



<b>TITAN</b>		
<b>Turnaround Integration in Trajectory And Network</b>		
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## Report on Local Workshops

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## Report on Local Workshops

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## EXECUTIVE SUMMARY

This deliverable presents the report on the Local Workshops in which TITAN (Turnaround Integration in Trajectory And Network) project results have been presented. When the project came to its end on the 30<sup>th</sup> of November 2012, it was proposed to the consortium to have a three-month extension to communicate the results of the project to stakeholder who were not able to attend the TITAN Final Workshop held in Palma de Mallorca.

These workshops were aiming at disseminating the technical work done during the 36 months duration of the project and presenting the main outcomes to the relevant stakeholders such as airlines, ground handlers, airport managers or other interested related entities.

The Local Workshops provided an insight on the following topics:

- An overview of the current situation and users' needs which were gathered and evaluated when defining the scope of the project.
- The Concept of Operations (ConOps) developed to meet the users' needs and requirements collected.
- The activities for the validation of the TITAN ConOps, which included gaming sessions and the use of the TITAN model, which was developed within the project to analyse via simulation different airport scenarios affecting the Target Off Block Time (TOBT).
- The TITAN Tool envisaged by the project as a demonstrator for the monitoring of the turnaround process by the different involved stakeholders in the specific case of missing passengers at boarding gate.
- A comprehensive Cost Benefit Analysis (CBA) for the implementation of the TITAN Tool at a generic airport.
- The integration of the TITAN Concept in the Air Transport System, as it will not be trivial in terms of complexity and effort but will need a change in institutional, general awareness and mindset areas.

The Local Workshops attracted a total of 42 qualified attendees demonstrating the industry's interest in the TITAN project results. Besides detailed discussions on the definition of terms (e.g. airside vs. landside) the feedback showed that TITAN managed achieving an important aim: further trustful collaboration of all stakeholders is shared as a prerequisite for improving the turnaround.



## 1. INTRODUCTION

### 1.1 Purpose

During the 3-month extension of the project, TITAN consortium aimed at disseminating the activities that took place during the entire project.

The present deliverable (D7.12) is the report on Local Workshops in which the TITAN results were presented to external stakeholders that could not attend the Final Workshop in Palma de Mallorca, on 21th November 2012 to look for their feedback. Those stakeholders included relevant actors for the turnaround process and for TITAN itself such as airlines, ground handlers, airport managers or other interested related entities (CDM representatives, for instance).

### 1.2 Intended Audience

This document is public and may be distributed freely, both within and outside the TITAN consortium.

### 1.3 Associated Documentation

[1] TITAN\_Public\_Deliverables at <http://www.titan-project.eu/index.php/library>

### 1.4 Abbreviations and Acronyms

A-CDM	Advanced CDM
ANSP	Air Navigation Service Provider
APOC	Airport Operations Centre
ATC	Air Traffic Control
CBA	Cost Benefit Analysis
CDM	Collaborative Decision Making
ConOps	Concept of Operations
E-OCVM	European Operational Concept Validation Methodology
IBT	In-Block Time
KPI	Key Performance Indicator
OBT	Off-Block Time
SESAR	Single European Sky ATM Research
TAM	Total Airport Management
TITAN	Turnaround Integration in Trajectory And Network



## 2. LOCAL WORKSHOPS

### 2.1 Objectives

The objective of the Local Workshops was to show to the external stakeholders the technical work developed by the TITAN consortium during the project (up to November 2012) in order to obtain their operational feedback on a potential implementation of the TITAN results.

These workshops helped attendees to understand the scope of the project, what the main outcomes of the project are and how the project partners managed to achieve them through specific presentations made by TITAN partners. A debate time was also planned in each session for feedback purposes.

### 2.2 Workshops Planning

The final location of those workshops was chosen based on those persons that have shown interest in our project results previously (attending to the 1<sup>st</sup> and/or 2<sup>nd</sup> workshop, accepting to be interviewed for CBA purposes etc.) but could not attend the Final Workshop as well as on TITAN partners' contacts.

The following workshops were agreed and held for dissemination purposes:

Place	Date
Munich	14 February 2013
Budapest	19 February 2013
Milan	21 February 2013
Cologne	25 February 2013
Brussels	28 February 2013

**Table 1. Workshops location and date**



### 3. MUNICH WORKSHOP

Munich Airport was the first European airport, where A-CDM was fully implemented (2007). With more than 5 years of experience on collaborative decision making procedures and integration with SESAR, Munich Airport was one of the most appropriate locations to conduct a workshop, where the TITAN consortium would have the opportunity to introduce the TITAN concept and the project results and get feedback from the target stakeholders.

The workshop target group consisted mostly of stakeholders from the airport side – operations and integration with A-CDM and SESAR – as well as some representatives from ATC (apron control) and ground handling side. The fact that the airport operator is in close cooperation with the main airline using the airport as network base (Lufthansa) and co-owns as well as makes exclusive use of one of the terminal buildings (T2) compensated for the lack in direct airline representatives.

The workshop was organised by RWTH Aachen University having as direct contact point with Munich Airport Mr. Christoph Schneider from the Department of Strategic Planning.

#### 3.1 Attendance list

The TITAN consortium was represented by INECO and RWTH Aachen University. Ten people attended the workshop as listed in Table 1.

Name	Company	Department
Jens Bartels	Flughafen München GmbH	Apron Control
Rudolf Donig	Aeroground	Project-, Process- and IT Management
Karina Huempfer	Flughafen München GmbH	IT Application Development Aviation
Peter Kanzler	Flughafen München GmbH	Apron Control
Johannes Knoeferle	Flughafen München GmbH	Airport Operations Management
Johannes Kreuzer	Flughafen München GmbH	IT Application Development Aviation
Michael Oberauer	Flughafen München GmbH	Apron Control
Frank Poetsch	Flughafen München GmbH	Central infrastructure, Traffic and Operational Planning
Marcus Rossbach	Flughafen München GmbH	Traffic and Infrastructure Planning
Christoph Schneider	Flughafen München GmbH	Strategic Planning
Michael Zaddach	Flughafen München GmbH	IT

Table 2. Munich Workshop Attendees List

#### 3.2 Workshop conduct

The workshop took place on 14.02.2013 from 13:30 to 17:30 at the headquarters of Munich Airport.

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A workshop agenda was set in advance (see Table 3). However, an interactive way of presenting the TITAN project and its results was followed that enabled discussions during the presentations and not just limited to the initially planned time slots.

Time Slot	Agenda Item	Presenter	Available at
13:30-13:45	General Overview	INECO	<a href="http://prezi.com/aannh0phzsyx/titan-general-overview/">http://prezi.com/aannh0phzsyx/titan-general-overview/</a>
13:45-14:00	Current Situation and User needs	RWTH Aachen	<a href="http://prezi.com/s5ikkzzqzbly/current-situation_users-needs/">http://prezi.com/s5ikkzzqzbly/current-situation_users-needs/</a>
14:00-15:00	TITAN Concept and Validation	INECO	<a href="http://prezi.com/xilg4ngt4h9t/concept-of-operations/">http://prezi.com/xilg4ngt4h9t/concept-of-operations/</a> <a href="http://prezi.com/18qmw4_btb-g/validation-of-the-concept/">http://prezi.com/18qmw4_btb-g/validation-of-the-concept/</a>
15:00-16:00	Discussion	-	-
16:00-16:30	TITAN Tool and CBA	RWTH Aachen	<a href="http://prezi.com/5tjed94xcehw/titan-tool/">http://prezi.com/5tjed94xcehw/titan-tool/</a> <a href="http://prezi.com/sqjzhr9ykkre/cba-of-titan-tool/">http://prezi.com/sqjzhr9ykkre/cba-of-titan-tool/</a>
16:30-17:00	Lessons Learned	All	<a href="http://prezi.com/ugxvcsty0of1/titan-lessons-learn/">http://prezi.com/ugxvcsty0of1/titan-lessons-learn/</a>
17:00-17:30	Discussion	-	-

**Table 3. Munich Workshop Agenda**

The workshop began with the “General Overview” presentation held by INECO. A short description of the projects and its objectives as well as the project consortium was given. At this point an important issue was raised by the audience pointing out the lack of consortium partners stemming from the operations side. It was explained that this is to attribute to the fact that such partners are usually busy with daily operations and do not see any benefit from the participation in such research projects and so it was difficult to convince them to participate in TITAN too.

RWTH took over by presenting the results of the analysis of the current situation and users’ needs. Useful feedback was received during this presentation which focused on what stakeholders need and what they think the problems during today’s turnaround processes are. Regarding the first part of the presentation (current situation) the first question raised had to do with the exact time span of the turnaround process, as some stakeholders consider it to begin when the aircraft lands and end when it takes off; in our case it was explained that the turnaround is considered to be the sum of all processes taking place between in and off block time. As a follow-up question it was asked whether TITAN focuses on the critical path of the turnaround process. The answer to this question was negative, as something like that would significantly limit the project’s spectrum. During a short discussion with attendees directly involved in the implementation of A-CDM in Munich Airport, it was made clear that the airport has a highly integrated view of what is happening there every single moment. To make this feasible they have defined milestones additional to those of A-CDM. By this means, the airport is getting connected through A-CDM to the network, an approach significantly differentiated from that used in USA, where collaborative decision making philosophy focuses on the ANSP and the airspace side. Furthermore, problems during the turnaround process may arise and so the efficiency of a future TITAN system may be jeopardised due to



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collaboration/communication difficulties between ground handlers and aircraft operators in cases where the first stakeholder is responsible for the whole turnaround process as the second one is home-based on another airport. With respect to the second part of the presentation (users' needs), a question was raised regarding the stage up to which validation according to E-OCVM was conducted. The answer was up to phase 2 (V2). Many questions focused, however, on the expected added value of the information that TITAN is planned to provide – mainly concerning the off-airport processes – asking if providing all these information is feasible and necessary; as an example Munich airport is taking full advantage of A-CDM implementation and reaches high performance levels although not having any special information on passenger and baggage processes. TITAN, however, is aiming to provide all this information considered to be necessary for supporting involved stakeholders by collaborative decision making and providing them an actual and reliable common situation awareness during the aircraft turnaround process.

Before the planned discussion/coffee break INECO made the presentation of the TITAN concept of operations and the validation activities results. No major questions were raised by the audience. During a short discussion it was explained by the representatives of A-CDM implementation at Munich Airport that validation activities took place before implementation to provide a reliable comparison basis for estimating the benefits from its implementation. More than 20 KPIs were defined and reports are produced on monthly basis. Historical data are assessed and regular meetings with the different stakeholders involved are organised to inform them on the results of A-CDM implementation.

After the break RWTH Aachen took over with the presentation of the TITAN tool and the results of the CBA analysis. One main concern according to the attendees is whether gathering all the data, on which the tool is expected to inform, will be made feasible. For instance, information on the exact start/completion times of particular turnaround sub-processes (such as cleaning, catering etc.) may not be available, for which the completion between ground handlers or flights serviced by a single ground handler may be responsible. Another reason, for which real time provision of such information may be difficult, is that the person called to provide it may be reluctant to do so as he may understand this as an indirect measure of controlling his actions and activities. Another issue raised during the tool presentation was that it does not promote a collaborative decision making approach, as it is for example planned for use mainly by airlines so that they can better coordinate their actions and not contribute to more efficient airport operations. According to the attendees a common post-processing of information and so a common solution is missing. Service-level agreements should be established and information provision must not be used as a measure of controlling and penalizing inefficient working. Moreover, a single management body responsible for administrating the whole airport system, what is currently missing in the developed tool and concept, is needed so that the missing “collaborative” link is restored; this is to differentiate from the APOC. The consortium representatives agreed with most of these comments, stating, however, that the tool is designed to optimize single turnarounds and provide a common situational awareness on them to all involved stakeholders as a means of contributing to the overall improvement of airport operations. Moreover, the CDM is ensured thanks to this common situational awareness provided by the data sharing. TITAN is in this context to be seen as a system additional to A-CDM. Last but not least, it was pointed out by the attendees involved in SESAR activities at Munich airport that any overlapping with SESAR information should be avoided. The answer here was that TITAN was from its beginning in alignment and close cooperation with SESAR, so that it was decided that on the basis of an accurate IBT provided by SESAR, TITAN is providing back an accurate OBT. With respect to the second part of the presentation (CBA analysis) no particular comments were made and for further and more detailed information on the exact assumptions and results the consortium representatives made a reference to the corresponding deliverable.



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Due to the fact that all previous presentations lasted longer than initially planned and detailed discussions were conducted during them, the last presentation (lessons learnt) was skipped as most issues summarized there were discussed in the previous ones.

The workshop was completed as initially planned around 17:30 thanking all participants for their feedback that can help the TITAN consortium when assessing the project results or preparing next research steps on this area.



## 4. BUDAPEST WORKSHOP

Budapest Airport does not have A-CDM implemented. However, HOCHTIEF Concessions has developed a Total Airport Management (TAM) master plan for the airport with the ambitious objectives of boosting the airport's business efficiency and making better use of existing capacities. In 2009, Budapest Airport acquired Airport and Ground Handling Resource Management System (Complete GroundStar Suite INFORM) for a further roll-out at Budapest Airport.

The workshop was organised by Slot Consulting having direct contact points with the Hungarian stakeholders.

### 4.1 Attendance list

The TITAN consortium was represented by Slot Consulting, INECO, RWTH Aachen University and Ecorys. Five people attended the workshop as listed in Table 4.

Name	Company
Andras Bedo	Best Reisen Airport Ltd
Laszlo Pajger	Ryanair BUD
Peter Szaloky	HungaroControl
Laszlo Tereh	ELAL
Zoltan Ormandi	Budapest Airport

Table 4. Budapest Workshop Attendees List

### 4.2 Workshop conduct

The workshop took place on 19.02.2013 from 10:00 to 14:00 at the headquarters of Budapest Airport Hotel. A workshop agenda was set in advance (see Table 2).

Time Slot	Agenda Item	Presenter	Available at
10:00-10:15	General Overview	INECO	<a href="http://prezi.com/aannh0phzsyx/titan-general-overview/">http://prezi.com/aannh0phzsyx/titan-general-overview/</a>
10:15-10:30	Current Situation and User needs	Ecorys	<a href="http://prezi.com/s5ikkzzqzbly/current-situation-users-needs/">http://prezi.com/s5ikkzzqzbly/current-situation-users-needs/</a>
10:30-11:30	TITAN Concept and Validation	INECO	<a href="http://prezi.com/xilq4ngt4h9t/concept-of-operations/">http://prezi.com/xilq4ngt4h9t/concept-of-operations/</a> <a href="http://prezi.com/18qmw4_btb-g/validation-of-the-concept/">http://prezi.com/18qmw4_btb-g/validation-of-the-concept/</a>
11:30-12:30	Discussion	-	-
12:30-12:45	TITAN Tool	RWTH Aachen	<a href="http://prezi.com/5tjed94xcehw/titan-tool/">http://prezi.com/5tjed94xcehw/titan-tool/</a>

Time Slot	Agenda Item	Presenter	Available at
12:45-13:00	CBA	Ecorys	<a href="http://prezi.com/sqjzhr9ykkre/cba-of-titan-tool/">http://prezi.com/sqjzhr9ykkre/cba-of-titan-tool/</a>
13:00-13:30	Lessons Learned	INECO	<a href="http://prezi.com/ugxvcsty0of1/titan-lessons-learnt/">http://prezi.com/ugxvcsty0of1/titan-lessons-learnt/</a>
13:30-14:00	Discussion and lunch	-	-

**Table 5. Munich Workshop Agenda**

Due to operational constraints of the audience, the workshop presentations ended at 12:30 while the discussions were held during the lunch break.

The workshop began with the “General Overview” presentation held by INECO. A short description of the projects and its objectives as well as the project consortium was given.

Secondly, Current Situation and User needs were presented by Ecorys. A comment was made from the audience that most of the focus should be put on the handling agencies because they are the actor most involved in the turnaround. Additionally, a comment was made from the audience that most of the main cause of the current delays in Budapest is not the turnaround itself but the CFMU slot allocation. They feel this is a crucial point of turnaround (network view).

After the presentation of the TITAN Concept, a discussion was held on the problems with the legacy of providing personal data. Passengers are the main problem: they are difficult to control and tracking them 100% would cause legal problems. Nowadays we trust in the goodness of passengers that want to be informed via the cellular phones. A question was asked from the audience about the relation of TITAN with CDM. It was explained that CDM and TITAN share the principles and that TITAN adds new milestones to CDM.

Subsequently, a presentation of the validation was held. The audience raised the questions about implementation: what is shown to the user and how? A comment was made that the implementation is not an easy task. There were no major question to the TITAN Tool and the CBA.

Finally, INECO presented the lessons learnt.

A discussion was continued during lunch. One of the most interesting points was raised by a representative of Ryanair who explained that their company has a very specific business model under which the duration of the aircraft turnaround is 25 min. This is a requirement the airline poses to the ground handlers and in fact this is the most important issue for the airline. For example a missing passenger does not pose a threat to the delay in the turnaround of the aircraft as the aircraft will not wait for the missing passenger. A discussion was held on the developments in the Hungarian airline business after the fall of Maleev and possible scenarios for future.



## 5. MILAN WORKSHOP

Milan or Milano is the second largest city in Italy and the capital of Lombardy. Is the main industrial, commercial and financial centre of Italy and is well known to host several international events and fairs.

Milan is served by several airports and one of them is Malpensa Airport. The airport is located in the province of Varese, 50km at the NW of Milan, and there are two main terminals.

The A-CDM project started at Malpensa Airport in February 2003 and has been successfully developing until present day. A CDM tool, incorporating VTT, has been developed according to the Eurocontrol documentation in-house by the airport operator, in close collaboration with Enav (atc) and Sea handling.

The tool have been presented to us after the workshop demonstrating the enormous quantity of data it is handling on-line (live) with the remark that this amount of information sometimes too much. Similar concern was expressed during the discussion of the TITAN tool during the workshop.

### 5.1 Attendance list

The workshop target group consisted mostly of stakeholders from the airport side – operations and integration with A-CDM – as well as some representatives from ATC (apron control) and ground handling side.

The TITAN consortium was represented by Slot Consulting, Ineco and RWTH Aachen University. Fourteen people attended the workshop as listed in Table 6.

Name	Company
Paolo Sordi	SEA
Marcos Moura	Users Committee
Antonio Marenatti	Emirates
Loredana Lualai	Turkish Airlines
Daniele Mascheroni	Fedex
Fabio Mazzucchelli	Fedex
Giacomo Gremi	I-Sec International
Alessandra Diclemente	American Airlines
Patricia Mainini	Alitalia
Stefania Durante	SEA
Gianfrancesco Poddie	SEA Handling
Paola Turri	SEA Handling
Umberto Rigamondi	Brussels Airlines
Gerda Anneline Aracino	Lufthansa

Table 6. Milan Workshop Attendees List



## 5.2 Workshop conduct

The workshop took place on 21.02.2013 from 09:00 to 13:00 at Malpensa Airport Terminal 1 at "Malpensa INFO CENTER"

A workshop agenda was set in advance (see Table 2). However, an interactive way of presenting the TITAN project and its results was followed that enabled discussions during the presentations and not just limited to the initially planned time slots.

Time Slot	Agenda Item	Presenter
09:00	General Overview TITAN Project	INECO
09:15	User needs and current situation	SLOT
09:30	TITAN Concept and Validation	INECO
10:30	Discussion	
11:00	Coffee Break	
11:15	TITAN Tool and CBA	RWTH
11:45	Lessons Learnt	ALL
12:15	Discussion	
13:00	End	

Table 7. Milan Workshop Agenda

The workshop began with the "General Overview" presentation held by INECO. A short description of the projects and its objectives as well as the project consortium was given.

SLOT took over by presenting the results of the analysis of the current situation and users' needs.

Before the planned discussion INECO made the presentation of the TITAN concept of operations and the validation activities results. During the discussion the question that if is TITAN a competitor of A-CDM was rose. It was explained that the consortium took into consideration the A-CDM and implemented the mail stone approach from it. However the goal was to gain more information on the turnaround process itself and provide a more detailed view of it thus enhancing the CDM. Therefore it is decided to consider the turnaround process from the moment of in-block to the off-block time and introduce new milestones in this range in the same time defining the interdependencies between the processes.

Another issue was the flexibility of the model. The differences in low-cost operations and the cargo operations should be also implemented into the tool. It was explained that the model has certain flexibility and that the different types of operations could be easily accommodated.

Then RWTH Aachen took over with the presentation of the TITAN tool and the results of the CBA analysis. One main concern according to the attendees is how to collect all those data required by the model. It was explained that the TITAN tool would work on any platform so there is no difficulty in introducing mobile devices as input terminals. Another way of collecting information is to connect to the stakeholders system and collect certain information from those systems. Another concern was that having too much information is sometimes a drawback. It is complicated to collect it and coordinate it. It was explained that this issue was taken into account in the 2nd version of the



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TITAN Concept as several levels of information were created. Therefore users can subscribe to the information they really need and that the human interface can be also shaped in a way to have different level of details on the screen according to the user needs. Furthermore the TITAN tool is designed in a way that the user do not need to monitor and evaluate the information constantly as in case of process disruption a warning is issued to the interested stakeholders indicating the process that needs intervention.

The attendees also were interested if the weather information is taken into consideration. It was explained that the effects of the weather can be simulated indirectly via its effects on the operation (i.e. delays).

As one of the TITAN examples was the late arrival of the passenger to the boarding gate the attendees has expressed that due to the high prices on the baggage new problems developed. The passengers are reluctant to pay extra for the baggage and therefore trying to have as much hand luggage as possible which results in the situation when not all the hand luggage can be accommodated in cabin, therefore some of it have to be relocated to the baggage hold of the aircraft at the last moment causing delays. It was explained that although it was not considered initially by the TITAN model due to the flexibility of the model it could be incorporated.

Question of differentiation between different handling agents according their different process times was mentioned and it was explained that such distinction is available in TITAN.

The attendees asked if the crew is taken into consideration and received a positive answer.

It was noted by the attendees that a practical example of the differences between TITAN and non-TITAN would have been useful (e.g. information flow and decision process for a lost passenger scenario).

Question of IATA delay code implementation was risen answer to which was negative.

The attendees were curious if they could have duplicated info in the system and, if so, how it is treated (e.g. arrival time provided by the ANSP and the Airline (SIT)). It was explained that the TITAN Tool could be configured to show both, however it was considered that it is more useful to use the most accurate one. For example during the approach the most accurate estimated landing time is available from the ANSP's system while at beginning of the flight it might be from different source.

The attendees commented that there must be a standardised (commonly agreed) set of definitions. E.g. off block time is understood by the airline as the time when the doors are closed and the break is released, while IATA defines it as the time when the wheels start to spin. They have also mentioned that the cost distribution is something to be discussed in depth and that sometimes airports contract ground handlers based on their cost rather than their performance (statistics on delays).

Due to the fact that all previous presentations lasted longer than initially planned and detailed discussions were conducted during them, the last presentation (lessons learnt) was skipped as most issues summarized there were discussed in the previous ones.

The workshop was completed as initially planned around 13:00 thanking all participants for their feedback that can help the TITAN consortium when assessing the project results or preparing next research steps on this area.

After the official end of the workshop Paolo Sordi has presented the flight information display system that currently used at the Malpensa airport.

## 6. COLOGNE WORKSHOP

The TITAN Workshop in Cologne was held on 25 February at Köln-Bonn airport. The purpose of the workshop was to inform managers and experts at the airport of the achievements of the TITAN project and to get feedback from them on how they saw the potential of TITAN being of use to them in their local environment.

The workshop was organised by RWTH Aachen University having direct contact points with Köln-Bonn airport.

### 6.1 Attendance list

The TITAN Consortium was represented by Ecorys, RWTH Aachen University and BluSky.

The list of local participants is given in the next table.

Name	Company	Department
Andreas Fuge	Flughafen Köln/Bonn GmbH	Director Operations & Traffic
Alexandra Wissen	Flughafen Köln/Bonn GmbH	Manager Traffic Department
Daniel Müller	Flughafen Köln/Bonn GmbH	Operations Manager Traffic Department
Karl-Heinz Wildschrei	Flughafen Köln/Bonn GmbH	Employee Traffic Department/Apron Controller
Dr.-Ing. Stefan Theiss	German Aerospace Center (DLR) - Flughafen Köln/Bonn GmbH	Institute of Air Transport and Airport Research

**Table 8. Cologne Workshop Attendees List**

### 6.2 Workshop conduct

The workshop took place on 25.02.2013 from 10:00 to 14:00 at the headquarters of Brussels Airport. Agenda items were set in advance (see Table 8).

Time Slot	Agenda Item	Presenter	Available at
10:00	General Overview	INECO	<a href="http://prezi.com/aannh0phzsyx/titan-general-overview/">http://prezi.com/aannh0phzsyx/titan-general-overview/</a>
	Current Situation and User needs	Ecorys	<a href="http://prezi.com/s5ikkzzqzbly/current-situation_users-needs/">http://prezi.com/s5ikkzzqzbly/current-situation_users-needs/</a>
	TITAN Concept and Validation	BluSky INECO	<a href="http://prezi.com/xilg4ngt4h9t/concept-of-operations/">http://prezi.com/xilg4ngt4h9t/concept-of-operations/</a> <a href="http://prezi.com/18gmw4_btb-g/validation-of-the-concept/">http://prezi.com/18gmw4_btb-g/validation-of-the-concept/</a>
	Discussion	-	-
	TITAN Tool	Jeppesen	<a href="http://prezi.com/5tjed94xcehw/titan-tool/">http://prezi.com/5tjed94xcehw/titan-tool/</a>



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Time Slot	Agenda Item	Presenter	Available at
	CBA	Ecorys	<a href="http://prezi.com/sqizhr9ykkre/cba-of-titan-tool/">http://prezi.com/sqizhr9ykkre/cba-of-titan-tool/</a>
	Lessons Learned	BluSky	<a href="http://prezi.com/uqxvcsty0of1/titan-lessons-learnt/">http://prezi.com/uqxvcsty0of1/titan-lessons-learnt/</a>
14:00	Discussion	-	-

Köln-Bonn airport is special in the sense that although the airport is in the course of development of a project focused on improving winter services, they do not as yet have a CDM project as such. However, the airport representatives were fully conversant with A-CDM and hence the TITAN baseline did not have to be explained as such. It was clear that this airport was suffering from all the lack of communications between the various partners and the common situational awareness which had led to the definition of the CDM concept in the first place. Although the airport does talk to the two main users of the airport, UPS and Germanwings, this coordination does not stretch much further than the airlines providing the airport with their requirements for how they want their aircraft parked. Real time exchange of information is almost non-existent.

Obviously, when an airport is still operating in a pre-A-CDM phase, talking about something like TITAN, which builds heavily on the availability of A-CDM, may sound anachronistic. However, it became clear in the discussions that this situation can also be seen as an opportunity where A-CDM implementation can eventually be combined with elements of TITAN from the ground up.

The non-technical challenges of TITAN were discussed at length. As an example of the problems to come once more extensive data sharing was put on the agenda the situation with the current Meteo service provider was mentioned. Apparently that private company involved is very reluctant to share any information, they insist on all data being acquired via their web-site which of course is a revenue source for the provider. The TITAN consortium explained that this kind of problem was well known and that it had to be solved primarily by the culture change aspect of CDM. It was also important to show those partners reluctant to sign up that there are potential benefits for them also.

The participants noted with interest the information provided and said that they will consider the TITAN results when a proper A-CDM project is initiated.

One of the raised questions concerned the availability of the TITAN Tool. The TITAN consortium explained that within the project only a demonstrator was built and saleable products are yet to be created by the partner responsible for the Tool development.

Last, one of the important observations concerned the fact that it was not always clear from the presentations how the collaborative aspect of TITAN was being realized. Partners highlighted the fact that this collaboration was in fact inherent in the services and the way end-user applications would be built. However, this is something that should be remembered in future projects.



## 7. BRUSSELS WORKSHOP

Brussels Airport has A-CDM implemented since 2010, being one of the pioneer airports which implement such a concept. Their first aim when implementing A-CDM was to increase punctuality while reducing the long queues of departing aircraft waiting at holding points. As one of TITAN objectives is also related with efficiency, their expectation was focused on the added benefits TITAN will bring upon A-CDM.

EUROCONTROL staff was also invited as they play an important role in SESAR WP8 dealing with the airport data modelling and performance measurements.

The workshop was organised by BluSky and Ineco having direct contact points with the Brussels CDM group and EUROCONTROL respectively.

### 7.1 Attendance list

The TITAN Consortium was represented by Jeppesen, BluSky, Ecorys and Ineco. Seven people attended the workshop as listed in Table 7.

Name	Company	Department
Kris de Bolle	The Brussels Airport Company	Operations Data Management
Philip Autekie	The Brussels Airport Company	Operations
Kathleen Vereecken	The Brussels Airport Company	A-CDM BRU/EBBR
Karin de Rademaeker	Aviapartner	Airside Services
Warwick Allan	Northrop Grumman	Airport Systems
Walter van Hamme	EUROCONTROL	Airport Data
Bruno Desart	EUROCONTROL	Single Sky

Table 9. Brussels Workshop Attendees List

### 7.2 Workshop conduct

The workshop took place on 28.02.2013 from 13:00 to 17:00 at the headquarters of Brussels Airport. Agenda items were set in advance (see Table 8).

Time Slot	Agenda Item	Presenter	Available at
13:00	General Overview	INECO	<a href="http://prezi.com/aannh0phzsyx/titan-general-overview/">http://prezi.com/aannh0phzsyx/titan-general-overview/</a>
	Current Situation and User needs	Ecorys	<a href="http://prezi.com/s5ikkzzqzbly/current-situation_users-needs/">http://prezi.com/s5ikkzzqzbly/current-situation_users-needs/</a>
	TITAN Concept and Validation	BluSky INECO	<a href="http://prezi.com/xilg4ngt4h9t/concept-of-operations/">http://prezi.com/xilg4ngt4h9t/concept-of-operations/</a>

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Time Slot	Agenda Item	Presenter	Available at
			<a href="http://prezi.com/18qmw4_btb-g/validation-of-the-concept/">http://prezi.com/18qmw4_btb-g/validation-of-the-concept/</a>
	Discussion	-	-
	TITAN Tool	Jeppesen	<a href="http://prezi.com/5tjed94xcehw/titan-tool/">http://prezi.com/5tjed94xcehw/titan-tool/</a>
	CBA	Ecorys	<a href="http://prezi.com/sqjzhr9ykkre/cba-of-titan-tool/">http://prezi.com/sqjzhr9ykkre/cba-of-titan-tool/</a>
	Lessons Learned	BluSky	<a href="http://prezi.com/uqxvcsty0of1/titan-lessons-learnt/">http://prezi.com/uqxvcsty0of1/titan-lessons-learnt/</a>
17:00	Discussion	-	-

**Table 10. Brussels Workshop Agenda**

The workshop began with the “General Overview” presentation held by INECO. A short description of the project and its objectives as well as the project consortium was given.

Afterwards, Ecorys presented the rationale behind the analysis of the current situation and the collected users’ needs that constitute the basis for the future work. One of the attendees showed interest in the turnaround process model showed in the presentation. Partners referred him to the process model included in the TITAN Concept of Operations as the level of granularity there is bigger than the one developed under the analysis of the current situation (see [1]).

TITAN ConOps was presented by BluSky highlighting the idea of TITAN being as a magnifying glass in the turnaround process embedded in A-CDM. Attendees’ first comment was made on the list of actors and organizations involved: they missed some other partners also involved in A-CDM apart from ANSP, airport, airlines and ground handlers. The consortium agreed that further parties should be involved in TITAN and as such it is explained in the corresponding deliverable, but the list was a common to all European airports what made it to be focused on the main actors only. Different definitions about landside and airside were also discussed, especially with SESAR representative. It was clarified that TITAN view is from the airport perspective so landside is roughly limited by the physical boundaries of the terminal building. Regarding the data sharing, in TITAN is foreseen to publish information in the cloud without sending messages in a specific format. Attendees found that airlines will not like that as they want to ensure security and confidentiality. The major issue for them regarding turnaround is the fuelling sub-process: they do not know the status of this process as on request they are always informed that the fuel is “on its way”. Furthermore, this process is sometimes under specific regulation so it may turn difficult to get information on it.

Some questions were raised regarding the technological enablers allowing collection of passenger information. For instance, about how to get the milestone on last passenger crossing the security control, a scanner after the security check may suffice. Consortium partners also reinforced the idea that most of times information is there (e.g., anytime a passenger buys something in a shop and he/she is asked to show his/her boarding pass) and none is making use of it. Psychological factors play a significant role when thinking as a passenger; they see so many advertisements in an airport that added information such as a panel with a list of time critical flights will not help. Beyond that, a balance is needed between the airline (being at gate on time) and the airport (spend money in the concessionaries) expectations. To find this balance, actors should trust in each other. Attendees agreed with this principle as they shared this experience when implementing A-CDM. Basically, they agree that TITAN ConOps would help to monitor the turnaround process.

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Ineco presented the validation results and attendees asked about how reliable those results are when applying them to other airports. They were addressed to the Validation report where different statistics were included on the KPIs measured. Furthermore, the number of exercises ran make us be positive on the results.

The TITAN Tool was introduced by Jeppesen. It resulted somehow confusing to the attendees as the HMI is not operationally oriented: manual inputs are required, warnings are too small, data appearance may be improved, and several windows should be avoided. It was highlighted that the relevance of the demonstrator is not the HMI but the architecture and design behind it. Regarding the concept behind the TITAN Tool, attendees were referred to the High Level Operational Scenario described in the TITAN Concept of Operations.

With regard to the CBA presented by Ecorys, Brussels airport representatives said that TITAN benefits foreseen by the different stakeholders are exactly the same as A-CDM. So, if the TITAN consortium wants to convince managers on implementing a concept such as TITAN, further benefits beyond A-CDM should be clearly highlighted. In this sense, the consortium explained that the CBA established as baseline an airport with A-CDM implemented so that the TITAN scenario showed the benefits TITAN will bring upon it. However, a validation taking as baseline an airport with A-CDM implemented was missed.

Some questions were raised regarding TITAN and SESAR relation. The different timelines of both projects were foreseen as a risk when establishing coordination between them, so it was decided that on the basis of an accurate IBT provided by SESAR, TITAN will provide back an accurate OBT. Being asked about the relationship with TAM concept, it was answered that TITAN was coordinated with SESAR Airport Operations, so no direct relation was established with TAM.

Looking at the differences between A-CDM and TITAN, attendees thought that off-block time appears “magically” in A-CDM while TITAN is providing an accurate OBT. Finally, all agreed that having this accurate OBT will be helpful for all actors. But before going on a TITAN implementation they would need to be aware of the extra benefits and also on what is covered by the current technology, among others.