Network Manager

EUROCONTROL

DPI Implementation Guide

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1 Introduction

1.1 Identification

(1) This document forms part of the "ETFMS" documentation.

(2) This document has a document reference of "APT/USD/DPI_Impl_Guide ".

(3) This document has a Title of "DPI Implementation Guide".

1.2 Purpose

(1) The purpose of this document is to provide Reference & Implementation guide for DPI messages. It provides an overview of the available DPI messages as well as the implementation details.

(2) This document contains a description of the different types of DPI messages. It starts with a description of the general fields, i.e., fields that can be used in any DPI message. It is followed by a detailed description of each type of DPI message.

(3) This document also contains a short description of other ETFMS messages and inputs that have a strong relationship with DPI messages such as the use of REA and DLA/CHG messages.

(4) This document describes the DPI implementation as implemented in the current NM release. It also contains an overview of outstanding issues expected to be implemented in future NM software releases.

1.3 Scope

(1) The intended audience of this document is anybody who would like to have an Overview of the DPI messages. This includes ANI Airports, CDM Airports, RNI Airports, Advanced ATC TWR Airports, AOs, NMOC OPS staff, FMP managers, software developers.

1.4 Requirement Identification

1.4.1 Requirements Terminology

(1) Although they look rather formal, the following notations are designed to provide a clear, concise and homogeneous way of expressing either mandatory requirements, preferred choices, or free choices. In particular, the notation of bold "**shall**" highlights mandatory requirements, thus allowing an easier application and better auditability of this document.

(2) Throughout this document the following use of terminology **shall** apply:

(3) The word "**shall"** as shown **shall** always be used in the text to indicate a statement of requirement which is mandatory.

(4) The word "will" as shown in lower case **shall** only be used in the text to indicate the future tense.

(5) The word "should" as shown in lower case **shall** only be used in the text to indicate a statement of preference.

(6) The word "may" as shown in lower case **shall** only be used in the text to indicate a statement of choice.

(7) Any text to be reproduced exactly **shall** be enclosed in quotes (i.e., "").

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1.5 Colour coding

(1) The following colour coding is used in this document:
- <mark>Yellow background</mark>:   not yet implemented, possible future extension
- Blue text: text for AOP-NOP descriptions

2 References

2.1 External

(1) This document makes reference to the following external documents, an external document being defined as a document not produced by the NM:

None

2.2 NM

(1) NM referenced documents shall take precedence over any referenced external documents wherever conflict arises between them. The following documents are referenced within this document:

Doc Ref 1: Flight Progress Messages, ref APT/USD/MSG_INTF, Edition 2.700, author Hans Koolen, dated 01/06/2021.

Doc Ref 2: DPI and API Implementation Road Map, ref APT/USD/DPI_API_Impl_RM, Edition 2.300, author Hans Koolen, dated 15/05/2022.

Doc Ref 3: NM B2B web services reference manuals. The NM B2B web services reference manuals are published in the Eurocontrol One-SKY teams B2B library. Access to the library can be requested to NM.customersupport@eurocontrol.int. More info can also be found on "www.eurocontrol.int/services/nm-b2b-web-services"

Doc Ref 4: Airport CDM Implementation Manual – Edition 5.0, dated March 2017.

Doc Ref 5: ATFCM Operations Manual, Network Operations Handbook, Edition 27.0, author(s) M. Sfyroeras, V.Vega, dated 25/04/2023

Doc Ref 6: NM B2B web services – Flight Management Use cases, Business documentation for Flight Management, Edition 1.3, author(s) B. Queval, A. Nesic, dated 01/08/2022.

Doc Ref 7: ATS Data Exchange Presentation (ADEXP), edition 3.4, edition 24/05/2023 . Document identifier: EUROCONTROL-SPEC-107.

3 DPI Introduction

3.1 Overview

(1) The purpose of the Departure Planning Information (DPI) message is to supply the NMOC with flight data related updates that are made available by DCB tools, sequencing tools (e.g., DMAN), ANI-, CDM-, RNI- or ADV ATC TWR Airport systems.

(2) The DPI shall supply the NMOC with more recent and more accurate flight data than the data that is currently available from IFPS and that cannot be sent via IFPS.

(3) Airport CDM systems are systems where AOs, Ground handling Agencies, Airport authorities and ATC work in a collaborative way in order to handle the traffic in an optimised way.

(4) The main data elements to be received via the DPI message are.
- an accurate estimation of the take-off time
- the taxi-time (EXOT)
- the SID
- TOBT & TSAT

(5) At CDM airports where the Aircraft Type and Registration are verified, the DPI message can also contain updates of:
- the aircraft type.
- the aircraft registration.

(6) The DPI will be used by the NMOC to update the flight data for ATFCM purposes. An early accurate update of the flight data will improve the ATFM slot allocation process by reducing overloads, reducing bunching and additionally it may reduce the ATFM delay for other non-departed flights.

(7) The data received via DPI messages will also be shared with ANSPs, AOs and Airports of Destination via the NM's Data Distribution Services.

(8) There are six types of DPI messages, where each DPI message type gives a more accurate update of the flight. They are called:
P-DPI - Predicted DPI
E-DPI - Early DPI
T-DPI-t - Target DPI - Target
T-DPI-s - Target DPI - Sequenced
A-DPI - ATC DPI
C-DPI - Cancel DPI
These DPI messages are described in more detail in the sections below.

(9) The detailed operational procedures associated to DPIs for the co-ordination between ATFCM and Airports are described in the ATFCM Operations Manual, Doc Ref 5.

Fig: DPI - 1
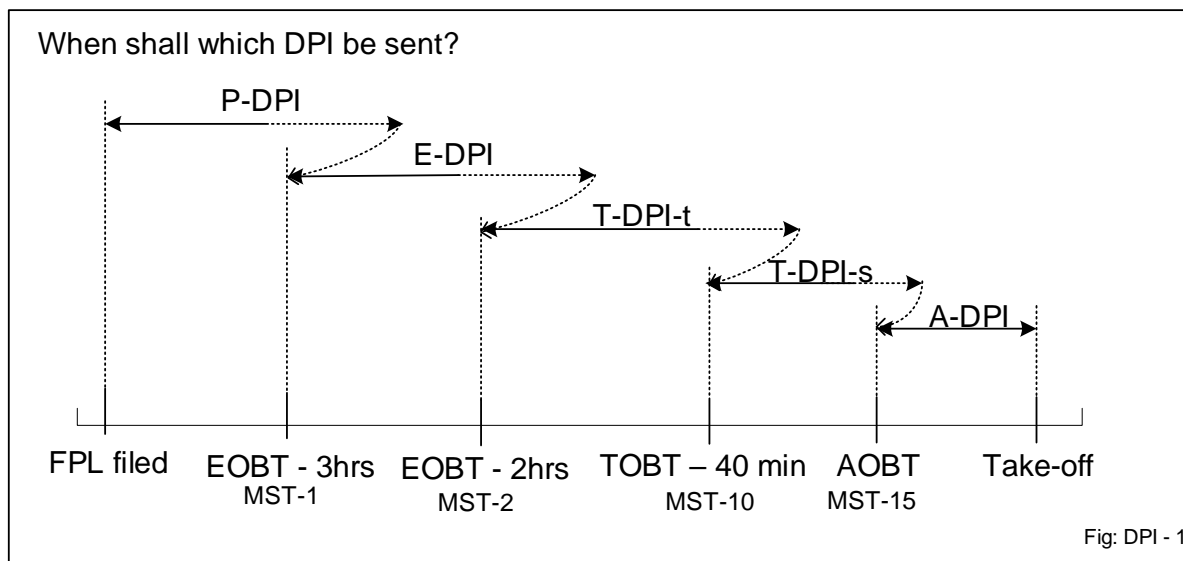
3.2 Airports providing DPI messages.

For the purpose of DPI message provision, the following 4 ways of Airport to Network Integration have been identified, each representing a higher level of integration:

1. Level 1 - Advanced ATC TWR Airport (AAT)
2. Level 2 - Regional Airport (RNI)
3. Level 3 - CDM Airport (CDM)
4. Level 4 - Advanced Network Integrated Airport (ANI)

Advanced ATC TWR Airports – Level 1:
These are airports that have not fully implemented the Airport CDM process but still would like to exchange information with the ATM Network using a limited set of DPI messages.

Regional Airports – Level 2:
These are airports that, from an external operational perspective have implemented the CDM Operational procedures. Such Airports normally do not have any capacity constraints and are able to provide DPI messages based upon a high level of automation.

CDM Airports – Level 3:
These are airports that have implemented the Airport CDM process as it is specified in the Airport CDM Implementation Manual (see Doc ref 4) and provide the full set of DPI messages for CDM Airports (i.e., E-DPI, T-DPI-t, T-DPI-s, A-DPI and C-DPI) to NM.

Advanced Network Integrated (ANI) Airports – Level 4:
These are airports that have implemented the Collaborative Decision-Making process as it is specified in the Airport CDM Implementation Manual (see Doc ref 4) and require a further level of integration with the ATM network in order to optimise its operations.
These airports have linked inbound with the outbound flights at an early stage and may have additionally implemented a Demand Capacity Balancing (DCB) process.
A DCB process is a process at the airport that compares the expected traffic demand with the available predicted capacity and defines an action plan in order to handle operations in the best possible way. DCB processes at airports may start at D-1 or even earlier and may continue during the day of operations if required.

In addition to the E-DPI, T-DPI-t, T-DPI-s, A-DPI and C-DPI, ANI airports also provide the P-DPI message.

ANI airports will also be providing the Arrival Planning Information (API) messages, but these are described in a separate document.

3.3 Airport CDM Implementation Manual

(1) The overall Airport CDM process is described in the Airport CDM Implementation Manual (Doc Ref 4). This document also describes the link between the CDM implementation milestones and the transmission of DPI messages.

(2) The DPI Implementation Guide describes the DPI messages with all the required and available details.

(3) To be able to place the DPI messages in the appropriate CDM context, it is highly recommended to read the relevant parts in the Airport CDM Implementation Manual. This will also ease the reading and understanding of the DPI Implementation Guide.

(4) The DPI messages shall be triggered based upon the milestone approach as described in the Airport CDM Implementation manual (see Doc Ref 4).

3.4 Objectives

(1) The overall objective of the DPI messages is to better coordinate ATFCM with Airport operations in order to ensure on time update of the flight data, more consistent slot calculation and improve slot adherence. This applies to Advanced ATC TWR Airports, RNI Airports, CDM Airports and ANI Airports.

(2) Five phases have been identified which require coordination with ATFCM:

(3) Pre-Planning phase: ANI Airports use Demand Capacity Balancing processes to predict and plan operations well in advance, if required. This process may well start as early as 6 days before the day of operations. The output of this process will be shared with NM as soon as it is available at the airport in order to improve traffic predictability (but not before flight plan filing time for the time being)

(4) Planning phase: CDM Airport schedule and flight plan estimates must be re-conciliated and consistent information must be sent to NMOC. Ghost flights and duplicated flights shall be suppressed. A first evaluation of the realistic taxi-time and SID will be indicated to NMOC in order to make a more realistic calculation of the ATFM slot.

(5) Turn-around phase: based on the flight connection, a more realistic estimate of the Off Block time will be available based on the arrival time of the inbound flight and turnaround time. It generally results in the creation and accurate maintenance of the Target Off-Block Time (TOBT) by AOs and handlers.

(6) Pre-sequencing: 30-40min before the TOBT, the flight is included in the ATC pre-departure sequence which will result in a Target Start-up Approval Time (TSAT). For regulated flights, the TSAT takes the ATFM slot into account.

(7) ATC phase: At engine start-up clearance delivery, the flight is handed over to the tower for pushback, taxiing and take-off. Local control units (ATC/Apron) will ensure that the flight goes off-blocks and takes off as close as possible to the local target times (TSAT, TTOT).

(8) At any time during these five phases, a change in the CDM Airport operating conditions may alter the taxi-time and/or SID.

(9) In order to be considered as an ANI, CDM, RNI or ADV ATC TWR Airport an airport shall have the proper procedure at the airport level with the appropriate mandate and clearly defined roles

agreed by all involved partners (AOs, Airport Authority and ANSPs). The mandate of this Airport must clearly describe the project management responsibilities as well as the operational responsibilities in particular, as far as ATC & ATFCM procedures are concerned. For more details, see Doc Ref 4.

3.5 Benefits of DPI/FUM messages

3.5.1 Introduction

(1) The purpose of DPI is to make NMOC and its partners (i.e. ATC Units, AOs, airports of destination…) aware of the situation of a given flight in respect of the pre-departure phase, in particular with regard to the Take-Off-Time (TOT), through a message that can automatically be processed.

(2) The purpose of FUM is to make NMOC partners aware of the situation of a given flight, in particular regarding the Estimated LanDing Time, through a message that can be automatically processed.

3.5.2 Benefits

(1) The messages are a way for the Airports and the ATFCM process to be integrated, supporting therefore the management of the network. They contribute to the common picture of the network situation, facilitating its understanding and further decision making.

(2) They allow the NMOC to better know the Airport constraints for a given flight and to take them into account in its own processes.

(3) They allow the Airport to have a better knowledge of the traffic to its destination and to take it into account in its own processes.

(4) They allow a best adjustment between Airport and ATC capacity.

(5) Although intended for exchanging messages between systems, they are short messages that can be used directly by persons, and also rather easily integrated in systems.

(6) They provide more accurate timing of the traffic enabling automatic processes such as slot allocation to be more effective.

(7) They improve the short term forecast of the traffic situation.

(8) They enable airlines to get a better view of their respective fleet situation before the departure of the flights.

(9) They will support the management of critical situation at Airports and the impact on other actors.

3.6 Pre-requisites

3.6.1 General

(1) Before reading the following summary description of the DPI messages, the following pre-requisites must be known and well understood.

(2) DPI messages can be sent by Airport systems and ATC systems. Such systems will have to be adapted in order to be able to output DPI messages.

(3) DPI messages are messages that will be automatically generated by such systems. In general, no human operator should be requested to type or input DPI messages.

3.6.2   Minimum Requirements / DPI Readiness Criteria

(1) Before starting the transmission of DPI messages to the NMOC, the Airport must provide evidence that it has reached an advanced stage of implementation.

(2) It shall show that it has fulfilled the applicable criteria as specified in Doc Ref 2.

(3) At that stage, several issues will be verified, e.g., verify the Slot Adherence behaviour and Departure Tolerance. See Doc Ref 2 for more details.

(4) Also, the interface details need to have been recorded in a DPI Interface Control Document (DPI-ICD) and will comprise e.g. the source of Taxi-Time (EXOT)s and SIDs, the operational trigger events of DPI messages, …

3.7 Implementation and Operational Evaluation

(1) The next step is the implementation of the DPI by the Airport CDM system at the CDM Airport.

(2) After the implementation has been completed, the transmission to an ETFMS test system can be started. The NMOC will perform an operational validation of the newly implemented DPI messages during a period agreed between the Airport and the NMOC.

(3) Only if the acceptance rate by ETFMS of these messages is considered high enough, a GoNoGo meeting will be organised. The transfer of DPI messages into operations will only take place after the DPI quality criteria are above the agreed NMOC acceptable values. The quality criteria are defined in Doc Ref 2.

3.8 IFPS Discrepancies

3.8.1   Description

(1) The DPI messages are intended to supply ETFMS with flight data updates that are not to be obtained from AO's via IFPS.

(2) However, there are three important flight plans (i.e. Aircraft Operator owned) fields that can be received via DPI messages. These fields are AO_OBT (TOBT/EOBT), Aircraft Type and Aircraft Registration.

(3) In case one of these fields is received via a DPI message and it appears to be (significantly) different from the data received via IFPS, then ETFMS will report an IFPS discrepancy.

(4) The AO can view IFPS Discrepancies on the CHMI and NOP portal or they can be retrieved via B2B. Such a discrepancy shall be solved by the AO by filing a DLA or CHG message to IFPS.

3.9 Procedural issues

(1) The processing of the DPI message is acceptable under the assumption that any IFPS discrepancies will be shown to the Airport-CDM platform users (e.g., Apron/TWR controller).

(2) The NMOC recommends that the pushback/start-up clearance is refused if any IFPS discrepancy has not been resolved at the moment of requested departure clearance.

3.10 Quality Control

(1) If, during operations, the quality control of DPI messages and of any other parameter (e.g., adherence to ATFM slots) descends below the agreed NMOC acceptable values, the NMOC may

decide to ignore/reject any DPI messages from that concerned originator (the following day). Note that the Interruption of DPI messages procedure is set out in Doc Ref 5.

3.11 Networks for transmission of DPI data

(1) The DPI data can be transmitted either:
- Via the AFTN network
- Via NM B2B web services (Doc ref 5).

(2) Note that most Airports provide DPI messages via AFTN, but more and more airports provide DPI via B2B web services.

(3) New messages like P-DPI can, in accordance with NM policy, can only be provided via B2B web services.

(4) The CP1 regulations mandates airports to provide DPI messages via B2B as of 2025.

3.12 New TTOT fields and Reading Guidelines

(1) This document now covers the DPI description for the 4 types of airports that can provide DPI messages. In order to prevent that the document becomes difficult to read, it has been decided to use the new TOT names and make the link.

(2) The following guidelines will help to read this document:
- TTOT of the E-DPI ➔ turnaroundTTOT
- TTOT of the T-DPI-t ➔ turnaroundTTOT
- TTOT of T-DPI-s (if provided before TSAT-10) ➔ earliestTTOT
- TTOT of T-DPI-s (if provided at or after TSAT-10) ➔ consolidatedTTOT
- TTOT of A-DPI = TTOT of A-DPI

Any exception to this rule will be described where necessary.

(3) The introduction of the new TTOT field names allows to describe the processing of the TTOT field independently of the DPI message type in which it is included, and it avoids repetition. It is also in line with the way ETFMS processes the TTOT fields.

(4) Another benefit of the new TTOT fields is that it allows for simplification of the transmission of the T-DPI-s (for airports that would like to simplify it).

(5) The use of the new TTOT fields is mandatory for ANI and RNI Airports only.

3.13 Traffic Demand ← → Traffic Load

3.13.1 Introduction

(1) The TOT values received in DPI messages and the DPI-types are very much related on how Flow Controller (NMOC staff and FMP staff in the ACCs) look at the traffic situation.
They look at:
- Traffic Demand
- Regulated Traffic Demand
- Traffic Load

(2) Note that flights that have been suspended by the ATFM processes are NOT included in the Traffic Demand, Regulated Traffic Demand or Traffic Load.

3.13.2 Traffic Demand

(1) The Traffic Demand is the view which shows the traffic situation (traffic counts) as the Airlines would like it to be. It is based upon:
- The flight plan (FPL), possibly updated with updated with DLA, CHG or CNL messages as filed by the Airline.
- The turnaroundTTOT from a DPI message.

As described below, the turnaroundTTOT depends on the EOBT updates and TOBT updates because these all together provide the "Airline view".

It also depends on EIBT/ELDT of the inbound flight because AOs shall update EOBT/TOBT of the outbound flight if the inbound flight is late.

(2) The Flow Managers (FMPs and NMOC) use the traffic demand to determine the need for a Flow Management restriction (i.e., a regulation).

(3) For this reason, a turnaroundTTOT shall never be affected by an ATFM delay/CTOT nor by any local/start-up delay (TSAT delay) for the flight concerned.

(4) Note that a turnaroundTTOT is based upon the ELDT of the inbound flight and as such may (only) be indirectly affected by a regulation, when the inbound flight is regulated.

3.13.3 Regulated Demand

(1) The Regulated Demand is the view which shows the traffic counts after a regulation has been activated in ETFMS. It allows the flow controllers and FMPs to view the impact of a regulation or a set of regulations.

(2) A turnaroundTTOT and an earliestTTOT may (only) indirectly impact the Regulated Demand.

3.13.4 The Traffic Load

(1) The Traffic Load is the view that shows the traffic situation as it is expected to happen. It contains the Airline view, possibly updated due to ATFCM Measures, possibly updated with updates coming from ATC. It is based upon:
- The Traffic Demand for flights that are not regulated and that are still on the ground
- The Regulated Demand for flights that are regulated and that are still on the ground.
- The earliestTTOT (i.e., expected startup delay) mainly for non-regulated flights.
- Updates (Radar data) for flights that are already airborne.

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4 Fields

4.1 Introduction

(1) The fields in the DPI message can be divided into two groups; fields used for matching the DPI message to the flight plan and fields used for updating the flight plan.

(2) The following fields will only be used for matching the DPI message to the flight (these will not be used for updating the flight data): ifplid, arcid, adep, ades, eobt, eobd.

(3) All other fields will be either used to update the ETFMS flight data or simply for information sharing purposes (i.e. collect the data elements from airports and share with the ATM community such as AOs through CHMI, NOP, B2B web services…).

(4) Syntax and semantic definition of the constituent fields are described in this section.

(5) For provision of DPI messages via AFTN, all ADEXP fields referenced but not described explicitly below are described in Doc Ref 7.

(6) For provision of DPI messages via B2B web services, all fields referenced but not described explicitly below are described Doc Ref 3.

4.2 Field naming conventions in this document

(1) This document describes the DPI processing for provision both of DPI messages via AFTN and via B2B web services.

(2) For each field there is an ADEXP name and a B2B name and unfortunately these field names are different.

(3) The B2B field names are only relevant for software developers. The ADEXP field names can also be seen by operational users that read DPI messages in the ETFMS oplog files. Note that DPI messages that are provided via B2B web services are visible in the ETFMS oplog files in the ADEXP syntax.

(4) This document uses the ADEXP field names by default. The equivalent B2B field may be mentioned in between brackets. For example:

ARCID (aircraftId)

Refer to Appendix G for the conversion table from B2B to ADEXP fields.

(5) Note that the fields are described in this section in alphabetical order.

4.3 Standard field acceptance rules

(1) The message, field syntax & semantic descriptions **shall** be as specified in Doc Ref 7 for provision of DPI via AFTN.

(2) The message, field syntax & semantics descriptions **shall** be as specified in Doc Ref 3 for provision of DPI messages via B2B web services.

(3) Any exceptions or special rules are mentioned in the section of the relevant field.

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4.4 Field – message relationships

(1) The following table provides an overview of which field shall or should be present for each DPI type.

Field-name	P-DPI 4), 6)	E-DPI	T-DPI-t	T-DPI-s	A-DPI	C-DPI	APT type
TITLE DPI							
DPISTATUS [5]	--	M	M	M	M	M	CDM, AAT
ARCID	M	M	M	M	M	M	All
ADEP	M	M	M	M	M	M	All
ADES	M	M	M	M	M	M	All
EOBT	M	M	M	M	M	M	All
EOBD	M	M	M	M	M	M	All
TOBT	O	O	HD	HD	--	--	ANI,CDM
TSAT	--	--	O	M	--	--	ANI,CDM
TAXITIME	M	M	M	M	M	--	All
TTOT [1]	--	O	O	O	M	--	CDM, AAT
TURNAROUNDTTOT [1]	M	O	O	O	--	--	ANI,CDM
EARLIESTTTOT [1]	HD	HD	HD	HD	--	--	ANI,CDM
CONSOLIDATEDTTOT [1]	--	--	O	O	--	--	ANI,CDM
SOBT [3]	M	HD	--(HD)	--(HD)	--(HD)	--(HD)	ANI,CDM
SOBD [3]	M	HD	--(HD)	--(HD)	--(HD)	--(HD)	ANI,CDM
AOBT	--	--	--	--	HD	--	All
AOBD	--	--	--	--	HD	--	All
SID	O	HD	HD	HD	M	--	All
ARCTYP	HD	HD	HD	HD	HD	--	All
REG	HD	HD	HD	HD	HD	--	All
DEPSTATUS-DEICING	O	O	O	O	O	--	All
DEPSTATUS-TWRUPDATE	-	-	-	-	O	--	All
REASON [2]	--	--	--	--	--	M	All
IFPLID	HD	HD	HD	HD	HD	HD	All
ORIGIN [5]	--	O	O	O	O	O	CDM,AAT
IATAARCID [3]	HD	--(HD)	--(HD)	--(HD)	--(HD)	--(HD)	ANI,CDM
IATADEP [3]	HD	--(HD)	--(HD)	--(HD)	--(HD)	--(HD)	ANI,CDM
IATADES [3]	HD	--(HD)	--(HD)	--(HD)	--(HD)	--(HD)	ANI,CDM
IATAARCTYP	O	O	O	O	O	--	ANI,CDM
RWYDEP	O	O	O	O	O	--	ANI,CDM, AAT
TERMINALDEP	O	O	O	O	O	--	ANI,CDM
ATVSTATUSOUTBOUND	M (O)	O	O	O	O	O	ANI
ADSDT	O	-- (O)	--	--	--	--	ANI
ARCIDINBOUND	HD	HD	HD	HD	HD	--	ANI,CDM
IFPLIDINBOUND	HD	HD	HD	HD	HD	--	ANI,CDM
REGINBOUND	HD	HD	HD	HD	HD	--	ANI,CDM
APRONSTANDDEP	O	O	O	O	O	--	ANI,CDM

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(2) Note that for DPI messages via AFTN, the above table contains the DPI-fields in the requested order in the DPI message. It is an operational requirement that all fields, when present, are included in the DPI message in this order.

(3) For DPI messages transmitted via AFTN, each field shall start on a new line.

(4) Note: the TSAT may be included in the T-DPI-t for e.g., regulated flights at airports that provide the first T-DPI-s around TSAT-issue time.

(5) Classification:
- --: Not allowed
- M: Mandatory
- HD: Highly Desirable because it significantly improves the quality of the provided information. "HD" means "Mandatory" except if providing it entails high implementation costs or a high impact on operational procedures.
- O: Optional

(6) The purpose of the APT Type column is to provide an overview of which data elements could be applicable for each airport type. It is however not intended to provide an exclusive requirement.

(7) Notes:

[1] The TTOT field cannot be present when turnaroundTTOT or the earliestTTOT or the consolidatedTTOT are present. ANI and RNI Airports shall provide the turnaroundTTOT field and optionally the earliestTTOT and consolidatedTTOT. CDM Airports currently provide the TTOT field but may consider providing the turnaroundTTOT, earliestTTOT and consolidatedTTOT fields instead.

[2] The reason-field is Mandatory for new airports. It should be provided by existing airports asap.

[3] The SOBT/SOBD, IATAARCID, IATADEP, IATADES fields can currently not be provided in the T-DPI-t and T-DPI-s but this will be a future extension. The IATAARCID, IATADEP, IATADES fields can currently not be provided in the E-DPI but this will be a future extension.

[4] The P-DPI can only be provided via B2B web services.

[5] These fields can only be provided via AFTN.

[6] In case of ATVSTATUSOUTBOUND=CNX, only the fields marked with "M" (mandatory) shall be included in the DPI message (plus ATVSTATUSOUTBOUND).

4.5 ICAO format Key-fields

4.5.1   Introduction

(1)   The ICAO format key-fields are used for matching DPI messages to flight data in NM/ETFMS as soon as a flight plan has been filed and been received by the airport.

(2)   If present, the ICAO format key-field takes precedence over any IATA format key-field.

4.5.2   ADEP & ADES (aerodromeOfDeparture & aerodromeOfDestination)

4.5.2.1   Description

(1)   If provided, the adep-field and the ades-field **shall** contain the ADEP and ADES as received in the Flight Plan from NM/IFPS.

4.5.2.2   When (can it be sent)

(1)   The adep-field and the ades-field **shall** be provided as soon as they are available in the Airport System(s), so after the ATC flight plan has been received.

4.5.2.3   How (does ETFMS use it)

(1)   ETFMS uses the adep-field and the ades-field for matching the received DPI message to the flight plan data in NM/ETFMS.

4.5.3   ARCID (aircraftId)

4.5.3.1   Description

(1)   If provided, the arcid-field **shall** contain the ICAO aircraft identifier as received in the ICAO ATC Flight Plan from NM/IFPS.

4.5.3.2   When (can it be sent)

(1)   The arcid-field **should** be provided when available in the Airport System(s). It may be provided at transmission of the 1st DPI.

4.5.3.3   How (does ETFMS use it)

(1)   The arcid-field will be used for matching the received DPI message to the flight plan data in NM/ETFMS.

4.5.4   EOBT & EOBD (estimatedOffBlockTime)

4.5.4.1   Description

(1) If provided, the eobt- and eobd-fields **shall** contain the EOBT and EOBD as received in the last received ICAO Flight Plan and associated messages (i.e., FPL, DLA or CHG message) from NM/IFPS.

(2) The presence of the EOBT & EOBD reduces the number of DPI-to-flight plan matching problems, especially for "shuttle flights" (flights with a short EET, using the same callsign for the same city-pair several times per day).

(3) Note that in the ATC flight plan, the EOBD is present in field18 as DOF/yymmdd.

4.5.4.2   When (can it be sent)

(1) The eobt- and eobd-fields **shall** be provided as soon as they are available in the Airport System(s), so after the ATC flight plan has been received.

(2) A DPI message update **should** be sent for a change to a previously provided EOBT or EOBD but only when it has an impact on any of the provided TOT-fields.

4.5.4.3   How (does ETFMS use it)

(1) The eobt- and eobd-fields will be used for matching the received DPI message to the flight plan data in NM/ETFMS.

4.5.5   IFPLID (ifplId)

4.5.5.1   Description

(1) If provided, the ifplid-field **shall** contain the IFPLID of the ICAO Flight Plan as received from NM/IFPS.

4.5.5.2   When (can it be sent)

(1) The ifplid-field **should** be provided when available in the Airport System(s). It may be provided at transmission of the 1st DPI.

(2) In case the ICAO Flight plan is cancelled and re-filed, the subsequent DPI messages **shall** contain the ifplid of the new flight plan.

4.5.5.3   How (does ETFMS use it)

(1) ETFMS uses the ifplid-field for matching the received DPI message to the flight plan data in NM/ETFMS.

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4.6 IATA format Key-fields

4.6.1   Introduction

(1)   The IATA format key-fields will be used for matching DPI messages to flight data in NM/ETFMS when the flight plan has not yet been filed and/or been received by the airport.

(2)   If present, the ICAO format key-field take precedence over any IATA format key-field.

(3)   In any case, even after the flight plan has been filed, the IATA format key-fields should remain included in the DPI messages.

4.6.2   IATADEP & IATADES (aerodromeOfDepartureIATA & aerodromeOfDestinationIATA)

4.6.2.1   Description

(1)   If provided, the iatadep- and iatades-fields **shall** contain the IATA name of the airports of departure and destination.

(2)   The iatades-field shall contain the destination of the 1st leg.

4.6.2.2   When (can it be sent)

(1)   The iatadep_iatades-fields **should** be provided when available in the Airport System(s), so they may be provided at transmission of the 1st DPI.

4.6.2.3   How (does ETFMS use it)

(1)   The iatadep- and iatades-fields are used for information sharing purposes only.

4.6.3   IATAARCID (aircraftIATAID)

4.6.3.1   Description

(1)   If provided, the iataarcid-field **shall** contain the IATA flight number of the flight (for example IB3214 and not IBE3214))

(2)   The source of the iataarcid may be the Aircraft Operator or the Airport Slot Coordinator.

4.6.3.2   When (can it be sent)

(1)   The iataarcid-field **should** be provided when available in the Airport System(s), so it may be provided at transmission of the 1st DPI.

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4.6.3.3 How (does ETFMS use it)

(1) The iataarcid-field is used for information sharing purposes. It improves the understanding of NMOC and it helps to answer question from AOs who sometimes refer to a flight using the IATA flight number.

4.6.4 SOBT & SOBD (scheduledOffBlockTime)

4.6.4.1 Description

(1) If provided by CDM Airports, the sobt-field **shall** contain the airportSlotDeparture time as provided by the National Airport Slot Coordinator.

(2) For CDM Airports, for flights that are exempted from having an airport slot, the SOBT and SOBD fields **shall** be omitted. An example of such flights are Ambulance flights.

(3) If provided by ANI and RNI Airports, the sobt-field **shall** contain the Scheduled Off Block Time as provided by the Aircraft Operator (AO) or the Airport Slot Coordinator.

4.6.4.2 When (can it be sent)

(1) From CDM Airports, the sobt-field **should** be provided in the E-DPI messages.

(2) A DPI message update **shall** be sent for any change of a previously provided SOBT.

4.6.4.3 How (does ETFMS use it)

(1) ETFMS uses the sobt-field only for post-ops analysis.

(2) Initially, the SOBT and SOBD fields will be used for offline evaluation purposes only. ETFMS will parse this field and will not base any logic upon the SOBT/SOBD.

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4.7 Data Fields

4.7.1 Introduction

(1) The general Data fields are data elements that can be used in several DPI messages.

(2) They are described in the following paragraphs in alphabetical order.

4.7.2 ADSDT (airportSlotDeparture)

4.7.2.1 Description

(1) If provided, the adsdt-field **shall** contain the airportSlotDeparture time as provided by the National Airport Slot Coordinator.

(2) For flights that are exempted from having an airport slot, the adsdt-field **shall** be omitted. An example of such flights are Ambulance flights.

4.7.2.2 When (can it be sent)

(1) The adsdt-field **should** be provided as soon as it is available in the AODB, so it may be provided at transmission of the 1st DPI message.

(2) A DPI message update **shall** be sent for any change of a previously provided ADSDT.

4.7.2.3 How (does ETFMS use it)

(1) ETFMS uses the adsdt-field only for post-ops analysis.

4.7.3 AOBT & AOBD (actualOffBlockTime)

4.7.3.1 Description

(1) If provided, the aobt- and aobd-fields **shall** contain the Actual Off Block Time and the Actual Off Block Date.

4.7.3.2 When (can it be sent)

(1) The aobt- and aobd-field **should** be provided at and after the actual off-block event.

4.7.3.3 How (does ETFMS use it)

(1) The aobt- and aobd-fields are currently not used. They will be used for information sharing purposes.

4.7.4   APRONSTANDDEP (departureApronStand)

4.7.4.1   Description

(1)   If provided, the apronstanddep-field **shall** contain the stand/parking position that is assigned to the flight.

4.7.4.2   When (can it be sent)

(1)   The apronstanddep-field **should** be provided as soon as it is available in the AODB, so it may be provided at transmission of the 1st DPI.

(2)   A DPI message update **shall** be sent for any change of a previously provided apronstanddep.

4.7.4.3   How (does ETFMS use it)

(1)   The apronstanddep-field is used for information sharing only.

(2)   The apronstanddep can be used by AO OCC to be kept informed about the actual Stand allocated to the Aircraft, for example there are situations where Airport changes the Apron Stand where the aircraft is parked (e.g., local resource needs or aircraft maintenance) and AO OCC is not informed about this movement.

4.7.5   ARCIDINBOUND (aircraftIdInbound)

4.7.5.1   Description

(1)   If provided, the arcidinbound-field **shall** contain the ICAO identifier of the ICAO Flight Plan of the preceding leg (inbound flight).

4.7.5.2   When (can it be sent)

(1)   The arcidinbound-field **should** be provided when available in the AODB, so it may be provided at transmission of the 1st DPI.

(2)   When the link between inbound and outbound is changed, a DPI update **shall** be sent to provide the new aircraftidinbound.

4.7.5.3   How (does ETFMS use it)

(1)   The arcidinbound-field will be used for information sharing purposes only.

4.7.6   ARCTYP (aircraftType)

4.7.6.1   Description

(1) If provided, the arctyp-field **shall** contain a valid ICAO aircraft type as specified in ICAO DOC 8643 Aircraft Type Designators.

(2) If provided, the arctyp-field **shall** contain the ICAO identifier of the aircraft type that operates the flight.

(3) If provided, the arctyp-field **shall** contain the aircraft type that is available in the AODB. It shall be an aircraft type that is received from the AO/HA via the IATA messaging or that has been verified by the responsible unit at the airport (it **shall not** be a simple copy from the ATC flight plan).

4.7.6.2   When (can it be sent)

(1) The arctyp-field **should** be provided as soon as it is available in the AODB.

(2) A DPI message update **shall** be sent for any change of a previously provided arctyp.

4.7.6.3   How (does ETFMS use it)

(1) The ARCTYP is stored and only used to show an IFPS discrepancy.

(2) For the time being, the ARCTYP is not used to update the flight profiles in ETFMS. This may be a future extension.

4.7.7   ATVSTATUSOUTBOUND (flightStatusOutbound)

4.7.7.1   Description

(1) If provided, the atvstatusoutbound-field **shall** contain the status of the flight from the airport's perspective with NM.

(2) Only the applicable values have to be provided. Note that the values that are crossed out are not compatible with the DPI concept and should not be provided. In the DPI interface supported by the future NM systems these values will be corrected/removed.

(3) The possible values that can be provided are:

Value	Meaning
SCH	Schedule data – flight is scheduled. The FPL has not yet been filed
INI	Initiated – The aircraft operation has been confirmed (ICAO FPL filed/activated in AODB)
BRD	Boarding in progress- The aircraft is on-stand and passengers are boarding
BRC	Boarding completed – The aircraft is on-stand and all passengers are on board.
RDY	Ready – Aircraft is ready to depart immediately upon reception of TWR instructions
OBK	Off-block – Off block/taxi-out. The aircraft is taxiing to the departure runway
~~DEP~~	~~Departure – the aircraft has taken off~~
CNX	Cancelled – The IATA flight has been cancelled by the Airline
RTN	Returning on ground – The aircraft is returning to stand before taking off.
~~RET~~	~~Returning to ground – The aircraft is returning after take-off~~

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RPO	Repositioning on towing – Aircraft is being towed or it is taxiing from another stand
RDI	Ready for De-icing – The aircraft is on the de-icing position (either on its stand or on the de-icing pad.
DEI	De-icing in progress -The aircraft is being de-iced (either on-stand or remotely)
TXD	De-icing taxi – The aircraft is taxiing to a remote de-icing position

4.7.7.2   When (can it be sent)

(1) The atvstatusoutbound-field **should** be provided as soon as it is available in the AODB so may be provided at transmission of the 1st DPI.

(2) A DPI message update **shall** be sent for any change of a previously provided atvstatusoutbound.

4.7.7.3   How (does ETFMS use it)

(1) The flightstatusOutbound-field will be used for information sharing purposes only.

4.7.8   CONSOLIDATEDTTOT (consolidatedTargetTakeOffTime)

4.7.8.1   Description

(1) If provided, the consolidatedttot-field **shall** contain the TTOT that is based upon all known constraints. This includes the turnaroundTTOT, earliestTTOT and the CTOT from NMOC.

(2) The consolidatedTTOT only makes sense for regulated flights.

(3) The consolidatedTTOT is based upon turnaroundTTOT, earliestTTOT and CTOT as follows:
If (flight is regulated and consolidatedTTOT <> CTOT and clock > EOBT-2hrs)
Then
   consolidatedTTOT shall be inside STW
   Note that consolidatedTTOT >= earliestTTOT always.
Else
   consolidatedTTOT shall be omitted.
End if

(4) A consolidatedttot-field **shall** only be provided when it can be different from the CTOT. Else the consolidatedTTOT field **shall** be omitted. Note that it can be provided if it is equal to CTOT but only when this occurs occasionally, and not all the time.

(5) The consolidatedttot-field **shall** be omitted for non-regulated flights.

4.7.8.2   When (can it be sent)

(1) The consolidatedttot-field **shall** only be provided after EOBT-2hrs (i.e. after slot-issue time). A provision of a consolidatedTTOT before that time would result in too many DPI message updates because the CTOT is very dynamic before EOBT-2hrs.

(2) A DPI update **shall** be sent when the consolidatedttot-field changes by 5min or more compared to a previously provided consolidatedTTOT.

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4.7.8.3   Additional acceptance rules

(1)   The consolidatedTTOT shall be equal or later than earliestTTOT (see section 4.7.12 EARLIESTTTOT (earliestTargetTakeOffTime))

(2)   If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

(3)   The consolidatedTTOT shall be equal or later than turnaroundTTOT in case no earliestTTOT is present in the message.

(4)   If it is not, the consolidatedTTOT is ignored.

(5)   If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

(6)   The consolidatedTTOT for regulated flights **shall** be between:
EOBT + Min_TT – STW_LowerBound_Extension – 45 min and
COBT + Max_TT + STW_UpperBound_Extension + 120 min

(7)   If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

When is the consolidatedTTOT accepted – regulated flight?

Fig: DPI - 2
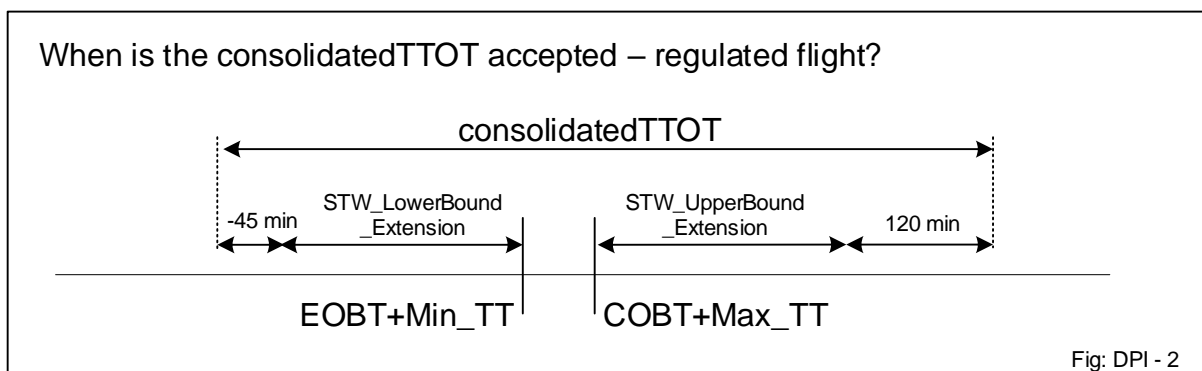
(8)   Min_TT / Max_TT are the minimum / maximum of the current taxi time of FTFM and the new taxi time from DPI message that is being validated.

(9)   DTW/STW_Lower/UpperBound_Extension are the values of the extension of the lower/upperbound of the DTW/STW (the value is zero if the regular window, i.e. [-5,+10], has not been extended).

(10)   The consolidatedTTOT for regulated flights is NOT checked against the clock anymore.

4.7.8.4   How (does ETFMS use it)

(1)   For non-regulated flights, ETFMS will ignore the consolidatedTTOT.

(2)   ETFMS uses the consolidatedTTOT only after EOBT-2hrs. Any earlier received consolidatedTTOT is ignored. If after an EOBT update (i.e. reception of a CHG or DLA) the EOBT is again more than 2hrs in the future, the consolidatedTTOT is ignored.

(3)   For regulated flights the following is applied:

consolidatedTTOT < STW	Ignored
consolidatedTTOT inside STW	The consolidatedTTOT is used to update the Load (CTFM) But only when the earliestTTOT is not inside the STW.
consolidatedTTOT > STW	Ignored. This is to be able to process race conditions (CTOT is improved and DPI is still based upon previousCTOT)

(4) A previously received consolidatedTTOT is also erased/ignored when:
- a new DPI message does not contain a consolidatedTTOT
- when CTOT is improved or deteriorated and consolidatedTTOT before or after new_STW

(5) Note that a consolidatedTTOT that is ignored, is not stored, not visible on CHMI and NOP portal and not output via B2B web services.

(6) Note that a consolidatedTTOT is used even when only the turnaroundTTOT is present (and the earliestTTOT is not present)

(7) Flight Activation Monitoring (FAM) may start shifting at the consolidatedTTOT and may suspend 17 min (default value) after the TTOT if no further information is received for the flight.

4.7.9   DEPSTATUS (depstatusDeicing)

4.7.9.1   Description

(1) If provided, the depstatus-field **shall** contain the departure status of the flight. This departure status indicates any special circumstances that may be applicable for the flight.

(2) In case the flight will be de-iced or is under de-icing the depstatus-field **shall** contain the value "DEICING".

4.7.9.2   When (can it be sent)

(1) The depstatus-field with the value DEICING **shall** be included in a DPI message as soon as it is known that the flight will be subject to special circumstances at the airport. For example, "-DEPSTATUS DEICING" can be included as soon as it is known that the flight has to be de-iced. This may only be known shortly before off-block or sometimes several hours before off-block.

(2) The "-DEPSTATUS DEICING" field shall remain included, even after de-icing has been completed.

(3) If a flight, that was previously subject to special circumstances, is no longer subject to these circumstances, an updated DPI message **shall** be sent. This DPI message shall no longer contain that depstatus-field.

(4) During situations when all aircrafts will require de-icing, the DEPSTATUS DEICING **should** be provided in any DPI message that is transmitted after the "declaration of general deicing" by TWR or Airport Operations..

(5) In all other situations, the DEPSTATUS DEICING **should** only be sent after the pilot has requested the de-icing.

4.7.9.3   Additional acceptance rules

(1) For deicing operations, the value that is required is "DEICING". It indicates that the flight needs to be de-iced or is currently being de-iced.

4.7.9.4   How (does ETFMS use it)

(1) ETFMS uses the depstatus-field to identify that the flight is subject to special circumstances at the airport.

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(2) The deicing status is visible on CHMI,NOP Portal and NMP to improve situational awareness for AOCCs and NMOC.

(3) ETFMS will use the depstatus-field (if it contains the value DEICING) to verify if the provided TTOT may be inside an extended STW or extended DTW. See sections 12.2 The STW and the DTW and 11.4 Use of DPIs during Special Circumstances at the airport for more information.

4.7.10   DEPSTATUS (depstatusTwrUpdate)

4.7.10.1   Description

(1) An A-DPI message in which the depstatus "TWRUPDATE" is present is subject to a specific type of processing compared to a Classic A-DPI. It acts as a request for either:

- A 10 min CTOT extension (see 9.1.1.3.2 CTOT extension request)
- A new slot (search for next available CTOT) (see 9.1.1.3.3 Request for a newCTOT (slot search))
- De-suspension of a flight that was suspended by the airport (via C-DPI) (see 9.1.1.3.4 Request for a de-suspension).

(2) See section 9.1.1.3 TOWER UPDATE A-DPI for more details.

4.7.10.2   When (can it be sent)

(1) For more information on possible use cases when the depstatus-field value "TWRUPDATE" can be provided refer to chapter 9.3 When (can it be sent).

4.7.10.3   Additional acceptance rules

(1) For more information on acceptance rules for the depstatus-field value "TWRUPDATE" refer to section 9.4 Acceptance rules.

4.7.10.4   How (does ETFMS use it)

(1) By including the depstatus-field containing the value "TWRUPDATE" in the A-DPI message, ETFMS will distinguish the Tower Update A-DPI from a Classic A-DPI.

(2) Depending on the use case for which the Tower Update A-DPI was sent (based on i.e., the status of the flight, the TTOT value, etc.), ETFMS will process the message accordingly. Please refer to chapter 9.5 How (does ETFMS use it) for more details.

4.7.11   DPISTATUS (--)

4.7.11.1   Description

(1) The contents of the dpistatus-field **shall** be as specified in Doc Ref 7. The table below lists the possible values:

DPI-type	DPISTATUS	B2B web service name
P-DPI	n.a.	PredictedDPIRequest

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E-DPI	EARLY	EarlyDPIRequest
T-DPI-t	TARGET	TargetDPITargetRequest
T-DPI-s	SEQ	TargetDPISequencedRequest
A-DPI	ATC	ATCDPIRequest
C-DPI	CNL	CancelDPIRequest

(2) The dpistatus-field is not applicable for DPI messages that are provided via B2B web services because each DPI type has its own specific service (see table above).

4.7.11.2   When (can it be sent)

(1) The DPISTATUS field **shall** be included in each DPI message (that is provided via AFTN).

4.7.11.3   How (does ETFMS use it)

(1) The dpistatus-field is used to derive the type of DPI message.

4.7.12   EARLIESTTTOT (earliestTargetTakeOffTime)

4.7.12.1   Description

(1) If provided, the earliestttot-field **shall** contain the earliest possible TTOT, taking into account the constraints from the AO and Handling Agent (see turnaroundTTOT) as well as any local airport capacity constraints. The earliestttot-field is usually the output of a Demand-Capacity-Balancing (DCB) tool or a Pre-departure sequencer tool.

(2) If provided, the earliestTTOT **shall** be based upon turnaroundTTOT and the output of the DCB tool or pre-departure sequencer as follows:

> If there are no Airport Departure Capacity constraints
> Then
> > earliestTTOT= turnaroundTTOT
> Else
> > earliestTTOT is the output of the DCB tool or the pre-departure sequencer.
> > For non-regulated flights, it may e.g., be Target Start-up Approval Time (TSAT) + Taxi-Time (EXOT).
> End if.

(3) If provided for a regulated flight, the earliestTTOT **SHALL NEVER** be in accordance with the CTOT. It is only based upon local Departure Capacity constraints, if existing.

4.7.12.2   When (can it be sent)

(1) The earliestttot-field **should** be provided as soon as it is available in the Airport system(s), so it may be provided at transmission of the 1st DPI message.

(2) If provided before EOBT-2hrs and the inbound flight is not yet airborne, a DPI update **shall** be sent when the earliestttot-field changes by 15min or more compared to a previously provided earliestttot.

(3) If provided after EOBT-2hrs or the inbound flight is already airborne, a DPI update **shall** be sent when the earliestttot-field changes by 5min or more compared to a previously provided earliestTTOT.

(4)   When the ready event is available, an earliestTTOT=ARDT+taxitime may be sent (in a T-DPI-s).

(5)   Note that traffic departing from A-CDM airports will automatically be given REA status when clock reaches TOBT – 5 and a T-DPI-s has been received for the flight. This is a transitional implementation in NM systems, currently under discussion in the ADCH UG. The DPI interface in the future iNM system will support the explicit transmission of the ready event, if decided by the ADCH UG.

(6)   If provided after TSAT-issue time during e.g., adverse conditions the taxi-time values may also be longer and the pre-departure sequence may become less accurate and possibly instable. For this reason, it is proposed to decrease the accuracy of the update window if earliestTTOT is "far" in the future in accordance with the following proposal:

(7)   In case the start-up delay (TSAT-TOBT) is more than 90min then the update accuracy of the earliestTTOTs **should** be +/-15min. If, however, the TSAT is less than 90min in the future, then the earliestTTOTs accuracy is back to normal, i.e. +/-5min.
More formally, this means:
If TSAT-TOBT > 90min and TSAT-current_time>90min
Then
        earliestTTOTs_accuracy_window is +/- 15min
Else
        earliestTTOTs_accuracy_window is +/- 5min
Endif

(8)   The graph below shows four different use cases, illustrated by the letters A, B, C or D.
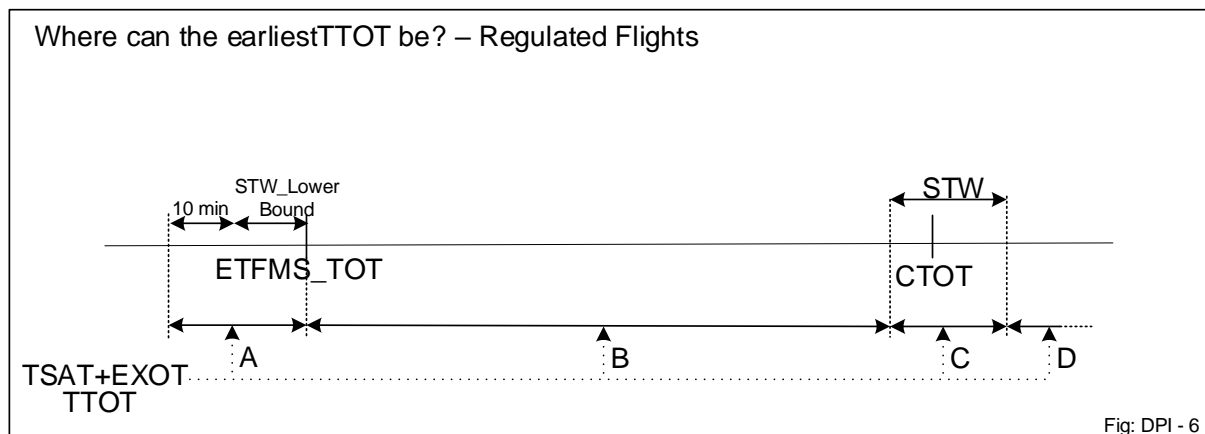
Fig: DPI - 6

(9)   When the Airport no longer wants to obtain any improvements to the ATFM slot (CTOT) then NM expects an earliestTTOT which is inside the Slot Tolerance Window (STW). This is illustrated as "case C" in graph "Fig DPI -6" above.

(10)   For more information on STW and DTW, see section 12.2 The STW and the DTW.

(11)   In case the flight cannot make its ATFM slot, i.e. the earliestTTOT is after the STW, then the CDM Airport **shall** inform the NMOC via an updated earliestTTOT. This is illustrated as "case D" in graph "Fig DPI -6" above.

(12)   In case the CDM Airport wants to prevent that ETFMS advances the CTOT up to a time that is not achievable, then the CDM Airport **shall** send an updated DPI with an appropriate

earliestTTOT. This is shown in "case B" in graph "Fig DPI -6" above. This earliest possible TOT is also referred to as the no-slot-before time or as the Optimal_TTOT.

(13)   In case the flight is ready to off block shortly before its TOBT, then a DPI with an earliestTTOT before the turnaroundTTOT should be sent. This is illustrated as "case A" in graph "Fig DPI -6" above.

(14)   For further details see also section 4.7.12.4 How (does ETFMS use it) .

4.7.12.3   Additional acceptance rules

(1)   The earliestTTOT **shall** be equal or later than turnaroundTTOT-15min? (see section 4.7.27 TURNAROUNDTTOT (turnaroundTargetTakeOffTime))

(2)   If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

(3)   The earliestTTOT for non-regulated flights **shall** be between:
EOBT + Min_TT – DTW_LowerBound_Extension – 45 min and
ETFMS_OBT + Max_TT + DTW_UpperBound_Extension + 120 min

(4)   If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

When is the earliestTTOT accepted – non-regulated flight?

Fig: DPI - 9
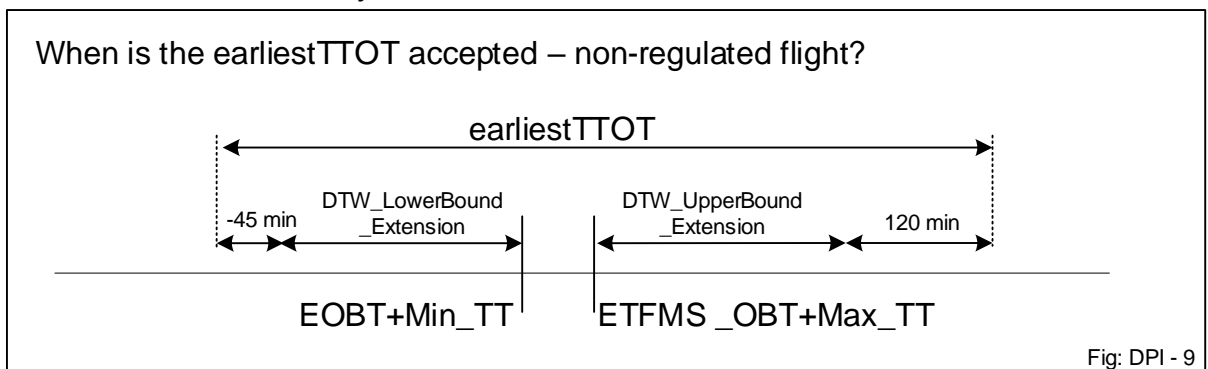
(5)   The earliestTTOT for regulated flights **shall** be between:
EOBT + Min_TT – STW_LowerBound_Extension – 45 min and
COBT + Max_TT + STW_UpperBound_Extension + 120 min

(6)   If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

When is the earliestTTOT accepted – regulated flight?

Fig: DPI - 10
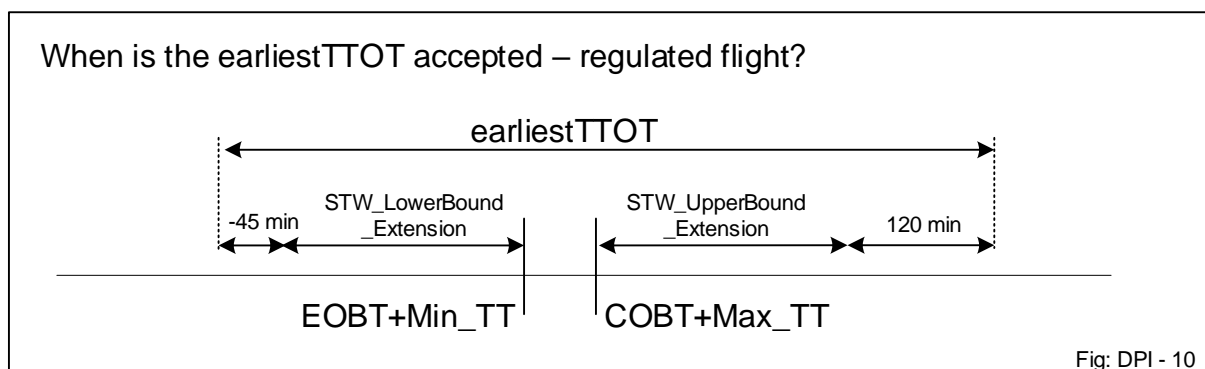
(7)   The ETFMS_OBT is the Off-Block-Time in the ETFMS "filed" flight model (FTFM), i.e., the last received OBT, derived from the last received DLA, CHG, E-DPI, T-DPI-t, REA…. (Derived OBT in DPI msg is TOT – last-received-taxi-time).

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(8) Min_TT / Max_TT is the minimum / maximum of the current taxi time of FTFM and the new taxi time from DPI message that is being validated.

(9) DTW/STW_Lower/UpperBound_Extension are the values of the extension of the lower/upperbound of the DTW/STW (the value is zero if the regular window, i.e. [-5,+10], has not been extended).

(10) Note that the earliestTTOT is no longer checked against the clock to be able to accept e.g., SID update while the TTOT has not been changed.

4.7.12.4   How (does ETFMS use it)

4.7.12.4.1 General

(1) ETFMS will store the earliestTTOT as a no-slot-before time.

(2) Note that this no-slot-before time will be kept by ETFMS. It will only be removed:
- at the reception of a C-DPI message
- turnaroundTTOT update which is later than the earliestTTOT
- when newEOBT+EXOT > earliestTTOT
- If the earliestTTOT is no longer present

(3) Flight Activation Monitoring (FAM) may start shifting using the latest of the earliestTTOT and CTOT and may suspend 17 min (default value) after that TOT if no further information is received for the flight.

4.7.12.4.2 Non-regulated flights – received before EOBT-2hrs

(1) If the earliestTTOT is inside the DTW, then:
- Regulations Crossed and Suspension Conditions are **not** assessed.
- Traffic Load is updated through the creation of the Actual Flight Model (CTFM) based upon the earliestTTOT.

(2) If the earliestTTOT is before the Departure Tolerance Window (DTW) around the take-off-time of the Estimated Flight Model (FTFM) then
- the earliestTTOT is used to update the Estimated Flight Model (FTFM)
- Regulations Crossed and Suspension Conditions are assessed.

(3) If the earliestTTOT is after the Departure Tolerance Window (DTW) around the take-off-time of the Estimated Flight Model (FTFM) then
- Regulations Crossed and Suspension Conditions are assessed.

(4) If Regulations Crossed and Suspension Conditions are assessed:
   a) If the flight becomes regulated, the Regulated Flight Model (RTFM) becomes the reference (CTFM is not created)
   b) If the flights remain unregulated, the Actual Flight Model (CTFM) is created based upon the earliestTTOT.
   c) If the flight becomes suspended, the Estimated Flight Model (FTFM) becomes the reference.

4.7.12.4.3 Non-regulated flights – received after EOBT-2hrs

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(1) If the earliestTTOT is inside the DTW, then:
- Regulations Crossed and Suspension Conditions are **not** assessed.
- Traffic Load is updated through the creation of the Actual Flight Model (CTFM) based upon the earliestTTOT.

(2) If the earliestTTOT is before the Departure Tolerance Window (DTW) around the take-off-time of the Estimated Flight Model (FTFM) then
- the earliestTTOT is used to update the Estimated Flight Model (FTFM)
- Regulations Crossed and Suspension Conditions are assessed.

(3) If the earliestTTOT is after the Departure Tolerance Window (DTW) around the take-off-time of the Estimated Flight Model (FTFM) then
- Regulations Crossed and Suspension Conditions are assessed.

(4) If Regulations Crossed and Suspension Conditions are assessed:

a) If the flight becomes regulated and earliestTTOT < STW then: the Regulated flight model becomes the reference for the Traffic Predictions.

b) If the flight becomes regulated and earliestTTOT is inside STW then: Traffic Load is updated through the creation or update of the Actual Flight Model (CTFM).

c) If the flight becomes suspended, the Estimated Flight Model (FTFM) becomes the reference.

4.7.12.4.4 Regulated flights – received before EOBT – 2hrs
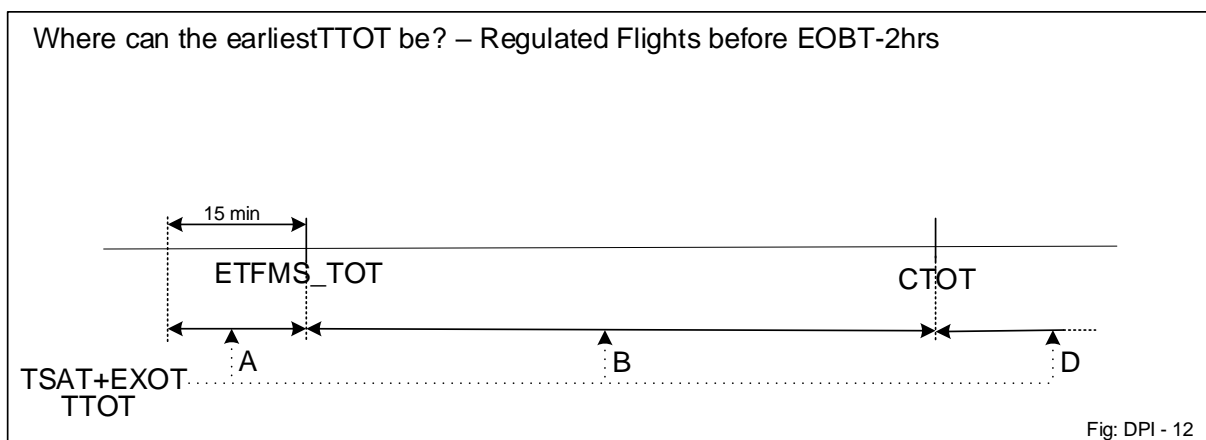
Fig: DPI - 12

(1) When the earliestTTOT is before the turnaroundTTOT then (see "case A" in graph "Fig: DPI – 12" above: earliestTTOT is used to update the Estimated Flight Model (FTFM) and it will overwrite the turnaroundTTOT.

(2) When the earliestTTOT is equal or between the turnaroundTTOT and the CTOT then (see "case B" in graph "Fig: DPI – 12" above: earliestTTOT is only stored for possible future use as a no-slot-before time and the Actual Flight Model (CTFM) is removed if it existed.

(3) In this case, ETFMS will try to improve the CTOT up to the provided no-slot-before time at regular intervals. ETFMS will also use the no-slot-before time when the regulation-schema is modified.

(4) When the earliestTTOT is after the CTOT then (see "case D" in graph "Fig:DPI – 12" above: regulations crossed, and suspension conditions are (re-) assessed.

(5) If Regulations Crossed and Suspension Conditions are assessed:

    a) If the flight remains regulated, the Regulated Flight Model (RTFM) remains the reference (CTFM is not created)

    b) If the flights become unregulated, the Actual Flight Model (CTFM) is created based upon the earliestTTOT.

    c) If the flight becomes suspended, the Estimated Flight Model (FTFM) becomes the reference.

4.7.12.4.5 Regulated flights – received after EOBT-2hrs

(1) When the earliestTTOT is before the turnaroundTTOT then (see "case A" in graph "Fig: DPI – 6" in section section 4.7.12.2 When (can it be sent)): earliestTTOT is NOT used to update the Estimated Flight Model (FTFM) and it is ignored. The turnaroundTTOT becomes the reference for minCTOT in this case.

(2) When the earliestTTOT is equal or between the turnaroundTTOT and the LowerBound of the STW then (see "case B" in graph "Fig: DPI – 6" in section section 4.7.12.2 When (can it be sent)):): earliestTTOT is only stored for possible future use as a no-slot-before time and the Actual Flight Model (CTFM) is removed if it existed.

(3) When the earliestTTOT is inside STW then (see "case C" in graph "Fig: DPI – 6" in section 4.7.12.2 When (can it be sent)):): the Traffic Load is updated through the creation or update of the Actual Flight Model (CTFM). ETFMS will no longer provide any CTOT improvements, and the flight may be impacted by modifications of the regulation schema.

(4) When the earliestTTOT is after the STW then (see "case D" in graph "Fig:DPI – 6" in section 4.7.12.2 When (can it be sent)): regulations crossed and suspension conditions are (re-) assessed.

(5) If Regulations Crossed and Suspension Conditions are assessed:

    a) If the flight remains regulated and earliestTTOT < newSTW then: the Regulated flight model becomes the reference for the Traffic Predictions.

    b) If the flight remains regulated and earliestTTOT is inside newSTW then: Traffic Load is updated through the creation or update of the Actual Flight Model (CTFM).

    c) If the flight becomes suspended, the Estimated Flight Model (FTFM) becomes the reference.

4.7.13   IATAARCTYP (aircraftTypeIATA)

4.7.13.1   Description

(1) If provided, the iataarctyp-field **shall** contain a valid IATA aircraft.

(2) If provided, the iataarctyp-field **shall** contain the IATA identifier of the aircraft type that operates the flight.

(3) If provided, the iataarctyp-field **shall** contain the aircraft type that is available in the AODB. This means that it **shall not** contain the aircraft type from the ATC flight plan (converted from ICAO to IATA format).

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4.7.13.2　　When (can it be sent)

(1)　The iataarctyp-field **should** be provided as soon as it is available in the AODB, so it may be provided at transmission of the 1st DPI message.

(2)　A DPI message update **shall** be sent for any change of a previously provided iataarctyp.

4.7.13.3　　How (does ETFMS use it)

(1)　The iataarctyp-field will be used for information sharing purposes only.

4.7.14　　IFPLIDINBOUND (ifplIdInbound)

4.7.14.1　　Description

(1)　If provided, the ifplidinbound-field **shall** contain the IFPLID of the ICAO Flight Plan of the preceding leg (inbound flight).

4.7.14.2　　When (can it be sent)

(1)　The ifplidinbound-field **should** be provided when available in the AODB so may be provided at transmission of the 1st DPI.

(2)　When the link between inbound and outbound is changed, a DPI update **shall** be sent to provide the new ifplidinbound.

4.7.14.3　　How (does ETFMS use it)

(1)　The ifplidinbound-field will be used for information sharing purposes only.

4.7.15　　ORIGIN (--)

4.7.15.1　　Description

(1)　If provided, the origin-field **shall** contain the AFTN address that NM/ETFMS will use to address replies to DPI messages if provided via AFTN.

4.7.15.2　　When (can it be sent)

(1)　The origin-field **should** be provided at transmission of the 1st DPI until the last DPI message.

4.7.15.3　　Additional acceptance rules

(1)　This address (or any change) to it **shall** be provided to NM before the start of any data exchange to prevent rejection of the DPI messages.

4.7.15.4   How (does ETFMS use it)

(1)   The origin-field will be used to send the DPI ERRor reply messages to the origin address instead of to the physical AFTN originator address.

(2)   The origin-field is only useful when that AFTN address is different from physical originator AFTN address.

4.7.16   REASON (reasonForDPICancellation)

4.7.16.1   Description

(1)   If provided, the reason-field **shall** contain the reason why the C-DPI is sent. This will help all actors to better understand what happened to the flight and it will help the AO in deciding the next action for the flight.

4.7.16.2   When (can it be sent)

(1)   The reason-field **shall** be provided at transmission of any C-DPI message.

4.7.16.3   Additional acceptance rules

(1)   If provided, the reason-field of the C-DPI **shall** contain one of the following values:

Reason value ADEXP / Reason value B2B	**Possible transmission reasons**	**Possible Actions**
NOAIRPORTSLOT / NO_AIRPORT_SLOT	The airport did not have an airport slot for the departure	AO to request an airport slot or to CNL the flight plan
TOBTUNKNOWNOREXPIRED / TOBT_UNKNOWN_OR_EXPIRED	The TOBT was deleted, the pilot did not request start-up or report ready in accordance with the procedures at the Airport, …	AO/Handling Agent to update the TOBT, to file a DLA message, AO to CNL the flight plan…
TSATEXPIRED / TSAT_EXPIRED	Use case 1: The pilot did not request start-up in accordance with the CDM procedures at the airport. Use case 2: The pilot did not pushback or start taxi at ASAT+10min.	AO/Handling Agent to update the TOBT, to file a DLA message, AO to CNL the flight plan…
RETURNTOSTAND / RETURN_TO_STAND	After having started taxi, the flight returned to stand/ramp	AO/Handling Agent to update the TOBT, to file a DLA message, to CNL the flight plan…

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FLIGHTPLANINVALID / FLIGHT_PLAN_INVALID	The discrepancy between TOBT and EOBT is larger than 15min (and needs to be resolved before start-up will be issued)	AO/Handling Agent to update the TOBT or send a DLA message
FLIGHTCANCELINAODB / FLIGHT_CANCEL_IN_AODB	Cancellation of the airport slot or Schedule before the ICAO FPL has been cancelled (CNL).	Cancel ICAO flight plan
UNDOADPI/ UNDO_ADPI	Request de-activation of a flight that was erroneously activated by wrong A-DPI	ETFMS to automatically de-activate the flight; the flight will NOT be suspended
OTHER / OTHER	Special value to be used when other C-DPI reason applies than the ones listed above. To be used until this other C-DPI reason is made official in NM systems	None

4.7.16.4   How (does ETFMS use it)

(1) The reason-field will be used for information sharing purposes only, except for the reason value UNDO_ADPI. It is displayed on CHMI, NOP Portal, NMP.

(2) The reason value UNDO_ADPI will be processed as a request for flight de-activation.

4.7.17   REG (registrationMark)

4.7.17.1   Description

(1) If provided, the reg-field **shall** contain the aircraft registration of the aircraft that operates the flight. It **shall** be a valid ICAO registration mark.

(2) If provided, the reg-field **shall** contain the aircraft registration from the AODB. This means that it **shall not** contain the REGistration from the ATC flight plan.

4.7.17.2   When (can it be sent)

(1) The reg-field **should** be provided as soon as the AODB has received the registration from the AO or Handling Agent (directly).

(2) A DPI message update **shall** be sent for any change of a previously provided reg-field.

4.7.17.3   How (does ETFMS use it)

(1) The reg-field is stored and only used to report IFPS discrepancies.

4.7.18   REGINBOUND (registrationMarkInbound)

4.7.18.1   Description

(1)   If provided, the reginbound-field **shall** contain the ICAO identifier of the ICAO Flight Plan of the preceding leg (inbound flight). It **shall** be a valid ICAO registration mark.

(2)   If provided, the reg-field **shall** contain the aircraft registration from the AODB. It shall be a registration that is received from the AO/HA via the IATA messaging or that has been verified by the responsible unit at the airport (it **shall not** be a simple copy from the ATC flight plan).

4.7.18.2   When (can it be sent)

(1)   The reginbound-field **should** be provided when available in the AODB, so it may be provided at transmission of the 1st DPI.

(2)   When the link between inbound and outbound is changed, a DPI update **shall** be sent to provide the new reginbound.

4.7.18.3   How (does ETFMS use it)

(1)   The reginbound-field will be used for information sharing purposes only.

4.7.19   RWYDEP (departureRunway)

4.7.19.1   Description

(1)   If provided, the rwydep-field **shall** contain the planned runway for departure of the flight.

4.7.19.2   When (can it be sent)

(1)   The rwydep-field should be provided as soon as it is available in the airport system(s), i.e., at transmission of the 1st DPI message.

(2)   A DPI message update **shall** be sent for any change of a previously provided rwydep.

4.7.19.3   Additional acceptance rules

(1)   If the departure runway is unknown in NM ENV data, then an oplog message is produced, with reason "Runway unknown".

4.7.19.4   How (does ETFMS use it)

(1)   The rwydep-field is used to update the departure runway for that flight.

The rwydep-field is used to select a SID, when no SID is present in the same DPI message...

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4.7.20   SID (departureProcedure)

4.7.20.1   Description

(1) If provided, the sid-field **shall** contain the SID that the flight is expected to use. It may contain a predicted SID but eventually, it shall be the SID that was provided in the ATC clearance.

(2) The sid-field **shall** contain the identifier of the SID as is published in the AIP or, in case the flight received a direct clearance, the letters "DCT" or the waypoint name to which the DCT was issued. In case the sid-field contains the name of a waypoint, NM/ETFMS will consider this also as a direct clearance to the provided waypoint.

4.7.20.2   When (can it be sent)

(1) The sid-field **should** be provided when it is available in the airport system, preferably from the transmission of the 1st DPI message.

(2) The sid-field **shall** be provided when the ATC clearance is issued at the latest.

(3) An updated DPI message **shall** be sent for any change of a previously provided sid.

4.7.20.3   Additional acceptance rules

(1) The sid-field **shall** have the following syntax if provided via AFTN:

  sid := "-" + "SID" + [departure_rte_name | dct_portion | way_point]

  departure_rte_name := POINT ! 1{DIGIT}1 ! 0{ALPHA}1

  dct_portion := "DCT"

  way_point := POINT

(2) Note that a DPI message is still accepted if SID field value cannot be used.

4.7.20.4   How (does ETFMS use it)

(1) The sid-field will override any automatically allocated SID or previously specified SID.

(2) The CDM Airport Data fields SID is normally used to update the ETFMS filed demand (FTFM), including if present in the T-DPI-s. If present in the A-DPI messages it is normally only used to update the load (Actual Flight Model, CTFM).

(3) The SID will not be used but stored for later use when none of its connecting points is on the route of the flight.

(4) The value "DCT" in the sid-field is interpreted by ETFMS as direct TWR clearance to the first en-route point. Note that ETFMS only uses the DCT value if a relevant DCT-segment has been defined in the NMOC CACD system.

(5) A waypoint name in the sid-field is interpreted by ETFMS as direct TWR clearance to the provided waypoint. Note that ETFMS only uses the waypoint if a DCT-segment has been defined in the NMOC CACD system between the Airport and the specified waypoint.

(6) The SID received via a DPI message can only be modified via another DPI message, not via an ENV runway update and not via a CHG message. The SID from the DPI prevails.

(7) The deterioration of a slot will be limited where the delay can be absorbed within the ATFM delay and slot tolerance window.

4.7.21 TAXITIME (taxiTime)

4.7.21.1 Description

(1) The taxitime-field **shall** contain the time between take-off and off-block.

(2) The only cases that are exceptions to this rule, i.e. when the taxi-time field contains the remaining tax-time are the remote-hold and the TWRUpdate A-DPI.

(3) The taxitime **shall** at least depend on gate/stand/parking position and departure runway.

(4) The taxitime-field may be further improved by making it dependent on aircraft type, AO preference for taxiing,…

(5) The taxitime-field **shall** also include any time it takes to de-ice. This applies to remote de-icing and on-stand de-icing.

4.7.21.2 When (can it be sent)

(1) The taxitime-field shall be provided from the transmission of the 1st DPI message onwards.

(2) An updated DPI message shall be sent when the taxitime-field changes by 5min or more compared to a previously provided taxi-time.

(3) However, during e.g. adverse conditions the taxi-time values may also be longer and the pre-departure sequencer or DCB tool TOT predications may become less accurate and possibly instable. For this reason, it is proposed to decrease the accuracy of the update window if TOT is "far" in the future in accordance with the following proposal:

(4) In case the start-up delay (TSAT_TOBT) is more than 90min then the update accuracy of the taxi-time window should be increased to +/-8min. If, however, the TSAT is less than 90min in the future, then the taxi-time accuracy is back to normal, i.e., +/-5min.

(5) More formal this means:
If TSAT-TOBT > 90min and TSAT-current_time>90min
Then
   Taxi-time accuracy window is +/- 8min.
Else
   Taxi-time accuracy window is +/- 5min.
Endif

4.7.21.3 Additional acceptance rules

(1) The taxitime-field value shall be between 1min and 90min.

4.7.21.4 How (does ETFMS use it)

(1) The Taxi-Time (EXOT) is normally used to update the ETFMS filed demand (FTFM), including if present in the T-DPI-s. If provided via an A-DPI messages, it is normally only used to update the Actual Flight Model (CTFM).

(2) The Taxi-Out-Time (EXOT) is considered to be the time between off-block and take-off, so including any waiting times such as e.g., runway delay and De-icing. It will be used to derive the OBT (internal to ETFMS) if the turnaroundTTOT is specified.

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(3) This derived off-block time is used for the decision to process a newEOBT received via a DLA or CHG message.

(4) The Taxi-Time (EXOT) will be used to derive the TTOT if no TTOT is specified in the E-DPI.

(5) The Taxi-Time (EXOT) received via a DPI message can only be modified via another DPI message, not via an ENV runway update.

(6) The Taxi-Time (EXOT) from a DPI message always prevails over other taxi-times.

(7) The deterioration of a slot will be limited where the delay can be absorbed within the ATFM delay and slot tolerance window.

4.7.22   TERMINALDEP (departureTerminal)

4.7.22.1   Description

(1) If provided, the terminaldep-field **shall** contain the terminal identification of the position where the aircraft is parked.

4.7.22.2   When (can it be sent)

(1) The terminaldep-field should be provided as soon as it is available in the Airport system(s) so may be provided at transmission of the 1st DPI.

(2) A DPI message update **shall** be sent for any change of a previously provided termindaldep.

4.7.22.3   How (does ETFMS use it)

(1) The terminaldep-field is used for information sharing.

(2) The terminaldep-field can be used to regulate departures.

4.7.23   TOBT (targetOffBlockTime)

4.7.23.1   Description

(1) If provided, the tobt-field **shall** contain the Target Off Block Time, which is the time at which the aircraft is planned to be ready from an AO & Handling Agent perspective (doors closed and pushback truck available).

(2) It **shall** only contain a very reliable TOBT value.

(3) The TOBT value may be based on a manual input, or it can be automatically calculated.

(4) In case the flight plan is CNL-ed and a new FPL is filed with an earlier EOBT, the TOBT field **shall** be reset. This is required when the flight plan is cancelled and re-filed to advance the EOBT.

4.7.23.2   When (can it be sent)

(1) The TOBT value can be provided as soon as it is available and displayed to the Handling Agent in the local HMI.

(2) A DPI message update **shall** be sent if the tobt-field changes by 5min or more compared to a previously provided TOBT value.

4.7.23.3   Additional acceptance rules

(1) The targetOffBlockTime-field shall be in accordance with the field syntax & semantics descriptions as specified in Doc Ref 3. This applies to provision of DPI messages via B2B web services.

(2) The TOBT field shall comply with the following acceptance rules:
TOBT >= EOBT - 45min
TOBT <= EOBT + 180min
TOBT <= turnaroundTTOT (in the same message) (or TTOT in E-DPI or T-DPI-t message)

(3) If not, the TOBT value will be ignored and also a previously received TOBT value will be erased. The rest of the DPI message will be processed.

(4) When the TOBT value is ignored, the ETFMS oplog will contain a History message with the value "TOBT_VALUE_INVALID".

4.7.23.4   How (does ETFMS use it)

(1) ETFMS will use the TOBT value to display it on CHMI, NOP Portal, NMP flight displays. This is particularly useful for AOs when their flight is at a CDM Airport which is an outstation for them.

(2) ETFMS will show an IFPS Discrepancy (see section 3.8 IFPS Discrepancies) if the provided TOBT is outside a window of +/- 15 min around the EOBT (IFPS OBT).

(3) It is important to note that the AOs must update their flight plan EOBT via DLA or CHG messages in case there is a difference of more than 15min between the EOBT (from IFPS) and the TOBT value in the DPI message.

(4) An AO may also request NM to automatically file a DLA message in case the TOBT in a DPI message is more than 15min (parameter) after the EOBT of the flight plan. See section 12.8 EOBT Update Service for A-CDM departures for more information.

(5) Note that the provision of a tobt-field is particularly useful for non-regulated flights. For such flights the network (including AOs) is otherwise not aware of the cause of the new TTOT (TSAT delay only or TOBT and TSAT delay).

(6) Note that the TOBT field is NOT used for updating of flight profiles.

(7) When an E-DPI, T-DPI-t or T-DPI-s message is received after EOBT (ETFMS OBT) - 40 minutes and it does not contain a TOBT field, an oplog History message "TOBT missing" will be created, even if a previous DPI contained a TOBT value.

(8) On reception of a DPI message without a TOBT, the previously received TOBT value is reset, and it is no longer displayed on the CHMI, NOP Portal, NMP nor output via B2B.

4.7.24   TSAT (targetStartUpApprovalTime)

4.7.24.1   Description

(1) If provided, the tsat-field **shall** contain the Target Start-up Approval Time (TSAT), which is the time at which the aircraft can expect start-up clearance from TWR.

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(2) For all flights, but for ATFCM regulated flights in particular, it shall contain the TSAT that corresponds to the CTOT.

(3) It must be noted that in cases of transmission of a "REA T-DPI-s" or a T-DPI-s with an "optimalTTOT", this TSAT value is later than the TTOT value. This is considered as normal.

(4) On reception of a DPI message without a TSAT, the previously received TSAT value is reset, and it is no longer displayed on the CHMI, NOP Portal nor output via B2B.

4.7.24.2   When (can it be sent)

(1) The tsat-field **shall** be provided from TSAT-issue time onwards.

(2) This also applies to airports that calculate a TSAT earlier.

(3) A DPI message update **shall** be sent if the tsat-field changes by 5min or more compared to a previously sent TSAT value.

(4) However, during e.g., adverse conditions the TSAT-TOBT differences may increase, taxi-time values may also be longer, and the pre-departure sequence may become less accurate and possibly instable. For this reason, it is proposed to decrease the accuracy of the update window in accordance with the following proposal:

(5) In case the start-up delay (TSAT-TOBT) is more than 90min then the update accuracy of the tsat-field should be +/-15min. If, however, the TSAT is less than 90min in the future, then the tsat-field accuracy shall be set back to normal, i.e., +/-5min.

(6) More formal this means:
If TSAT-TOBT > 90min and TSAT-current_time>90min
Then
   TSAT_accuracy_window is +/- 15min
Else
   TSAT_accuracy_window is +/- 5min
Endif

4.7.24.3   Additional acceptance rules

(1) The TSAT field for non-regulated flights **shall** comply with the following acceptance rules:
   A valid TOBT (as described above) shall be present in the same message
   TSAT >= TOBT – 15 min – DTW_LowerBound_Extension
   TSAT <= earliestTTOT in the same DPI message
        (There is no comparison between TSAT and TTOT in a T-DPI-t msg)
   TSAT >= clock - 10min
   TSAT <= clock + 240min

(2) If not, the TSAT value will be ignored and a previously received TSAT value will be erased. The rest of the DPI message will be processed.

(3) When the TSAT value is ignored, the ETFMS oplog will contain a History message with the value "TSAT_VALUE_INVALID".

(4) DTW_LowerBound_Extension is the value of the extension of the lowerbound of the DTW (the value is zero if the regular window, i.e. [-15,+15], has not been extended).

(5) The TSAT field for regulated flights **shall** comply with the following acceptance rules:
   A valid TOBT (as described above) shall be present in the same message
   TSAT >= TOBT – 15 min – STW_LowerBound_Extension
   TSAT <= CTOT + STW_UpperBound_Extension + 115min
   TSAT >= clock - 10min

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TSAT <= clock + 240min

(6) If not, the TSAT value will be ignored and a previously received TSAT value will be erased. The rest of the DPI message will be processed.

(7) When the TSAT value is ignored, the ETFMS oplog will contain a History message with the value "TSAT_VALUE_INVALID".

(8) STW_Lower/UpperBound_Extension are the values of the extension of the lower/upperbound of the STW (the values are zero if the regular window, i.e. [-5,+10], has not been extended).

4.7.24.4   How (does ETFMS use it)

(1) ETFMS will use the TSAT value to display on CHMI, NOP portal and NMP flight displays. This is particularly useful for AOs when their flight is at a CDM Airport which is an outstation for them.

(2) Note that a tsat-field in all T-DPI-s messages is particularly useful for regulated flights departing from airports that provide a T-DPI-s message with an "optimal TTOT". The tsat-field will contain the real-TSAT (i.e., the TSAT that corresponds to the CTOT) while the TTOT will be the earliest possible take-off time and it may be before the TSAT value.

4.7.25   TTOT (targetTakeOffTime)

(1) If provided in an E-DPI or a T-DPI-t, the ttot-field **shall** be provided with the same contents as the turnaroundTTOT (see section 4.7.27 TURNAROUNDTTOT (turnaroundTargetTakeOffTime) for more details).

(2) If provided in a T-DPI-s, and the TTOT is an optimalTTOT or from a REA T-DPI-s, the ttot-field **shall** be provided with the same contents as the earliestTTOT (see section 4.7.12 EARLIESTTTOT (earliestTargetTakeOffTime) for more details).

(3) If provided in a T-DPI-s, and TTOT is in accordance with the CTOT, the ttot-field **shall** be provided with the same contents as the consolidatedTTOT (see section 4.7.8 CONSOLIDATEDTTOT (consolidatedTargetTakeOffTime) for more details).

(4) If provided in an A-DPI, the ttot-field **shall** be provided as described in see section 4.7.26 TTOT for A-DPI only.

(5) Any exceptions to these standard rules will be included at the appropriate places.

4.7.26   TTOT for A-DPI only

4.7.26.1   Description

(1) If provided in an A-DPI, the ttot-field **shall** supply ETFMS with an estimate of the actual take-off-time, i.e., AOBT+EXOT.

(2) If provided in an A-DPI for a regulated flight the TTOT **shall** take into account the CTOT and **shall** be inside the Slot Tolerance Window (default -5 to +10 min around CTOT) see section 12.2 The STW and the DTW for more details.

4.7.26.2 Who (can send it)

(1) The ttot-field in an A-DPI **shall** be provided by ANI Airports, CDM Airports, RNI Airports and ADV ATC TWR Airports.

4.7.26.3 When (can it be sent)

(1) If provided, a DPI update **shall** be sent when the ttot-field changes by 5min or more.

4.7.26.4 Additional acceptance rules

(1) The TTOT of the A-DPI for non-regulated flights shall be between:
 ETFMS_OBT + Min_TT – DTW_LowerBound_Extension – 30min and
 ETFMS_OBT + Max_TT + DTW_UpperBound_Extension + 155 min
In addition, TTOT shall be no later than:
 clock + EXOT + 50min

The ETFMS_OBT is the Off-Block-Time in the ETFMS "filed" flight model, i.e., the last received OBT, derived from the last received DLA, CHG, E-DPI, T-DPI-t, REA….
(Derived OBT in DPI msg is TOT – last-received-taxi-time).

(2) If it is not, the A-DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

Fig: DPI – 4
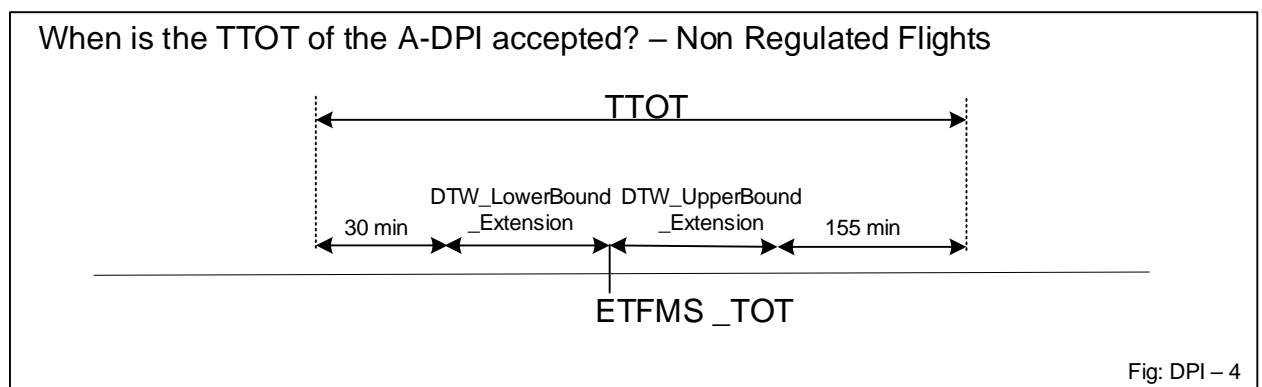
(3) The TTOT of A-DPIs for regulated flights **shall** first of all be between:
 COBT + Min_TT – STW_LowerBound_Extension - 30 min and
 COBT +Max_TT + STW_UpperBound_Extension + 155 min
In addition, TTOT shall be no later than:
 clock + EXOT + 50min

(4) If it is not, the A-DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

Edition: 2.600

When is the TTOT of the A-DPI accepted? – Regulated Flights

TTOT

STW_LowerBound _Extension STW_UpperBound _Extension

30 min   155 min

CTOT
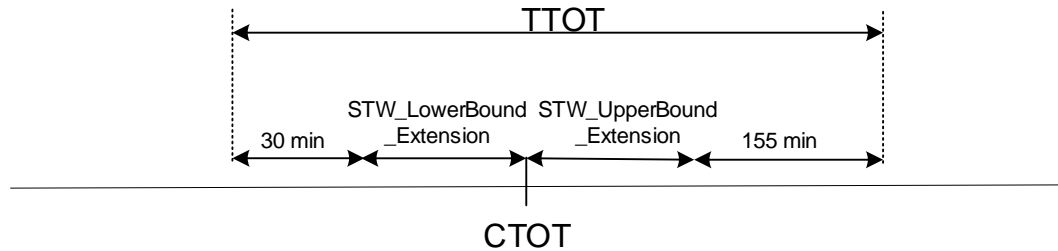
Fig: DPI – 5

When is the TTOT of the A-DPI accepted – All flights?

TTOT

EXOT   50 min

Clock
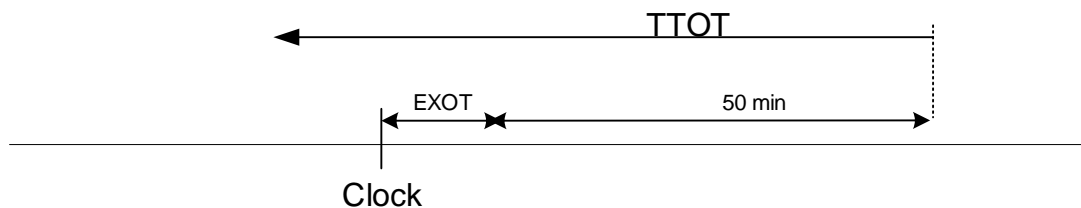
Fig: DPI - 11

4.7.26.5   How (does ETFMS use it)

(1)   If provided in an A-DPI, the ttot-field will be used to update/create the Actual Flight Model (CTFM) and place the flight at its ATO (ETO derived from the TTOT) in the slot list. As such, flights that have been updated with an A-DPI are reflected in the "load" graphs of ETFMS.

(2)   In case the TTOT is before the STW, then a CTFM will be created with CTFM_TOT = STW_lowerbound.

(3)   In case the TTOT is after the STW, then a CTFM will be created with CTFM_TOT = TTOT.

4.7.27   TURNAROUNDTTOT (turnaroundTargetTakeOffTime)

4.7.27.1   Description

(1)   If provided, the turnaroundttot-field **shall** contain a TOT based upon the constraints stemming from EOBT, TOBT or late ELDT if existing, else it contains the schedule take-off time.

(2)   The turnaroundttot-field **shall** never be based upon any local departure capacity constraints.

(3)   The turnaroundttot-field **shall** never be based upon the CTOT from NMOC.

(4)   The turnaroundTTOT (tTTOT) is based upon EXOT, EOBT, TOBT, EIBT+MTT and SOBT as follows:
   If (TOBT is already provided by the AO or the Handling Agent)

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Then
   If EOBT is already available and EOBT > TOBT +15min
   Then
      tTTOT= EOBT + EXOT   - the AOCC has filed a DLA and not yet informed
                                          Handling Agent
    Else
       tTTOT= TOBT +EXOT
     End if
Else
   If EOBT is already available (i.e., flight plan has been filed)
   Then
     If EIBT/AIBT + MTT > EOBT
     Then   *-- EOBT cannot be met due to late arrival of* inbound flight.
       tTTOT= EIBT/AIBT + MTT + EXOT
     Else   *-- EOBT can still be met and is basis for TOT calculation.*
       tTTOT= EOBT + EXOT
     End if
   <mark>Else   *-- flight plan has not been filed yet – future extension*.</mark>
     <mark>If EIBT/AIBT + MTT > SOBT</mark>
     <mark>Then   *-- SOBT cannot be met due to late arrival of inbound flight.*</mark>
       <mark>tTTOT= EIBT/AIBT + MTT + EXOT</mark>
     <mark>Else   *-- SOBT can still be met and is the basis for TOT calculation.*</mark>
       <mark>tTTOT= SOBT + EXOT</mark>
    <mark>End if</mark>
End if

4.7.27.2   When (can it be sent)

(1) The turnaroundttot-field **shall** be provided from the transmission of the 1st DPI message for ANI, CDM Airports and RNI Airports.

(2) If provided before EOBT-2hrs and the inbound flight is not yet airborne, a DPI update **shall** be sent when the turnaroundttot-field changes by 15min or more compared to a previously provided turnaroundttot.

(3) If provided after EOBT-2hrs or the inbound flight is already airborne, a DPI update **shall** be sent when the turnaroundttot-field changes by 5min or more compared to a previously provided turnaroundttot.

4.7.27.3   Additional acceptance rules

(1) The turnaroundTTOT **shall** be between EOBT + Min_TT – 45 min and EOBT + Max_TT + 180 min.

(2) If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

When is the turnaroundTTOT accepted?

turnaroundTTOT accepted

-45 min

EOBT+Min_TT

+180 min

ETFMS_OBT+Max_TT
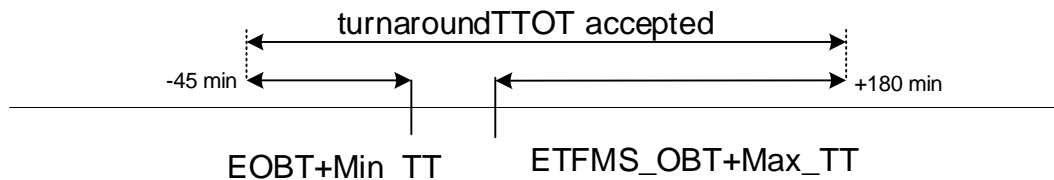
Fig: DPI - 3

(3) The EOBT is the latest EOBT provided by IFPS, taking into account the FPL message and any DLA or CHG messages. The COBT = CTOT – taxi-time.

(4) Min_TT / Max_TT is the minimum / maximum of the current taxi time of FTFM and the new taxi time from DPI message that is being validated.

(5) If modified compared to a previously provided turnaroundTTOT, the turnaroundTTOT-field **shall** be after clock – 10 min. If the turnaroundTTOT is equal to a previously provided turnaroundTTOT, there is no comparison with the system clock.

(6) If it is not, the relevant DPI is rejected with "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

When is the turnaroundTTOT accepted – dependent on clock?

turnaroundTTOT

10 min

Clock
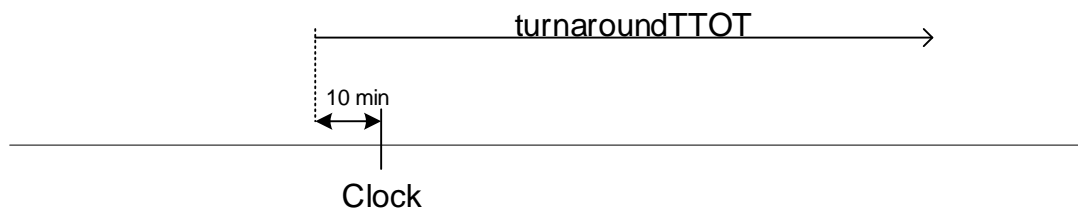
Fig: DPI - 13

The above rule is not applied in case the turnaroundTTOT (-taxiTime) is equal to a previously received turnaroundTTOT (-taxiTime).

4.7.27.4 How (does ETFMS use it)

Before EOBT – 2hrs

(1) For non-regulated flights, ETFMS will always update the Filed Demand (FTFM) and re-assess the impact on the ATM network.

After EOBT-2hrs

(2) For non-regulated flights, ETFMS will update the Filed Demand (FTFM) and re-assess the impact on the ATM network. In the following cases:
  - new_turnaroundTTOT <> previous_turnaround_TTOT
    (Note that this condition is required to prevent a Network Impact Assessment for e.g., a DPI that is sent for an earliestTTOT change while the turnaroundTTOT has not changed)

(3) For regulated flights, ETFMS will re-assess the impact on the ATM network in the following cases:

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- new_turnaroundTTOT > CTOT
  (Note that this condition is required to prevent a Network Impact Assessment for e.g., a DPI that is sent for an earliestTTOT change while the turnaroundTTOT has not changed)

(4) For ATFM suspended flights, any ATFCM suspension conditions will be re-assessed. If the flight remains or becomes suspended, the Estimated Flight Model (FTFM) becomes the reference, and it is based upon the turnaroundTTOT. ETFMS will (re-)send an FLS after EOBT-2hrs (SIT1).

(5) For non-regulated flights, Flight Activation Monitoring (FAM) may start shifting at the turnaroundTTOT and may suspend 17 min (default value) after the TTOT if no further information is received for the flight (for regulated flights, FAM uses the CTOT).

5 P-DPI

5.1 Description

5.1.1 Message

(1) The Predicted DPI (P-DPI) message provides NM/ETFMS with relevant data from the AOP as soon as this data becomes available.

(2) Its purpose is to provide Airport Data before the start of the Airport CDM process.

(3) The P-DPI **shall** be in accordance with the message-, field- syntax & semantic descriptions as specified in section 4 Fields.

5.1.1 Link to the A-CDM milestone approach

(1) None.

5.2 Who (can send it)

(1) The P-DPI **shall** be sent by ANI Airport systems that can provide ETFMS with more accurate data than the data that can currently be obtained from IFPS or NMOC ENV data.

5.3 When (can it be sent)

(1) The first P-DPI **shall** be sent as soon as flight plan data (from IFPS) is available in the AOP but never earlier than EOBT-48hrs.

(2) If not, the message is rejected with "FLIGHT NOT YET CONFIRMED BY FLIGHT PLAN" or by "NOT EXISTING FLIGHT".

(3) Flight plans are filed to the NM IFPS system. Valid FPLs are transferred to the ETFMS system, but not earlier than EOBT-48hrs. Valid FPLs are also distributed to the external user systems. It may happen that a FPL is received by an external user system before it is received by ETFMS. For this reason, and in order to avoid the rejection of a P-DPI due to the fact that it cannot be correlated to an existing flight, it is recommended to implement a possibility to delay the sending of the first P-DPI. While 1-minute delay has proved to be sufficient in most cases, a parameterised solution would be recommended. Note that this recommendation also applies to flight plans filed after EOBT-3hrs and to the corresponding DPI types.

(4) The transmission of the P-DPI message update shall stop at EOBT-3hrs, i.e., when the CDM process starts. If EOBT is updated such that it is more than 3 hours in the future, P-DPI shall be sent until newEOBT-3hrs.

(5) The P-DPI **shall** still be sent when the flight is suspended. This applies to ATFCM suspensions such as suspensions due to closed airspace, FAM, … This is to de-suspend a flight that was suspended due to a P-DPI update.

5.4 Acceptance rules

5.4.1   Pre-requisites

(1)   The P-DPI will only be accepted on the ETFMS operational system if the Quality control parameters are above a pre-defined level. An example of such a QC parameter could be Slot-Adherence shall be above an agreed value (e.g., 80%). See Doc Ref 2 for more details.

5.4.2   Technical

(1)   The purpose of these validation rules is to identify ANI Airport system bugs and wrong ATC/Airport controller system inputs (activation of wrong flight plan).

(2)   The acceptance of the P-DPI is dependent on the acceptance of the fields that it contains.

(3)   The P-DPI **shall** be in accordance with the message-, field- syntax & semantic descriptions as specified in section 4 Fields.

(4)   The P-DPI message is rejected for IFPS suspended flights. IFPS suspended the flight due to an invalid flight plan. Flights with invalid flight plans shall not take place. In such a case the P-DPI is rejected with "FLIGHT IS SUSPENDED BY IFPS REVALIDATION".

5.5 How (does ETFMS use it)

(1)   The processing of the P-DPI is dependent on the fields that it contains. See section 4 Fields for more details.

(2)   In case of a suspension due to IFPS revalidation the P-DPI is rejected and an FLS is NOT resent.

(3)   The CDMSTATUS is set to "p – predicted" if the P-DPI is accepted.

6 E-DPI

6.1 Description

6.1.1 Message

(1) The transmission of an E-DPI **shall** confirm to NMOC that an airport slot and flight plan for a particular flight have been correlated in accordance with local rules at the airport (A-CDM Milestone 1).

(2) The E-DPI will allow (in the future) eliminating ghost flights and duplicated flight plans.

(3) When no airport slot can be found or when the flight plan EOBT is not consistent with the airport slot SOBT, the AO shall be informed (by the A-CDM platform) and the E-DPI shall not be sent until the problem has been solved.

(4) Possible reasons for not sending the E-DPI are:
- No airport slot exists for the flight plan.
- The airport slot has already been assigned to another flight plan (ghost or duplicate flight plan)
- The flight plan EOBT is (long) before the SOBT of the airport slot which is an indication that EOBT is made earlier to anticipate e.g., an ATFM delay.

(5) E-DPI is also used to supply ETFMS with a first update of the Taxi-Time (EXOT) and SID (CDM Airport Information), the Aircraft Type and Registration and TTOT.

6.1.2 Link to the A-CDM milestone approach

(1) The DPI messages shall be triggered based upon the milestone approach as described in the Airport CDM Implementation manual (see Doc Ref 4).

(2) The transmission of the E-DPI shall be linked to Milestone – 1.

(3) The E-DPI shall be transmitted in case there are outstanding IFPS discrepancies (EOBT-TOBT, Aircraft Type, REGistration).

(4) This allows the NMOC to inform the AO community of the discrepancy via CHMI, NOP portal, NMP, Data Distribution Service, …

(5) The AO at the OCC may decide to file a DLA or CHG or may even delegate the DLA filing to the NMOC. See section 12.8 EOBT Update Service for A-CDM departures for more information.

6.2 Who (can send it)

(1) The E-DPI **shall** be sent by ANI Airports, CDM Airports and RNI Airports.

(2) The E-DPI **should** be sent by ADV ATC TWR Airports (but only with taxi-time and SID included).

6.3 When (can it be sent)

(1) The first E-DPI **shall** be sent after EOBT – 3 hours.

(2) If not, the message is rejected with " MESSAGE RECEIVED TOO EARLY OR TOO LATE"

(3) For ANI Airports, CDM Airports and RNI Airports, the E-DPI **shall** be sent after verification of the airport slot with the flight plan EOBT.

(4) For Advanced ATC TWR airports, the E-DPI **should** be sent between EOBT – 3 hours and take-off or until the transmission of the A-DPI message (whichever comes first or is available).

(5) The E-DPI **should** also be sent when the flight is suspended. This applies to ATFCM suspensions such as suspensions due to closed airspace, FAM,…

6.4 Acceptance rules

6.4.1 pre-requisites

(1) The E-DPI will only be accepted on the ETFMS operational system if the Quality control parameters are above a pre-defined level. An example of such a QC parameter could be Slot-Adherence shall be above an agreed value (e.g., 80%). The quality criteria are defined in Doc Ref 2.

6.4.2 Technical

(1) The purpose of these validation rules is to identify TWR or CDM system bugs and wrong ATC/Airport controller system inputs (activation of wrong flight plan).

(2) The "correctness" of an operational decision of Airport CDM staff shall be questioned by quality control actions, if necessary online.

(3) The E-DPI **shall** be in accordance with the message-, field- syntax & semantic descriptions as specified in section 4 Fields.

(4) The E-DPI message is rejected for IFPS suspended flights with comment "FLIGHT IS SUSPENDED BY IFPS REVALIDATION". IFPS suspended the flight due to an invalid flight plan. Flights with invalid flight plans shall not take place.

6.5 How (does ETFMS use it)

(1) In general, the processing of an E-DPI depends on the TOT-field(s) it contains. See section 4 Fields for more details.

(2) The CDMSTATUS is set to "e – estimated" if the E-DPI is accepted.

(3) After reception of the first E-DPI, ETFMS will apply the "first-planned first-served" principle on a time derived from this first E-DPI. This derived time (called ETFMS_CASA_ref_time) is set to the latest of the IFPS_OBT and the EOBT in this E-DPI message. This applies only to E-DPI from A-CDM Airports.

Suspension by ATFM:

(4) Suspension conditions and regulations crossed are (re)-assessed.

(5) If the flight remains suspended, the FLS message is re-sent.

(6) If the flight becomes de-suspended, then a DES or SAM message is sent.

Suspension due to IFPS re-validation:

(7) If the flight is suspended due to IFPS re-validation, then the T-DPI-s is rejected with ERR "FLIGHT SUSPENDED DUE TO IFPS REVALIDATION".

7 T-DPI-t

7.1 Description

7.1.1 Message

(1) The purpose of the T-DPI-t message is to provide NMOC with a TOT that is based upon the ELDT and EXIT of the inbound flight, the Turnaround time and the EOBT, TOBT and EXOT of the outbound flight.

7.1.2 Link to the A-CDM milestone approach

(1) The DPI messages **shall** be triggered based upon the milestone approach as described in the Airport CDM Implementation manual (see Doc Ref 4).

(2) The transmission of the first T-DPI-t **shall** be at Milestone 2. Updates shall be sent when necessary, e.g., at the milestones 3 – 9. Dependent on the status of the flight updates could be sent up to 10min before milestone 14.

7.2 Who (can send it)

(1) T-DPI-t messages **shall** be sent by ANI Airports, CDM Airports and RNI Airports.

7.3 When (can it be sent)

(1) The T-DPI-t message **shall** be sent when the sending Airport CDM system has established the relevant TOT values as specified in section 7.1.2 Link to the A-CDM milestone approach above and when it can be published to NMOC.

(2) The first T-DPI-t message **shall** not be sent earlier than 2 hours before EOBT.

(3) If not, the T-DPI-t message is rejected with the message "MESSAGE RECEIVED TOO EARLY OR TOO LATE"

(4) The T-DPI-t **shall** be sent when the flight is suspended. This applies to ATFCM suspensions such as suspensions due to closed airspace, FAM, …

7.4 Acceptance rules

7.4.1 Pre-requisites

(1) The T-DPI-t will only be accepted on the ETFMS operational system if the Quality control parameters are above a pre-defined level. An example of such a QC parameter could be Slot-Adherence shall be above an agreed value (e.g., 80%). See Doc Ref 2 for more details.

7.4.2 Technical

(1) The purpose of these validation rules is to identify TWR or Airport CDM system bugs and wrong ATC/Airport controller system inputs (activation of wrong flight plan).

(2) The "correctness" of an operational decision of Airport CDM staff shall be questioned by quality control actions, if necessary online.

(3) The T-DPI-t shall be in accordance with the message-, field- syntax & semantic descriptions as specified in specified in specified in section 4 Fields.

(4) The T-DPI-t message is rejected for IFPS suspended flights with comment "FLIGHT IS SUSPENDED BY IFPS REVALIDATION". IFPS suspended the flight due to an invalid flight plan. Flights with invalid flight plans shall not take place.

7.5 How (does ETFMS use it)

(1) In general, the processing of a T-DPI-t depends on the field(s) it contains. See section 4 Fields for details.

(2) The CDMSTATUS is set to "t – targeted" if the T-DPI-t is accepted.

Suspension by ATFM:

(3) Suspension conditions and regulations crossed are (re)-assessed.

(4) If the flight remains suspended, the FLS message is re-sent.

(5) If the flight becomes de-suspended, then a DES or SAM message is sent.

Suspension due to IFPS re-validation:

(6) If the flight is suspended due to IFPS re-validation then the T-DPI-s is rejected with ERR "FLIGHT SUSPENDED DUE TO IFPS REVALIDATION".

(7) The Flight will get the status RFI automatically regardless of what the ENV settings for the AO concerned are and regardless of any previously received ATFCM message.

(8) A SWM message is rejected from that moment onwards because it does not seem to be very logical for departures from a CDM Airport. The update of the TOBT is the best solution to inform all concerned.

Edition: 2.600

8 T-DPI-s

8.1 Description

8.1.1 Message

(1) A T-DPI-s **shall** contain the Take-Off-Time as calculated by the Pre-Departure Sequencer (PDS).

(2) The input for the Pre-departure Sequencer is the TOBT+Taxi-Time (EXOT) (for non regulated flights), the CTOT (for regulated flights) and any ANI or CDM Airport constraints. The output of the Pre-Departure Sequencer is the Target Start-up Approval Time (TSAT) and its corresponding Target Take-Off Time.

(3) The provision of the TSAT + Taxi-Time (EXOT) will be most beneficial in circumstances where there are big differences between the TOBT and the TSAT, which will often be the case during special circumstances at the ANI or CDM Airport such as reduction in runway capacity, de-icing, use of MDI's, …

(4) There are two main types of Pre-Departure Sequencers. In this document they are referred to as Optimal PDS or Standard PDS.

(5) ANI or CDM Airport that have an Optimal PDS are able to generate an Optimal Pre-Departure Sequence. This Optimal Pre-Departure Sequence is based upon the TOBT+Taxi-Time (EXOT) for all flights, including for regulated flights. The purpose of the Optimal Pre-Departure Sequence is to determine the earliest possible TOT for regulated flights, solely based upon Airport/ATC constraints, even when the flight is regulated.

(6) This Optimal Pre-Departure Sequence is used to provide ETFMS with an Optimal_TTOT for regulated flights. This is the earliest possible TOT, taking all Airport/ATC constraints into account. The Optimal_TTOT is very useful for ETFMS and the Airport, especially if it is after TOBT + Taxi-Time (EXOT) and before CTOT, because it will prevent that ETFMS provides a CTOT that cannot be met due to (significant) Airport constraints. ETFMS will try to advance the CTOT up to the provided TTOT. In this context, the description of Optimal_TTOT is equivalent to the description of 4.7.12 earliestTTOT.

(7) ANI or CDM Airports that have a Standard PDS provide the Network with a TSAT for non-regulated flights, and with the corresponding TTOT. As the Standard PDS prioritizes the CTOT constraint for regulated flights (TTOT is inside the STW), and in order to avoid that the slot is frozen, these airports have to delay the sending of the first T-DPI-s for regulated flights to the first of the following events:

a) The ready or the start-up request event

8.1.2 TSAT-10 or ASAT (T-DPI-s with TTOT inside STW). Link to the A-CDM milestone approach

(1) The DPI messages shall be triggered based upon the milestone approach as described in the Airport CDM Implementation manual (see Doc Ref 4).

(2) The transmission of the first T-DPI-s could be at milestone 10 and updates should then be sent up-to milestone 11-14. Please note further details in the sections below.

(3) A dedicated T-DPI-s could be sent at milestone 12 to inform NMOC that the flight reported ready.

8.2 Who (can send it)

(1) T-DPI-s messages **shall** be sent by ANI Airports, CDM Airports and RNI Airports.

8.3 When (can it be sent)

8.3.1.1 All flights

(1) The T-DPI-s message **shall** be sent when the sending Airport system has established the relevant TOT values as specified in 8.1.2 Link to the A-CDM milestone approach above and when it can be published to NMOC.

(2) The T-DPI-s **shall** never be sent earlier than the last received (TOBT or EOBT_from IFPS) – 40min.

(3) An earlier received T-DPI-s message is rejected with "MESSAGE RECEIVED TOO EARLY OR TOO LATE".

(4) The T-DPI-s **shall** be sent when the flight is suspended. This applies to ATFCM suspensions such as suspensions due to closed airspace, FAM… (it does not apply to IFPS suspensions).

8.3.1.2 Non-regulated flights

(1) The T-DPI-s message **shall** be sent when the Airport system has included the flight in the pre-departure sequence, i.e., at TSAT-issue time. The flight is normally included in the pre-departure sequence approximately 30-40 min before the TOBT.

(2) This is shown by period "B" in the diagram "Fig: DPI – 7" below.
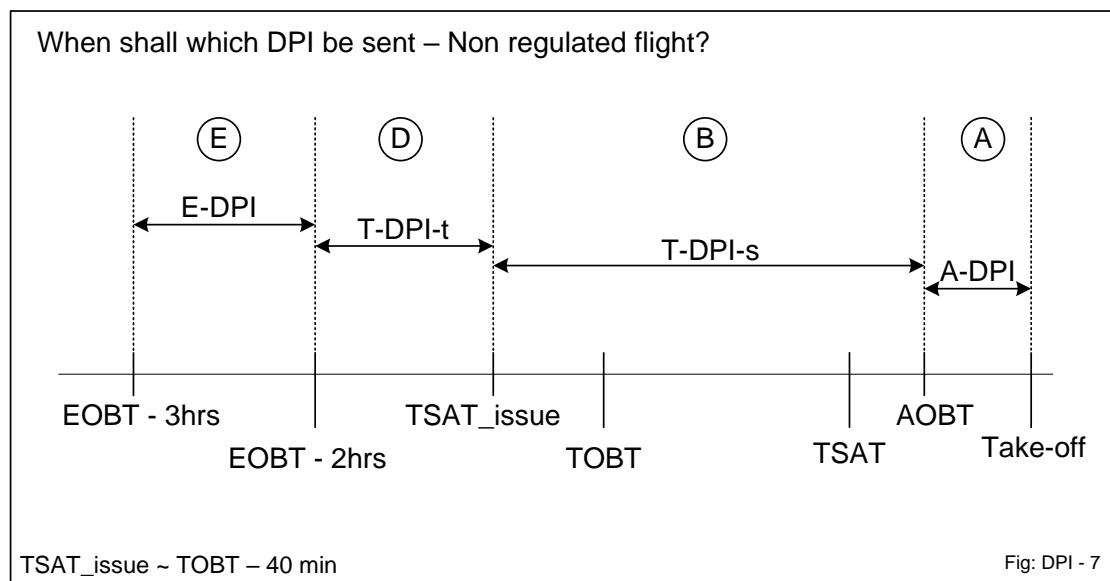
8.3.1.3 Regulated flights (T-DPI-s with TTOT field)

(1) The T-DPI-s message could be sent when the Airport system has included the flight in the pre-departure sequence, i.e., when the TSAT is issued.

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(2) However, the Airport must take the processing of this TTOT in ETFMS into account for determination of the most appropriate time/event.

(3) An overview is shown by periods "C" and "B" in the diagram "Fig: DPI – 8" below.

When shall which DPI be sent – Regulated flight?

TSAT_issue ~ TOBT – 40 min

TSAT_publi_to_NMOC ~ TSAT – 10 min

Fig: DPI - 8
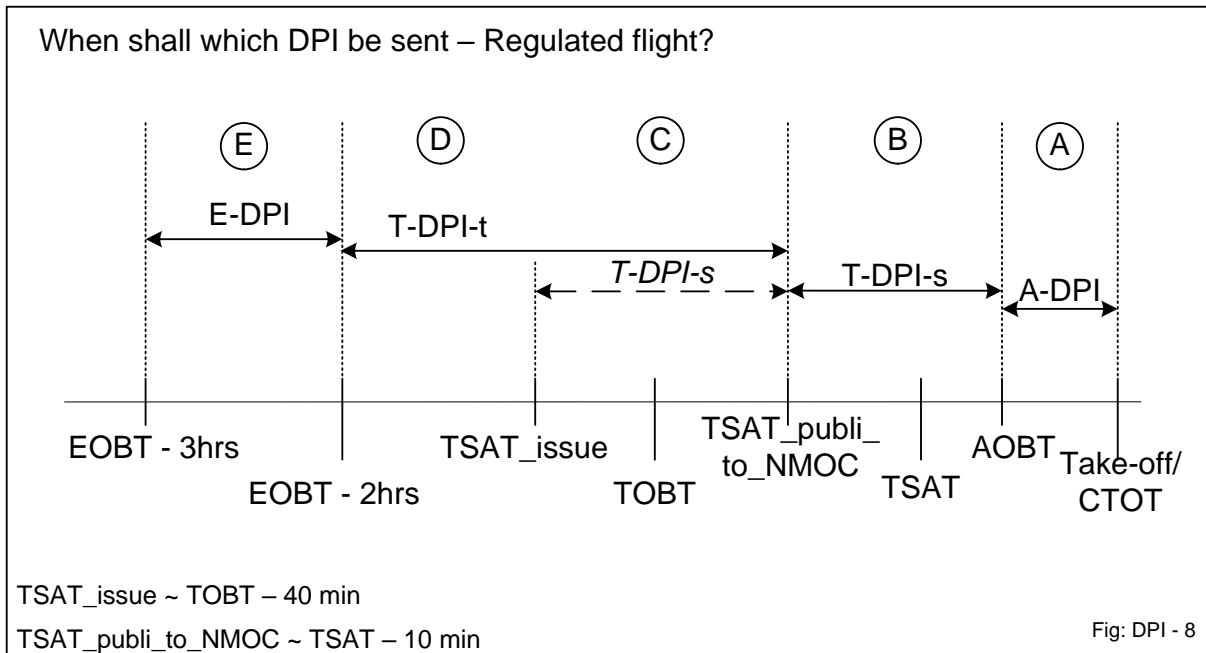
(4) The above graph makes a distinction between TSAT_issue_time and TSAT_publi_to_NMOC_time:

The TSAT_issue_time is the time when the TSAT is published to all partners at the airport such as pilots, handlers, …

The TSAT_publi_to_NMOC_time is the time when the TTOT-field, which is based upon the TSAT, is published/provided to the NMOC. This is to prevent that ETFMS stops all CTOT improvement for a flight at TSAT-issue time.

For regulated flights, the TSAT_issue_time is usually different from the TSAT_publi_to_NMOC_time.

(5) The CDM Airport **shall** send the T-DPI-s to the NMOC at TSAT_publication_to_NMOC_time. This is shown by period "B" in the diagram "Fig: DPI – 8" above. The TSAT_publication_to_NMOC_time could be e.g., TSAT-10min or the start-up-given event.

(6) During period "C" in the diagram "Fig: DPI – 8" above, the T-DPI-s:

a) **shall** be sent as soon as it is known that TSAT+EXOT will be after the STW. The earlier ETFMS is provided with this information the bigger the chances are that ETFMS can adjust the CTOT to the provided TTOT. This is illustrated as "case D" in graph "Fig: DPI – 6" in section 4.7.12.2 When (can it be sent).

b) **shall** be sent when Airport CDM no longer wants ETFMS to improve/advance the CTOT. This is usually 5-10 min before the TSAT or at start-up clearance issue but in special circumstances, this may be earlier. This is illustrated as "case C" in graph "Fig: DPI – 6" in section 4.7.12.2 When (can it be sent)).

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(7) If the Airport calculates an Optimal Pre-Departure Sequence, the T-DPI-s for regulated flights **shall** <u>also</u> be sent (see "case B" in graph "Fig: DPI – 6" in section 4.7.12.2 When (can it be sent)) when both below conditions have been met:

    a) If the difference between TOBT+EXOT and the Optimal_TTOT is bigger than SYSPAR (5 min)

    b) When the Airport CDM wants to inform ETFMS about the earliest possible TOT, considering any Airport CDM constraints, excluding the CTOT. In this case the Optimal_TTOT may be well before the STW but not earlier than the TOBT+EXOT.

(8) In case the flight requires De-icing, a T-DPI-s with a TTOT=TOBT+taxitime+deicing_time may be sent to provide ETFMS with a no-slot-before to prevent a CTOT advancement at a time when De-icing is not yet finished. This can also be considered as an optimal TTOT (see section "11.4 Use of DPIs during Special Circumstances at the airport" for more details).

(9) In case the Airport is providing the REAdy information via a T-DPI-s, the airport **shall** send a T-DPI-s at Actual ReaDy Time (ARDT) with TTOT=ARDT+taxi-time. The flight will get the REA status if the clock has reached TOBT – 5 or later. Note that when the TTOT is inside the STW, ETFMS will no longer search for an improved CTOT.

8.3.1.4   Regulated flights (T-DPI-s with earliestTTOT and consolidatedTTOT)

(1) The T-DPI-s message **shall** be sent at TSAT-issue time.

(2) This is shown by period "B" in the diagram "Fig: DPI – 7" below.

Fig: DPI - 7
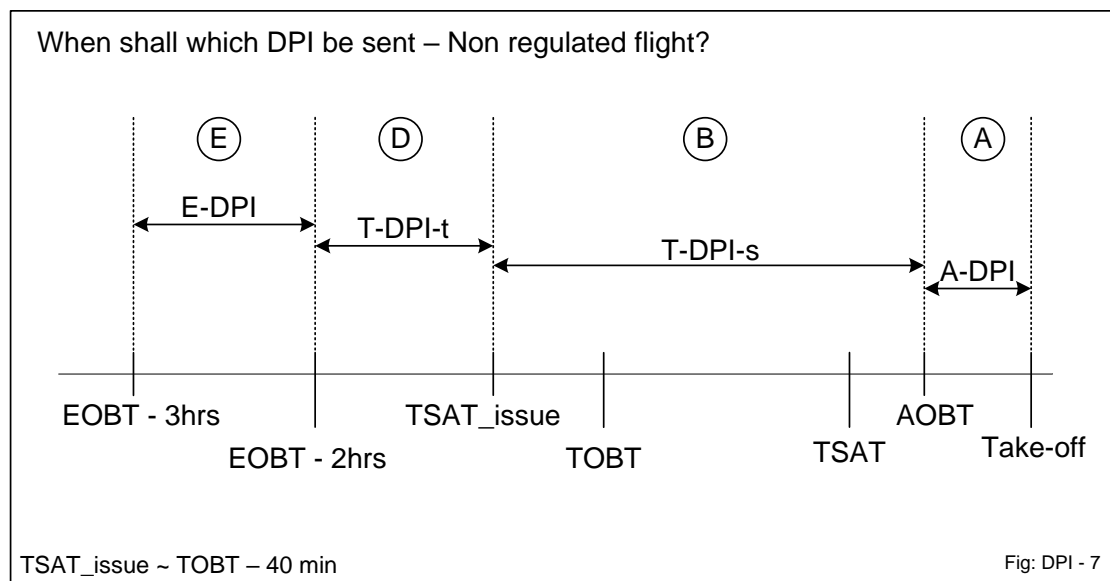
(3) Note that the transmission events for a T-DPI-s message have been significantly simplified when both earliestTTOT and consolidatedTTOT are provided instead of one single TTOT field. In fact, the transmission events are the same as for non-regulated flights.

(4) In case the Airport is providing the REA information via a T-DPI-s, the airport **shall** send a T-DPI-s at Actual ReaDy Time (ARDT) with earliestTTOT=ARDT+taxi-time. The flight will get the REA status if the clock has reached TOBT – 5 or later. Note that when the TTOT is inside the STW, ETFMS will no longer search for an improved CTOT.

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8.4 Acceptance rules

8.4.1 pre-requisites

(1) The T-DPI-s will only be accepted on the ETFMS operational system if the Quality control parameters are above a pre-defined level. An example of such a QC parameter could be Slot-Adherence shall be above an agreed value (e.g., 75%). The quality criteria are defined in Doc Ref 2.

8.4.2 Technical

(1) The purpose of these validation rules is to identify TWR or CDM system bugs and wrong ATC/Airport controller system inputs (activation of wrong flight plan).

(2) The "correctness" of an operational decision of Airport CDM staff shall be questioned by quality control actions, if necessary online.

(3) The T-DPI-s **shall** be in accordance with the message-, field- syntax & semantic descriptions as specified in section 4 Fields.

(4) The T-DPI-s message is rejected for IFPS suspended flights with comment "FLIGHT IS SUSPENDED BY IFPS REVALIDATION". IFPS suspended the flight due to an invalid flight plan. Flights with invalid flight plans shall not take place.

8.5 How (does ETFMS use it)

(1) The CDMSATUS is set to: "s-sequenced".

(2) In general, the processing of a T-DPI-s depends on the TOT-field(s) it contains. See section 4 Fields for details.

(3) If the flight remains/becomes non-regulated/no-longer-suspended then: Traffic Load is updated through the creation or update of the Actual Flight Model (CTFM). An SLC or DES is sent if necessary.

(4) If the flight remains/becomes ATFM suspended then: The Estimated Flight Model (FTFM) is the reference and an FLS is sent or re-sent.

(5) If the flight remains/becomes regulated it receives REA status.

(6) Any Taxi-Time (EXOT) in the T-DPI-s may be used to create the Actual Flight Model (CTFM). If it is changed it will also be stored with the Estimated Flight Model (FTFM).

(7) Any SID in the T-DPI-s may be used to create the Actual Flight Model (CTFM). If it is changed, it will also be stored with the Estimated Flight Model (FTFM).

Suspension by ATFM:

(8) Suspension conditions and regulations crossed are (re)-assessed.

(9) If the flight remains suspended, the FLS message is re-sent.

(10) If the flight becomes de-suspended, then a DES or SAM message is sent.

Suspension due to IFPS re-validation:

(11) If the flight is suspended due to IFPS re-validation then the T-DPI-s is rejected with ERR "FLIGHT SUSPENDED BY IFPS REVALIDATION".

8.6 Additional requirements for Airport CDM

(1) A newCTOT that is received after a T-DPI-s **shall** be confirmed by a new T-DPI-s which is in accordance with the newCTOT. A new T-DPI-s shall of course be provided at a time that is in accordance with the newly provided CTOT (e.g., at newTSAT-10min).

(2) Note: Taxi-Time (EXOT) and SID from the T-DPI-s are initially only used to update the Actual Flight Model (CTFM). Only in case that the Estimated Flight Model (FTFM) has to be updated (for other reasons, the SID and Taxi-Time (EXOT) are reflected in the Estimated Flight Model (FTFM).

9   A-DPI

9.1 Description

9.1.1   Message

9.1.1.1   General

(1) The purpose of the A-DPI is to inform ETFMS that the flight has off-blocked, i.e., the flight is "under ATC (or Apron) control" and taxiing to take-off.

(2) The A-DPI message **shall** supply a reliable estimate of the Take-Off Time, in the TTOT-field from AOBT until take-off.

(3) Two different types of A-DPI messages can be distinguished:

    a) Classic A-DPI (mandatory in the DPI messaging process)
    b) Tower Update A-DPI (optional service for interested airports)

(4) Note that both A-DPI types can (also) contain a depstatus-field with the value DEICING.

(5) Note that, in case it can be estimated, before the flight has off-blocked, that the STW cannot be met, the airport system shall provide a T-DPI-t or a T-DPI-s message triggered by e.g., a TOBT update or by a (manual) TTOT/TSAT update. The airline may also file a DLA message.

9.1.1.2   Classic A-DPI

(1) The purpose of the Classic A-DPI is to provide NM with the Actual-Off Block event and an accurate estimation of the TTOT between off-block and take-off.

9.1.1.3   TOWER UPDATE A-DPI

9.1.1.3.1   General

(1) Even with best planning, last minute situations may require coordination between TWR and NMOC for single flights. This coordination is normally done by phone and can be time-consuming. The Tower Update A-DPI replaces the phone call with a message request that is automatically processed by NM systems, reducing the workload of both TWR and flow controllers.

(2) The Tower Update A-DPI can be used to:

    a) request a CTOT extension.
    b) request a newCTOT (search for first available CTOT).

    c) request de-suspension for a flight that was suspended while (still) under control of ATC.

(3) A Tower Update A-DPI is recognized by the presence of a depstatus-field with TWRUPDATE. For this reason, it can also be referred to as 'A-DPI TWRUPDATE'.

(4) A Tower Update A-DPI **shall** always be manually triggered by the TWR controller.

(5) Performing a slot recalculation (network impact assessment) when a CTOT extension cannot be granted prevents the flight departing outside the tolerance window and reduces the risk of creating over-deliveries in the downstream sectors. The TWR controller will no longer be constrained to give clearance to a flight outside of its STW.

(6) Knowing that the flight is under the control of ATC, NMOC will be able to automatically provide a more operationally fitting reply to the TWR when a CTOT extension cannot be granted. The TWR controller will then be able to take the necessary measure, without necessarily having to rely on an action from the AO or the ground handler.

(7) The TWR controller will need to be ready operationally and procedure-wise to deal with a new CTOT in case the CTOT extension could not be granted.

(8) The Tower Update A-DPI, provided for a flight that was suspended by the airport, is especially applicable to Advanced ATC TWR airports, where the only options for the TWR, for a suspended flight, are to ask the pilot for an updated EOBT. In case this coordination is impeded, there is a risk that the TWR may be constrained to give clearance to a suspended flight. Sending a Tower Update, A-DPI in this situation ensures that a network impact assessment is performed, reducing the risk of over-delivery in downstream sectors.

(9) FAM suspensions at A-CDM airports should not occur. For Adv ATC TWR systems, FAM suspensions should not occur after the off-block event. This is ensured due to the continuous provision of accurate target times through the DPI exchange. However, in those exceptional cases when they do occur, e.g., inaccurate estimation of the de-icing/taxi time duration, the TWR controller may trigger an A-DPI TWRUPDATE to request the flight de-suspension.

(10) The message exchange, automatically processed, replaces the need for phone coordination between TWR and NMOC for individual flights.

(11) It is highly recommended that the airport/TWR system consumes and displays to the TWR controller all the possible ATFM comments that can be returned by ETFMS following the processing of the Tower Update A-DPI. These are intended to inform the TWR controller about the reason why a CTOT extension could not be granted to a request made via a Tower Update A-DPI.

(12) The CDM airport or Advanced ATC TWR airport need to establish procedures for the TWR that describe:

- The situations when a Tower Update A-DPI message can be triggered (manually).
- The required action that needs to be taken depending on the reply from ETFMS to the Tower Update A-DPI request.

9.1.1.3.2 CTOT extension request

(1) If, due to an operational/technical problem while taxiing, the TWR controller estimates that the flight will not be able to take-off inside the STW, and expects that take-off can be achieved within 10min after the STW, he/she can request a CTOT extension (of max 10min) via a Tower Update A-DPI.

(2) This 10min CTOT extension **shall** be requested by sending a Tower Update A-DPI and a TTOT value that is between CTOT+10 and CTOT+20min.

(3) Note that if STW happens to be temporarily extended and the TTOT is inside the extended STW then the Tower Update A-DPI is processed as a Classic A-DPI.

(4) Note that a 10min CTOT extension request that cannot be granted is processed as a request for a newCTOT.

9.1.1.3.3   Request for a newCTOT (slot search)

(1) If, due to an operational/technical problem while taxiing, the TWR controller estimates that the flight will not be able to take-off inside the STW, and even expects that take-off <u>cannot</u> be achieved within 10min after the STW, he/she can request a newCTOT (search for first available CTOT) via a Tower Update A-DPI.

(2) A newCTOT can be requested by sending a TWRUPDATE A-DPI with a TTOT > CTOT +20min.

(3) Note that if STW happens to be temporarily extended and the TTOT is inside the extended STW then the Tower Update A-DPI is processed as a Classic A-DPI.

9.1.1.3.4   Request for a de-suspension

(1) For a flight that started taxiing and was suspended by a C-DPI or by FAM, and when the flight is still under control of ATC, a Tower Update A-DPI can be used to request de-suspension.

(2) The TTOT value to be provided shall be an accurate estimation of the TTOT and shall be at least later than clock time + remaining Taxi Time. The taxi-time field should also contain the remaining taxiing time (so that ETFMS uses the TTOT field as minimum CTOT and not clock+taxitime).

(3) Note that a Classic A-DPI is rejected in this case with ATFM comment "FLIGHT IS SUSPENDED").

(4) Advanced ATC TWR airports are advised to implement the Tower Update A-DPI to deal with this situation when the flight is still under control of ATC. Otherwise (in case of return-to-stand), the only option to de-suspend the flight is through a new EOBT from a DLA/CHG message.

(5) A-CDM airports are not expected to use this function but should be able to trigger an updated T-DPI-s (due to a manual TSAT/TTOT update by TWR) or a T-DPI-t (due to a TOBT update by Handling Agent). In exceptional cases, when e.g., a flight departing from a CDM airport and requiring de-icing becomes suspended by FAM, the TWR has the option to request de-suspension through an A-DPI TWRUPDATE.

9.1.2   Link to the A-CDM milestone approach

(1) The DPI messages shall be triggered based upon the milestone approach as described in the Airport CDM Implementation manual (see Doc Ref 4).

(2) The transmission of the first A-DPI shall be at milestone 15 and updates should then be sent up-to milestone 16.

9.2 Who (can send it)

(1) The A-DPI message **shall** be sent by ANI Airports, CDM Airports, RNI Airports and ADV ATC TWR Airports.

9.3 When (can it be sent)

(1) The first A-DPI **shall** be sent at the off-block event/push-back clearance delivery. This is considered the moment when the TTOT is reliable & stable enough to inform ETFMS.

(2) The A-DPI for <u>non regulated</u> flights **shall** be sent after:
$$(ETFMS\_OBT – DTW\_LowerBound – 25\ min)$$

(3) If it is not, the A-DPI is rejected with "MESSAGE RECEIVED TOO EARLY OR TOO LATE".

(4) The A-DPI for <u>regulated</u> flights **shall** be sent after:
$$(CTOT – EXOT – STW\_LowerBound – 25\ min)$$

(5) If it is not, the A-DPI is rejected with "MESSAGE RECEIVED TOO EARLY OR TOO LATE".

(6) In case the flight is using a remote-hold procedure and has to off-block in order to free a stand and to wait elsewhere on the airport for CTOT improvements, the transmission of the A-DPI **shall** be postponed until Airport CDM no longer wishes to receive any CTOT improvements for the flight (see also "11.3 Remote Holding (Push & Hold procedure)" section for more details).

(7) The provision of a Tower Update A-DPI shall only be done after the off-block event.

(8) The ETFMS_OBT is the Off-Block-Time in the ETFMS "filed" flight model, i.e. the last received OBT, derived from the last received DLA, CHG, E-DPI, T-DPI-t, REA….
(Derived OBT in DPI msg is TOT – last-received-taxi-time).

9.4 Acceptance rules

9.4.1 <u>pre-requisites</u>

(1) The A-DPI will only be accepted on the ETFMS operational system if the Quality control parameters are above a pre-defined level. An example of such a QC parameter could be Slot-Adherence shall be above an agreed value (e.g., 80% in normal circumstances).

(2) It must be well understood that the A-DPI is the end of a process which is the management of EOBT/TOBT by the Aos. All measures should be taken before to comply with the CTOT. This should be done using the T-DPI-t and T-DPI-s if available or the DLA.

9.4.2 <u>Technical</u>

9.4.2.1 General

(1) The purpose of the validation rules is to identify TWR or Airport system bugs and wrong ATC/Airport controller system inputs (activation of wrong flight plan).

(2) The "correctness" of an operational decision of TWR controller shall be questioned by quality control actions.

(3) The A-DPI **shall** be in accordance with the message-, field- syntax & semantic descriptions as specified in section 4 Fields.

(4) The following validation rule, applies to all A-DPI messages:
$$TTOT <= clock + Taxi\ Time + 50$$

If a later TTOT is provided, the A-DPI will be rejected with ATFM comment "PROVIDED TAKE OFF TIME OUT OF BOUNDS".

9.4.2.2   Classic A-DPI

(1)   A Classic A-DPI **shall** not be sent when the flight is suspended (both ATFM and IFPS suspensions). The A-DPI is rejected with "FLIGHT IS SUSPENDED" because a flight is not supposed to off-block when it is suspended (Note that a Tower Update A-DPI may be used to request de-suspension of a flight in exceptional cases).

9.4.2.3   Tower Update A-DPI

9.4.2.3.1   General

(1)   Note that NMOC may decide to disable the acceptance of the Tower Update A-DPI for a particular airport, independently of the acceptance of Classic A-DPI messages. This will only be done following coordination with the TWR.

(2)   This could occur when a technical problem has been identified with the provision of the message.

(3)   In such case, the A-DPI is rejected with "NOT AUTHORISED TO SEND THIS MESSAGE".

(4)   After the Tower Update A-DPI has been disabled, the TWR should revert back to the procedure to request CTOT extensions via phone call / e-Helpdesk.

9.4.2.3.2   CTOT extension request

(1)   On reception of a Tower Update A-DPI, that is processed as a request for a 10min CTOT extension the following additional conditions have to be met:

Condition 1.

> A Classic A-DPI, with TTOT inside the STW, was previously accepted, i.e., the flight is in CDM status "Actual off-block".

(2)   This condition will check whether the flight was planned/pre-sequenced in the CDM process according to its STW and, at actual off-block time, the flight was estimated to depart inside the STW.

(3)   Otherwise, the CTOT extension request will be rejected with ATFM comment "NOT REPORTED AS OFF BLOCK".

Condition 2.

> No CTOT extension has been granted yet, neither automatically upon CTOT extension request via A-DPI nor manually by the flow controller.

(4)   No more than one CTOT extension request can be granted to a flight.

(5)   Otherwise, the CTOT extension request will result in a NIA and this may result in an SRM, FLS or SLC.

Condition 3.

> The limit of three CTOT extensions, automatically granted in the past rolling hour, has not yet been reached.

(6)   This condition has been introduced to limit the number of CTOT extensions granted automatically to a particular airport that could potentially cause over-deliveries in the downstream sectors. The need for this condition will be re-assessed in the future as the risk of over-deliveries is largely contained because of Condition 5.

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(7) Otherwise, the CTOT extension request will result in a NIA and this may result in an SRM, FLS or SLC.

Condition 4.

> The flight trajectory updated with the new TTOT and/or SID is not violating restricted airspace, nor crossing any RAD restriction(s).

(8) Otherwise, the CTOT extension request will be rejected with ATFM comment "INVALID ROUTE DUE TO TTOT OR SID CHANGE". This will ensure that the TWR is informed and can then decide on a suitable action, in coordination with the pilot.

Condition 5.

> At least one available slot exists within the next 20 min from the current CTOT.

(9) Otherwise, the CTOT extension request will result in a NIA and this may result in an SRM, FLS or SLC. Note that the likelihood of this condition to be met is limited.

9.4.2.3.3   Request for a newCTOT

(1) On reception of a Tower Update A-DPI, that is identified as a request for a newCTOT, i.e., a search for the first available CTOT, only Condition 1 above has to be met.

(2) Note that the TWR can send as many requests for CTOT recalculation via Tower Update A-DPI as needed.

9.4.2.3.4   Request for a de-suspension

(1) On reception of a Tower Update A-DPI, that is identified as a request for de-suspension, only Condition 1 above has to be met.

(2) The flight must have been suspended by a C-DPI or by FAM. Else the Tower Update A-DPI is rejected with "FLIGHT IS SUSPENDED".

(3) Note that the TWR can send as many requests for de-suspension via Tower Update A-DPI as needed.

9.5 How (does ETFMS use it)

9.5.1.1   General

(1) ETFMS will use the depstatus-field with value DEICING to verify if the provided TTOT may be inside an extended STW. See sections 12.2 The STW and the DTW and 11.4 Use of DPIs during Special Circumstances at the airport for more information.

(2) Any Taxi-Time (EXOT) in the A-DPI is used to create the Actual Flight Model (CTFM). It will also be stored with the Estimated Flight Model (FTFM) for use in case a re-calculation is required for the FTFM.

(3) Any SID in the A-DPI is used to create the Actual Flight Model (CTFM). It will also be stored with the Estimated Flight Model (FTFM) for use in case a re-calculation is required for the FTFM.

(4) Note that a TWRUpdate A-DPI for a non-regulated flight is processed as a Classic A-DPI.

9.5.1.2   Classic A-DPI

(1)   The processing is as follows:

- The flight will get CDMSTATUS = Actual Off-Block
- The traffic load (CTFM) will be updated with:
  - If TTOT < STW then   CTFM_TOT=STW_Lowerbound
  - If TTOT is inside STW then CTFM_TOT=TTOT
  - If TTOT > STW then   CTFM_TOT=TTOT
- The Flight State = Tact Activated (TA).
- The ATFM slot (if applicable) will be frozen and consequently any REA status will be removed.
- IFPS will be informed about the "Actual Off-block state" of the flight and the IFPS Operator may decide to reject any DLA or CHG message.
- Flight Activation Monitoring (FAM) may start shifting at the TTOT and may suspend 17 min (default value) after the TTOT if no further information is received for the flight.

9.5.1.3   Tower Update A-DPI

9.5.1.3.1   Identification of 3 types

(1)   The Tower Update A-DPI is normally processed as CTOT extension request if the TTOT value is between CTOT+10 and CTOT+20min.

(2)   The Tower Update A-DPI will result in a Network Impact Assessment (NIA) and may result in a later CTOT, an FLS or SLC in the following cases:

1. an extension of the CTOT by 10min will push the flight into a zero-rate, insufficient RVR or XCD regulation period.
2. the CTOT has already been extended (either in response to previous A-DPI TWRUPDATE or to a request handled manually by NMOC).
3. The limit of 3 granted CTOT extensions in the past rolling hour, per airport, has been reached.
4. There is no available slot within 20 min from the current CTOT.
5. The reception time of the Tower Update A-DPI is after the STW (including the last minute of the STW) and TTOT > STW (possibly extended)
6. The STW is extended and the TTOT > extended STW.
7. TTOT > CTOT + 20min

(3)   A Tower Update A-DPI received for a suspended flight by the airport (via C-DPI) or by FAM, ETFMS will perform a Network Impact Assessment (NIA).

9.5.1.3.2   Processed as a CTOT extension request

(1)   A Tower Update A-DPI that is accepted as a CTOT extension request will result in transmission of an SRM with a newCTOT that is equal to previousCTOT+10min.

(2)   The TTOT will be inside the new STW and the flight is updated as for a Classic A-DPI.

9.5.1.3.3   Processes as a newCTOT (slot search)

(1)   For a Tower Update A-DPI that has been identified as a request for a newCTOT, ETFMS will perform a Network Impact Assessment (NIA) using the TTOT in the A-DPI as the minimum CTOT.

(2)   In case the result of the processing of the A-DPI is such that the provided TTOT is inside the possibly updated CTOT/STW, or the flight becomes unregulated, then the processing is like for a Classic A-DPI.

(3)   In case the result of the processing of the A-DPI is such that the provided TTOT is before of the possibly updated CTOT/STW, then.

- The flight will get CDMSTATUS = the CDMSTATUS it had before reception of 1st A-DPI.
- The Regulated Demand (RTFM) will be updated with the newCTOT value and Flight State = Slot Issued (SI).
- The flight will get REA status.
- IFPS will be informed about the updated CDMSTATUS and DLA, CHG and CNL messages are accepted again.
- Flight Activation Monitoring (FAM) may start shifting at the CTOT and may suspend 17 min (default value) after the CTOT if no further information is received for the flight.
- The CTFM will be removed if it existed before.

(4)   In case the result of the processing of the A-DPI is such that the flight will be suspended, then.

- The flight will get CDMSTATUS = the CDMSTATUS it had before reception of 1st A-DPI.
- The Traffic Demand will become the reference (FTFM) and Flight State = Filed (FI).
- The flight will not get REA status.
- IFPS will be informed about the updated CDMSTATUS and DLA, CHG and CNL messages are accepted again.
- Flight Activation Monitoring (FAM) may start shifting at the CTOT and may suspend 17 min (default value) after the CTOT if no further information is received for the flight.

9.5.1.3.4   Process as a de-suspension request

(1)   On reception of a Tower Update A-DPI for a suspended flight by the airport (via C-DPI) or by FAM, ETFMS will perform a Network Impact Assessment (NIA). The flight may be de-suspended and ETFMS will send a new SAM message if the flight is regulated and it will send a DES if the flight is no longer regulated. An FLS is re-sent when the remains suspended.

(2)   In case the result of the processing of the A-DPI is such that the provided TTOT is inside the possibly issued CTOT/STW, or the flight is not-regulated, then the processing is like for a Classic A-DPI.

(3)   In case the result of the processing of the A-DPI is such that the provided TTOT is before of the possibly issued CTOT/STW, then.

- The flight will get CDMSTATUS = the CDMSTATUS it had before reception of 1st A-DPI.
- The Regulated Demand (RTFM) will be updated with the newCTOT value and Flight State = Slot Issued (SI).
- The flight will get REA status.
- IFPS will be informed about the updated CDMSTATUS and DLA, CHG and CNL messages are accepted again.
- Flight Activation Monitoring (FAM) may start shifting at the CTOT and may suspend 17 min (default value) after the CTOT if no further information is received for the flight.

(4)   In case the result of the processing of the A-DPI is such that the flight will remain suspended, then:

- The flight will get CDMSTATUS = the CDMSTATUS it had before reception of 1st A-DPI.
- The Traffic Demand will become the reference (FTFM) and Flight State = Filed (FI).
- The flight will get not get REA status.
- IFPS will be informed about the updated CDMSTATUS and DLA, CHG and CNL messages are accepted again.
- Flight Activation Monitoring (FAM) may start shifting at the CTOT and may suspend 20 min (default value) after the CTOT if no further information is received for the flight.

10   C-DPI

10.1 Description

(1)   The purpose of the C-DPI is to inform ETFMS that previously sent DPI information is no longer valid.

(2)   The C-DPI is a solution to manage unknown TTOTs for a single flight but not for an airport sequence issue.

10.2 Who (can send it)

(1)   The C-DPI **shall** be sent by ANI Airports, Airport CDM Airports and by Advanced ATC TWR airports.

10.3 When (can it be sent)

(1)   The C-DPI **shall** be sent at moments when a previously sent TTOT is no longer valid <u>AND</u> a new TOT is not yet known. A typical example is a technical problem during taxiing when the Departure Clearance is revoked.

(2)   The C-DPI **should** be sent at:

	Possible transmission reasons	Reason value ADEXP / Reason value B2B
1	The airport did not have an airport slot for the departure. MST-1 was not passed	NOAIRPORTSLOT / NO_AIRPORT_SLOT
2	The TOBT was deleted, the pilot did not request start-up or report ready in accordance with the procedures at the Airport, …	TOBTUNKNOWNOREXPIRED / TOBT_UNKNOWN_OR_EXPIRED
3	Use case 1: The pilot did not request start-up in accordance with the CDM procedures at the airport. Use case 2: The pilot did not pushback or start taxi at ASAT+10min.	TSATEXPIRED / TSAT_EXPIRED
4	After having started taxi, the flight returned to stand/ramp	RETURNTOSTAND / RETURN_TO_STAND
5	The discrepancy between TOBT and EOBT is larger than 15min (and needs to be resolved before start-up will be issued)	FLIGHTPLANINVALID / FLIGHT_PLAN_INVALID
6	Cancellation of the airport slot or Schedule <u>before</u> the ICAO FPL has been cancelled (CNL).	FLIGHTCANCELINAODB / FLIGHT_CANCEL_IN_AODB
7	Request de-activation of a flight that was erroneously activated by a wrong A-DPI	UNDOADPI / UNDO_ADPI
8	Special value to be used when other C-DPI reason applies than the ones listed above. To be used until this other C-DPI reason is made official in NM systems	OTHER / OTHER

(3) The C-DPI **should normally** be sent not earlier than 3hrs before EOBT. An exception to this requirement will only be accepted when the C-DPI is sent to inform that the flight would not operate before the ICAO FPL is cancelled (point 6 in the above table). In this case, the C-DPI should contain the reason Flight cancelled in AODB. The airport can provide this C-DPI from flight plan filing time onwards. This will enable NM to update the traffic demand picture before the aircraft operator cancels the flight plan through a CNL message.

10.4 Acceptance rules

10.4.1   Pre-requisites

(1) The C-DPI will only be accepted on the ETFMS operational system if the Quality control parameters are above a pre-defined level. An example of such a QC parameter could be Slot-Adherence shall be above an agreed value (e.g., 80% in normal circumstances).

10.4.2   Technical

(1) The purpose of these validation rules is to identify TWR or Airport system bugs and wrong User system inputs (activation of wrong flight plan).

(2) The "correctness" of an operational decision of User Inputs shall be questioned by quality control actions. If necessary on-line.

(3) Note that a C-DPI FLIGHTCANCELINAODB shall not be sent if the flight is cancelled by the AO with the transmission of the CNL message.

(4) The C-DPI **shall** be in accordance with the message-, field- syntax & semantic descriptions as specified in section 4 Fields.

10.5 How (does ETFMS use it)

(1) ETFMS will use the C-DPI to re-create the Filed Demand based upon the latest received IFPS information (EOBT likely already in the past!).

(2) The Taxi-Time (EXOT), SID, ARCTYP and REG are not reset after a Cancel DPI.

(3) If the flight is not in CDM Status "Actual Off-Block", previously received CDM information (CDMStatus, all TTOTs, TOBT and TSAT) is reset.

(4) If the flight is in CDM Status "Actual Off-Block", only the TTOT from A-DPI and ConsolidatedTTOT are reset.

(5) ETFMS will suspend the flight and an FLS message with a dedicated comment will be sent, even if it is the first DPI message provided for this flight. The details of the comment information can be found in APPENDIX I – Output of flight suspension status via FLS and B2B P/S.

(6) Note that a C-DPI that contains the reason value "UNDO_ADPI" follows a special processing compared to the other reasons. When the value "UNDO_ADPI" is provided, the flight is de-activated and the previously received A-DPI information is removed. The flight is NOT suspended in this case.

(7) The CDMSTATUS is set to "e – departure from CDM airport" which is the initial value.

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11   Additional Info & Special Circumstances

11.1 Sequence of DPI messages

11.1.1   Description

(1)   For CDM Airports, the normal sequence of DPI messages **shall** be, first is an E-DPI, followed by a T-DPI-t, followed by a T-DPI-s and followed by an A-DPI.

(2)   For ADV ATC TWR airports, the E-DPI message (without TTOT) **should** be sent until the A-DPI message is sent.

(3)   For ANI Airports, the normal sequence of DPI messages **shall** be, first a P-DPI, followed by an E-DPI, followed by a T-DPI-t, followed by a T-DPI-s and followed by an A-DPI.

(4)   The type of DPI message to be sent **shall** correspond to the progress status of the flight at the Airport.

(5)   For ANI Airports, CDM Airports and RNI Airports, a T-DPI-t or a T-DPI-s message **shall** be preceded by an E-DPI.

(6)   If the flight is becoming "valid" again (after e.g., transmission of a C-DPI) and a TTOT is known, a new T-DPI-t or T-DPI-s **shall** be sent regardless of which status had been reached before sending the C-DPI.

(7)   After the transmission of a C-DPI (flight is suspended), the AO/Ground Handler are expected to enter a new TOBT and a new E-DPI, T-DPI-t or T-DPI-s is expected. An A-DPI is rejected for a flight that was suspended by the airport via a C-DPI. A new EOBT provided in a DLA/CHG message also de-suspends the flight.

(8)   Any update of the airport and airline information **shall** be sent in the last sent DPI message type (P-DPI, E-DPI, T-DPI-t, T-DPI-s or A-DPI), keeping the same (previously sent) TTOT if necessary.

(9)   In special cases (e.g., the flight has an unexpected delay after a T-DPI-t, T-DPI-s or an A-DPI has been sent), ETFMS expects the DPI message type that belongs to the new status of the flight (e.g., E-DPI or T-DPI-t). So, a C-DPI is not mandatory before sending a DPI of an "earlier" type.

(10)   After the Airport CDM has issued the T-DPI-s to ETFMS, it is normally no longer required to provide TOBT+Taxi-Time (EXOT) updates in the form of a T-DPI-t. This will prevent the need to send 2 messages. It will only be useful to send a T-DPI-t again when the new TOBT is after the TSAT or when the flight is taken out of the pre-departure sequence.

11.2 Additional guidelines for ANI and CDM Airports

(1)   If a non-regulated flight becomes regulated, the Airport system **shall** not automatically send a T-DPI-s update other than a TTOT which is inside the STW. This is to avoid a regulated ←→ non-regulated ping-pong effect. Manually triggered T-DPI-s messages (i.e., via user inputs) may always be sent.

(2)   If a regulated flight becomes non-regulated, the Airport system **shall** not automatically send a T-DPI-s update. This is to avoid a regulated ←→ non-regulated ping-pong effect. Manually triggered T-DPI-s messages (i.e., via user inputs) may always be sent.

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11.3 Remote Holding (Push & Hold procedure)

(1) Some airports have a shortage of gates and they use procedures to free the gate as soon as the aircraft is ready to move.

(2) In such cases, the aircraft is cleared to off-blocks and to move to a remote holding position, waiting for the next clearance to taxi to the runway.

(3) It is assumed that this procedure is mainly applied for flights which have a "longer" ATFM delay (> 30-45min) compared to the TOBT.

(4) In cases of Remote Holding, the normal transmission of DPI messages and the A-DPI at AOBT in particular, cannot be used because this would prevent the flight from receiving any possible CTOT improvements.

(5) The following DPI transmission sequence is recommended:

1. Send T-DPI-s
   This T-DPI-s shall be sent when the start-up clearance is given (ASAT) or at the AOBT event. The TTOT should be set to the earliest possible TTOT. For Airports providing an optimal_TTOT/TSAT this time is provided by the pre-departure sequencer for other airports this is usually ASAT/AOBT+EXOT.
   This will provide ETFMS with the earliest possible TTOT, it will make the flight REAdy for improvement automatically (if clock has reached TOBT-5) and ETFMS will try to advance the CTOT up-to the provided TTOT.
   The taxi-time field shall contain the time from the gate/parking position to the runway, excluding the waiting time at the remote-hold.

2. Send T-DPI-s update.
   As soon as the flight has arrived at the remote hold, a new T-DPI-s shall be sent with an updated TTOT and an updated taxi-time. The taxi-time should be the time that is required to re-start the engines (if necessary) and to taxi from the remote hold to the runway. The TTOT should be set to clock + taxi-time or to optimal_TTOT to provide ETFMS with the no-slot-before time.
   ETFMS will also use this updated/short taxi-time to calculate a minimum CTOT based upon the clock (minCTOT=clock+taxi-time) as soon as the provided TTOT is in the past. An updated T-DPI-s shall be sent if taxi-time changes or if TTOT changes for any other reason than changes of the clock.

3. Send A-DPI
   When the flight is cleared to taxi from the remote hold to the runway, the A-DPI shall be sent. The trigger of this A-DPI could possibly by linked to the (new or 2nd) re-clearance to taxi.
   The taxi-time field shall contain the time from the remote hold position to the runway.

(6) This sequence of DPI messages will ensure that ETFMS is informed about the earliest possible TTOT for the flight. It will make the flight REAdy for improvement and request ETFMS to provide CTOT improvements.

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11.4 Use of DPIs during Special Circumstances at the airport

11.4.1   Introduction

11.4.1.1   General

(1) The DPI messages will improve the cooperation between the Airport and the NMOC/ETFMS during Special Circumstances at the airport.

(2) It is the intention to improve the traffic predictability for ATFCM and to improve the stability of the departure sequence also during these difficult circumstances at the airport.

(3) A compromise is needed between protecting the ATM network from over-deliveries and the prevention that the departure sequence of the flight is disturbed by ATFCM actions on the flight.

(4) The DPI messages will indicate that the flight's departure is suffering from Special Circumstances by the inclusion of the depstatus-field.

(5) For the time being, De-icing is the only Special Circumstance at the airport for which special procedures for DPI message transmission have been defined. This may evolve depending on experience and the requirements from CDM Airports.

(6) A pre-requisite for using DPI messages in De-icing situations is that the Airport CDM **shall** be able to estimate the time it takes to de-ice (including the time it may take to line up for De-icing, to vacate the de-icing bay…). This estimation **shall** be used to update the taxitime and relevant TTOT in DPI messages.

11.4.1.2   Remote De-icing

(1) In case of remote De-icing the aircraft will be ready to off-block at the TOBT, i.e., the TOBT is not influenced by De-icing.

(2) The De-icing will be seen as part of the time between off-block and take-off, i.e., the time it takes to taxi.

11.4.1.3   On-stand De-icing

(1) For on-stand de-icing, the de-icing is planned to take place before off-block and is normally not considered as part of the taxiing time.

(2) For on-stand de-icing, it is recommended to identify two TOBT values: TOBT and EEZT (some airports called it TOBT_deice).

(3) The TOBT is the time at which "normal" ground handling is finished, the doors are closed, and de-icing could be started.

(4) The EEZT is the time at which de-icing is planned to be finished.

(5) It is also a requirement and common practice that an aircraft that has been de-iced has to take-off as soon as possible and that the flight is included in the pre-departure sequence very close to the time that the De-icing is finished.

(6) To prevent that NMOC/ETFMS impacts the pre-departure sequence for a flight under De-icing, a "late" update for de-icing should be prevented by updating the taxi times for flights as soon as possible and it may possibly be provided in a T-DPI-s message. For more information see section 11.4.4 Overview. Note that De-icing is the only exception to this rule.

11.4.1.1 General De-icing versus De-icing-on-request

(1) It is recommended to identify and process "General De-icing" and "De-icing on request" differently.

General De-icing

(2) Based upon the weather forecast, it may be known well in advance that the majority of the flights are expected to require de-icing during a period of time.

(3) In order to improve TOT predictability and to increase the probability to have "on-time CTOT" it is recommended to extend the taxi-times with an average value for all departures within the specified period as soon as the weather forecast is available, preferably several hours before departure.

De-icing upon request only

(4) When it is expected that only a minority of the departures requires de-icing, then the taxi-time should not be extended globally and should only be done after the de-icing has been requested.

11.4.2 Significant reduction of Runway availability

(1) The Active Departure Runway may be changed regularly. This is normal operations and is normally taken into account by the pre-departure sequencer, i.e., in case of runway change, the pre-departure sequencer will sequence the flight(s) for the new active runway(s) and send T-DPI-s updates if necessary.

(2) However, some special cases may happen, and this may require special handling of the pre-departure sequencer and updating of DPI messages, mainly the T-DPI-s message.

(3) The special cases that have been identified are:

A) Temporary runway closure - short duration

(4) This may happen in e.g., snow removal cases. The RWY is closed for e.g., 10-20min. In such cases, the flights will probably not be re-sequenced to another RWY but they are sequenced after the re-opening time of the RWY.

(5) If the aircraft is still at the gate, an updated T-DPI-s may have to be sent in accordance with the standard transmission rules as specified in section "8 T-DPI-s".

(6) If the aircraft is already taxiing, an A-DPI with an updated taxi-time and TTOT shall be sent.

B) Temporary runway closure - longer duration

(7) This may happen due to e.g., an accident. The RWY is closed for e.g., 20-120min. In this case the flights will normally be re-sequenced to another RWY (if available).

(8) If the aircraft is parked at the gate, an updated T-DPI-s may have to be sent in accordance with the standard transmission rules as specified in section "8 T-DPI-s" and also taking into account the special rules when TTOT is far in the future as described in section "8.3 When (can it be sent)".

(9) If the aircraft is already taxiing, an A-DPI with an updated taxi-time and TTOT may have to be sent.

C) Complete closure (until further notice)

(10) In case there is no departure RWY available anymore, then a TSAT cannot be issued. Previously issued TSATs may be erased.

(11) In such cases, the FMP shall request activation of a zero-rate regulation to NMOC for all flights (arrivals and departures) and/or the activation of an EU restriction.

(12) This will result in a suspension (FLS message) for all flights.

(13) In case the aircraft was already taxiing, return to stand procedure should be applied.

(14) It is recommended to stop the transmission of the DPI messages until the flights are able to depart again and the zero-rate regulation is lifted.

(15) Refer to Doc Ref 5 Section 7.2 Management and recovery of a disruption for a detailed description of the procedure.

(16) See also section "13 Operational Procedures" for more details on the Operational Procedures required during such special operating conditions.

11.4.3   Contents of DPI messages

11.4.3.1   TOT fields

(1) The relevant TOT-fields in these DPI messages **shall** be updated with the time it takes to de-ice the aircraft. For more details refer to section 11.4.4 Overview.

11.4.3.2   TAXITIME

(1) It is recommended to identify the following two situations:

General De-icing

(2) When many flights are expected to require de-icing, a general taxi-time extension should be set by TWR by inputting a time duration (in minutes) or by the selection of an Operational Scenario. An operational scenario will have pre-defined taxi-time extension values included.

(3) This taxi-time extension for de-icing can be cancelled manually or automatically at a certain time before departure if the pilot has not requested/confirmed the need for de-icing.

(4) A general taxi-time extension should also be removed after the flight has been sequenced for de-icing by a de-icing sequencing tool or procedure.

(5) Note that the global extension of taxi-times in ETFMS is a well-known common practice since many years for non-CDM Airports during e.g., winter operations. It is usually provided by FMPs via the CHMI.

(6) For CDM Airports, global taxi-time extensions shall be provided in DPI messages because a taxi-time in a DPI always has a higher priority than the taxi-times updates provided via CHMI.

De-icing upon request only

(7) When it is expected that only a minority of the departures requires de-icing, then the taxi-time should not be extended globally and should only be done after the de-icing has been requested by the pilot.

(8) Dependent on the De-icing method, the taxitime-field **should** also include the time it takes to de-ice.

Note that this requirement is for the taxitime-field in the DPI messages. Local procedures may result in different habits and requirements.

11.4.3.3 DEPSTATUS

(1)   The DEPSTATUS is used to mark that the flight will be de-iced. In that case, it will contain the value "DEICING".

(2)   For more details, please refer to section "4.7.9 DEPSTATUS (depstatusDeicing)".

11.4.4   <u>Overview</u>

11.4.4.1   All flights

(1)   The DPI messages must be sent in accordance with the trigger events as described in the sections of P-DPI, E-DPI, T-DPI-t, T-DPI-s and A-DPI.

(2)   They also have to be sent for example when the TOT changes by 5 min or more. This could for example be the case at exit of the De-icing queue, at entry of the De-icing stand or at exit of the De-icing stand.

(3)   In the tables below the following abbreviations are used:

bestOBT:	best known OBT for the flight The bestOBT is the most accurate value of the Off-Block-Time from AO/HA perspective that is available at that moment. It could e.g., be EOBT, TOBT input by Handling Agent, EIBT+MTTT if already available.
optimalTTOT:	earliest possible TTOT (for regulated flights) The optimalTTOT could be received from an optimal pre-departure sequence tool or based upon the "REA function". It contains the earliest possible take-off time from ATC perspective taking the TOBT and any local constraints into account. It applies to regulated flights with an ATFM delay only.
EXOT_standard:	Normal Variable Taxi-Out-Time (VTT/EXOT) The EXOT_standard is the time between off-block and take-off, excluding any time required for de-icing the aircraft.
EXOT_gen_ext:	General Extended Taxi-Out-Time The EXOT_gen_ext is the time between off-block and take-off, including the global estimated increase of the delay of the flight due to de-icing. This is the equivalent of the taxi-time extension that is/was done by FMP in ETFMS via CHMI.
EXOT_DI_rem:	Increased Taxi-Out-Time for De-Icing Remote The EXOT_DI_rem is taxiing time from stand to de-cing platform + waitingtime in de-icing queue + EDIT + taxiing time from de-icing platform to runway.
EDIT_DI_os:	De-Icing estimation, for De-Icing On-Stand The EDIT_DI_os is an estimation of the time that is required for de-icing. It is: waitingtime in de-icing queue + EDIT.
EDIT :	Estimated De-Icing Time (duration)

11.4.4.2 EDIT is the most accurate estimate of the De-Icing time that is available. It ranges from an accurately estimated and update value to a rough estimation. If not, yet available it is expected to be 0.Non regulated flights

(1) The following is an overview of triggering of DPI messages for non-regulated flights during De-icing circumstances.

When shall which DPI be sent – Non regulated flight?

F — P-DPI
E — E-DPI
D — T-DPI-t
B — T-DPI-s
A — A-DPI

FPL filed   EOBT - 3hrs   EOBT - 2hrs   TSAT_issue   TOBT   TSAT   AOBT   Take-off

TSAT_issue ~ TOBT – 40 min

Fig: DPI - 7
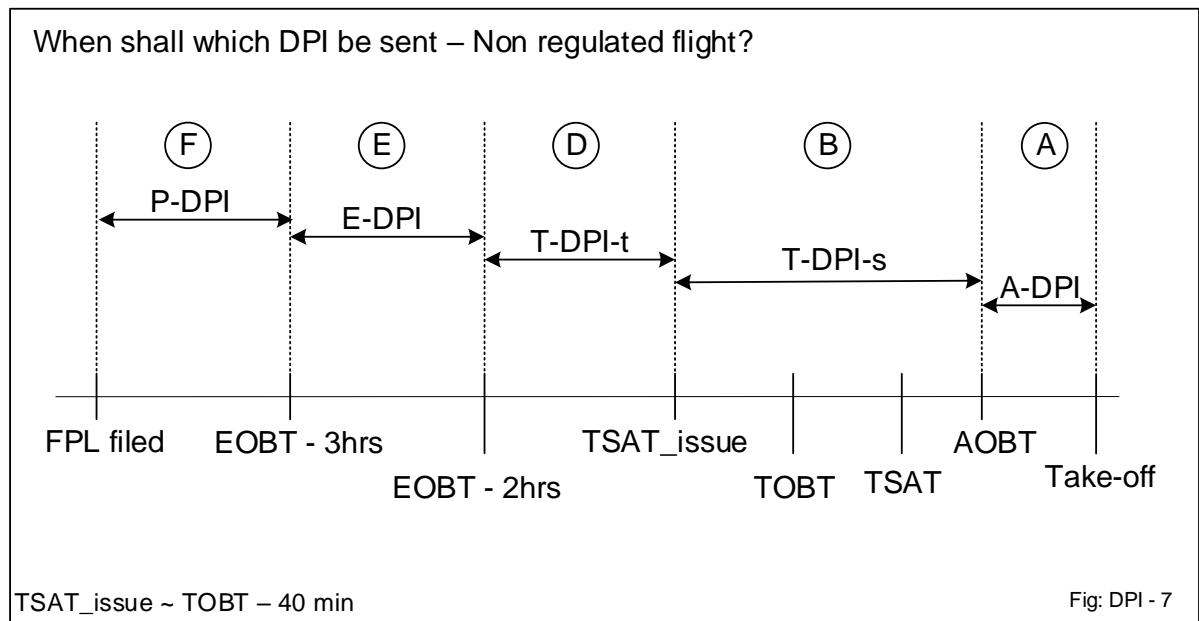
(2) The ttot- and the taxitime- fields in DPI messages for non-regulated flights for De-icing **shall** be calculated as specified in the tables below.

Remote de-icing
When flight is not yet sequenced for de-icing or de-icing sequencing is not (yet) available:

Period	DPI-type	taxitime-field	TOBT-field	ttot-field
F	P-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
E	E-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
D	T-DPI-t	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
B	T-DPI-s	EXOT_gen_ext	TOBT	TSAT+EXOT_gen_ext
A	A-DPI	EXOT_gen_ext	--	AOBT+EXOT_gen_ext

Remote de-icing
After the flight has been sequenced for de-icing:

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Period	DPI-type	taxitime-field	TOBT-field	ttot-field
F	P-DPI	n.a.	n.a.	n.a.
E	E-DPI	EXOT_DI_rem	TOBT	TOBT+EXOT_DI_rem
D	T-DPI_t	EXOT_DI_rem	TOBT	TOBT+EXOT_DI_rem
B	T-DPI-s	EXOT_DI_rem	TOBT	TSAT+EXOT_DI_rem
A	A-DPI	EXOT_DI_rem	--	AOBT+EXOT_DI_rem

On stand de-icing:

When flight is not yet sequenced for de-icing or de-icing sequencing is not (yet) available:

Period	DPI-type	taxitime-field	tobt-field	ttot-field
F	P-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
E	E-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
D	T-DPI-t	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
B	T-DPI-s	EXOT_gen_ext	TOBT	TSAT+EXOT_gen_ext
A	A-DPI	EXOT	--	AOBT+EXOT

On stand de-icing:

After the flight has been sequenced for de-icing:

Period	DPI-type	taxitime-field	tobt-field	ttot-field
F	P-DPI	n.a.	n.a.	n.a.
E	E-DPI	EXOT_standard	TOBT	TOBT_deice+EXOT_standard
D	T-DPI-t	EXOT_standard	TOBT	TOBT_deice+EXOT_standard
B	T-DPI-s	EXOT_standard	TOBT	TSAT+EXOT_standard
A	A-DPI	EXOT_standard	--	AOBT+EXOT_standard

11.4.4.3 Regulated flights

(1) The following is an overview of triggering of DPI messages for regulated flights during De-icing circumstances.

When shall which DPI be sent – Regulated flight?

TSAT_issue ~ TOBT – 40 min
TSAT_publi_to_NMOC ~ TSAT – 10 min

Fig: DPI - 8
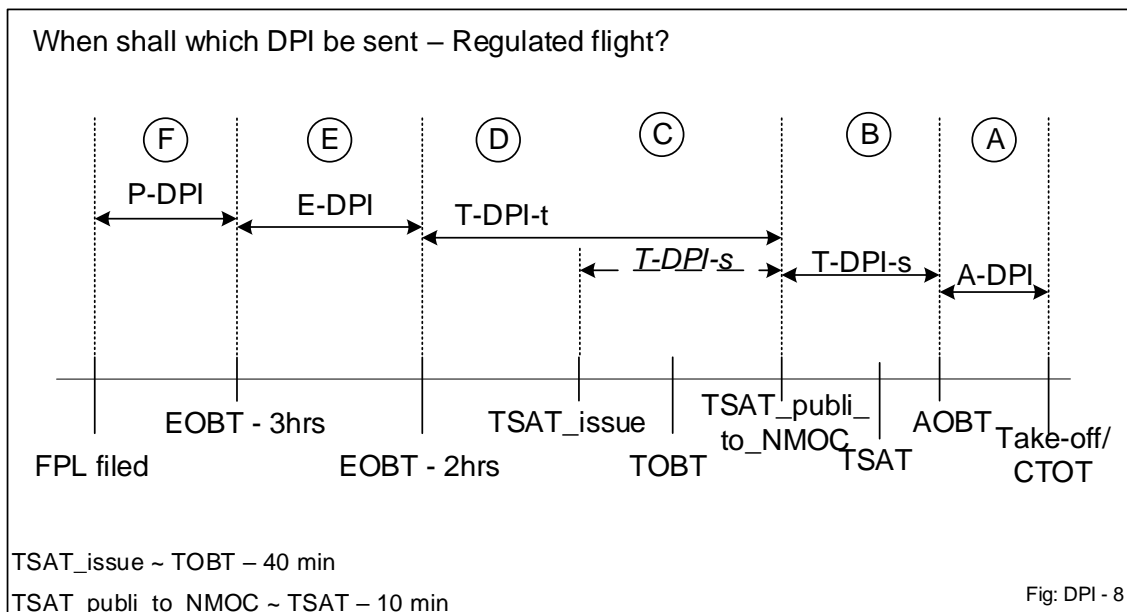
(2)   The ttot- and taxitime-fields in DPI messages for regulated flights for De-icing **shall** be calculated as specified in the table below.

Remote de-icing
When flight is not yet sequenced for de-icing or de-icing sequencing is not (yet) available:

Period	DPI-type	taxitime-field	tobt-field	ttot-field
F	P-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
E	E-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
D	T-DPI-t	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
C	T-DPI-s	EXOT_gen_ext	TOBT	optimalTTOT based upon EXOT_gen_ext
B	T-DPI-s	EXOT_gen_ext	TOBT	TSAT+EXOT_gen_ext
A	A-DPI	EXOT_gen_ext	--	AOBT+EXOT_gen_ext

Remote de-icing
After the flight has been sequenced for de-icing:

Period	DPI-type	taxitime-field	tobt-field	ttot-field
F	P-DPI	n.a.	n.a.	n.a.
E	E-DPI	EXOT_DI_rem	TOBT	TOBT+EXOT_DI_rem
D	T-DPI_t	EXOT_DI_rem	TOBT	TOBT+EXOT_DI_rem
C	T-DPI-s	EXOT_DI_rem	TOBT	optimalTTOT based upon EXOT_DI_rem
B	T-DPI-s	EXOT_DI_rem	TOBT	TSAT+EXOT_DI_rem
A	A-DPI	EXOT_DI_rem	--	AOBT+EXOT_DI_rem

On stand de-icing:
When flight is not yet sequenced for de-icing or de-icing sequencing is not (yet) available:

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Period	DPI-type	taxitime-field	tobt-field	ttot-field
F	P-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
E	E-DPI	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
D	T-DPI-t	EXOT_gen_ext	TOBT (if available)	bestOBT+EXOT_gen_ext
C	T-DPI-s	EXOT_gen_ext	TOBT	optimalTTOT based upon EXOT_gen_ext
B	T-DPI-s	EXOT_standard	TOBT	TSAT+EXOT_standard [1]
A	A-DPI	EXOT_standard	--	AOBT+EXOT_standard

(3)   Notes:

1) This TSAT is expected to be after De-icing has been finished.

On stand de-icing:
After the flight has been sequenced for de-icing:

Period	DPI-type	taxitime-field	tobt-field	ttot-field
F	P-DPI	n.a.	n.a.	n.a.
E	E-DPI	EDIT_DI_os	TOBT	TOBT+EDIT_DI_os
D	T-DPI-t	EDIT_DI_os	TOBT	TOBT+EDIT_DI_os
C	T-DPI-s	EDIT_DI_os	TOBT	optimalTTOT based upon EDIT_DI_os
B	T-DPI-s	EXOT_standard	TOBT	TSAT+EXOT_standard
A	A-DPI	EXOT_standard	--	AOBT+EXOT_standard

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12 Relationship between DPI and other NMOC inputs & messages

12.1 CDM Status

12.1.1 Description

(1) This section describes the relationship between the DPI message type, the DPISTATUS and the CDMSTATUS.

(2) The DPISTATUS is the field inside the DPI message that indicates the DPI message type.

(3) The CDMSTATUS is the column that is shown in ETFMS HMI and CHMI and NOP portal flight lists. It provides the latest information about the DPI messages to the operational users.

(4) The CDMSTATUS may for example change at the reception of a DPI message, at reception of a DLA or CHG messages and at modifications of the regulation-scheme.

(5) The purpose of the CDMSTATUS-field is not only to show the last received DPI message but also the usage of the DPI message in the ETFMS flight profiles.

(6) The following table lists the different values of DPISTATUS and CDMSTATUS and it shows their basic relationship:

Message-type	DPISTATUS	CDMStatus		
		HMI value	Value in EFD or FUM	Meaning
--	--	N	Not included	Departure from a standard airport. Note that this value is normally not shown in CHMI.
--	--	c	DPIEXPECTED	Departure from CDM Airport or advanced TWR (initial value)
P-DPI	PRED	p	PREDICTED	predicted
E-DPI	EARLY	e	ESTIMATED	estimated
T-DPI-t	TARGET	t	TARGETED	targeted
T-DPI-s	SEQ	s	PRESEQUENCED	(pre-) sequenced
A-DPI	ATC	a	ACTUALOFFBLOCK	actual off-block
C-DPI	CNL	c	DPIEXPECTED	Departure from CDM Airport (initial value)

(7) The CDMSTATUS may change due to the reception of messages (e.g., DLA) or due to the modification of the regulation-scheme. The following general rules apply:

 ➢ The CDMSTATUS "s – sequenced" is set when a T-DPI-s is received. The CDMSTATUS "s-sequenced" may be removed for example, if ETFMS receives a DLA message of which the EOBT is after TTOT – Taxi-Time (EXOT) (of the T-DPI-s) then the CDMSTATUS is re-set to "e – estimated".

 ➢ After modification of the regulation-scheme the CDMSTATUS may be set to "t – targeted" or "e – estimated" dependent on the last received DPI message.

 ➢ After reception of a REA, FCM, the CDMSTATUS will be reset to "e – estimated".

(8) ATFCM suspension of a flight does not change the CDMSTATUS.

(9) Note that CDMSTATUS "c" is shown as ""(blank) on CHMI & NOP and that it is only visible on the ETFMS HMI.

12.2 The STW and the DTW

12.2.1   Introduction

(1) ETFMS uses a Slot Tolerance Window (STW) for regulated flights and a Departure Tolerance Window (DTW) for non regulated flights. These windows are used to produce statistics and for the processing of DPI messages.

(2) During adverse conditions at a CDM Airport, it happens that Flow Management Positions (FMPs) and NMOC/OPSD flow controllers agree upon a general extension of the Slot Tolerance Window (STW) and Departure Tolerance Window (DTW) if required. This is usually an extension of 5-10 min during a period of approximately 1 hour.

(3) Extensions of STW and DTW need to be input into ETFMS so that they can be used for the processing of the DPI messages.

12.2.2   Extensions of the STW and DTW

12.2.2.1   General

(1) The NMOC flow controller may decide to extend the upper and lower limits of the STW and the DTW during a limited period of time (e.g., 1 hour).

(2) The extension is input into the ETFMS HMI per CDM Airport by specifying the upper and lower limits and the validity period.

(3) When defining the DTW and STW extensions and validity periods, the NMOC Flow Controller will have the possibility to specify if the extensions will be applicable for:
   a)   all flights
   b)   only for flights for which ETFMS has received the information that these are being de-iced via the inclusion of "-DEPSTATUS DEICING" (see section 11.4 Use of DPIs during Special Circumstances at the airport

(4) Note that ETFMS will use the DTW and STW when it is updating the data of a flight, e.g. at reception of messages such as DPI, DLA…. The modification of the DTW or STW parameters themselves via the HMI will not lead to a search for flights that may be affected by the new parameters.

(5) Note that it will only be possible to modify parameter that are in the future.

(6) The extended STW and DTW limits are shown on ETFMS HMI and CHMI for FMPs in the flight data displays and on the flight lists.

12.2.2.2   The STW

(1) The standard Slot Tolerance Window (STW) is a window of -5 min to +10 min around the last published CTOT. It applies to regulated flights only.

(2) The STW is used for the processing of the T-DPI-s and the A-DPI messages. For this document the STW_LowerBound (-5) and STW_UpperBound (+10) are used. See corresponding sections

about T-DPI-s 8.5 How (does ETFMS use it) and A-DPI 9.5 How (does ETFMS use it) for the details.

(3) If the CTOT is inside the Validity Period as agreed with the NMOC Flow Controller, ETFMS will use the extended limits instead of the standard limits.

(4) The STW is also used to delay the moment that Flight Activation Monitoring (FAM) suspends a regulated flight.

(5) A flight is suspended by FAM if at TOT_for_FAM + STW_UpperBound + 7 min, the flight is not reported as airborne. The TOT_for_FAM is normally the TOT_of_CTFM (so a TTOT of a T-DPI-s that falls inside the STW or an A-DPI) if it exists. Else it is the CTOT.

12.2.2.3   The DTW

(1) The standard Departure Tolerance Window (DTW) is a -15 min to +15 min window around the take-off-time of the Estimated Flight Model (FTFM). It applies to non-regulated flights only.

(2) The take-off-time of the Estimated Flight Model (FTFM) consists of the EOBT+Taxi-Time (EXOT) from the FPL message, possibly updated with the last of:
  - the EOBT + Taxi-Time (EXOT) from a DLA or from a CHG message
  - the turnaroundTTOT from any DPI message
  - the TTOT from the E-DPI message
  - the TTOT from the T-DPI-t message
  - the TTOT of a T-DPI-s if it is before the TTOT of the last received T-DPI-t message.
  - the timestamp + minlineup from a REA message (only in the exceptional case when a regulated flight becomes non regulated)
  - the FCM done by the NMOC Flow Controller
  - …

(3) The DTW is used for the processing of the T-DPI-s messages. For this document the DTW_LowerBound (-15) and DTW_UpperBound (+15) are used. See corresponding section about T-DPI-s 8.5 How (does ETFMS use it) for the details.

(4) If the take-off-time of the Estimated Flight Model (FTFM) is inside the validity period as agreed with the NMOC Flow Controller, ETFMS will use the extended limits instead of the standard limits.

(5) The DTW is also used to delay the moment that Flight Activation Monitoring (FAM) suspends a non-regulated flight.

(6) A flight is suspended by FAM if, at TOT_for_FAM + DTW_UpperBound + 2 min, the flight is not reported as airborne. The TOT_for_FAM_model is normally the TOT_of_CTFM (so a TTOT of a T-DPI-s or an A-DPI) if it exists. Else it is the TOT_of_FTFM.

12.3 Use of TIS/TRS for CDM Airports

12.3.1   TRS

(1)   The parameter "Time to Remove from the Sequence" (TRS) will prevent a change to the Take-Off time once the clock reaches TRS minutes before the current Off-Block time of the flight (CTOT – Taxi-Time (EXOT) (COBT) if any, or EOBT).

(2)   The TRS is used at two different moments and these moments/actions need to be distinguished:
   A)   At creation or modification of a regulation
   B)   At automatic improvement (true revision & holes recovery)

A)   At creation or modification of a regulation

(3)   When a regulation is created or modified, ETFMS needs to determine which flight are affected by the regulation and which flights can still be delayed realistically. Weather a flight is affected by a regulation is based upon the FTFM (i.e., the flight plan possibly updated by E-DPI or T-DPI-t). The FTFM profile is used to determine the Traffic Volumes that are crossed by the flight.

For non-regulated or suspended flights the following applies:
   Flights of which clock < FTFM_OBT – ref_time will receive a SAM, SLC or FLS.
   Flights of which clock > FTFM_OBT – ref_time will be regulated but their
$$CTOT=FTFM\_OBT+TT.$$

For flights that were already regulated the following applies:
   Flights of which clock < CTOT-TT - ref_time will receive a newCTOT, SLC or FLS.
   Flights of which clock > CTOT-TT - ref_time will keep their CTOT.

ref_time is: the longest of (TRS and 30min). Note that the flow controller may update this 30min parameter or even choose to select flights with an EOBT < clock. This is for use in special circumstances. Airborne flights will never be re-calculated and A-DPI flights will only be re-calculated after a specific action by Flow Controller.

B)   At automatic improvements

(4)   A CTOT can automatically be improved by the True Revision process or Holes Recovery process and the TRS is also used in these processes.
   This means that as soon as clock > CTOT-TT-TRS, the CTOT is no longer advanced.
   Example:
   FTFM_OBT=1000, TT=10, CTOT=1100, TRS=20min, flight is REA
   So CTOT-TT-TRS=10:30
   When clock is 10:35, minCTOT=clock+TT=10:45 However, the clock has passed clock-TT-TRS so the CTOT is no longer improved.

12.3.2   TIS

(1)   The parameter "Time to Insert into the Sequence" (TIS) will ensure the provision of a new CTOT so that an already organised departure sequence may still be adapted. It is the necessary number of minutes needed to adapt the departure sequence before the Off-block time. It is used every time a CTOT is computed.

(2)   Note that the TIS parameter is not applicable for flights that have the status REA.

(3) These parameters may be adjusted at any time depending on the departure aerodrome traffic situation and may vary during the day and the runway in use.

(4) It is recommended to reduce the TIS value once CDM has been put into operations because a longer TIS value may not be required when a pre-departure sequence is being used.

12.4 DLA/CHG

12.4.1 Introduction

(1) ETFMS will normally process each DLA or CHG message that it receives from IFPS.

(2) The DLA and CHG messages update the Estimated Flight Model (FTFM).

(3) If the CHG message contains a SID, then it is ignored. A SID from a DPI message prevails.

12.4.2 P-DPI, E-DPI, or T-DPI-t

(1) Sequence of events, example I:
   1. Last received DPI message is a P-DPI, E-DPI or T-DPI-t
   2. ETFMS receives a DLA or a CHG message that significantly changes the OBT that ETFMS derived from the turnaroundTTOT. The EOBT from the DLA or CHG message is called the IFPS_OBT.
   A significant change of EOBT is defined as:
   $$IFPS\_OBT > turnaroundTTOT – Taxi\text{-}Time\ (EXOT) + 15min$$

(2) The ETFMS_TOT, which is TOT of the Estimated Flight Model (FTFM), will be set to this IFPS_OBT + Taxi-Time (EXOT). The Taxi-Time (EXOT) is the last received value in a DPI.

(3) The CDM status will be changed from to "e - estimated" because the turnaroundTTOT is no longer used.

(4) Sequence of events, example II:
   1. Last received DPI message is a P-DPI, E-DPI or T-DPI-t
   2. ETFMS receives a DLA or CHG message with an EOBT that is "before" a previously received (turnaroundTTOT – Taxi-Time (EXOT)).
   "Before" is defined as:
   $$IFPS\_OBT <= turnaroundTTOT – Taxi\text{-}Time\ (EXOT) + 15min$$

(5) The Estimated Flight Model (FTFM) is updated with the data from the DLA or CHG message (route, ARCTYP…), except for the newEOBT. The ETFMS_TOT, which is the TOT of the Estimated Flight Model (FTFM), will be therefore kept at the turnaroundTTOT. The CDM status will be kept at "p-predicted", "e-estimated" or "t - targeted" respectively.

(6) In this case, the newEOBT of the DLA message has no impact on a possible CTOT, as the newEOBT is not used to update the FTFM.

12.4.3 T-DPI-s

(1) Sequence of events, example III:
   1. Last received DPI message is a T-DPI-s
   2. ETFMS receives a DLA message or a CHG message. The EOBT from the DLA or CHG message is called the IFPS_OBT.

(2) A possible previously received turnaroundTTOT will be re-processed as described in section see 12.4.2 P-DPI, E-DPI, or T-DPI-t.

(3) The earliestTTOT (TTOT from the T-DPI-s) will be kept as a no-slot-before. If possible the Actual Flight Model (CTFM) will be re-created and in that case the CDM status will be kept at "s - (pre-sequenced". If the Actual Flight Model (CTFM) is not re-created, the CDMSTATUS is set as described in 12.4.2 P-DPI, E-DPI, or T-DPI-t.

(4) The effect of a DLA/CHG message on a previously received earliestTTOT (TTOT of a T-DPI-s) message depends on the value of the new IFPS_OBT. For example:
  - If the new IFPS_OBT of a DLA/CHG message is after the earliestTTOT-Taxi-Time (EXOT) then a previously created Actual Flight Model (CTFM) is removed.
  - If the new IFPS_OBT of a DLA/CHG message is before the earliestTTOT-Taxi-Time (EXOT) then ETFMS will try to keep Actual Flight Model (CTFM) based upon this earliestTTOT. This could for example be feasible if this earliestTTOT is inside the STW of a possible newCTOT.

12.4.4   A-DPI message

(1) Note that it is not normal that ETFMS receives a DLA or CHG message after the A-DPI but it is possible that an IFPS Operator decides to accept a DLA/CHG manually and force transmission to ETFMS. If may also occur in case of race conditions.

(2) Sequence of events, example IV:
  1. Last received DPI message is an A-DPI.
  2. ETFMS receives a DLA message or a CHG message. The EOBT from the DLA or CHG message is called the IFPS_OBT.

(3) The CTFM based upon the TTOT will be deleted.

(4) ETFMS will try to re-apply the turnaroundTTOT and earliestTTOT (TTOT from a previously received T-DPI-t and T-DPI-s) as described in section 12.4.3 T-DPI-s.

(5) ETFMS will try to re-apply the TTOT of the last ATC-DPI.

(6) The CDMSTATUS will be set in accordance with the new state of the flight.

12.5 REA message

(1) The REA message can still be used but it is recommended to use the T-DPI-t or the T-DPI-s messages. The use of the REA should be reserved for special occasions such as during an interruption of CDM procedures at the Airport CDM or during interruption of the DPI connection (AFTN or B2B web services) with NMOC.

(2) The main differences between the T-DPI-t, T-DPI-s and REA messages are:
  1. The REA:
    - is only accepted for regulated flights.
    - provides ETFMS with a new earliest TOT the TWR controller can afford. This TOT is set to REA_receptiontime+MINLINEUP.
    - the flight receives the status REA.
  2. The T-DPI-t
    - is accepted for all flights.
    - provides ETFMS with a new earliest TOT the AO/handlers can afford, which is the turnaroundTTOT (TOBT+EXOT)
    - the flight receives the status RFI.
  3. The T-DPI-s
    - is accepted for all flights.

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- provides ETFMS with a new earliest TOT from the ATC pre-departure sequence, which is the earliestTTOT (TSAT+EXOT)
- the flight may receive the status REA (see section on T-DPI-s for details).

(3) In case the reception_time + MINLINEUP of the REA message is before the ETOT of the FTFM, the REA results in an update of the Estimated Flight Model (FTFM) and overwrites the turnaroundTTOT of a previously received DPI. If this occurs, the CDMSTATUS is (re-)set to "e-estimated".

(4) A previously received TSAT+EXOT (from a T-DPI-s or an A-DPI) will be overruled by the minCTOT (clock+MINLINEUP) from the REA.

(5) If the clock+MINLINEUP is before the last received earliestTTOT (of a T-DPI-s), it will also overrule this value.

(6) After reception of a REA, the CDMSTATUS will be reset to "e - estimated".

(7) In practice this may mean that if a REA is sent after the A-DPI, the CTOT is no longer "frozen" (and may even become later). The TTOT received in the A-DPI is deleted and this may have a negative impact on Traffic predictability. If the REA is sent after the T-DPI-s, ETFMS may advance the CTOT up-to a value that is not achievable from the "pre-departure sequencer perspective".

12.6 SWM message

(1) A flight for which a T-DPI-t message is received, automatically obtains the RFI status.

(2) In the CDM process, AO/handlers are expected to provide accurate EOBT/TOBT updates to all partners and these times are used as the earliest possible off-block time from an AO/handler perspective.

(3) Providing a SWM message to NMOC only, does not make sense in a CDM environment.

(4) For this reason, the SWM message is rejected for flights for which a T-DPI-t, T-DPI-s or an A-DPI message has been received.

(5) The rejection message is: "FLIGHT MANAGED BY CDM PROCESS AT DEPARTURE AIRPORT."

(6) After reception of a C-DPI, a SWM is accepted again.

(7) At reception of a C-DPI message, the RFI/SWM status is set back to the value that is specified for the AO concerned in the NMOC ENVironment database.

12.7 Suspensions

12.7.1 Introduction

(1) This section describes what will happen to data that has been received via DPI messages when the flight becomes suspended due to other (non-DPI) events.

(2) This section also describes what will happen to previously received DPI data when the suspension status is removed due to other (non-DPI) events.

(3) How ETFMS processes a just received DPI for a suspended flight is described with each type of DPI message.

12.7.2   Flight becomes suspended by ATFM

(1)   A flight may become ATFM suspended after it has received one or more DPI messages. This section describes what happens to the data that has been received via the DPI messages.

(2)   Such a suspension may for example occur due to a modification of the regulation-scheme, due to the reception of an SMM or due to the reception of a C-DPI.

(3)   ETFMS keeps the Estimated Flight Model (FTFM) for an ATFM suspended flight except if it is suspended by a C-DPI.

(4)   For ATFM suspensions, except due to C-DPI, ETFMS keeps the possibly received earliestTTOT (from the T-DPI-s) as a no-slot-before for possible later use.

(5)   For a suspension by a C-DPI the FTFM is re-created based upon the EOBT and latest DPI taxitime and SID. The earliestTTOT is erased.

(6)   The TTOT from an A-DPI is removed.

12.7.3   ATFM Suspension status is removed

(1)   A suspended flight may become de-suspended and/or regulated. This section describes what happens to a flight if it had previously received DPI data.

(2)   Such a de-suspension may for example occur due to the modification of the regulation-scheme or reception of a message such as FCM.

(3)   It may also occur due to the reception of a P-DPI, E-DPI, T-DPI-t or T-DPI-s. An A-DPI is rejected with "FLIGHT IS SUSPENDED", no matter what the reason for suspension was.

(4)   The network impact is assessed based upon the Filed Flight Model (FTFM), so possibly including the TOT from the last received DPI.

(5)   The possibly stored earliestTTOT (from a T-DPI-s (no-slot-before)) may be used in a similar way as if the T-DPI-s was received after the removal of the suspension status. So for example, the Actual Flight Model (CTFM) may be re-created.

12.7.1   Flight becomes suspended due to FPL re-validation

(1)   A flight may be suspended due to IFPS re-validation. If this happens, the flight plan is no longer valid and it is up-to the AO to update (or cancel) his flight plan.

(2)   Until the flight plan has been corrected, all DPI messages are rejected.

12.7.2   Suspension due to FPL re-validation is removed

(1)   This suspension status can only be removed through the reception of a DLA or a CHG message. See section 12.4 DLA/CHG for details.

12.7.3   Recommendation related to suspensions

(1)   A flight that was regulated and becomes suspended **shall** be considered as "no longer regulated" and consequently the CTOT **shall** be erased from the CDM Platform (for a suspended flight).

(2)   After the flight is de-suspended, ETFMS will send a new SAM message if the flight is still regulated and it will send a DES if the flight is no longer regulated. Note that in this sequence of inputs and outputs no SLC message is sent.

12.8 EOBT Update Service for A-CDM departures

12.8.1 Introduction

(1) The airlines have to update their flight plan if it is delayed by more than 15 min and this delay is due to the airline's own operations.

(2) Airlines can delegate to NM the filing of the DLA message for departures from designated A-CDM airports.

(3) For flights operated by an airline which has delegated to NM the filing of the DLA, NMOC will automatically file a DLA message using the TOBT values in the DPI messages received.

12.8.2 Legal requirements

(1) This service assists the airlines in complying with the following legal requirements:

(2) The ICAO prescription, as set out in doc 7030:

(3) "Any changes to the EOBT of more than 15 minutes for any IFR flight within the IFPZ shall be communicated to the IFPS".

(4) The EU IR 255/2010, article 6/6 (c), which stipulates that, by failing to comply with this ICAO prescription, flights risk not being granted take-off clearance:

(5) "The ATS Unit at the departure airport shall ensure that:

(6) (c) flights not adhering to their estimated off-blocks time, considering the established tolerance, are not given take-off clearance".

12.8.3 Benefits

(1) Solving the EOBT/TOBT discrepancies is significantly expedited via this service.

(2) Reduced risk for the pilot of being refused a start-up request when TOBT and EOBT are not aligned due to the airline's late response to resolve an EOBT/TOBT discrepancy. In addition, efficiency gains can be achieved throughout the turnaround process due to:

- Reduction of radio communications between the ATC / TWR and the flight crew;
- Optimised need for coordination between the ground handler and the AO or between the Airport Management Unit and the ground handler/AO.

(3) The number of MVT messages sent by the ground handler could be reduced, subject to the bilateral agreement with the AO.

(4) Possible reduction of workload for the partners involved.

12.8.4 How does it work

(1) The airline has to request to NM the activation of the service.

(2) Any TOBT value which exceeds the EOBT by more than a set parameter threshold (e.g., 15 min) will be transmitted to IFPS in an internal DLA message with an EOBT = TOBT.

(3) IFPS will process and distribute this DLA message in the same manner as if the request was received from the airline directly via e.g., AFTN or SITA networks.

(4) The aircraft operator is derived from the Field 18 (OPR) of the FPL if it is filled in; otherwise it is derived from the ARCID.

(5) When an ORM (Operational Reply Message – sent by IFPS) is generated for a DLA message received from ETFMS, the ORM message will include a comment field stating "THIS DLA MESSAGE HAS BEEN TRIGGERED FROM A DPI MESSAGE".

(6) These ORM messages are addressed to the AOCC and/or to the FPL originator, following the same configuration as specified in the NM ENV system for regular FPL messages.

(7) The visibility over any REJ message is particularly important as these inform the AOCC that the DLA triggered by the TOBT has not been successfully done.

(8) IFPS will automatically reject the DLA messages received from ETFMS that fail IFPS validation. A REJ ORM would be sent. In this case, the AO has to correct the problem by e.g., filing a CHG message, similarly to the current procedure.

(9) A TOBT which is earlier than the EOBT will not trigger an update of the EOBT. A TOBT which is more than 15 min earlier than the EOBT raises a discrepancy, displayed on CHMI/NOP Portal/B2B.

(10) This discrepancy could also be caused by the reception of a DLA/CHG with an EOBT which is after TOBT+15min. In this case, the ground handler or in general, the "person responsible to update the TOBT" has to update the TOBT to the value of the EOBT.

(11) If the airline needs to advance the EOBT by more than 15 min, the action it should take is CNL and re-file, similarly to the current procedure.

(12) When creating a DLA delegation, the airline has two options:

    a) Immediate transmission of the DLA (directly when the TOBT is received)

    b) Deferred transmission of the DLA (only at a specified time before TOBT)

(13) The airline may choose to go for option b) as it can happen that the TOBT values fluctuate, especially if they are provided too early. The example use case below shows the implications of option a):

- The CDM airport provides TOBT values to NMOC as soon as they are available;
- EOBT=1000; TOBT=1030 is NOT accurate; it updates the EOBT anyway; EOBT=1030;
- Next received TOBT=1010 is a more accurate one; as it is more than 15 min earlier compared to EOBT it is ignored by NMOC; only a discrepancy would be shown.
- To reflect the correct OBT in the FPL, the AO needs to CNL and re-file.

(14) To mitigate this, when subscribing to the service, the airline has the option to defer the moment when the DLA is filed to a time when the TOBT is more stable. This can be achieved by specifying the value of the parameter *DLA_Transmission_Time* (configurable in the NM system). For example, when the parameter value is set to 30 min, the DLA will only be filed at TOBT – 30 min, even if the TOBT value was received earlier than this time.

(15) The update of the EOBT with a TOBT from a DPI message does normally not result in a network impact (re)assessment because the EOBT is simply being aligned to a previously received TOBT.

12.8.5 Recommendations for the AO and Ground Handler

(1) For this service to be effective, the quality of the TOBT values received from a CDM airport should be of a sufficient level at all times. Prior to making the service available for a specific airport, NM assesses the quality of the TOBT.

(2) The aircraft operator that has activated this service for a particular CDM airport will still be able to file DLA/CHG messages on its own, if necessary.

(3) Before the first DPI message is received (normally EOBT-3hrs), it is recommended that the OCC monitors and informs NM of any expected delay. Any DLA/CHG message is used to update the

flight profile. At this point, this is the only information that can provide a more accurate demand picture.

(4) As soon as the first DPI message is received, NM has a correct demand picture based on the TTOT and Taxi Time values received. In this timeframe, it is recommended that the OCC lets the automatic function update the EOBT, unless a DLA message is required before the first TOBT is made available to NM. Note that the TOBT value itself is NOT used for updating the flight profiles.

(5) Any delay of more than 3 hours should be communicated to NM through a DLA message rather than a TOBT. This restriction may be removed in the future.

12.8.6   Service request and (de)activation

(1) The service can be requested by any airline for departures from CDM airports.

(2) It is based upon the three letter ICAO code of an airline.

(3) The requests for activation or deactivation of the service should be addressed to:

(4) airport-cdm@eurocontrol.int

(5) Visit the dedicated page on our website, which includes a map with the A-CDM airports at which this service can be activated on request:

(6) https://www.eurocontrol.int/service/estimated-block-time-update-service Upon request from the airline, NM will activate the service on a trial basis. During the trial period, the NM/APT Unit will ensure support and guidance to the AOCC, the ground handler and to the concerned CDM airport(s).

13   Operational Procedures

13.1 Introduction & Background

Introduction

(1)   This section summarizes the operational procedures that need to be considered when A-CDM is put into operations at an airport and the DPI messages are provided to the NMOC Operational system. It consolidates the procedures laid out in the ATFCM Operations Manual (Doc Ref 5) which are relevant for CDM Airports.

Contingency Operations

(2)   This section also summarizes the required contingency procedures that need to be followed when CDM is put into operations at an airport and the DPI messages are provided to the NMOC Operational system.

Working relationship TWR – FMP - NMOC

(3)   For most airports (that are not CDM), the communication concerning ATFCM matters is done between the FMP and NMOC. The TWR usually does not communicate directly with the NMOC. For example, the TWR provides runway-in-use changes to the FMP who then provides these to the NMOC.

(4)   For CDM Airports it is normally agreed that the TWR and the NMOC communicate directly when it concerns individual flights, for example a flight for which a DPI has been received with late TTOT. The communication concerning global airport related issues should still go via the FMP, for example Airport Default Capacity changes.

(5)   For a detailed list of responsibilities of TWR and FMP at CDM Airports, please refer to Appendix D.

(6)   To cover these specific working arrangements used at individual airports the general convention "FMP/TWR" is used in the procedures to refer to the entity responsible for the action.

(7)   The communication and cooperation between a CDM Airport and NMOC may depend on the level of impact on Network Operations and different procedures may apply accordingly. For a full description of these Network Impact Levels please refer to Doc Ref 5, ANNEX B AIRPORT CDM → LEVELS OF IMPACT ON NETWORK OPERATIONS OF CDM AIRPORTS.

(8)   A summary can be found in Appendix E.

13.2 Procedures for FMP/TWR and NMOC

13.2.1   Level 0 - Normal Operations

(1)   The NMOC may support the CDM Airport during normal operations with the following actions if requested by FMP/TWR.

    a)   CTOT Improvements

    b)   CTOT Extensions

    c)   Slot swapping

(2)   The FMP/TWR at the CDM Airport will coordinate individual flights as required with the NM Tactical Team.

13.2.1.1.2 CTOT improvements for individual flights

(1) Note that the use of this condition is by exception for when a flight appears to have been excessively penalised for reasons that are not evident.

(2) After coordination between NMOC Flow Controller and TWR (A-CDM) an improved CTOT can be agreed upon. Following the agreement, the flight should be forced in the regulation by the Flow Controller at the agreed CTOT, which will be distributed in an SRM to the ATM community The TWR pre-departure sequencer will sequence the flight according to the newly received CTOT in the SRM.

(3) Refer to Doc Ref 5 Section 5.7.2.4 CTOT Improvement Management for a detailed description of the procedure.

13.2.1.1.3 CTOT extensions for individual flights.

(1) Refer to Doc Ref 5 Section 5.7.2.5 CTOT Extension Management for a detailed description of the procedure.

13.2.1.1.4 Slot Swapping

(1) Swaps of ATFM slots could take place, also for departures from CDM Airports, either on request of an AO or on initiative of a Flow Controller. The CTOT shall not be before the TTOT from last received DPI message.

(2) Refer to Doc Ref 5 Section 5.7.2.6 Slot Swapping for a detailed description of the procedure.

13.2.2   Level 1 - Adverse Conditions or Hindered Operations

(1) The NMOC may support the CDM Airport during Adverse Conditions by extending the slot or departure tolerance windows for de-icing flights or for all flights during a limited period of time if requested by FMP/TWR.

(2) The FMP/TWR at the CDM Airport will coordinate with the NM DOM as soon as possible when local constraints severely affect the flow of traffic.

13.2.2.2   STW & DTW Extension

(1) In case of Adverse Conditions and De-icing the first action that can be taken is that, where possible, the A-CDM TWR supervisor requests a slot/departure (STW/DTW) extension.

(2) Such a general extension can, for example, be requested during other adverse conditions such as runway closure, fog, thunderstorms etc…

(3) The CTOT extension can be applied for de-icing flights only or for all flights. The selection of de-icing flights is only possible if the de-icing status is present in the DPI message. If not present, the default 'All Flights' should be left (see para below).

Example of ETFMS HMI (for de-icing only):

(4) In case the Adverse Condition continues, TWR may request further extensions of the DTW and STW. The maximum duration is always 1hr and consequently the request has to be repeated every hour to confirm that the adverse condition continues and to verify if the current network situation allows for further extensions.

(5) By extending the STW & DTW the period before FAM suspensions is applied is extended too.

(6) Refer to Doc Ref 5 Section 7.1.1 Short-term ATFCM solutions for a detailed description of the procedure.

13.2.3 Level 2 - Disrupted Operations

(1) The NMOC may support the CDM Airport during Disrupted Operations by:

a) Further extension of STW & DTW

b) Interruption of DPI messages.

(2) The A-CDM TWR supervisor (or representative) will inform NM DOM and FMP as soon as possible when local constraints have fully disrupted the current operations.

13.2.3.2 Further extension of STW & DTW

(1) In case of severely Disrupted Operations at an Airport, the NMOC, after Network Impact assessment, will assist the CDM TWR with manual CTOT management. A small number of flights could be forced to depart after STW but with updated CTOT equal to TTOT. Specific flights going into problem (high delay and adverse conditions) areas may not be granted a STW/DTW extension.

(2) By extending the STW & DTW the period before FAM suspensions is applied is extended too.

(3) Refer to Doc Ref 5 Section 6.1.1 Short-term ATFCM solutions for a detailed description of the procedure.

13.3 Interruption of DPI messages Procedure

(1) In case the quality of the DPI messages deteriorates, either due to severely disrupted operations that affect the airport or to a technical system failure, a temporary interruption of the DPI messages may be required.

(2) Refer to Doc Ref 5 Section 6.1.4 Interruption of DPI messages for a detailed description of the procedure.

(3) This procedure also stipulates the required coordination between FMP/TWR and NMOC in case of a planned technical maintenance/outage.

(4) As soon as the DPI messages are interrupted contingency operations should be activated.

13.4 Contingency Scenarios

(1) A CDM airport is normally operating using its CDM Operational Procedures and systems locally and the DPI messages are provided to the NMOC/ETFMS Operational system.

(2) Ideally a CDM Airport should be able to operate, using CDM Operations locally, while the DPI messages are not provided to the NMOC/ETFMS Operational system.

(3) This is already required during the DPI Operational Evaluations and during the transition period just before putting the DPIs into operations. It is also required during temporary interruptions of the DPI messages after CDM has become fully operational.

(4) However, if an airport is not able to operate its local CDM procedures without operational DPI connections to NMOC/ETFMS, then the airport shall foresee a contingency for the case DPI messages are interrupted and ETFMS is stopped for maintenance purposes.

(5) Such a contingency shall consist of appropriate operational procedures and if necessary, supported by adequate system functionalities.

(6) A stepped approach to start contingency operations is described in Annex F, "Procedure for Contingency Operations with CDM Aerodromes ".

(7) Note that ETFMS is interrupted during approximately 1 hour every 4 weeks for scheduled maintenance and for about 3 hours and during the installation of new software releases 2-3 times per year as well as, rarely, during ad-hoc exceptional maintenance windows. The regular and increment ETFMS maintenance windows are published on the NMOC website and the exceptional ones also via AIM.

14 NM Software releases

14.1 Introduction

(1) This section normally describes the DPI implementation of a future NM release.

(2) The following section provides a short overview of the changes compared to the previous software releases.

(3) It summarizes the outstanding issues for future releases and provides details, where available.

14.2 NM Release overview

14.2.1 Overview of changes in NM Release 26.0

(1) The following CRs were implemented in the NM Release 26.0:

CR number	Title
CR_047947	Append FLS comment with C-DPI reason
CR_048208	Accept P-DPI after E-DPI

(2) This DPI Implementation Guide has been updated in accordance with the above listed CRs.

14.2.2 Overview of outstanding changes currently planned for NM Release 27.0

(1) The following CRs are currently planned for implementation in NM Release 27.0:

CR number	Title
CR_048209	Show TTOT values from extended DPI on Flight List
CR_049109	A-CDM Alerts reception (NM B2B WS)
CR_049122	A-CDM Alerts reception and dissemination (NM B2B WS) (Display in NMP Flight)
CR_048126	One B2B DPI certificate for several airports
CR_052806	Flights departing from a CDM/ANI airport shall no longer receive the REA status on reception of T-DPI-s only

14.2.3 Overview of outstanding changes after NM Release 27.0

(1) The Network Manager is currently engaged in a major revamping of its systems through a programme called iNM. For this reason, the traditional NM Release process has been put on hold until iNM will deliver the first software version (expected 2025), which will become the baseline for future enhancements. Only after that point can new change requests be planned. These future changes will be discussed and agreed in advance with the airport integration community through the relevant working arrangements (AICH WG / ADCH UG).

(2) One such change that has long been outstanding due to the limitations of the legacy systems (discrepancy between IFPS and ETFMS) is checking the validity of the FPL once DPI updates have been received and processed. These updates may cause changes to the off-block times such that the flight may cross restricted airspace. This check is currently not enforced, and no action is performed on the flight, e.g. suspension, advisory. Due to the safety implication, this change is considered to have a high priority for the early versions of the iNM system.

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APPENDIX A: Acronyms and Abbreviations

The following are the definitions of the Acronyms and Abbreviations that are particular to this document and not of a more general nature:

A

Airport CDM	Airport CDM (CDM airport)
ADEP	Aerodrome of Departure
ADES	Aerodrome of Destination
AIP	Aeronautical Information Publication
ANI	Advanced Network Integrated (airport)
AOBT	Actual Off-Block Time
AODB	Airport Operations DataBase
AOWIR	Aircraft Operator What-If Re-route
ARCID	Aircraft Identification
ARCTYP	Aircraft Type (ADEXP)
ATC	Air Traffic Control
ATFCM	Air Traffic Flow and Capacity Management
ATO	Actual Time Over
ATS	Air Traffic Services

B, C

CDM	Collaborative Decision Making
CFMU	Central Flow Management Unit (now called NMOC)
CHMI	Collaborative Human Machine Interface
COBT	Computed Off-Block Time (CTOT – TaxiTime)
CTFM	Current Traffic Flight Model (also called Actual Flight Model on CHMI)
CTOT	Calculated Take-Off Time

D

DEP	Departure Message
DES	De-suspension (message)
DPI	Departure Planning Information
DTW	Departure Tolerance Window

E

EDIT	Estimated De-Icing Time
EOBD	Estimated Off-Block Date (off block date provided by IFPS)
EOBT	Estimated Off-Block Time (off block time provided by IFPS)
ENV	ENVironment
ETFMS	Enhanced Tactical Flow Management System
ETO	Estimated Time Overhead
ETOT	Estimated Take-Off Time
EXIT	Estimated taXi-In Time
EXOT	Estimated taXi-Out Time

F

FAM	Flight Activation Monitoring
FCM	Flight Confirmation Message
FDPS	Flight Data Processing System
FMP	Flow Management Position
FPL	Flight Plan Message (ICAO format)
FTFM	Filed Traffic Flight Model (also called Estimated Flight Model on CHMI)
FUM	Flight Update Message

G, H, I

IFPLID	Initial Flight Plan Identification

K, L, M

MDI	Minimum Departure Interval
MFD	Mini Flightplan Data (created by CCAMS when COR received and no flight plan available

N

NA	Not applicable
NM	Network Manager
NMOC	Network Manager Operations Centre

O

OAT	Operational Air Traffic

P, Q

R

REA	REAdy (message)
RFI	Ready For Improvement
REG	aircraft REGistration
RNI	Regional Network Integrated (airport)
RTFM	Regulated Traffic Flight Model

S

SAM	Slot Allocation Message
SID	Standard Instrument Departure
SMM	Slot Missed Message
SOBT	Scheduled Off Block Time
SRM	Slot Revision Message
STW	Slot Tolerance Window
SWM	Sip Wanted Message

T

TBC	To Be Completed
TBD	To Be Defined
TIS	Time to Insert into the Sequence
TOBT	Target Off-Block Time (from AO/Handler)

TRS   Time to Remove from the Sequence
TSAT   Target Start-up Approval Time
TWR   Tower

U, V, W, X, Y, Z

Intentionally left blank

APPENDIX B-1

DPI ERRor Reply messages

Comment-field text	Description	Notes
TAXI TIME OUT OF RANGE	The taxi-time is not between 1 and 90 min.	

MESSAGE RECEIVED TOO EARLY OR TOO LATE	Does not apply to the P-DPI.
	An E-DPI that is received earlier than EOBT - 3hrs
	An C-DPI that is received earlier than EOBT - 3hrs
	A T-DPI-t that is received earlier than EOBT - 2 hrs
	A T-DPI-s that is received earlier than TOBT - 40min
	An A-DPI for non-regulated flights that is received earlier than
	    ETOT - DTW_LowerBound - EXOT - 25 min
	An A-DPI for regulated flights that is received earlier than
	    CTOT - STW_LowerBound - EXOT - 25 min	

DPI MESSAGES NOT IN CORRECT SEQUENCE	- a C-DPI is received after another C-DPI	

PROVIDED TAKE OFF TIME OUT OF BOUNDS	For turnaroundTTOT:
	    tTTOT < EOBT + Min_TT – 45 min or
	    tTTOT > ETFMS_OBT + Max_TT + 180 min
	or
	    tTTOT < clock -10min AND
	    tTTOT-EXOT <> FTFM_OBT
		(1)

	For earliestTTOT (non-regulated):
	    eTTOT < EOBT + Min_TT – DTW_LowerBound_Extension – 45 min or
	    eTTOT > ETFMS_OBT + Max_TT + DTW_UpperBound_Extension + 120min
	
	For earliest (regulated):
	    eTTOT < EOBT + Min_TT – STW_LowerBound_Extension – 45 min or
	    eTTOT > COBT + Max_TT + STW_UpperBound_Extension + 120 min or	

	For consolidatedTTOT (non-regulated):
	    cTTOT < EOBT + Min_TT – DTW_LowerBound_Extension – 45 min or
	    cTTOT > ETFMS_OBT + Max_TT + DTW_UpperBound_Extension + 120min
		(1)

	For consolidatedTTOT (regulated):
	     cTTOT < EOBT + Min_TT – STW_LowerBound_Extension – 45 min or
	     cTTOT > COBT + Max_TT + STW_UpperBound_Extension + 120 min or	

	For A-DPI (Non_regulated):
	     TTOT < ETFMS_OBT + Min_TT – DTW_LowerBound_Extension – 30min or
	     TTOT > ETFMS_OBT + Max_TT + DTW_UpperBound_Extension + 155 min	

	For A-DPI (regulated):
	     TTOT < COBT + Min_TT – STW_LowerBound_Extension - 25 min or
	     TTOT > COBT +Max_TT + STW_UpperBound_Extension + 155 min or
		(1)

NOT EXISTING FLIGHT	The message could not be matched to flight data in ETFMS because ETFMS had not (yet) received the flight plan or because the AO had cancelled the flight plan.	(1)
NOT AUTHORISED TO SEND THIS MESSAGE	When DPI received from an address which is not allowed to send DPI or NMOC has disabled the acceptance of the DPI messages	
PLEASE PROVIDE A VALID DPISTATUS	The DPISTATUS-field is missing or incorrect in a DPI message	
FLIGHT ALREADY ACTIVATED	The flight has already been reported as airborne to ETFMS so DPI messages are no longer accepted.	
FLIGHT ALREADY TERMINATED	ETFMS has already terminated the flight. DPI messages not accepted	
FLIGHT IS SUSPENDED	The flight is suspended. This DPI messages is not accepted for a suspended flight	
FLIGHT NOT YET CONFIRMED BY FLIGHT PLAN	The DPI has been associated to an RPL/MFD for which no FPL message has been received from the AO yet	
FLIGHT IS SUSPENDED BY IFPS REVALIDATION	The flight is suspended by IFPS re-validation. The AO must send a DLA of CHG message before DPI messages are accepted.	
FLIGHT IS CANCELLED	A flight may get the status CANCELLED (temporarily) during the AOWIR process. This status is normally only used between the cancel of the flight in ETFMS and the moment the new FPL is received from IFPS.	

Notes:
(1) - Please note that these ERRor messages should be interpreted with care when testing the A-CDM system on the B2B_OPEVAL, B2B_PREOPS or on the ETFMS OPS evaluation system via AFTN to the test address EUCHZMTT. These ERRor messages returned by the PREOPS or OPEVAL systems might not be sufficiently reliable because they may e.g. use a different CTOT and respond in accordance with this different CTOT. See the table on the following pages for additional guidance. For an explanation of the general ERROR "Syntax Error", please refer to Doc Ref 1.

APPENDIX B-2

<u>DPI ERRor Reply messages – interpretation on the NM PRE-OPS and OPEVAL systems</u>

Comment-field text	Interpretation on the OPEVAL and PREOPS systems
TAXI TIME OUT OF RANGE	No special interpretation
MESSAGE RECEIVED TOO EARLY OR TOO LATE	For the A-DPI this rejection is occasionally incorrect for regulated flights because the CTOT may be significantly different on the OPEVAL system from the OPS system.
DPI MESSAGES NOT IN CORRECT SEQUENCE	This rejection may only occur for a C-DPI message that is received after another C-DPI (without any other DPI message in between). It may occur unjustified if the OPEVAL or PREOPS system receives a copy of the C-DPI messages that are sent to operational ETFMS system. Such a copy is usually configured by NM. This may occur during e.g. during DPI testing for B2B DPI messages when the AFTN DPI messages are still in operations.
PROVIDED TAKE OFF TIME OUT OF BOUNDS	This may e.g. occur for regulated flights in case the CTOT on the ETFMS OPS system is significantly different from the CTOT on the OPEVAL or PREOPS system.
NOT EXISTING FLIGHT	The PREOPS system does not necessarily contain all flight plans. This error can be ignored on the PREOPS system. In case the E-DPI is rejected with this error for a flight plan that is filed after EOBT-3hrs, then the problem could be caused by the configuration of the OPEVAL system.
NOT AUTHORISED TO SEND THIS MESSAGE	It may occur that the acceptance flags on the ETFMS PREOPS or OPEVAL system are disabled when they should not have been disabled. The AFTN originator address may be unknown to NM. It may also occur that there is an issue with the B2B certificate. Action: Contact the NM/APT test responsible person.
PLEASE PROVIDE A VALID DPISTATUS	No special interpretation
FLIGHT ALREADY ACTIVATED	No special interpretation
FLIGHT ALREADY TERMINATED	No special interpretation
FLIGHT IS SUSPENDED	No special interpretation
FLIGHT NOT YET CONFIRMED BY FLIGHT PLAN	The PREOPS system does not necessarily contain all flight plans. This error can be ignored on the PREOPS system. In case the E-DPI is rejected with this error for a flight plan that is filed after EOBT-3hrs, then the Problem could be caused by the configuration of the OPEVAL system.
FLIGHT IS SUSPENDED BY IFPS REVALIDATION	No special interpretation
FLIGHT IS CANCELLED	No special interpretation

APPENDIX C

DPI Summary Table

Message	E-DPI	T-DPI-t	T-DPI-s	A-DPI	C-DPI
Timing from OBT	From EOBT - 3 hrs	From EOBT - 2 hrs	From TOBT – 40 min	At AOBT	At any time
Received from	A-CDM or Adv ATC TWR	A-CDM	A-CDM	A-CDM or Adv ATC TWR	A-CDM or Adv ATC TWR
Main received Data elements	TT SID turnaroundTTOT SOBT	TT SID turnaroundTTOT TOBT TSAT	TT SID earliestTTOT TOBT TSAT	TT SID TTOT AOBT	
Derived Data	CDM status = e	CDM status = t	CDM status = s	CDM status = a	CDM status = e
Effect on ETFMS					
FTFM	Updated with turnaroundTTOT	Updated with turnaroundTTOT	For Regulated Flight Updated if earliestTTOT < ETOT ⇨ Same processing as REA	No impact	Recomputed
RTFM	Updated in accordance with Network assessment outcome	Same effect	Same effect	No impact	Deleted
CTFM	No impact	No impact	For Non regulated Flight ⇨ CTFM is always created

For Regulated Flight When TTOT after ETOT and before STW ⇨ CTFM deleted ⇨ TTOT = No slot before ⇨ CTOT improvement possible

When TTOT inside STW ⇨ CTFM created ⇨ No CTOT improvement | For Non Regulated Flight ⇨ CTFM created based on TTOT

For Regulated Flight CTOT frozen When TTOT before STW ⇨ CTFM created based on STW_LowerBound

When TTOT inside or after STW ⇨ CTFM created based on TTOT | Deleted |
| **Network assessment triggers** | When FTFM updated | When FTFM updated | For Non regulated Flight if earliestTTOT is outside DTW For regulated Flight When earliestTTOT after STW | Never | Never |
| **Other** | | | | tac activated | Flight suspended (FLS) |

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<u>Outcome of Network assessment</u>

When Flight non-regulated / de-suspended:

⇨ CTFM re / computed or removed

⇨ SLC / DES sent appropriately

When Flight assessed regulated:

⇨ SAM / SRM sent only after SIT1

⇨ CTOT improvement possible

When Flight assessed suspended:

⇨ FLS sent

APPENDIX D

<u>Working relationship</u>
<u>TWR – FMP - NMOC</u>
<u>Operation</u>
<u>@ CDM Airports</u>

FMP@CDM Airport
The FMP at a CDM Airport needs to keep a close link between CDM TWR and NMOC Operations

In general, the FMP for a CDM Airport will be the main contact for:
- Implementation decision for ATFCM inbound regulations
- Coordination with NMOC with regards to general information (e.g. WX, technical issues,…)
- Defining the TIS value

When CDM and DPI messages are fully operational, the FMP for a CDM Airport provides:
- runway configuration updates for arriving flights
- taxi-time extensions in ENV data for departures of which EOBT is more than 3hr in the future

TWR@CDM Airport
The TWR at a CDM Airport needs to keep a close link between FMP and NMOC Operations

The TWR at a CDM Airport needs to communicate with NMOC Operations for:
- Actions on individual flights (e.g. adjust CTOT)
- Situation at the airport to improve situational awareness for NMOC for e.g. display in NOP Portal.

The TWR at a CDM Airport will be the main contact for:
- informing of unexpected runway (un)availability
- Ensure that updates to taxi-times (via DPI messages) are adjusted to the operational circumstances (e.g. general de-icing)
- STW & DTW extensions
- CTOT extensions for individual flights

FMP or TWR @CDM Airport
During Contingency Operations, when CDM and DPI messages are no longer operational, the FMP or TWR, dependent on local arrangements for a CDM Airport provides:
- all changes to runway configurations
- send REA messages
- send DLA messages (if required in the past)

APPENDIX E
Operational Procedures issues @CDM Airports - Summary

1. Level 0 - Normal Operations

Situations that Qualify
- situations during which Demand & Capacity are in Balance.

Actions required by TWR (if necessary):
- Coordinate on individual flights
- Inform NMOC about any changes in the situation
- Inform FMP about any changes in the situation
- Identify & help flights with disproportional ATFM delay

Actions required by NMOC (if necessary):
- ATFM Slot Improvements for individual flights
- ATFM CTOT extensions for individual flights
- AFTM Slot swaps
- Identify & help flights with disproportional ATFM delay

2. Level 1 – Adverse Conditions

Situations that Qualify
The following situations may qualify:
- emergencies such as security alerts, fire, closure of runway/apron,…
- ATC, airport system failures
- Extreme adverse weather such as freezing rain, thunderstorm,,,

Actions required by TWR (if necessary):
- Inform NMOC about any changes in the situation
- Inform FMP about any changes in the situation

Actions required by NMOC (if necessary):
- Extend STW and DTW
- Inform ATFM Community

3. Level 2 – Disturbed Operations

Situations that Qualify
The following situations may qualify:
- Significant number (e.g. 25%) of the regulated flights are not able to take off within the extended STW
- if TOBT and TSAT of the majority of the flights are differing by 90min or more
- During e.g. the last 2hrs there have been 2-4 runway closures of which the estimated begin and end times have been exceed by more than e.g. 10min.
- Suspension of departures (e.g. freezing rain) and no estimation for reopening plannable
- Unexpected Runway closure and no estimate can be made for reopening

Actions required by TWR (if necessary):
- Inform NMOC about any changes in the situation
- Inform FMP about any changes in the situation

Actions required by NMOC (if necessary):
- Further extend STW and DTW
- Extend FAM suspension period
- Inform ATFM Community

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APPENDIX F

Procedure for Contingency Operations
with CDM Aerodromes

1. Procedure

1.1   Step 1 – Information Exchange

(3)   Refer to Doc Ref 5 Section 7.1.4 Interruption of DPI messages for a detailed description of the procedure.

A-CDM TWR supervisor (or representative) will inform NMOC supervisor as soon as possible of any interruption or change of local CDM procedures that have an impact on the quality and availability of the DPI messages.

If the problem is detected by NMOC, the A-CDM TWR supervisor and Technical help desk will be informed by NMOC.

Note that the NMOC is not monitoring the quality and completeness of the reception of DPI messages continuously.

Following the coordination between the FMP/TWR and NMOC, disabling the acceptance of DPI messages may be decided. This could be required if all DPI messages are erroneous and are consequently rejected by ETFMS.

NMOC will send AIM messages to inform the ATFM community of any relevant changes to the interface (both operational and technical) with the CDM Airport.
Example:

```
CDM DATA EXCHANGE (DPI) FROM .... TO NMOC INTERRUPTED
-----------------------------------------------------------
.
. VALID: WEF DD.MM.YYYY HH:MM UTC UNTIL UFN.
.
. REASON ......
.
. THE DPI TRANSMISSION TO NMOC IS INTERRUPTED FOR TECHNICAL . REASONS
.
. IMPACT ON OPERATIONS:
.
. IT IS REQUIRED TO REVERT TO:
.    UPDATE OF EOBT IN CASE OF ATC GROUND DELAY VIA DLA MESSAGES
.    UPDATE OF STANDARD TAXITIME IN NMOC IF APPLICABLE
.    TRANSMISSION OF REA MESSAGE IF APPLICABLE
.
. NOTE THAT CDM OPERATIONS LOCALLY AT THE AIRPORT MAY CONTINUE
.
. WE WILL KEEP THE COMMUNITY INFORMED WHEN NEW INFORMATION IS AVAILABLE
.
. NETWORK MANAGER OPERATIONS CENTER - BRUSSELS
```

1.2   Step 2 – Activate Contingency procedures

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Examples of actions may be required by the CDM Airport during the interruptions of DPI messages to the ETFMS Operational system:

a) REA messages
   If the CDM Airports is using the DPI messages to provide the REAdy for improvement status of flights the NMOC/ETFMS, a contingency must be foreseen.
   The contingency could consist of a different operational procedure to send REA messages via the NMOC CHMI or to provide REA message from the local TWR software application.

b) DLA messages
   TWR ATC controllers at some airports, which are not yet CDM, send DLA messages. Sometimes on behalf of the pilot, sometimes because the flight is delayed by ATC, sometimes to prevent suspension by Flight Activation Monitoring (FAM), and other times because the flight cannot adhere to its CTOT,…
   When the CDM airport provides DPI messages to the NMOC/ETFMS operational systems such DLA messages are no longer required.
   However, when the DPI messages are interrupted, a contingency procedure shall ensure that the DLA messages can be sent again, as was done before CDM operations.

c) Global taxi-time increase
   DPI messages provide a variable taxi-time (VTT/EXOT) for each individual flight. The DPI messages contain longer taxi-times in case this is required during for example adverse conditions.
   When the DPI messages are interrupted, the TWR controller in close cooperation with the FMP, shall request to extend the global taxi-time in NMOC. This is the same procedure that was used before CDM was put into operations.

 d) Modifying TIS back to standard value (for large airports usually 20 min)

During the period the DPI messages are interrupted, the NMOC may provide additional support to the Airport, similar to the support provided during adverse conditions as specified in section 13.2 Procedures for FMP/TWR and NMOC.

1.3   Step 3 – Analyse and solve problem

Analyse and solve the problem. Agree date and time with Current OPS Manager (NM OM) when DPI message transmission can be re-started.

1.4   Step 4 – Normal Operations

Revert back to normal CDM operations on the agreed date and time. In case the interruption was caused/requested by the Airport, the Airport shall inform NMOC that the situation is back to "normal" and that the acceptance of the DPI messages shall be re-enabled.

Refer to Step 2 of the list of actions that may have to be taken.

APPENDIX G

Conversion table of DPI data fields B2B ↔ AFTN

The table below shows the equivalent ADEXP field name for each B2B attribute, sorted alphabetically on B2B attribute.

ADEXP	B2B attribute
ADEP	aerodromeOfDeparture
ADES	aerodromeOfDestination
ADSDT	airportSlotDeparture
AOBT + AOBD	actualOffBlockTime
APRONSTANDDEP	departureApronStand
ARCID	aircraftId
ARCIDINBOUND	aircraftIdInbound
ARCTYP	aircraftType
ATVSTATUSOUTBOUND	flightStatusOutbound
CONSOLIDATEDTTOT	consolidatedTargetTakeOffTime
DEPSTATUS DEICING	depstatusDeicing
DEPSTATUS TWRUPDATE	depstatusTwrUpdate
DPISTATUS	--
EARLIESTTTOT	earliestTargetTakeOffTime
EOBT + EOBD	estimatedOffBlockTime
IATAARCID	aircraftIATAID
IATAARCTYP	aircraftTypeIATA
IATADEP	aerodromeOfDepartureIATA
IATADES	aerodromeOfDestinationIATA
IFPLID	ifplId
IFPLIDINBOUND	ifplIdInbound
ORIGIN	--
REASON	reasonForDPICancellation
REG	registrationMark
REGINBOUND	registrationMarkInbound
RWYDEP	departureRunway
SID	departureProcedure
SOBT + SOBD	scheduleOffBlocktime
TAXITIME	taxiTime
TERMINALDEP	departureTerminal
TITLE	--
TOBT	targetOffBlockTime
TSAT	targetStartupApprovalTime
TTOT	targetTakeOffTime
TURNAROUNDTTOT	turnaroundTargetTakeOffTime

Note: The syntax of the B2B attributes may vary slightly compared with the syntax of the ADEXP fields. For more technical specifications on using NM B2B web services please refer to Doc Ref 6.

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APPENDIX H

Output of DPI Attributes via B2B

The table below shows where the attributes that NM receives via DPI messages can be found in the flight data output (Flight. …) of the B2B web services (R/R and P/S).

DPI input attribute	Attribute in flight. \<name>
actualOffBlockTime	Not output
aerdodromeOfDeparture	flightId.keys.aerodromeOfDeparture
aerodromeOfDestination	flightId.keys.aerodromeOfDestination
aerodromeOfDepartureIATA	Not output
aerodromeOfDestinationIATA	Not output
aircraftIATAID	Not output
aircraftId	flightId.keys.aircraftId
aircraftIdInbound	cdm.status.info.aircraftIdInbound
aircraftType	cdm.status.info.aircraftType
aircraftTypeIATA	cdm.status.info.aircraftTypeIATA
airportSlotDeparture	Not output
consolidatedTargetTakeOffTime	cdm.status.info.consolidatedTargetTakeOffTime
depstatusDeicing	cdm.status.info.departureStatus
depstatusTwrUpdate	Not output
departureApronStand	cdm.status.info.departureApronStand
departureProcedure	cdm.status.info.departureProc
departureRunway	cdm.status.info.departureRunway
departureTerminal	cdm.status.info.departureTerminal
earliestTargetTakeOffTime	cdm.status.info.earliestTargetTakeOffTime
estimatedOffBlockTime	FlightKeys.estimatedOffBlockTime
flightStatusOutbound	cdm.status.info.flightStatusOutbound
ifplId	flightId.id
ifplIdInbound	cdm.status.info.ifplidInbound
reasonForDPICancellation	cdm.status.info.cancelReason
registrationMark	cdm.status.info.registrationMark
registrationMarkInbound	cdm.status.info.registrationMarkInbound
scheduleOffBlocktime	Not output
targetOffBlockTime	cdm.status.info.targetOffBlockTime
targetStartupApprovalTime	cdm.status.info.targetStartupApprovalTime

targetTakeOffTime	Output in:
	    cdm.status.info.turnaroundTargetTakeOffTime or
	    cdm.status.info.earliestTargetTakeOffTime or
	    cdm.status.info.atcTargetTakeOffTime

taxiTime	cdm.status.info.taxiTime

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turnaroundTargetTakeOffTime	cdm.status.info.turnaroundTargetTakeOffTime
DPISTATUS	Not output
ORIGIN	Not output
TITLE	Not output

Other relevant attributes:

B2B attribute	**Attribute in flight. \<name\>**
EOBT discrepancy flag	cdm.status.info.offBlockTimeDiscrepancy
AircraftType discrepancy flag	cdm.status.info.aircraftDiscrepancy
Registration Discrepancy flag	cdm.status.info.registrationMarkDiscrepancy
NM Airport classification	cdm.airportType
CDM status	cdm.status

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APPENDIX I

Output of flight suspension status via FLS and B2B P/S

The tables below shows the contents of the FLS comment field in an FLS message in case the flight is suspended by the airport via a C-DPI message.

	Reason value ADEXP / Reason value B2B	FLS comment field
1	NOAIRPORTSLOT / NO_AIRPORT_SLOT	SUSPENDED BY DEPARTURE AIRPORT. NO AIRPORT SLOT OR EOBT DOES NOT MATCH WITH AIRPORT SLOT. REQUEST AN AIRPORT SLOT OR UPDATE THE EOBT.
2	TOBTUNKNOWNOREXPIRED / TOBT_UNKNOWN_OR_EXPIRED	SUSPENDED BY DEPARTURE AIRPORT. TOBT UNKNOWN OR EXPIRED. UPDATE THE TOBT/EOBT.
3	TSATEXPIRED / TSAT_EXPIRED	SUSPENDED BY DEPARTURE AIRPORT. TSAT EXPIRED. UPDATE THE TOBT/EOBT.
4	RETURNTOSTAND / RETURN_TO_STAND	SUSPENDED BY DEPARTURE AIRPORT. A/C RETURNED TO STAND. UPDATE THE TOBT/EOBT WHEN KNOWN, OR CNL THE FPL.
5	FLIGHTPLANINVALID / FLIGHT_PLAN_INVALID	SUSPENDED BY DEPARTURE AIRPORT. ALIGN EOBT AND TOBT.
6	FLIGHTCANCELINAODB / FLIGHT_CANCEL_IN_AODB	SUSPENDED BY DEPARTURE AIRPORT. FLIGHT CANCELLED IN AODB. CNL THE FPL.
7	UNDOADPI / UNDO_ADPI	Not applicable.
8	OTHER / OTHER	*(comment field is empty)*

The B2B users will be able to retrieve the FLS comment equivalent information from the following fields/attributes:

    suspensionStatus = AIRPORT_SUSPENSION
    suspensionInfo: see table below

	Reason value ADEXP / Reason value B2B	suspensionInfo
1	NOAIRPORTSLOT / NO_AIRPORT_SLOT	NO AIRPORT SLOT OR EOBT DOES NOT MATCH WITH AIRPORT SLOT. REQUEST AN AIRPORT SLOT OR UPDATE THE EOBT.
2	TOBTUNKNOWNOREXPIRED / TOBT_UNKNOWN_OR_EXPIRED	TOBT UNKNOWN OR EXPIRED. UPDATE THE TOBT/EOBT.
3	TSATEXPIRED / TSAT_EXPIRED	TSAT EXPIRED. UPDATE THE TOBT/EOBT.
4	RETURNTOSTAND / RETURN_TO_STAND	A/C RETURNED TO STAND. UPDATE THE TOBT/EOBT WHEN KNOWN, OR CNL THE FPL.
5	FLIGHTPLANINVALID / FLIGHT_PLAN_INVALID	SUSPENDED BY DEPARTURE AIRPORT. ALIGN EOBT AND TOBT.
6	FLIGHTCANCELINAODB / FLIGHT_CANCEL_IN_AODB	FLIGHT CANCELLED IN AODB. CNL THE FPL.
7	UNDOADPI / UNDO_ADPI	Not applicable.
8	UNDEFINED OTHER / OTHER	*(comment field is empty)*

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