Minutes of Meeting

Integration of A-SMGCS and DMAN, Workshop 02

Eurocontrol HQ Brussels, Meeting Room Mercure / Neptune, 12-13 June 2008
Organiser: Airport Operations & Environment (AOE) Division

1. Agenda

Day 1
10.00 Welcome and Introduction (*Klaus Haschke, EHQ)*
10.20 Summary of Eurocontrol's discussions with
Industry during ATC Global 2008 on DMAN/A-SMGCS integration
and CDM definitions (*Kim Silander, EHQ*)
10.40 Topic 1: De-icing
Questions in connection with de-icing *(Dr. Dietmar Böhme, DLR)*
Discussions
11.20 Coffee break
11.40 Handling of de-icing in Arlanda (*Jan-Olof Roos, LFV)*
Discussions
12.30 Lunch break
13.30 Importance of Sequencing
under Adverse Conditions (*Henk Hesselink, NLR)*
14.20 Topic 2: Target Based Behavior
Explaining the problem (*Eugene Tuinstra, EHQ)*
Discussions
16.00 Summary & End of Meeting Day 1 (*Klaus Haschke, EHQ)*

Day 2
10.00 Welcome and Introduction (*Klaus Haschke, EHQ)*
10.15 ASMAS Overview (*Paul Adamson, EHQ*)
10.30 Summary of Workshop 1 *(Kim Silander, EHQ)*
Summary of Workshop Day 1 (Eugene Tuinstra, EHQ)
11.00 Comments from the Industry / Discussions
11.30 Coffee break
11.50 Discussions on Definition and Characteristics of DMAN
DMAN definition (Kim Silander, EHQ)
A-CDM definition (Eugene Tuinstra, EHQ)
12.10 Comments from the Industry / Discussions
12.30 Lunch break
13.30 Requirements for TRS (*Klaus Haschke, EHQ)*
13.45 Plans for launching TRS for Validation (*Paul Adamson, EHQ)*
14.00 Wrap up (Klaus Haschke, EHQ)
14.30 End of Workshop

2. Participants

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3. Welcome and Introduction (Klaus Haschke, Eurocontrol)

Klaus Haschke (KH) opened the meeting at 10.00 hrs, welcomed all participants, presented the agenda and mentioned the objective for Day 1, which was:

- Exchange knowledge on DMAN and A-SMGCS, with special focus on de-icing
- Discuss Target Based Behavior from A-CDM and SESAR point of view

An introduction round of all the participants followed.

Copies of the Minutes of Meeting from WS1 of 22.02.08 and an information paper ”Integration of A-SMGCS Level 1 and DMAN” were made available for newcomers.

Note: All meeting minutes below end with discussion, where Q stands for Question; A stands for Answer; R stand for Remark.

4. Summary of Eurocontrol’s Discussions with the Industry (Kim Silander, Eurocontrol)

In March 2008 during the Global ATC exhibition in Amsterdam several industrial partners were visited at their stands in order to gain feedback on DMAN and A-SMGCS need for interface standards, as well as to inform them on Airport CDM as basic requirement for acronyms, procedures and exchange with CFMU Departure Planning Information (DPI) messages. Meetings were positive and informative. Industry reacted by strong presence on day 2 of this workshop.

Discussions:
Q: Why is AMAN not part of the roadmap in Eurocontrol? DMAN-AMAN seems to many industry and partners an important next step? Boundaries between DMAN-AMAN should be visualised and defined.
A: The rational for this approach is that to enable proper sequencing using mixed mode with tailored gaps you need absolute predictability of the outbound taxi flow at the runway. Hence DMAN and A-SMGCS is a first step that may identify how predictable the outbound really can be. This may give understanding of how much uncertainty needs to be buffered for AMAN-DMAN operations in future.
Q: Are buffer length at the runway holding considered? These should be shortened from an airline perspective.
A: The queues should be reduced, however from a capacity point of view one needs to feed the runway in order not to waste runway slots. Hence, depending on ATC policy and controller preference a minimum average amount of aircraft should be in the runway buffer to feed the throughput.
Q: DMAN and network objectives, is Industry aware of the network objectives in SESAR that can be met with DMAN?
A: That is why industry is involved in this workshop on day 2.

5. Questions in connection with De-icing (Dietmar Boehme, DLR)

Dietmar Boehme (DB) explained the consequences for taxi time estimations when de-icing is applied. Three types of de-icing are identified:

- At stand
- After long pushback
- Remote

De-icing at the stand is not affecting the taxi out time, but can give uncertainties to the TOBT prediction. A long pushback affects the taxi time, however is fairly predictable due to direct availability of the de-icing equipment. Remote de-icing is highly unpredictable due to the taxi time to the remote area, the uncertainty of the waiting time before de-icing due to other aircraft, and the complexity factor of the de-icing depending on weather conditions.

Important factors with de-icing are the holdover time, which is the time window where the aircraft must take-off before the effect of de-icing is lost. This holdover time is a crucial constraint for pilots, and is directly affecting safety.

Another factor with remote de-icing is that propeller and wide body aircraft need to shut down the engines during de-icing. However this may be a local issue for some airports, depending on their local procedures and laws.

Adding to the unpredictability of de-icing times is the fact that some aircraft in the sequence for the runway have remote de-icing whilst others have de-icing at gate or after push back. Also the required de-icing method and mixture, based on temperature, dew point and icing condition of the aircraft, results in uncertainties for the de-icing duration.

The impact of de-icing on sequencing is complex. Instable weather with changing de-icing demands from pilots has impact on the estimation of the duration, as well as the holdover time. Stable conditions however may prescribe more equal types of de-icing, and hence the process can be better estimated.

Estimations depend on whether the de-icing procedure becomes a new bottleneck. If this is the case due to resource limitations, the runway throughput will always suffice, and waiting times in runway buffers do not exist. However, when de-icing has enough resources available, the runway could become the bottleneck resulting in problems for de-iced flights with limited holdover time. Prioritisation may then be critical in sequence building, hence, intelligent de-icing and runway sequencing becomes essential. Impact of ATFM slots in combination with de-icing or adverse conditions may be a topic for investigation by the Airport CDM team, as they are responsible for initiating procedures based on their implementation manual.

De-icing may require a separate sequencing, where DMAN for TSAT and TTOT calculations depend on. However, the main question with de-icing is how to get the information of the duration correct; how to get holdover time into the system, and how to reason with uncertainties in the predicted values. It is agreed that today's figures are highly inaccurate, however it is also mentioned that a grip on the uncertainties is much desired to create more predictability in take-off times. And this happens to be also a hard requirement from the SESAR project and CFMU; to have more predictability under adverse conditions, such as de-icing weather.

Discussions:
R: ETOT today in Airport CDM means *Estimated* Take-Off Time, and not *Earliest* Take-Off Time.
R: It is essential to feed any planning system with de-icing capacity figures, which are output from the ground handler resource planning.
R: How to get accurate de-icing information from the ground handler is the key problem. How to get the information into the Airport CDM system is even more problematic. The same accounts for the accurate holdover time. Pilots will know this only after de-icing, and a revised prediction of the TTOT is then already very late to anticipate as the holdover time may be very short.
R: Information given by the ground handler may be inaccurate, and hence creates false expectations. To remain reliable no information or planning may be of more value then to make a poor planning which will be controversial. Poor planning may be especially the case in unstable weather situations with highly changing conditions and de-icing demands.
A: The situation of highly instable weather is at most 10-15 days per annum. For all other de-icing conditions it makes very well sense to gather information and feed planning systems, as stable de-icing is not problematic to predict and use in DMAN runway planning. Default values based on statistics are more right then using no values and leave everything as is today.
A: Fixed times for de-icing may not work, as different pilots have different demands of de-icing factors. This may affect planning strongly, as holdover times will vary. And a pilot will never risk take off outside their calculated holdover time as this is a critical safety issue. TTOT calculated by DMAN will not change the pilot's behaviour as safety is priority. However it may be a burden to know under stressed conditions.
A: DMAN enables a change in buffer times, in order to accommodate strict holdover times. It is however important to get the holdover time into the system, and this information

is not always known today. Usually only in the case the pilots have problems or are close to the end of the holdover time they communicate this to ATC. This may be the case when the runway is swept and de-iced aircraft are waiting to take-off.
R: Information on holdover time must always be reported by radio communication, as it is critical information which must be understood and confirmed by ATC directly to the pilot. Data link would not be an appropriate medium to enter this type of information, as it is safety critical and urgent information. Closed loop communication is essential for safety critical messages.
Q: When is DMAN planning the TSAT and TTOT sequences, when is information available to sequence?
A: Hours in advance already information is available, such as CTOT, EOBT, and from CFMU Flight Update Messages (FUMs) information on outstation take-off (ATOT) and hence Estimated Landing Time (ELDT). This information, coming from a well implemented Airport CDM Milestone process, is refining DMAN predictions and will become even more accurate after in-blocks, when TOBT updates are made by Ground Handler or Aircraft Operator, depending on progress in the turn-round process. Once TSAT is issued based on TOBT predictions and traffic constraints, the planning should become stable. After off blocks the controllers may deviate from the planned sequence if it is tactically required. Via surveillance or electronic strip inputs, the planning can be adjusted to the actual events that cause lost or gained time in the planning.
Q: Can the pilot provide accurate information about the hold over time and end of de-icing before commencing the actual de-icing?
A: Yes, when we know the mixture of de-icing fluid we can provide this information. This is normally known before we start de-icing.
R: A pilot proposed that before commencing de-icing, the pilot would provide ATC over radio with the expected de-icing and holdover time. This could to some extent be a mitigation to the uncertainty of remote de-icing situations since that can be fed to a DMAN/CDM process 5-10 minutes before the aircraft would leave the de-icing area.

6. Handling of De-icing in Arlanda (Jan-Olof Roos, LFV)

Jan-Olof Roos (JR) presents the current de-icing operations at Stockholm Airport Arlanda. He confirms the three types of de-icing at stand, after pushback, or remote, mentioned earlier by DB. All three de-icing situations are applicable at Arlanda, and extra constraints are present due to environmental restrictions for the 3rd RWY where all aircraft have to de-ice remotely. Another problem is the relocation of de-icing units in case of configuration change from remote to gate in the morning peak, which has negative impact on capacity. However it is basically only the remote de-icing that actually forms the main uncertainty in estimating taxi times. Stand de-icing or after pushback predictions can be made more accurately (which is 60-70% of total flights).

A detailed table of de-icing values is available which gives information of the expected duration for different de-icing complexities.

Arlanda expects to incorporate de-icing into the DMAN planning, since it is essential for the future mixed mode operations to get control over the runway sequence predictions. It is planned to go into mixed mode operations already in 2009.

Discussions:

Q: How can you know the de-icing complexity?
A: It is not known today, this is a problem still to be resolved!
Q: Is any study done to justify the de-icing duration values in the table?
A: No, these are estimates of experts, but validation is essential to get these values more accurate. Also, uncertainty margins must be determined to reason with uncertainty.
R: Today's de-icing rates are highly unpredictable due to squeezing of statistics to unrealistic de-icing times. This is mainly caused by the competition between companies on the airport where coordination would be needed but is avoided due to this competition factor.
R: Especially this competition is creating a big uncertainty factor that under adverse conditions should be mitigated. Measurements should be performed locally and delay codes adjusted to real causes. However often delay codes are not realistic and true causes may be covered up.
A: De-ice sequencing is influenced by many factors. Refuelling of the trucks can cause delay in de-icing, especially when all trucks are empty at the same time, causing a queue of trucks for refuelling. Information is not shared, which causes the aircraft queue to increases also.
R: Some airports have procedures to shut down engines during remote de-icing.
A: In that case extra start-up time is needed before aircraft re-commences taxi to runway. This is an additional 10 minutes for wide body aircraft.
R: Additional taxi time may be also needed for slow taxi speed due to icy taxi ways. Often corners of the taxi ways are not swept as well as main taxiways or runways. This time loss is putting extra pressure on pilots to achieve take off within the holdover time.
A: However such time can be foreseen by modification of the variable taxi times due to bad weather or other conditions.
Q: Have there been studies to justify remote de-icing versus stand de-icing?
A: Environmental rules make remote de-icing for 3rd RWY mandatory. Hence the remote platform is designed for large capacity de-icing in order to maintain high capacity runway operations during mixed mode runway use in 2009. Also mixed mode runway operations require less departures per runway, hence maximum capacity needed for mixed mode is lower then today's segregated runway use. DMAN is expected to deliver a reduced taxi time of 50% under de-icing conditions. That is what justifies the work on DMAN and the integration of de-icing planning. This 50% equals 4-5 Tons per hour of fuel reduction and hence environmental benefits.
Q: Is queuing included into VTT? How is the VTT build up?
A: Yes, VTT includes pushback and start-up manoeuvre, taxi movement time, runway buffer and line-up time. With de-icing, extra time and de-icing queues needs to be added which is discussed above.
R: Low visibility procedures reduce taxi speed substantially.
A: Hence, movement time should be increased. This can be done by adjusting the total taxi time for all aircraft, or just the taxi element that represents movement, so that longer taxi routes get corresponding extra taxi time.
R: It is of absolute importance that actual de-icing times are fed back into the planning, the same way as actual events on runway or off-blocks are fed back to update the planning and avoid drifting of plan versus reality. Robustness of planning starts with feeding it with actual events to measure time gains and losses.

7. Importance of Sequencing under Adverse Conditions (Henk Hesselink, NLR)

Henk Hesselink (HH) presented the history of DMAN work in NLR, which goes back almost ten years and consists of research projects and simulation experiments. The concept of DMAN is briefly explained, where flexible preference functions represent complex time constraints. With these preference functions every flight can be transformed into a flight profile and an algorithm can calculate the optimal take-off time for multiple flights with overlapping constraints.

Currently NLR is working with Amsterdam Airport Schiphol to determine procedures for the Airport CDM subproject Collaborative Pre-Departure Sequence Planning, which is similar to DMAN objectives of runway and off-block planning. A demonstrator tool is being developed to enable discussions by visualisation of scenarios and consequences of sequencing.

An example is shown from a stormy day at Schiphol, when only one active runway was used and queues were caused by different priorities of flights (regulated versus non-regulated). The demonstrator can also incorporate a Take-off Interval Rate, which could during adverse conditions increase the delays for non-regulated flights significantly.

Discussions:
Q: Which flights can be considered pre-departure sequenced?
A: With different views of the demonstrator the flights that are sequenced becomes visible. The demonstrator is organised in a flexible manner to show different perspectives, e.g. for different users.
Q: Why is TSAT frozen 15 minutes in advance?
A: This is similar to the Arlanda DMAN; a certain period of stability is needed. When the TSAT would still change dynamically, resource planners of different users would not be able to anticipate efficiently. At Schiphol this stability period is minimally 15 minutes for mainly the Ground Handlers to organise and anticipate. However, discussions at Schiphol are still on-going.
Q: How about de-icing at Schiphol?
A: Also still ongoing discussions, similar to this workshop.
Q: How does prioritisation and competition affect runway sequencing, when some airlines receive too much priority or benefits over other airlines? Will that generate legal conflicts in the future?
A: Legal issues should be avoided by using Airport CDM procedures, and moreover a Memorandum of Understanding between all partners. This can be done by objective and agreed measurement of actual and planned sequences, and evaluated on frequent basis with all partners. Goal is to improve the overall performance of an airport. It is the aim of the ANSP and all partners to have fewer delays and all aircraft operators benefit from more automation.

8. Target Based Behavior (Eugene Tuinstra, Eurocontrol)

Eugene Tuinstra (ET) presented the impact of Airport CDM and SESAR for pilots.
Especially for this and regarding the de-icing discussed above, Pilots (Marcel Flick and Joao Moutinho) and ground handler expert Caroline Schmeits were invited to the workshop

and their presence was much appreciated. They provided valuable insights and explanations.

The target based behavior presentation was conducted as a dialog between Eugene and Joao, with Joao and Marcel contributing the pilot's view. Airport partners mostly from ATC shared their thoughts which lead to an open discussion.

Discussions:
Q: What will the value be of a TOBT update by the pilot?
A: A pilot may encounter situations on board after doors closed, which may justify an update via radio or data link.
A: We may not forget the importance of the TSAT, being issued between 40 and 20 Minutes before EOBT. This is to establish the pre-departure sequence. Only in case of late TOBT updates, after aircraft being ready, these can be taken into account.
Q: How do we know that the Ground Handling Agent will provide an accurate TOBT? They don't want to be responsible for any delays for commercial reasons and so will be conservative in their TOBT updates.
A: It is true that Airlines do blame and/or fine ground Handling agents for delays. Also competition amongst them is responsible for 'better performance' on paper. So they will not be forced to review their resources. But as accurate TOBT input is providing benefits for the handler too, they are motivated to give quality information.
Q: Who should have the responsibility for sending TOBT updates? Airlines, Ground Handlers or pilots?
A: It was agreed that the ground handler has the most vital information for the accuracy of the updates, but there was a doubt on the honesty of these times. (See previous question) The Airlines are reluctant to give the authority of sending TOBT's to the handler. This is often because of lack of knowledge, and they think these updates are the same as DLY (delay) messages on their flight plan. A pilot would have a more vested interest in providing accurate TOBT since it directly affects his own aircraft. No conclusions can be made on which procedure (pilot involvement or not) would result in more reliable TOBT updates. This needs to be addressed in future A-CDM studies.
Q: Would the pilot change his behavior, for instance adjust taxi speed to meet the TTOT if this information would be made available?
A: The pilot could work towards TTOT to some extent if safety is not compromised, e.g. during low visibility, slippery taxiway etc. However, there is also a risk that pilots stress to meet TTOT could result in safety hazards. This needs to be studied more in future activities before any conclusions can be made.

R: Due to time constraints, other subjects like the linkage to SESAR could not be addressed.

The workshop was continued on Day 2 with additional representatives from the Industry.

The objective for Day 2 was:

- Inform Industry on operational needs regarding planning
- Outline of Eurocontrol's DMAN/A-SMGCS Validation activities 2008 - 2010

9. ASMAS Overview (Paul Adamson, Eurocontrol)

Paul Adamson (PA) provided an overview of the Eurocontrol mission, Airport Operations & Environment Division and ASMAS projects. Key activities of the project are

- Low Visibility situations (Stop Bars, Safety Bubbles, MLS trigger line)
- Level 2 Safety Nets (Lighting and Electronic Flight Strips)
- Low Cost Surveillance
- Vehicle Guidance/Navigation
- Automatic FOD detection
- Integration of DMAN and A-SMGCS
- Roadmap development
- Support of Implementation
- Runway Safety

More details can be found on the website of AOE.

10. Summary of Workshop 1 (Kim Silander, Eurocontrol)

Kim Silander (KS) elaborated on the workshop held on 22 February 2008 in Brussels. Aim then was to move forward to a common definition for DMAN, and to discuss three operational cases where sequencing is affected by uncertainties on the taxiways, and hence taxi time variations.

The first case, Variable Taxi Times by Dietmar Boehme (DLR) was one of the main subjects, which is the reason why one of today's topics, De-icing as main disturbance factor for taxi times, was put on the agenda. The second case, DMAN and guidance was presented by Ake Wall (LFV) who made the link with routing functions in the cockpit to enable more predictable taxi times. The third case, passing bays was investigated by Jason Atkins (Nottingham University), who came with findings that justified presence of flexible runway entries.
The outcome of the meeting was that another workshop would be needed to elaborate on De-icing and impact on taxi times. Also, industry would be invited to learn findings from the operational discussions. This was the justification for this second workshop.

Q: Why is this needed? Why do we need to stick to the sequence and this is something the controller can do better themselves?
R: The controller does not have to stick to the sequence but in future operations using mixed mode tailored gaps it might have a negative impact (if the gap needs to be increased or decreased as a result of the change) on either the arrival and departure flow. Maybe passing bays is something that mitigates this.

Q; But If I change a sequence between two aircrafts and both are medium what is the difference? A controller can much better judge what the best decision for a given situation is.

R: Correct, the controller should have the flexibility to do this. The system just sets the plan. But sometimes a change is between two aircraft that requires changes in the spacing during mixed mode operations. This impacts the arrival or departure flow and hence the predictability and stability during mixed mode operations using tailored gaps. This is also the reason why we do not focus on AMAM/DMAN with A-SMGCS at this stage of the project. This is really SESAR and out of scope for this activity.

Also note that DMAN is not going to sequence traffic tactically or give advisory on what routes etc to take. However it sets up a plan and then many mitigating solutions can be done to minimize the uncertainty. Some may be to improve planning data (VTT etc) and others may be something that may support controllers (routing or passing bays). Passing bays is a matter of concrete and DMAN is not making decisions on how to use them, that is entirely up to the controller.

Airport CDM was explained by Eugene Tuinstra (Eurocontrol) in order to put focus on the operational foundation for planning and sequencing.

11. Summary of Workshop Day 1 (Eugene Tuinstra, Eurocontrol)

For the participants who where not present on day 1, Eugene summarized the topics of day 1, details can be found above.

12. DMAN Definition (Kim Silander, Eurocontrol)

Kim Silander (KS) presented the definition of DMAN to the workshop. DMAN is a term used very frequently but its meaning differs. A reason for this might be that different airports take different constraints and preferences into account. Hence, also the boundaries differ between the various DMAN solutions. E.g. some airports consider TMA or ACC constraints due to traffic from adjacent airports, whilst others don't have a need to do that.

Studies have also found that some vendors consider the use of one DMAN for an airport with multiple runways whilst others have a DMAN per runway. The complexity with making a definition is that the systems, preferences, constraints and licensing today are quite different.

But to support a global definition there are some common denominators. All DMAN systems calculate runway sequence and a TTOT and TSAT (may differ if data is presented to controller or not) and all DMAN systems consider various preferences and constraints.

Therefore for this project Eurocontrol initially proposed the following DMAN definition:

"DMAN is a planning system to improve departure flows at airports by calculating the Target Take Off Times (TTOT) and Target Start-up Approval Times (TSAT) for departing traffic taking multiple constraints and preferences into account".

Discussions:
Q: A stakeholder proposed to amend the definition to make it more clear that it calculates a runway sequence. Can this be made?

R: This is a valid comment and we will amend proposal to reflect this. However then we should also mention the off-block sequence, as DMAN, as DMAN generates both.
Q: One stakeholder commented that TTOT actually is not used or presented to controllers and for this reason may only be a calculation step.
R: TTOT is one key abbreviation from CDM and have an importance for the future. Indeed the information may not be presented in all locations but it will have an important role for the ATM Network in SESAR. In Airport CDM the TTOT is the basis for CFMU to generate or modify CTOT slots.
Q: One Stakeholder commented that Wikipedia had a good and extensive definition of DMAN. Maybe that could be a good alternative.
R: The Wikipedia text was written by KS in December to raise the DMAN profile globally so indeed it is hard not to agree. The new definition is however a shorter one which also can fit the bill.

New proposal:
"DMAN is a planning system to improve departure flows at airports by calculating the Target Take Off Time (TTOT) and Target Start-up Approval Time (TSAT) for each flight, taking multiple constraints and preferences into account."

This definition would cover different DMANs using different constraints etc and would at least make it clear that the outcome of the planning tool is always a runway sequence proposal that contains TTOTs and TSATs.

13. A-CDM Definition (Eugene Tuinstra, Eurocontrol)

Eugene Tuinstra (ET) pointed out the relevance of Airport CDM as basis for implementation of DMAN with A-SMGCS. The procedure developed by Airport CDM is the operational pre-condition that allows information sharing and transparency among airport partners to be in place.

ET elaborated on the essence for Airport CDM to be implemented before DMAN implementation takes place. This is also in the interest of industrial parties, to pave the way for successful installation of DMAN.

The six Airport CDM concept elements are:

1. Information Sharing
2. Milestones Approach (TOBT updates in the turn-round process)
3. Variable Taxi Time
4. CDM in Adverse Conditions
5. Collaborate Pre-departure Sequencing (or DMAN)
6. Collaborate Management of Flight Updates (CFMU DPI message exchange)

The order of implementation of the Airport CDM concept elements is of key importance, as every element is an essential basis for the next element to function correctly. More details about these concept elements can be found in the Airport CDM Implementation Manual, on the website of Eurocontrol AOE division.

14. Requirements for TRS (Klaus Haschke, Eurocontrol)

A brief description about Eurocontrol's intention how to continue with the validation of A-SMGCS / DMAN integration was given.

The steps will be Master Plan, Simulations, Operational Trials, Safety and Human Factors Cases and Cost-Benefit Analysis to complete the Validation.

For Simulations and Operational Trials Eurocontrol would prefer a medium sized airport with peak-hour operations and a complex taxiway layout. At that airport A-SMGCS L1 should be in place and the airport should operate in line with CDM principles.
For simulations a generic airport could be used.

15. Plans for Launching TRS for Validation (Paul Adamson, Eurocontrol)

Eurocontrol plans to launch a TRS (or call for tender) for validation of the A-SMGCS/DMAN concept, subject to budget becoming available. Such a TRS may be released in late 2008 or in 2009 and the duration of the task was expected to be approximately 15 months.

16. Conclusion

The fact that the workshop was attended by a big number of stakeholders showed the huge interest in the subject of A-SMGCS / DMAN integration.

Valuable contributions were made and a lot of detailed information shared. The discussion on the two topics however did not always result in a common agreement and some items were left open. Especially on remote de-icing, queuing at remote de-icing stand, duration of de-icing process and accounting of holdover times, no solution was reached how accurate data could be provided for the DMAN.

Discussions on Target Based Behavior of pilots and ground handlers did not gain final results. Pilots request to be more involved in Airport CDM, and ground handler's competition and inconvenience to deliver accurate TOBT information, lead to a need for more discussions on planning and procedures, and potentially future Airport CDM studies.

For the DMAN a one sentence definition was found. Comments are welcomed.

Based on the results of all workshops an operational concept will be drafted, which is targeted for completion by the 3rd quarter 2008. A third workshop may be required for clarification or to discuss new issues. It is hoped that a TRS for validation of the concept could be launched in late 2008 or early 2009, depending on the required budget becoming available.

17. Actions

Nr.	Description	Responsible	Date
	Distribute Minutes and Presentations	Eurocontrol	30 June 2008
	Acceptance of the DMAN definition	Eurocontrol	31 July 2008
	Draft Operational Concept	Eurocontrol	31 August 2008
	Decision whether to call new Workshop	Eurocontrol	September 2008