

Research Workshop

Interdependencies within ATM: Time to reconsider the present for a more robust and flexible regulatory system in the future

29 October 2020;- On October 21-23 close to 250 participants from all over Europe attended the online research workshop “Interdependencies within ATM Performance in the Context of a Dynamic Environment”. The event was co-organized by BLUE MED FAB, FABEC, University of Bologna and German Aviation Research Society (GARS) and hosted by ENAV. The objective of the workshop was to investigate the impact of interdependencies within ATM performance traditionally measured in the areas of safety, capacity, environment and cost-efficiency. After two reference periods of the EU performance scheme, almost ten years of operational experience and in the light of the impact of the current pandemic and unprecedented volatility the European aviation is facing, the workshop initiated a discussion to reassess the existing performance scheme and to adapt it to the needs of European society and the market. High level representatives from States, EC, ANSPs, NSAs, NM, PRB, IFATSEA and IFATCA contributed to the workshop, as well as industry representatives, academics, researchers and operational delegates presenting overall 12 academic and practice-oriented subjects.

Paolo Simioni, BLUE MED FAB and CEO ENAV stated: *“This workshop raises the important question of interdependencies within ATM at the right moment in time. There are many factors to consider when examining the performance of an ANSP, but - even more - when we link all the different actors playing a role across the aviation domain. Aspects such as predictability, volatility, adaptability and resilience are becoming, in this tough time, increasingly important – and lead us to question the traditional ways of steering performance. It is urgent to work together to clearly describe and provide evidence of the strength and the nature of such relationships”.*

Klaus-Dieter Scheurle, Chairman FABEC CEO-Board and CEO DFS said: *“The current way of steering ATM performance has lost touch with reality. It is urgently needed to change the perspective from an intrinsic, production-oriented management to a stakeholder focused one – both from the perspective of European citizens, the economy, the airspace users and their passengers.”*

Throughout the discussion, it became evident that interdependencies within ATM performance areas are a reality and influence decision-making. Hence, there is a strong need to address them in an appropriate way. This need has become more pressing as the on-going challenge of extreme volatility in terms of traffic demand



and route preferences is forcing a change to more flexible and adaptive ways of working to ensure robust and resilient operations. To reach this ambitious objective, there is a strong need to firstly develop new metrics – for instance in the area of the environmental performance and arrival punctuality – and to use state-of-the art technologies such as big data and modern statistical methodologies. Secondly, this changed approach requires a single value chain approach oriented towards the needs of the key stakeholders and the general public.

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“Interdependency within ATM Performance in the Context of a Dynamic Environment”

Key Messages of the Workshop

The workshop raises the important question of interdependencies within ATM at the right moment in time as the pandemic forces us to reassess whether existing models, metrics and methodologies used are the right ones to manage ATM performance. Interdependencies within ATM performance areas are highly relevant and influence decision-making. There is a lesson learned that we have to reconsider parts of the performance scheme to make it flexible, adaptive, robust and resilient based on modern technologies and methods.

- The framework (traffic volatility, traffic predictability, airline's priorities) has a huge impact. Subsequently, there is a need to govern the wider system based on external requirements (needs from airspace users, passenger, citizens and European economy) and not – as today – from an intrinsic, production-oriented perspective (e.g. current use of capacity metrics instead of punctuality metrics, current use of a deviation from the great circle distance metric instead of an emissions metrics).
- Current regulation does not provide enough flexibility to act or react in a rapidly changing environment. Volatility in terms of time and space strongly influences the performance. Consequently, there is a need to reconcile the need for a stable regulatory framework (certainty in planning) with more flexible tools and targets and adapt them continuously in the light of overall developments.
- Little is known about interdependencies of Key Performance Areas - and worse even less about specific performance areas. More research based on modern methodologies (big data, AI, multidimensional methods etc.) is urgently needed to boost performance management in the Age of Digitization and to create a state-of-the-art ATM performance regulatory scheme.
- Optimization in one area may lead to deterioration in the performance of the overall system. A system-of-systems approach is needed.
- Cost-efficiency is in the focus as it is the basis for charges and can be measured rather precisely. Safety, Environment and Capacity are currently measured based on indicators coming from the past and developed even before the performance scheme regulations, and which are either not defined precisely or even negatively (delay or risks). This is a root cause why their links and trade-offs are not being considered adequately yet.
- It seems that most of information available relates to the trade-off between cost-efficiency and capacity.
- Although safety is the mission of ANS and the Green Deal is on the top of the political agenda there is a substantial lack of knowledge concerning metrics, methodologies and subsequently trade-offs with other key performance areas.
- The overall costs of the performance related activities have to be duly considered, both in terms of transaction cost and the cost of the regulatory system as such.
- The decision on which indicators are used is of huge importance as it identifies the focus areas being addressed and determines the behaviour of ANSPs and might either lead to a positive or a negative result.
- The wider SES regulatory framework (for instances the implementation of Common Projects) influences the outputs and has an impact on final performance of the system. Subsequently, it is important to evaluate trade-offs already in the development of new “solutions”.

- Quick-wins may lie in smaller technical achievements and have to be duly considered together with the large scale investment programmes which sometimes have not provided for the full expected benefits.
- Controversial results in benchmarking may be due to insufficiently robust modelling and unclear relationships between different indicators used.
- The performance scheme and its supporting detailed analysis shall not lead to micromanagement, which would be in contradiction with the performance-based principles.
- The topic of Interdependencies has to be addressed to deliver results in preparation for the RP4.