Collaborative Decision Making

Airport CDM Applications

Guide

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CDM linking all partners

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In the day-to-day business of an airport operator, air navigation service provider and aircraft operator, or as travelling passengers, we are often faced with unexpected situations. These disrupt the smooth running of air transport operations, frequently with widespread impact. At an airport for example, crew and passengers might be late, aircraft not prepared in time, services unavailable and / or infrastructure malfunctioning creating sporadic sometimes systematic delay, inconvenience and inefficiency. Sharing current information on such events, communicating it to those involved and then taking collaborative decisions is targeted at minimising such disruption, maintaining efficient operations and consistently maximising the effective utilisation of the airport infrastructure.

This guide to collaborative decision making (CDM) aims to show how common situational awareness, inexpensive systems and processes and the collaboration of key partners adds value to real-time decision making at an airport, substantively fuelling the drive to more efficient operations.

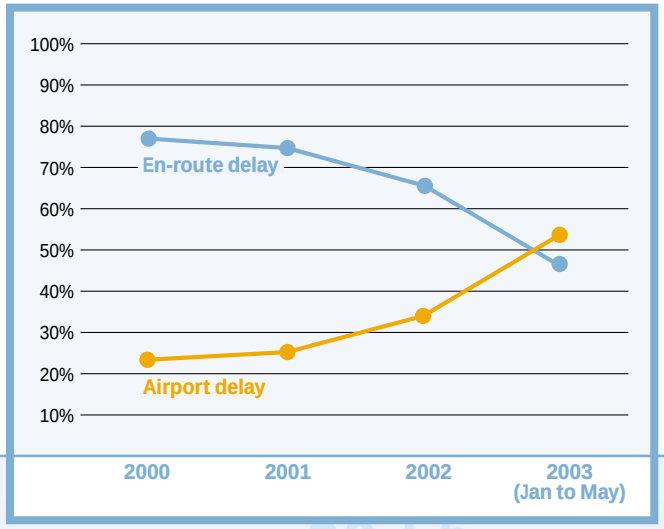
The pay-back of CDM is already being realised. Several airports have already invested in CDM. It changes the decision-making process by managing aircraft operations through a wider, network-oriented approach. Plans are shared, the air traffic picture is drawn, means to minimise disruption are devised and decisions to maintain fluid operations developed and executed. Significant gains from often menial process or equipment enhancements are achievable.

Having read this guide on the overview of Airport CDM, I urge you to consider implementation. A manual that details all the steps to implement airport CDM will be distributed by Eurocontrol in the near future. Efficient airport airside operations are fundamental to an effective European air traffic management system of the future.

We all share that goal.

Víctor M. Aguado
Director General, EUROCONTROL.

Concerns of our partners



ATC

- Apron and taxiway congestion
- Traffic and frequency overload
- Late incoming information reduces pre-planning flexibility
- Sub-optimal predeparture sequence

Aircraft Operators

- Poor punctuality caused by last minute delays
- Knock-on effect of delays on the daily network operation
- Inefficient fleet utilisation
- Missed connections (passengers and baggage)
- Preferences and priorities not considered

CFMU

- Poor CTOT slot adherence
- Inaccurate traffic load predictions resulting in over-deliveries or capacity under-utilisation

Ground Handling

- Poor Service Level Agreement compliance
- Low turn-round predictability due to last minute changes
- Inefficient use of resources (manpower and equipment)

Airport Operations

- Inefficient use of airport infrastructure limits airport throughput
- Poor airport slot compliance
- Inadequate information flow results in late stand & gate changes

1 Concerns
of our partners and passengers

"Flights get longer as planes get faster,"* BBC News reports. *"Airlines have increased the scheduled times of their flights to allow for growing delays and congestion … because of the extra time spent hanging around on the runway, or waiting to land, as air travel gets more popular." "Many flights, particularly short ones, are taking longer than they did 30 years ago… even though modern aircraft are faster."

How is this possible? Aircraft are faster than ever, but flights take longer than 30 years ago. In fact, air traffic is growing so rapidly, that the airport resources cannot keep up with the demand. As the graph on the opposite page illustrates, airports are becoming *the bottleneck* of the air transport network.

With the increase in traffic, the workload of operators and planners is increasing as well, making their task of ensuring safety and efficiency harder every year. Consequently, passengers start complaining, because their flights take longer and delays are more frequent than ever.

So what exactly causes these problems? When we look closer, we notice that many problems are related to the inefficiency of daily airport operations and the non-availability of reliable information. The illustration on the opposite page lists the main everyday concerns of airport partners.

In fact, the concerns described have one thing in common:
All airport partners lack up-to-date global situational awareness due to inadequate information sharing or fragmented information flows.

Possible reasons for this are:

- Most relevant information exists somewhere around the airport in various systems, but is not readily available to all partners.
- The information systems of the various partners have been developed and built independently.
- Certain partners are reluctant to share information which they consider "commercially sensitive", therefore restricting information sharing.

Surely something needs to be done to remedy these problems. To this end, this guide offers you a solution:

Collaborative Decision Making

Expected benefits to partners of Airport CDM

ATC

- Flexible pre-departure planning
- Reduced apron and taxiway congestion
- Smooth flow of traffic eases air traffic controllers' workload

Aircraft Operators

- Daily programme of flight operations and turn-round times on schedule
- Possible schedule disruptions predicted early, thus managed efficiently
- Preferences and priorities taken into account
- Fuel and time savings with reduced taxi and holding time.

CFMU

- Enhanced Calculated Take-Off Time (CTOT) compliance
- Optimum utilisation of available capacity, reducing sector overloads

Ground Handling

- Enhanced punctuality of operations
- Maintaining Service Level Agreements
- Optimised resource management

Airport Operations

- Increased Departures and Arrivals punctuality and airport slot adherence
- Efficient use of infrastructure i.e. stands & gates
- Accelerated operational recovery in adverse conditions or other disruptions
- Reduced environmental nuisance e.g. emissions and noise

2 Airport CDM brings benefits

Collaborative Decision Making (CDM) at airports improves the way Aircraft Operators, Ground Handling Agents, Airport Operations, ATC and Central Flow Management Unit (CFMU) *work together* at an operational level. Of course, collaboration between different partners in the air transport network has to some extent always existed. However, until now the collaboration has been more of an ad-hoc and human-centred process, especially in cases of disruption. Airport CDM is a culture that emphasises the importance of *global collaboration* in planning and managing air traffic.

So how exactly does Airport CDM change the way the air transport system is managed? Airport CDM tries to replace the current *central* planning paradigm with a *collaborative* process. To establish such a process, information owned by individual partners is shared amongst all in a useful system-wide representation.

When all airport partners have access to up-to-date information, a ***common situational awareness*** platform will be established. As all partners involved will have a global overview, they can improve their pre-tactical and tactical planning processes.

The illustration on the opposite page highlights a number of expected benefits Airport CDM can bring to your airport.

To achieve enhanced common situational awareness, the Airport CDM culture requires the following:

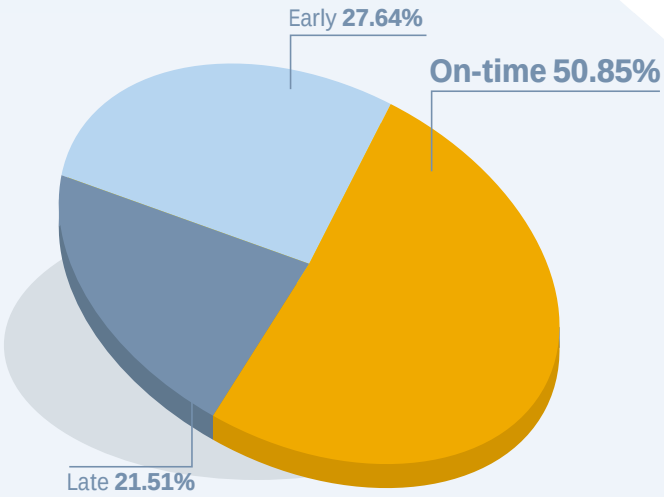
- Agreed relevant data should be shared between all partners involved at the right time.
- Data shared should be of sufficient quality to facilitate improved traffic predictability and planning capabilities for all partners involved.
- Decisions should be made by the partner best placed to make them.
- Decisions made should be shared with all other partners.

These prerequisites create transparency of the traffic flow, are based on the appropriate Service Level Agreements or Memoranda of Understanding and do not imply that someone is loosing control over its own process.

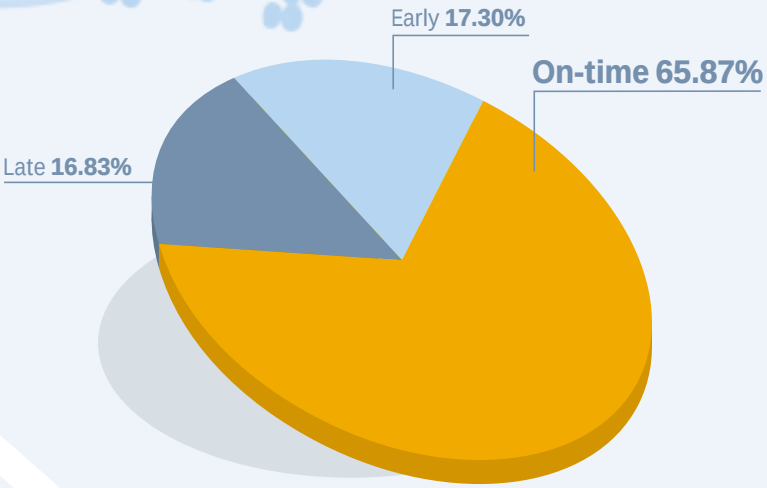
The benefits of Airport CDM to Departure Compliance

source: FAA/FFP1 - Final Report R90145-05

Pre-CDM
Departure Compliance



Post-CDM
Departure Compliance



3 High return & Low cost

Initial studies conducted by EUROCONTROL and the FAA show considerable operational benefits for all airport partners, in terms of more efficient operations, better use of resources and increased punctuality. For example, an FAA study, represented in the illustrations on the opposite page, shows an increase of on-time departures by 15 % with the implementation of CDM.

Risks of non-action

Aircraft Operators, Airports and ATC will benefit from a wider use of Airport CDM. Reluctance to adopt and contribute to Airport CDM compromises improved gate-to-gate management, enhanced aircraft operations and increased airport capacity. Such a lack of action, resulting in a continued inefficiency of operations, will be contrasted by the positive developments and lower unit costs at more progressive organisations.

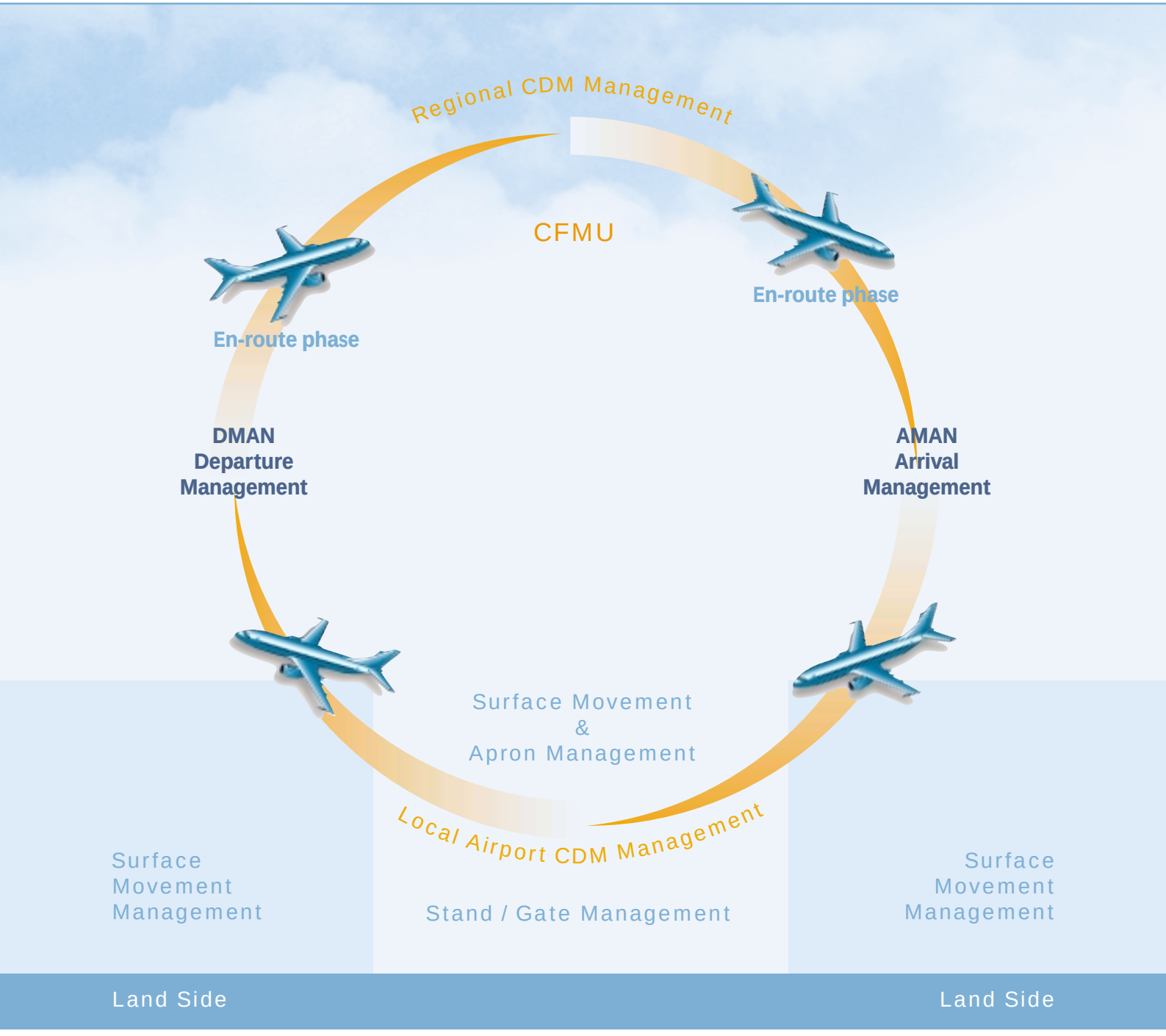
In these CDM organisations, wide participation to a common standard will facilitate the provision of airline data to all airports in which they operate, a common expectation and service provision by ATC. An overall sharing of operational data will also be facilitated. This in turn will stimulate demand for efficiency improvements by other means, both commercial and regulatory.

And what about the costs?

Airport CDM is not an expensive process, as it does not introduce radically *new* systems or procedures but mainly involves enhancing and improving *existing* systems and processes.

For example, in the first step towards implementing CDM (Level 1), information sharing is accomplished by combining data from various partners (Aircraft Operators, ATC, Ground Handling, Airport Operations and CFMU) using the *existing* infrastructure at the airport. Furthermore, milestones can be defined to improve the data quality and predictability of planning information in Level 1 without the need for new infrastructure, newly developed systems or procedural changes. This relatively low demand for investment makes Airport CDM a very promising concept indeed.

Local and Regional CDM Management



4 Local & Regional Airport CDM

While local Airport CDM aims at collaboration between all partners at your airport, regional CDM connects local CDM with CDM processes en-route and at other airports through the Central Flow Management Unit (CFMU).

Airports represent "*The missing link in Air Traffic Evolution".* The Air Transport Network is the combination of flight segments, currently managed by ATM, where CFMU performs the global flight management functions, and ground segments managed by Airport partners.

> The **efficiency** of the Air Transport System depends highly on traffic **predictability**.

In the present situation, where there is no effective linkage between airborne and ground status segments, deviations from the planned traffic situation will not be transmitted to the Network.

The knock-on effect that traffic deviations in any of the links produce on the Network will not be anticipated downstream by air transport managers. This results to a large number of missed ATFM slots or non-compliance with the slot allocation requirements and as such to inefficient use of the planned en route and airport network capacity.

Airports own both:

- updated operational planned data,
- accurate aircraft ground status data.

CFMU owns:

- accurate, timely inbound flight data.

Consistent, collaborative airport data and CFMU data will be linked and shared (with the **new ATFM messages**) to greatly enhance traffic *predictability* and global *efficiency*, by developing a "Network Real-time Monitoring System".
CDM therefore has not just local, but regional and European-wide applications in all phases of the gate-to-gate concept, from pre-flight planning to "on-blocks" at the arrival stand.

Airport CDM Applications Project levels

CDM Levels

④ Other CDM applications — 2006 2005

③ Collaborative Predeparture Sequence & CDM in Adverse Condition — 2004

② Collaborative Management of Flight Updates & Variable Taxi Time Calculation — 2003

① Airport CDM Information Sharing & CDM Turn-round Process — 2002

5 The whole spectrum of Airport CDM Applications

The whole spectrum of Airport CDM Applications is described by the following Levels:

① The **First Level** (basic) CDM applications aim at achieving a *common situational awareness* and improving both inbound and outbound traffic *predictability*. By linking flight segments among them and to the CFMU, First Level (basic) applications will lay the foundation of the traffic network, that is essential for system planning improvement.

The two main applications in this Level are:

- The Airport CDM Information Sharing
- The CDM Turn-round Process (Milestones Approach)

② The **Second Level** CDM applications aim at improving *punctuality* by introducing the required operational *flexibility* to cope with traffic changes and operators' preferences.

The two main applications in this Level are:

- Collaborative Management of Flight Updates.
- Variable Taxi Time Calculation

③ The **Third Level** CDM applications will further enhance *flexibility* requirements and will optimise the use of airport resources, helping to orderly *recover* from disruptions.

The two main applications in this Level are:

- Collaborative Predeparture Sequence
- CDM in Adverse Conditions

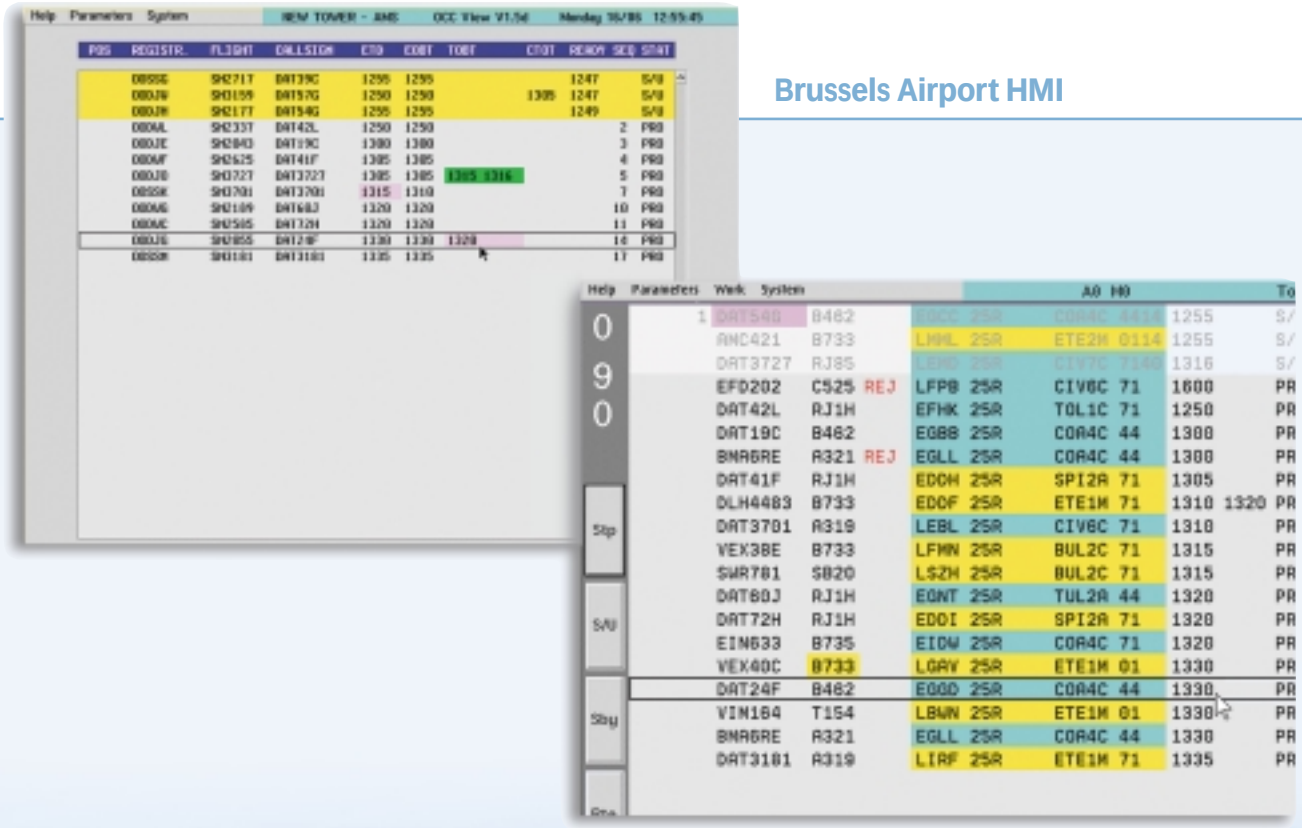
④ The **Advanced Level** CDM applications will be introduced, building upon existing ones, as new technology and procedures are developed and introduced. Typical advanced applications will enhance and extend common situational awareness to other interested airport partners, such as pilots and apron personnel, by introducing, for example, data link and GPS technology.

The levels described above are defined by the Airport Collaborative Decision Making (CDM) Applications Project of EUROCONTROL, in order to facilitate a phased approach for the implementation at European airports.

This is all very well, you might think, but from where to start? The following section is devoted to give you a detailed answer to that question.

If this interests you, do read further....

Brussels Airport HMI



6 The basic Airport CDM

The basic Airport CDM defines what is needed to implement "Airport CDM Information Sharing" and the "CDM Turn-round Process" as foundational airport CDM applications. It is important to realise, that all subsequent Airport CDM applications build on and require this foundation.

Airport CDM Information Sharing

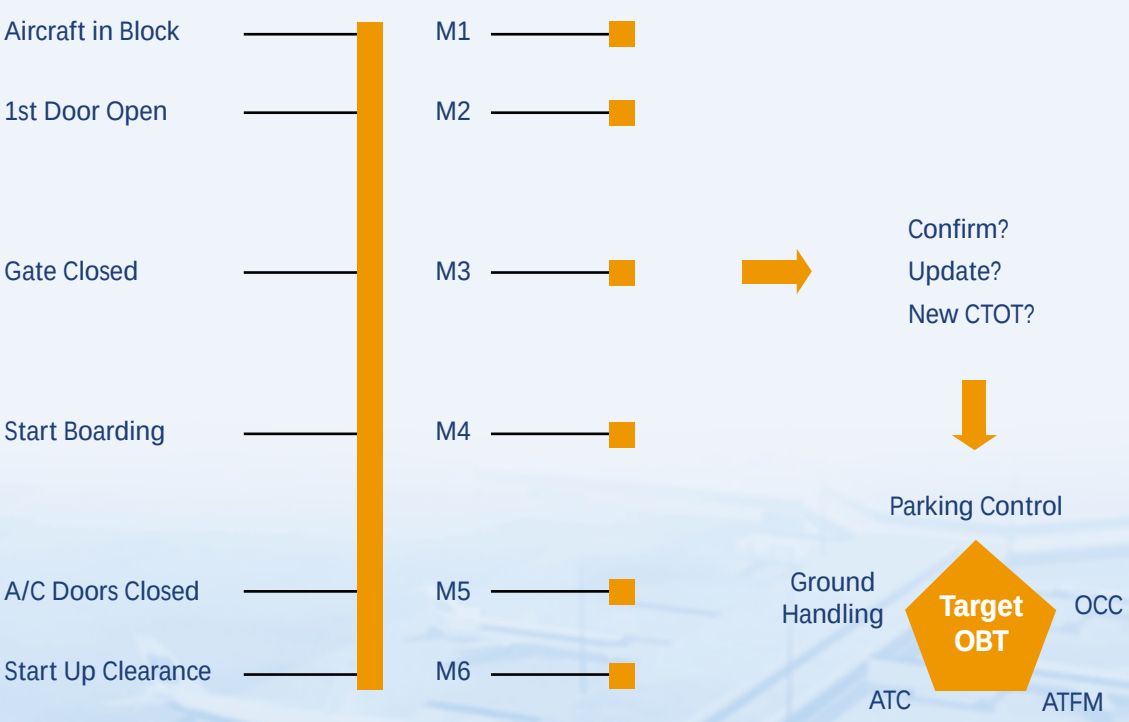
To achieve Common Situational Awareness and improve traffic predictability.

"Airport CDM Information Sharing" is the foundation of all other identified Airport CDM applications. The sharing will use the **existing** infrastructure at airports, but information flows between all partners will be improved by combining data from different sources. Adaptations of existing information systems might be required in order to include or correlate data that is not currently available.

Defined rules will determine responsibility and quality of information at each phase of a flight. This will provide all partners with a common overview of the real-time operations, as well as the expected progress of the planned operations. The result will be ***Common Situational Awareness***, currently a missing element in planning the activities of all partners, resulting in a non-efficient use of the available resources.

The sharing of information between the CDM partners will be based on Memoranda of Understanding, Service Level Agreements and/or protocols for Non-Disclosure Agreements, where the quality of data will be defined according to the requirements of site-specific Airport CDM applications and processes.

An example of the Milestones Approach: six milestones between in-block and start-up clearance



Airport CDM Turn-round Process – Milestones Approach

To improve data quality, predictability of departing flights and planning information for all partners, including CFMU.

The Airport CDM Turn-round Process (Milestones Approach) links the flight and ground segments, improves current information flows and predicts forthcoming events. It concerns updates of the flight plan information when changes are anticipated and dissemination of the information at such time as to allow re-planning of activities of the partners involved.

The process defines a set of milestones in the aircraft turn-round process, allowing all CDM partners to identify possible deviations from schedule. Furthermore, the process will identify the means by which the achievement or not of the individual milestones is shared and distributed among those airport partners who are impacted by the achievement of a particular milestone.

Milestones are set from the planning of the inbound flight from the outstation until the take off of the flight at the subject airport. When milestones are completed, a continuous update of the flight status becomes available, permitting the partners involved to appropriately respond to the event.

When milestone events do not appear as planned and no re-planning has taken place, a prompting mechanism raises alarms, which trigger the reaction of the responsible partner to provide the re-planning of the operation.

How does the Milestones Approach work:

To give an example of how this may work, imagine a situation in which boarding has not started 20 minutes before estimated off-block time. In such a situation, the milestone event indicating "start boarding" does not appear as planned, triggering an alarm to inform the involved partners about the missed target. Subsequently, the Ground Handlers may be prompted to confirm the anticipated delay duration, resulting in an updated set of milestones for the remainder of the process. As a result, all partners will be informed immediately about the late boarding, enabling them to appropriately respond to the current situation. The figure on the previous page illustrates the Milestones approach in a graphical manner.

The Airport CDM NETWORK is growing

7 What the first airport trials have shown

Since the year 2001, EUROCONTROL set up several trials aimed at proving Airport CDM benefits at the airports of Brussels, Barcelona, Helsinki, Stockholm and Milan.

Brussels Airport

In 2001 the Brussels Airport Authority (BIAC), the ATS provider (Belgocontrol), the former home carrier Sabena and the EUROCONTROL Experimental Centre set up a CDM project. The aim was to improve the airport operations by enhancing the co-operation between airport partners.

After analysis, it appeared that a lot of information required to improve the partner's business processes is already available, but was never disseminated due to a insufficient insight of operational needs of each partner or for economic reasons. The need for a better co-ordination between all airport and ATFM processes was acknowledged for sharing the required information, as well for drawing up common objectives for all airport partners.

At Brussels Airport, the Milestones approach was tackled by the re-evaluation of the existing milestones, that need to be standardised, synchronised and endorsed by all partners. It was decided to start from a basic objective acceptable to all partners: the launch of the Target Off-Block Time (TOBT) procedure. After extensive studies and technical testing, the TOBT procedure was officially published by the Aeronautical Information Circular (AIC) Belgium NR 13 of 15.05.2003.

In the past and while managing their arrival and departure processes, the partners involved did not co-ordinate their actions satisfactorily. The Target Off-Block Time (TOBT) procedure aims at synchronising the different partners' processes, ensuring a fluid departure sequencing. Implementing this procedure will yield a critical mass for a self-incentive process, allowing to further gear up the different airport optimisation processes.

Barcelona Airport

The Airport CDM project at Barcelona airport has been conducted by EUROCONTROL Experimental Centre, Barcelona Airport, Iberia, Spanair, Eurohandling, Barcelona's Flow Management Position (FMP) and the airport's ATC Tower, supported by AENA (both Airports and Air Navigation Services).

First, an extensive study was carried out to analyse all interactions between the airport's Business Processes. This study demonstrated the information exchange between airlines/handlers and ATC, the FMP, and the airport operations to be insufficient, leading to sub-optimal decisions and reduced slot adherence.

Shared use of information at Barcelona and Brussels airports

Status

OBK	Off Block
BRD	Boarding
OST	On Stand
FNL	Final Approach
FIR	A/C in Spanish FIR
INI	FPL has been received
SCH	Airport Schedule

operations

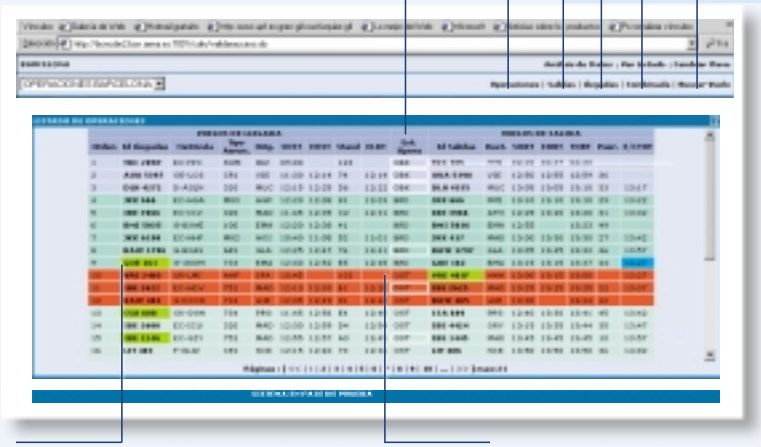
Selection of user defined list

departures

arrivals

combined list

search for flight



GREEN indicates
Airport Slot /
Flight Plan Incoherence

RED indicates
Boarding Alarm

3-D AIRPORT OVERVIEW

AIRPORT RESOURCE GANTT CHARTS:
CHUTE / CHECK-IN : BAGGAGE RECLAIM / GATE / STAND

USER SELECTION CRITERIA

Alarm signal:
entry not made
yet or too late

Blue marker:
Active flight
TOBT DIALOGUE /
NEGOTIATION
has just started

Schedule time of departure

Departure time + indicator:
E = estimate
A = actual

Actual block times

Target off block time
Indicator H = Airline/handler time
Indicator S = Predeparture sequence by ATC

Next, a number of workshops were conducted with the participation of all airport partners, in order to detect both individual and common objectives. As a result, the development of a traffic monitoring tool was decided. This tool, shared by all partners, is capable of detecting the deviations of the current aircraft situation from the originally scheduled.

A collaborative predeparture sequence derived from the traffic monitor will allow all actors in the process to take the appropriate decisions or corrective actions to cope with the new situation.

In the figure on the next page, a Human Machine Interface of the traffic monitor demonstrates the shared use of information by several actors. In the figure, colour codes mark situations that are of importance to the collaborating partners.

Stockholm & Helsinki Airports

Started in September 2002, Airport CDM trials at Stockholm Arlanda and Helsinki Vantaa airports focus on operations efficiency through enhanced synchronisation, anticipation and increased transparency between all cooperating partners, i.e. aircraft operators, CAA, ATC, ground handling and de-icing services, and flow management positions.

After an extensive analysis of operations (from Sept. 2002 to Feb 2003), several directions are now explored from which quick wins are expected (until end of 2003):

- Insight on information systems and on the kind of information that must be shared between partners to enhance common operations' efficiency.
- Amongst potential collaborative procedures, collaborative de-icing has been emphasized at both airports as the first collaborative procedure that is expected to provide quick wins.
- At Arlanda Airport, TAAM simulations are made to provide taxi times assessment under various scenarios. In the next future, new scenarios would cover areas such as de-icing, low visibility operations, strong winds, off-block times disruptions.
- A post operations analysis framework supported by key performance indicators will be proposed, oriented towards monitoring operations' efficiency. This will serve as an efficient tool to find out where real airport issues are and to identify 'quick wins' areas for improvement supported by sound quantification.
- At both airports, the need for supporting decision making for implementation has been emphasised. For such business cases light cost/benefit analysis will be provided at important steps, eventually supported by benefits' assessment of implementations made at other CDM airports.

CDM trials presently at Milan, Stockholm and Helsinki airports

Helsinki Airport

Stockholm Airport

Milan Malpensa Airport

In the future, CDM activity will rely on implementation and benefits assessment, continuous improvement of quality of service/data, developing new collaborative procedures where flexibility would be the anchoring concept, establishing corresponding service level agreements, implementing potential enablers, and increased cooperation with the CFMU. Vantaa and Arlanda airports will provide a sound basis for experiments regarding regional CDM (CDM at Nordic airports).

Milan Malpensa Airport

The Airport CDM trial at Milan Malpensa commenced in February 2003. The current project phase identifies common objectives and improvement targets, detects the data gaps with the current state of operations and designs new collaborative processes and/or new information flows in order to reach the common targets.

Analysis of current operations resulted in the detection of the gaps in:

- the processes,
- the information systems,
- the information flow map, in terms of collaboration.

The airport partners proposed a milestones approach consolidation for data improvement. A special effort has to be focused on the arrival sequence with a more accurate estimated in block time.

New collaborative processes, with associated information flows/systems, have been specified. For example, a pre-departure sequence based on estimated ready time, estimated push-back clearance delivery time and estimated taxi out period allows a correct pre-departure sequence with a more accurate take off time to be defined.

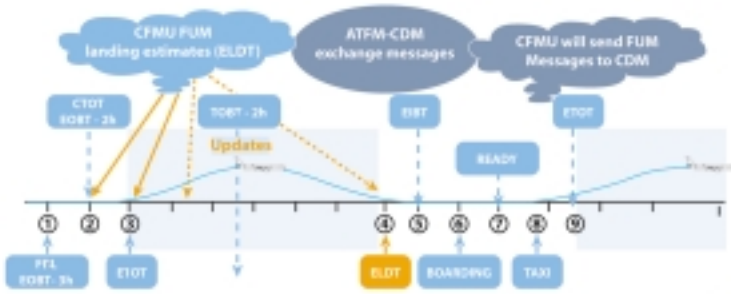
The next steps of the ongoing trial include:

- consolidation of collaborative processes, information flows or information systems,
- list of potential projects (new procedures, information flows or information systems),
- road map for each scenario, including description of the expected benefits,
- validation before implementation.

FUM

Flight Update Message

The FUM is sent by the CFMU to advise Airport CDM about the modification of ELDT including the new estimated time over the last point of the route



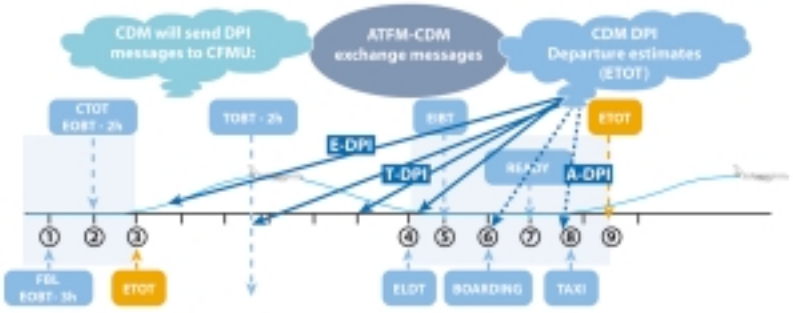
- 2 hrs before entering the ECAC Area
- EOBT - 2 hrs
- At first activation of the flight in ETFMS
- At modification of the ELDT of 5 minutes or more

EXAMPLE OF FUM

DPI

Departure Planning Information

The DPI message is sent by the Airport CDM to advise the CFMU about the best available ETOT including the locally calculated taxi time



- E-DPI *(Early - DPI)* sends ETOT (FPL EOBT) -2 to -3 hrs
- T-DPI *(Target - DPI)* sends TTOT (CDM TOBT) - SIT(); - ELDT –30'); - AIBT
- A-DPI *(ATC - DPI)* sends ATTOT (from CDM TOBT) - EOBT-30' (BRD(); - AOBT

EXAMPLE OF E-DPI MESSAGE

EXAMPLE OF T-DPI MESSAGE

EXAMPLE OF A-DPI MESSAGE

8 Step by step implementation

Although all basic elements of CDM need to be implemented and a European-wide approach is desirable to achieve full potential benefits, a phased, bottom-up approach is the only practical and possible solution. Each implementation step will deliver an incremental benefit, which will become even more significant as CDM applications mature. This section describes the steps that build upon the basic Airport CDM applications: the second step (Level 2) and the third step (Level 3) towards a European-wide implementation of Airport CDM.

Airport CDM Level 2

In Level 2, the "Variable Taxi Time Calculation" and the "Collaborative Management of Flight Updates" applications are developed as a second step towards implementation of Airport CDM.

Variable Taxi Time Calculation aims at improving the airline's adherence to scheduling by introducing and distributing realistic taxi times. Specifically, the "Variable Taxi Time Calculation" application will calculate *accurate estimates of take off times* (ETOTs) based on the runway in use, stand location, aircraft's type, airport procedures, traffic congestion, weather, etc. By replacing the "default taxi times", improved *punctuality* and *slot adherence* can be expected through a more accurate flight progress calculation.

The **Collaborative Management of Flight Updates** application aims at further improving the flexibility of aircraft and airport operations and the pre-departure sequence by using features such as Slot Swapping and Slot Shifting to take aircraft operators' preferences and airport operations constraints into account.

For example, aircraft operators will provide more accurate off-block times (OBTs) when there is confidence that an appropriate alternative slot will be allocated for a re-planned flight with the Slot Swapping and Slot Shifting mechanism. In conjunction with the flexible taxi time calculation, Slot Swapping and Slot Shifting mechanisms will increase punctuality and both CTOT and airport slot compliance and eliminate today's inefficiencies.

CFMU Contribution

Recently, two ***new ATFM messages*** have been developed by EUROCONTROL to facilitate the "Collaborative Management of Flight Updates": the **Flight Update Message (FUM)** and the **Departure Planning Information (DPI)** message.

The FUM provides real-time *arrival updates* to a CDM airport, advising about modifications in the Estimated Time of Arrival.

The DPI message provides realistic *departure updates* to the CFMU from the CDM airport. The intention is that flight updates or

changes are communicated as soon as possible, providing the CFMU with up-to-date Estimated Take-Off Times (ETOT). With such estimates, CFMU is able to establish an *accurate picture* of the departure flow from CDM airports, and therefore predict en-route sector traffic loads.

Airport CDM Level 3

The Airport CDM Level 3 contains the "Collaborative Predeparture Sequence" and the "CDM in Adverse Conditions" (Reduced Airport Capacity Management due to Disruption) applications.

The **Collaborative Predeparture Sequence** aims at enhanced *flexibility*, increased *punctuality* and improved *slot-adherence*, allowing the airport partners to express their *preferences*.

The "Collaborative Predeparture Sequence" is an essential airport CDM application for optimising the use of apron facilities, stands and gates, while at the same time Aircraft and Airport Operators' requirements and priorities are taken into account in a collaborative process. Accurate Estimates of Off-block times are necessary for the effectiveness of this application.

Presently and as a general rule, aerodrome ATC applies the "first come first served" principle in departure sequencing, taking into account only the optimisation of the runway throughput. It's widely accepted that this principle is well out of date. When prenotification of when the aircraft is ready for push back is available, optimised presequencing of departures according to known constraints is possible. The "Collaborative Predeparture Sequence" application will define processes where certain sequencing principles could be applied for some specified reasons (such as slot compliance, airline preference, night curfew, or evacuation of stand / gate for arriving aircraft). The process would result in a collaborative predeparture list that ATC would take into account while sequencing departing aircraft, as and when feasible. Final sequencing will always remain the responsibility of the local ATC.

The **CDM in Adverse Conditions** application aims at collaborative capacity management during periods of reduced capacity (due to fog, strong winds, snow, etc.). The application intends to disseminate relevant information to all partners in anticipation of disruptions or to facilitate expeditious recovery after disruptions. In contrast with today's ad hoc solutions to unforeseen disruptions (usually by telephone), the "CDM in Adverse Conditions" application will define systematic strategies to deal with disruptions, allowing for a faster recovery to normal operations afterwards.


Airport CDM
Implementation
MANUAL
PILOTS
Every
movement
matters
AIRLINES
AIRPORTS
ATC
EUROCONTROL

9 Preview
of the CDM Implementation Manual

This guide has provided you with an overview of Airport CDM and how it can improve the efficiency, capacity, punctuality and customer satisfaction at your airport.

For those of you willing to introduce CDM at your airport, EUROCONTROL is currently preparing the **Airport CDM Implementation Manual** to guide you through the step by step implementation.

The "Airport CDM Implementation Manual" will include the following:

- Operational Concept Description
- Functional Requirements and Specifications
- Key Performance Indicators
- Generic Memorandum of Understanding / Service Level Agreement
- Implementation Risks
- Generic Procedures

This "Airport CDM Implementation Manual" will be available to you soon.

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