

DLR, Institute of Flight Guidance, hosts two International Conferences on ATM

Two significant ATM conferences at DLR Braunschweig were dedicated to the subject of airports, as these are considered to be the bottlenecks of future air transport:

- 5th ATM-Symposium 2005 „Airport – Bottleneck or Booster for future ATM“
- 2nd NASA-MIT-DLR Workshop on Surface Operations

5th ATM-Symposium 2005

The first event – jointly organized by DLR, EUROCONTROL and European Commission – was bringing together about 100 experts, project managers and decision makers from multiple European nations from policy, air transport industry and research in order to discuss the role of the airport in the overall air transport system.



In a first session the European ATM-policy was discussed, setting the frame for future airport research and development, followed by stakeholder views, highlighting some of the requirements, expectations and constraints for future solutions. Finally in two sessions potential solutions like A-SMGCS, CDM, xMAN-Approach, Turn-Around-Optimization, ADS-B / CPDLC, 4D-Management, Virtual Tower and a pre-tactical airport planning system were presented and discussed. The presentations can be found on the website:

atmsymposium.dlr.de



A suitable social programme gave people the opportunity to discuss the approaches more in detail and to intensify business relations. In a technical tour, the DLR simulation facilities like approach, tower, apron, cockpit and airport control centre and some of the previously presented applications were shown.

It became obvious during the symposium that the challenges of the future in this domain are clear, in a do-nothing scenario airports will remain the bottleneck of the ATM system. Further some very promising solutions, already at a good technology readiness level through intense collaborative research of the past, are becoming visible these days.

The collaboration in the big European programmes between all stakeholders from users defining the demand, researchers providing and maturing new ideas and manufacturers turning it into products is a key success factor to keep innovation at the necessary level to cope with growing traffic demand figures at European airports.

2nd NASA-MIT-DLR Workshop on Surface Operations

The second DLR-NASA-MIT joint workshop on Airport Surface Operations Management was held at DLR in Braunschweig, Germany in October 2005. Fourteen presentations were given, from as many research organizations and companies, working on airport surface tool development and research. The meeting supported the work of the FAA-EUROCONTROL Action Plan 21 – “Surface Operation Research – A-SMGCS and CDM”. To this end, the focus of the presentations were to familiarize attendees with the work going on both sides of the Atlantic from the high level structure and drivers of the research to the research work being conducted under these directives.



The presentations can be found on the website www.dlr.de/a-smgcs. After each presentation, a short discussion was held concerning the presented content. Some main results are given here:

Research Focus and Technical Key Issues

- The ICAO manual on A-SMGCS should be worked on, maybe through the AP21 group, to say more about performance, security and their relationship to technology.

- The Level of Safety to be ensured at different Airports has to be investigated more in detail. It is important to demonstrate to potential system users that the safety aspects of the tools have been considered.
- The environmental aspect has to be included in all studies and projects, it should be an integral part of future concepts and tools. Why are environmental metrics not routinely included in surface studies?
- The focus of research seems to be on surface efficiency. A focus on capacity generation without delay should be a focus.
- Definition of procedures is the core to bringing a benefit from a surface tool/ system.
- The landside of Airports must not be forgotten. Often bottlenecks occur on the land side as well. This is perhaps out of the scope of AP21, but is, nevertheless, an important subject.
- If there are tools, assessing the performance of an A-SMGCS and judging about potentially safety critical situations via some continuous off-line assessment, one should investigate possibilities to use these tools for automatic incident reporting as well.
- It is becoming more and more obvious, that A-SMGCS might serve many more purposes than it was originally intended for. A-SMGCS is transforming the ground phases of flights into an electronic form. Perhaps even some regulation is necessary e.g. to avoid mis-use.
- Surface research has to redefine what 'vision' is. If using a display is okay when conditions are IFR why is it not okay when conditions are VFR? The advantage of a surface display is that everyone involved with the surface can be looking at the same picture which will help them to coordinate and work together.
- The Virtual Tower concept needs high attention and should be further explored.
- For the management of super density airports the analogy will not be free flight but a highly regulated system.

Research Management and Research Process

- The Vision2020 is already 5 years old. Iteration after a certain period of time would be necessary to compare the goals with what was achieved and to revisit the goals of the Vision. Cooperation between SESAME and NGATS teams might be beneficial.
- NGATS is already looking to the overall Air Transport System, from Curb to Curb.
- Though there are some differences in the way airports are operated in US and in Europe, there is some commonality in the problems to be solved. Although the approaches to solve these issues are quite different between the two R&D communities, it is absolutely worthwhile to learn from each other.
- Where is the innovation in airport research? There is too much concern in research organizations and universities to gain funding and to produce tools and not enough focus on developing innovative ideas. So, surface research currently is very conservative. We should consider ideas such as multiple landings on a runway – look outside the box.

Similarities and Differences between US and EU Approaches

- Recent discussions with FAA have shown that A-SMGCS Level 1&2 corresponds clearly to ASDE-X. FAA is not so much interested in the apron area, but EUROCONTROL is.
- The transponder procedures developed by EUROCONTROL are applicable in Europe and in the US.
- The European approach is a more modular; the US approach seems to be more monolithic.
- In Europe we try to provide a platform for ATM improvements and we try to convince decision makers to buy-in. In the US it seems to be more the approach: Here is a problem and then a solution is generated and transferred into operation.
- The European approach to research is to define, plan & execute. The US approach is to write a wish list & get started.
- We will have a competition between tool providers in the future (*what is usually good for the customer in the end* – comment by the editor). A performance driven approach is needed.