed should be identified, highlighted, and reduced.

Inputs from workshop: None

PRC takeaway: definition as framed is good approach.

Process for improving capacity performance

- Definition of performance requirement;
- Identification of gap between actual situation and expectations;
- Precise identification of problem creating gap in performance;
- Development of plans to resolve / mitigate problem;
- Monitoring of progress in resolving problem.

Inputs from workshop:

General objectives understood, although not easy to master.

Interdependency with other KPAs and conflicting priorities. Cost efficiency can affect options for capacity.

Very good coordination between NM and all ANSPs. Current capacity planning process includes most points already.

PRC takeaway: Good approach to follow, in-line with operational practices, no counter-proposals.

Capacity Planning:

Identification of existing problems: Identify bottlenecks by looking at ATFM delays in specific geographical locations. Look at evolution of declared capacity against evolution of traffic demand to spot problem areas.

Inputs from workshop:

Limitations due to staffing issues can outweigh limitations in declared capacity.

Limited number of bottlenecks, focus on problem areas.

Bottlenecks already listed in NOP with mitigation measures.

> **PRC takeaway:** Good approach to follow. Room for improvement on highlighting specific bottleneck sectors, rather than ACCs, and on reporting specific actions required by ANSP to mitigate or resolve.

Resolution / mitigation of existing problems: Prioritise most constraining sectors; identify the real causes of the constraints (possible deployment issues).

Inputs from workshop:

Reported delays do not always show root causes of constraints - the ANSPs are aware of root causes.

Some problems cannot be solved quickly, need staff etc.

Deploying all licensed ATCOs on ops duties can boost capacity in short term.

> **PRC takeaway:** Important to focus on the real reasons for the capacity constraints and on the geographical locations where constraints actually occur. Transparency can be improved to ensure that airspace users and other stakeholders are aware of real reasons for capacity constraints.

Identification of current capacity requirement: Compare the peak demand against declared capacity at ACC level, sector family level, sector level. Consider also the demand suppressed by use of RAD or eNM measures in response to significant capacity shortfalls, and traffic that re-routed to avoid ATFM regulations.

Inputs from workshop:

NM measures the capacity baseline every year to see is capacity has been increased or not.

If traffic forecast is not good then it leads to bottlenecks elsewhere in network.

> **PRC takeaway:** No objections raised against PRC proposals.

Quantification of future capacity requirement: After identifying the correct level of demand, use traffic forecasts to quantify the expected traffic demand in the future, especially during peak periods. It is essential to recognise that traffic forecasts present a range of values not a single value, and they are based on wide areas with yearly aggregation.

Inputs from workshop:

Difficult to breakdown general forecasts to sector-family level – increasing granularity increase uncertainty.

NEST primary tool for capacity planning, NEST gives constrained demand.

ANSP- internal forecast department- -include users, military, past drivers / assumptions – adding local factors to STATFOR forecast.

Real unconstrained growth forecast might be useful for ANSPs in planning traffic but difficult to achieve as would use confidential information from airports and airlines.

Traffic forecasts are available in NEST down to sector level – not reliable.

NM provides capacity requirements at all 3 STATFOR levels according to SES target.

Capacity planning at sector level would not work – more options at ACC or cross border level.

Capacity planning at sector-level, which sector to open and when, is performed two months prior to day of operations.

ANSPs looking at contract situation between NM/ANSP and users, ANSP provides capacity according to demand information provided by users.

Users cannot provide specific information years in advance since they require high flexibility.

PRC takeaway: NM and ANSPs fully aware of limitations of forecasts. Not easy to translate generic forecasts into future traffic demand suitable for operational use. Historic data plays a significant role.

Buffers: The use of traffic forecasts to predict future demand brings with it an element of uncertainty. Capacity plans based on medium-term predicted growth should include suitable buffers to minimise any adverse effects from alternative traffic growth within the range window.

Inputs from workshop:

Planning capacity only on high scenario would drive costs.

Should ANSP always offer 100% of capacity, zero delay? – What would be cost?

PRC takeaway: ANSPs have to include buffers to cope with known/unknown uncertainty, but are obviously constrained by costs.

Control mechanisms: Being able to show airspace users (and other stakeholders) the expected benefits of capacity projects – particularly in resolving / mitigating bottlenecks, will provide assurance that the ANSP is addressing the operational deficiencies. Capacity plans provided by ANSPs should be more detailed allowing more transparency and greater ability for stakeholders to monitor progress. Stakeholders should be presented with the expected benefits of capacity projects and the means to determine if projects were successfully implemented.

Inputs from workshop:

Using annual ATFM delay is limited – component that ANSPs cannot influence.

Not all ATFM delays are problematic for passengers.

Potential to increase granularity in terms of operating times or geographical locations.

NOP shows what ANSPs do to provide capacity.

Sector occupancy not just entry counts can show capacity.

NM checks if planned measures have been implemented.

> **PRC takeaway:** It would be beneficial for ANSPS, and for other stakeholders, if there were more transparency provided about capacity planning and the implementation of capacity plans. Equating ANSP performance solely in terms of annual ATFM delay is not an effective means of capturing ANSP capacity performance. Less-efficient trajectories can also be an indication of lack of capacity performance.

Capacity Deployment

Declared capacity: Declared capacity allows a transparent means of monitoring ANSPs efforts to increase capacity in ATC sectors. It reflects 'normal operations' – some days can be better, some can be worse.

Inputs from workshop:

Nil

> **PRC takeaway:** Even though increasing capacity involves more than simply increasing declared capacity in individual sectors (e.g. improvements in deployment of sector configurations, ACC-wide projects and cross-border initiatives), monitoring the sector declared capacity clearly reflects the efforts of ANSPs to provide additional capacity, especially in constrained sectors.

Constraints to capacity: It is important to identify clearly any impediment that is preventing the deployment of capacity. Collapsing two or more sectors into one may reduce the number of ATCOs required to control traffic but it can also reduce the available capacity within the airspace – constraining available capacity.

Inputs from workshop:

Nil

> **PRC takeaway:** All ANSPs agreed that by collapsing sectors, an ANSP limits the level of capacity that is available for air traffic. The decision to operate collapsed sectors may have been taken months in advance based on information that was available at the time including staffing / rostering limitations.

Problems in identifying capacity constraints: the PRC has noted instances where ATFM delays are attributed to non-operational sectors which makes it impossible to ascertain where the capacity constraint actually occurred, therefore making it impossible to resolve. The PRC also found many instances where ATC capacity is listed as they cause of the delay but the regulation was applied at a lower rate than the declared capacity of the sector. ATFM delays are attributed to external causes such as adverse weather even though the ANSP is already reducing capacity due to internal reasons such as lack of available ATC staff to open the required sectors.

Inputs from workshop:

No consistency in application of reasons for delay.

Statistics are driven by regulations reasons: need to get better at analysing the delay reasons.

Regulation reasons are not used to identify root causes of constraints.

Staffing delay much more significant than recorded – guidelines allow this.

ANSP knows real reason for delays.

Final statistics (containing inconsistent reasons) are reported at very high level and need to be correct.

Post operations process introduced to improve data but not fed into statistics – another layer on top.

The future is having a robust post-ops process, the way to understand the root cause is by getting the ANSPs to explain it

We should find the root cause, through post operations analysis, not by expecting the operational people to put in the perfect rationale and reason.

Attribution of delays to ATC capacity or ATC staffing is dependent on how the ATCO roster is planned, and what happens subsequently. Sector opening (which and when) is planned 8 weeks in advance.

If there is no chance to plan additional staff (2 days before) then [ANSP] consider this as a capacity problem rather than a staffing problem, and follow guidelines in ATFCM handbook.

If (roster) plan, published weeks in advance, did not foresee a big peak of traffic, then it is not ATC staffing, it is the quality of your plan …, the traffic demand forecast might not be accurate.

Non-ops sectors were used internally within ANSPs to redistribute ATFM delays without penalising individual sectors / ACCs. It encourages cooperative behaviour.
[ANSP] uses same information as provided to NM re regulations

Challenging situation to get information from OPS room on what happened exactly when

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PRC takeaway: All attendees acknowledged that the recorded information regarding reasons for ATFM delay does not consistently reflect the root causes for the capacity constraint. It was generally agreed that a consistent robust process for attributing delay causes would be beneficial, even though there were differences of opinion on how best to achieve this.

The justification of the use of non-ops sectors indicates that there is a perception of ANSPs being punished by the current performance monitoring systems when trying to operate in a collaborative manner.

It will be impossible to make effective political or strategic decisions to improve the network, based on impartial and accurate evidence, if ANSPs are reticent / reluctant to attribute delays to certain delay causes.

Improving the identification of capacity constraints:
- ATC capacity delays should only be when the regulation level was equal to or greater than the level of declared capacity;
- all delays should be attributed to ANSP internal reasons unless no internal constraints apply;

- both large-scale and day-to-day capacity constraints due to military operations and training should be attributed to airspace management, and finally
- whenever additional capacity could be provided by de-collapsing a sector, then ATC staffing is a factor and should be identified as such.

Inputs from workshop:

Nil

PRC takeaway: No attendees indicated any conceptual objections to the rationale provided. However, when discussing actual operations, ANSPs reverted to defending 'business-as-usual', perhaps brought about by a reluctance to be seen in an unfavourable light. Even though the total amount of delays will not change in the slightest, the classification of the delays remains a very subjective, and therefore difficult, issue for ANSPs.

Adverse weather and military operations: The PRC outlined its findings that whilst adverse weather can certainly be a capacity constraint, it is significantly aggravated by other constraints such as staffing issues. ATC units operating at the limit of their capacity are generally the ones that produce the highest delays attributed to adverse weather. Conversely, the PRC notes that even in the core area, there are relatively few delays attributed to airspace management despite activation of TRA/TSA causing significant reductions in available capacity.

Inputs from workshop:

When combination of adverse weather and staffing [ANSP] prefer to attribute delay to weather rather than staffing.

Cross border weather initiative going on with EUROCONTROL.

[ANSPs] have a validation process agreed with their NSAs to review most penalising regulations and provide more information on weather and weather regulations.

Attributing delay due to military activity, the ATFM Operations Manual splits them in two regulations reasons: Airspace Management 'M' (small-scale military activity) and Special Event 'P' (Large multinational military exercises).

PRC takeaway: The ANSPs agreed that weather and military operations and training should be identified if they are the actual cause of capacity constraints. They also acknowledged that they can aggravate other capacity constraints, including those caused by the ANSP itself e.g. staffing. However, similar to the discussion over the rationale, the ANSPs prefer to identify weather instead of the underlying internal constraint.

Inconstant traffic demand: Dynamic traffic demand is the nature of the business. Traffic variation follows strong known patterns. How do ANSPs accommodate the ever-present traffic fluctuation? Do they add buffers for staffing, buffers for capacity? How flexible are ANSPs to deploy additional ATCOs if required?

Inputs from workshop:

[ANSP] have buffers for staffing levels and can even call office-staff ATCOs to help if needed.

Rostering rules should allow flexibility to deal with normal absence levels.

Even on the day of operations, there should be flexibility using good cooperation of staff to provide cover.

Key issue to reduce buffers is to increase predictability

Flexibility in staff planning.

Flexibility, traffic uncertainty, plays a role.

> **PRC takeaway:** Flexibility in operations requires ANSPs planning more ATCOs to be available than 'necessary' for the expected traffic demand.
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> ANSPs plan Staffing many weeks before the day of operations based on the demand information available at the time of planning. However, as noted by the ANSPs, the demand information weeks in advance is not reliable, which raises the question of the level of confidence that they can have in their staff planning being sufficient to handle the eventual traffic.

Cost of Capacity

Financial cost of capacity: Airspace users pay for all the costs of the ANSPs for capacity to be provided, both currently and for the provision of future capacity through capacity enhancement projects. Airspace users also incur huge costs if capacity is not provided – circa €1.7 billion in 2019.

Inputs from workshop:

Point to be emphasised, main cost of providing capacity is staff costs (circa 80%).

RP2, there is an incentive scheme, although it was not intended to cover costs of lack of capacity for airlines (different order of magnitude). However, incentive scheme has a contradiction. If ANSP does not provide enough capacity, it gets a penalty; if ANSP wants to hire more staff (to provide more capacity) it will cost more, but ANSP will not have as much because it has to pay a penalty.

Interesting to compare the cost of lack of capacity on the airspace users' side against the additional staffing cost on ANSP side to not have a lack of capacity.

Cost of delay from University of Westminster (€1.7 billion) will not include additional fuel costs for airlines avoiding capacity constraints by re-routing.

> **PRC takeaway:** Important to recall big picture where attempts to control specific costs can lead to much greater costs in other KPAs.

Capacity and ATCO hour productivity: Econometric of ATCO hour productivity does not necessarily align with capacity performance. ANSPs, especially constrained ANSPs, should also consider the cost (to the users) of delays or flight trajectories and not just ATCO hour productivity as an economic performance metric.

Inputs from workshop:

ANSPs not focussed on improving ATCO hour productivity. Focus is on trying to provide capacity at certain cost, with flight efficiency.

Staff shortage can lead to increase in productivity but that is not the intention.

ATCO hour productivity versus ATCO hour cost may be a good econometric for ANSPs.

PRC takeaway: Understanding that operational goal is to improve capacity performance not to improve ATCO hour productivity.

How safety affects capacity deployment: Collapsing sectors can save on ATCO resources and increase ATCO hour productivity. However, to avoid overload (a safety issue) sectors will need to de-collapse to handle increased traffic levels (without ATFM regulations). Even though the sector are handling more aggregated traffic, they may individually appear less productive.

Inputs from workshop:

Cannot imagine that ANSP would decide not to split a sector, even though it is required, to save money and end up with a safety issue.

At tactical level, where decision on whether or not to split sector, no money is saved at that point in time.

PRC takeaway: Operational focus is on providing capacity, not on limiting deployment of resources and capacity.

Current & Future Priorities: Will ANSPs focus on costs or on getting ready for increased demand? What do the airspace users wan the ANSP to focus on?

Inputs from workshop:

During charges negotiation, users and ANSPs decide the cost level at which a certain level of service will be provided. Performance to go with that service needs to be monitored.

When it comes to capacity, what is really interesting is to know what throughput can be achieved within a certain volume of airspace.

Once price is agreed then the operational performance must be monitored effectively.

Ultimately, if agreed level of performance is not achieved then there should be a reimbursement mechanism to compensate the users.

Performance scheme is not doing the job it was supposed to: otherwise, 2018 and 2019 situation would not have arisen.

There are interdependencies in different areas; the world is changing, conditions are changing.

The COVID crisis has put pressure much more back on costs even though last year it was not the case.

Dynamic environment does not really suit a regulation (performance scheme reference period) that lasts for 5 years.

PRC takeaway: Agreement that improved transparency will come from reporting on more than simply annual ATFM delay. Need to monitor operational performance, in all aspects of operations including planning and deployment.