DPI & FUM Implementation Road Map
Document Control

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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 "URB/USD/DPI_FUM_Impl_RM".
(3) This document has the Title of "DPI & FUM Implementation Road Map".

1.2 Purpose

(1) The purpose of this document is to describe the implementation Road Map for DPI and FUM messages.
(2) It describes the steps that need to be taken to validate the DPI and FUM messages before these can be taken into operations. The final step is taking the DPI/FUM into operations.
(3) It applies to AOP-NOP Airports, CDM Airports and Advanced ATC TWR Airports. For AOP-NOP Airports and CDM Airports the full process is applicable and for Advanced ATC TWR only the relevant parts (i.e. the parts related to A-DPI and C-DPI messages).
(4) The NMOC and the Airport will have to plan and execute the DPI and FUM Operational evaluations in accordance with the steps that are described in this document.
(5) This document also describes the DPI Validation Criteria. This is a set of measureable parameters that will determine if DPIs are ready to be put into operations.
(6) The implementation details can be found in the DPI Implementation Guide (Doc Ref 3), the Flight Progress Messages document (Doc Ref 2) and the Advanced ATC TWR Implementation Guide (Doc Ref 4).

1.3 Scope

(1) The intended audience of this document is all staff at AOP-NOP Airports, CDM airports and ATC Staff at Advanced ATC TWR Airports, which are or will be involved in message exchange between the airport system(s) and NMOC//ETFMS. Staff with both a technical background and an operational background will be involved.
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:

The NM B2B web services reference manuals are published in the NM B2B OneSky Team shared space on the EUROCONTROL website which is accessible to the NM B2B Web Services users only.
However, access to the technical documentation can be requested to NM.customersupport@eurocontrol.int. The first info can also be found on "www.eurocontrol.int/services/nm-b2b-web-services"
3 Terminology

3.1 Concepts

(1) The following are the definitions of the main concepts that are particular to this Document and not of a more general nature:

**AOP_NOP Airports:**
AOP_NOP Airport are airports that have implemented the Collaborative Decision Making process as it is specified in the Airport CDM Implementation Manual (see Doc ref 1) and provide the full set of DPI messages to NMOC.
In addition to the E-DPI, T-DPI-t, T-DPI-s, A-DPI and C-DPI, these airports also provide the P-DPI messages as an output of its Demand Capacity Balancing (DCB) process.

**CDM Airports:**
CDM Airport are airports that have implemented the Collaborative Decision Making process as it is specified in the Airport CDM Implementation Manual (see Doc ref 1) 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 NMOC.

**Advanced ATC TWR Airports**
Advanced ATC TWR Airports are airports that have not implemented or not fully implemented the Airport CDM process but still would like to integrate into the ATM Network using a limited set of DPI messages (i.e. the A-DPI and C-DPI).

3.2 Acronyms and Abbreviations

(1) The following are the definitions of the Acronyms and Abbreviations that are particular to this Document and not of a more general nature:

- **ANSP** - Air Navigation Service Provider
- **ATFCM** - Air Traffic Flow & Capacity Management
- **ATFM** - Air Traffic Flow Management
- **CDM** - Collaborative Decision Making
- **CFMU** - Central Flow Management Unit
- **DPI** - Departure Planning Information
- **EFD** - ETFMS Flight Data (message)
- **ETFMS** - Enhanced Tactical Flow Management System
- **FUM** - Flight Update Message
- **FMD** - (CFMU) Flow Management Division
- **ICD** - Interface Control Document
- **IFPS** - Initial Flight plan Processing System
- **OPS** - Operational
- **NM** - Network Manager
- **NMOC** - Network Manager Operations Centre
- **QC** - Quality Control
4 Summary

4.1 DPI Evaluations

(1) The DPI Operational Evaluations will be executed in several steps starting with a simple test of communications and ending with an evaluation of data that is provided from operational systems.

(2) The DPI Evaluation can be split into 6 major steps, including the last step, i.e. taking DPIs into operations:

1. Communication and Message Syntax verification
   For DPI via AFTN, this step consists of testing if all the network communication links are in place and verification of the message syntax and global semantics.
   For DPI via B2B web services this step consists of testing the syntax and semantics of the B2B web services using the NM B2B_PREOPS platform.

2. Evaluation of Live Data
   This step consists of the evaluation of live data. It is performed by the transmission of DPI messages for Live/Operational traffic to the ETFMS Operational Evaluation system which contains copies of live data, i.e. it is shadow system of the Operational System.

3. ATFCM Impact Assessment
   The purpose of the ATFCM Impact Assessment is to determine what the impact of the provided DPIs in the ATFCM process managed by ETFMS.
   The ATFCM Impact assessment is executed by NMOC Operations, i.e. NMOC Flow Controllers.

4. Operational Trial
   The purpose of this step is to verify the correct working of DPI message exchange with the Operational Airport system and the ETFMS Operational system.

5. Operations
   After all previous steps have been completed successfully the DPI messages can be put into operations on a permanent basis.

6. Post Operations Support
   It is important that Post Operations support is properly organised and guaranteed.

(3) A detailed overview of all the phases including estimated durations of the DPI Operational Evaluation can be found in Annex 1.
Each step will take place during an agreed period, items to be tested will be agreed and an evaluation report will be provided.
4.2 DPI OPS Evaluation Criteria

(1) The DPI Validation Criteria is set of criteria that need to be fulfilled in order to put the DPI messages into Operations.

(2) The criteria have been split into 2 groups: “DPI Quality Indicators” and “DPI Performance Indicators”.

(3) The “DPI Quality Indicators” show the completeness and the reliability and the DPI messages and the data in these messages.

(4) The “DPI Performance Indicators” compare the DPI data with data of other sources such as flight plan data.

(5) The described quality indicators are applicable to normal circumstances and shall be achieved for 95% of the flights or DPI messages.

4.3 FUM Evaluations

(1) The FUM Operational Evaluations will be executed in several steps starting with a simple test of communications and ending with an evaluation of data that is provided from operational systems.

(2) The FUM Evaluation can be split into 3 major steps:

   1. Communication and Message Syntax
      This step consists of testing the AFTN or B2B communication links and verification of the message syntax and global semantics.

   2. Evaluation of Live Data
      This step consists of the evaluation of live data. It is performed by the transmission of FUM messages for Live/Operational traffic by the ETFMS Operational system to an airport system.

   3. Operational Trial
      The purpose of this step is to verify the correct working of FUM message exchange with the Operational Airport system and the ETFMS Operational system.

(3) The Airport may do several FUM evaluations and NMOC will support the evaluation process by answering questions and queries for investigations.

4.4 NM Support during the OPS Evaluation Process

4.4.1 AFTN

(1) The implementation process for provision of DPI via AFTN is fully supported by the NM Airport Unit.

(2) For contact details, please refer to section 8 Contacts.

4.4.2 B2B implementation

(1) Airports have to request access to the B2B services and documentation by sending a request to: NM.servicerequests@eurocontrol.int.
The NM B2B web services reference manuals are published in the Eurocontrol One-SKY teams B2B library. More information can also be found on:  
https://www.eurocontrol.int/service/network-manager-business-business-b2b-web-services

During the Registration Process, NM Services is the main point of contact and will direct any questions to the appropriate Technical and/or Business Specialists in NM. Please note that the registration process may take up to 2-3 months.

During the Software Development and Testing phases, using the NM PREOPS certificate and system, questions can best be posted in the Discussion Forum on the B2B One-SKY teams. Please note that answers may already be available in previous discussions or amongst the answers to Frequently Asked Questions (FAQ).

NM will do its best to respond within one day but it may take longer, especially for cases for which multiple specialists are required.

For technical B2B support during operations, i.e. once the Operational Certificate is being used, the NM System Operators should be contacted on nm.cso@eurocontrol.int or on +32 2 745 19 97

For questions related to DPI & FUM functional specifications, you may always contact your contacts at the NM Airports unit. For contact details, please refer to section 8 Contacts.
5 DPI OPS Evaluation Phases

5.1 Communication and Message Syntax

5.1.1 Purpose

(1) The purpose of the “Communication and Message Syntax” test is to verify if the messages are addressed to the correct AFTN address or correct URL and if the connection is in place.

(2) An initial and quick verification of message syntax will save time during testing with live data.

5.1.2 How

5.1.2.1 For AFTN

(1) Step 1: Transmission of off-line copies of messages using E-mail for initial validation of syntax.

(2) Step 2: Transmission of several simple test messages via AFTN to the ETFMS test address, which is EUCHZMTT.

(3) The messages may contain test data. It is not necessary to provide data for live traffic for this test(s). It is important to have several examples of several different events and of each DPI type.

5.1.2.2 For B2B web services

(1) This test consists of the provision of DPI messages to the NM B2B_PREOPS platform.

(2) The NM B2B_PREOPS platform is used for B2B tests in general and allows for verifying of the correctness of the interface in both directions, i.e. the provision of DPI messages and the reception of replies to the DPI messages.

(3) The DPI messages must be provided via the appropriate URL, using “B2B_PREOPS” as the platform_name (see Doc Ref 5 for more details).

5.1.3 How long

(1) One or several e-mails may be provided for AFTN tests.

(2) For B2B web services test, the test shall continue until all software problems have been solved.

(3) The connection test can be very short, one or two days should be planned.

5.1.4 Report

(1) The NMOC will provide comments to the provided off-line copies via e-mail.

(2) The results of the connection test will be provided via phone or e-mail.

(3) The AOP-NOP Airport, CDM Airport or the Advanced ATC TWR Airport is expected to implement improvements if necessary.

5.1.5 Next steps

(1) If the report identifies significant problems it will be necessary to find solutions and repeat the test. In all other cases the “Evaluation of Live Data” will be planned.
5.2 Evaluation of Live Data

5.2.1 Purpose
(1) The purpose of the Evaluation of Live Data is to determine the accuracy and consistency of the provided data and the suitability of the data for ATFCM purposes.

5.2.2 How
(1) The test consists of the transmission of DPI messages for Live/Operational traffic to the ETFMS (test) Ops Evaluation system. The ETFMS Ops Evaluation system is a non-operational ETFMS system but it receives a copy of the operational flight plans and regulations.
(2) The incoming messages will be processed, logged and analysed. ETFMS also provides additional log messages during the processing of the received messages.
(3) The analysis will be based upon the logged messages.
(4) During this phase the airport system can be provided with FUM messages from the ETFMS Operational system if so required.

5.2.2.1 For AFTN
(1) The DPI messages shall be transmitted via AFTN to the ETFMS test address which is EUCHZMTT.

5.2.2.2 For B2B web services
(1) The DPI messages must be provided via the appropriate URL, using “B2B_OPEVAL” as the platform_name (see Doc Ref 5 for more details).

5.2.3 How long
(1) During the first hour of the trial, addressing, format and common understanding by applications will be verified.
(2) This provision of data for one test session should be at least 24 hours without interruption. If possible several test sessions should take place during several days on several different days of a week.
(3) For planning purposes, 4 weeks must be reserved for one “Evaluation of Live Data”. It includes, one week for execution, data analysis and report writing by the NMOC, one week for analysis of the report by the Airport and two weeks for possible adjustments of the software and procedures by the airport.
(4) In order to test the availability of systems and all the network connections involved, it is required to provide DPI messages for a period of at least 7-14 days continuously. In fact, the airport is recommended to provide the DPI messages from the first test onwards and continue transmission during the whole evaluation period without interrupting it.
(5) At a later stage of DPI trials it could also be envisaged to repeat the trials during special circumstances such as strike, runway closure, de-icing,…

5.2.4 Report
(1) The received DPI messages and the generated ERRor messages and also the additional log messages generated by ETFMS will be analysed by NMOC with appropriate tools.
(2) The tools will generate statistics reports and other reports which will be used to investigate the history of flights (i.e. all the incoming and outgoing messages for a flight).

(3) The statistics report will be analysed by NMOC and airport specialists and a final evaluation report will be produced.

5.2.5 Next steps

(1) If the report identifies significant problems it will be necessary to find solutions and repeat the test. The solutions could consist of system adaptations or improving AOP-NOP, CDM or Advanced ATC TWR operations.

(2) From experience, we have learned that the “Evaluation of Live Data” has to be planned for at least 3 times, so approximately a total of 3 months in duration.

(3) This step may be concluded with a DPI Operational Evaluation Review meeting between NMOC and Airport Project Implementation team in order to summarize the outstanding issues, to conclude and to decide on the next steps.

(4) In all other cases the “ATFCM Impact Assessment” will be planned.
5.3 ATFCM Impact Assessment

5.3.1 Purpose

(1) The purpose of the ATFCM Impact Assessment is to determine the impact of the provided DPIs on the ATFCM process managed by ETFMS.

(2) The ATFCM Impact assessment will be executed by NMOC Operations staff, i.e. NMOC Flow Controllers.

5.3.2 How

(1) The test consists of the transmission of DPI messages for Live/Operational traffic to the ETFMS (test) Ops Evaluation system. The ETFMS Ops Evaluation system is a non-operational ETFMS system but it receives a copy of the Operational Flight plans, Airborne Data updates (FSA, CPR,...) and regulations.

(2) The incoming messages will be processed by ETFMS and result in flight profile updates and updates of the counts of the airspaces concerned.

(3) The impact on regulations will be verified. Wasted capacity and bunching will be verified. Any short term fluctuations in counts and traffic will be identified.

(4) The test will be executed by comparing counts on an ETFMS Ops evaluation system which receives DPI messages and the ETFMS Operational system (which does not receive DPI messages for the airport under test yet).

(5) During this phase the airport system can be provided with FUM messages from the ETFMS Operational system if required.

5.3.2.1 For AFTN

(1) The DPI messages shall be transmitted via AFTN to the ETFMS test address which is EUCHZMTT.

5.3.2.1 For B2B web services

(1) The DPI messages must be provided via the appropriate URL, using “B2B_OPEVAL” as the platform_name (see Doc Ref 5 for more details).

5.3.3 How long

(1) This provision of data should be at least 24 hours without interruption. If necessary the test will take place during several days on several different days of a week.

(2) For planning purposes, 3 days have to be reserved. It includes one day for execution of the test, one day for data analysis and report writing by NMOC and one day for review by the AOP-NOP Airport, CDM Airport or Advanced ATC TWR Airport.

(3) If feasible, it could also be envisaged to repeat the trials during special circumstances such as strike, runway closure, de-icing,...

5.3.4 Report

(1) The analysis will be based upon the graphs and count displays that will be opened via the ETFMS HMI.

(2) If necessary special test regulations will be created. Special cases for special flights will be investigated using the ETFMS oplog query facility.
The NMOC will produce an “ATFCM Impact Assessment” Report.

5.3.5 Next Steps

(1) If the report identifies significant problems it will be necessary to find solutions and repeat the test. The solutions could consist of system adaptations or improving AOP-NOP, CDM or Advanced ATC TWR Operations.

(2) In all other cases the “Evaluation with OPS users” will be planned.
5.4 Operational Trial

5.4.1 Purpose
(1) The impact of DPI messages on ATFCM operations has been analysed in the “Evaluation of LIVE data” phase.
(2) However to verify the impact of the DPI messages on a complete Operational Environment, DPI Operational Trials will be organised.
(3) The purpose of the DPI Operational Trials is to verify the correct working of DPI message exchange with the airport Operational system and its impact on the airport Operations.
(4) It is a final test before taking the DPI messages into operations on a permanent basis.

5.4.2 How
(1) The test consists of the transmission of DPI messages for Live/Operational traffic to the ETFMS Operational system.
(2) At least one TWR controller and one flow controller should be on duty for the whole duration of the trial.
(3) The incoming messages will be logged and analysed. ETFMS also provides log messages during the processing of the received messages.
(4) The analysis will be based upon the logged messages.
(5) During this phase the airport system can be provided with FUM from the ETFMS Operational system.
(6) Before the start of the Operational Trial, the airport should publish a NOTAM.
(7) NMOC will publish an (internal) Operational Instruction (OI) as soon as the NOTAM is available.

5.4.2.2 For AFTN
(1) The DPI messages shall be transmitted via AFTN to the ETFMS OPS address which is EUCHZMTA.

5.4.2.3 For B2B web services
(1) The DPI messages must be provided via the appropriate URL, using “B2B_OPS” as the platform_name (see Doc Ref 5 for more details).

5.4.3 How long
(1) The DPI operational trials will be organised on 2 different days during a period of approximately 5 hours each day. The dates and times will be agreed with all concerned.
(2) For planning purposes one week should be reserved for this activity. It includes 2 days for the tests, 2 days for report writing and review by NMOC and 1 day for analysis of the report by the Airport Implementation Project Team.

5.4.4 Report
(1) The airport will have the opportunity to analyse the data exchange based upon its own tools.
(2) The received DPI messages and the generated ERRor messages and also the additional log messages generated by ETFMS will be analysed by appropriate tools.
(3) The ETFMS tools will generate statistics reports and other reports which will be used to investigate the history of flights (i.e. all the incoming and outgoing messages for a flight).
The report will be interpreted by NMOC and airport specialists and a final evaluation report will be produced.

5.4.5 Next steps

(1) If the report identifies significant problems it will be necessary to find solutions and repeat the test. The solutions could consist of system adaptations, improving AOP-NOP, CDM or Advanced ATC TWR operations, informing the user community.

(2) In all other cases the "Operations" will be planned
5.5 Operations

5.5.1 Purpose

(1) After all previous steps have been successfully completed, the DPI messages can be put into operations on a permanent basis.

5.5.2 How

(1) Before the DPI messages can be sent to the ETFMS Operational System, it must be ensured that the following Action List is completed:

<table>
<thead>
<tr>
<th>Action Nr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APT.1</td>
<td>Agree date with NMOC to go Operational</td>
</tr>
<tr>
<td>APT.2</td>
<td>Provide Functional &amp; Post Operations Contact Details. These contact details will be included in the DPI-ICD.</td>
</tr>
<tr>
<td>APT.3</td>
<td>Provide TWR Contact Details. These contact details will be included in the DPI-ICD.</td>
</tr>
<tr>
<td>APT.4</td>
<td>Provide System Monitoring contact details. These contact details will be included in the DPI-ICD.</td>
</tr>
<tr>
<td>APT.5</td>
<td>Ensure that the System Technical Supervisors know the procedure to interrupt DPIs in case of unexpected problems.</td>
</tr>
<tr>
<td>APT.6</td>
<td>Draft NOTAM and review the ATFM part with NMOC.</td>
</tr>
<tr>
<td>APT.7</td>
<td>Draft AIP/AIC update and review the ATFM part with NMOC.</td>
</tr>
<tr>
<td>APT.8</td>
<td>Publish AIP/AIC before start of operations.</td>
</tr>
<tr>
<td>APT.9</td>
<td>Change AFTN address from EUCHZMTT to EUCHZMTA on agreed date and time or change URL from the B2B_OPEVAL platform to the B2B_OPS platform.</td>
</tr>
<tr>
<td>APT.10</td>
<td>Ensure close operational monitoring and support during the first two weeks of operation.</td>
</tr>
<tr>
<td>APT.11</td>
<td>Ensure sufficient post-operational support also after the first weeks of operation.</td>
</tr>
</tbody>
</table>

(2) During the first hours of operations the DPI message exchange shall be carefully monitored both by NMOC Operations Staff and Airport operations staff (i.e. TWR, Airport operations center, AOs, handlers,…).

5.5.3 How long

(1) If DPI messages had not been provided on a continuous basis before, the Operational Reliability and stability has to be proven by transmission of continuous operational DPI messages for 2 weeks. This will also ensure that the impact of the “learning curve” at the airport for the network is reduced to the absolute minimum.

(2) For preparations of the Operations, approximately 1-2 weeks must be reserved.

(3) Operations start at the agreed date and time and will continue until further notice.

5.5.4 Report

(1) Any special case shall be reported to NMOC and AOP-NOP, CDM or Advanced ATC TWR Airport specialist for further investigation.
5.5.5 Next steps

(1) Ensure Post Operations Support.
5.6 Post Operations Support

5.6.1 Purpose

(1) It is essential to guarantee Post Operations Support after DPIs of a new Airport have been taken into operations.

(2) During the first weeks of operations of DPI messages, all types of users such as Aircraft Operators, ATC TWR controllers, Ground Handlers, Flow managers,…. will have questions. A quick analysis of the reported cases will ensure that the new users will get more confidence in the DPI messages.

(3) It may also happen that during first operations some unidentified software problems appear and these need to be analysed asap.

5.6.2 How

(1) Ensure that during the first 2-4 weeks after the first day of operations, DPI specialists and AOP-NOP Airport, Airport CDM or Advanced ATC TWR system experts are available to answer to queries for the Airport Users and from NMOC on very short notice, preferably within 24 hrs.

(2) After this 2-4 weeks period it is important that such a Function remains available but the response time may be longer. The recommendation is to respond within 5 working days to User’s and NMOC’s requests.

(3) Post Operations Support is normally only available during Office Hours.

5.6.3 How long

(1) During the first 2-4 weeks after first operations, a short response time is required.

(2) After this period Post Operations Support shall remain available as in all other operational cases, and the response time may be longer than during the initial period.

5.6.4 Reporting

(1) Any special case shall be reported to NMOC and AOP-NOP, CDM or Advanced ATC TWR Airport specialist for further investigation.

5.6.5 Next steps

(1) No more next steps.
6 DPI OPS Evaluation Criteria

6.1 Introduction

(1) The purpose of this section is to list criteria for validation and acceptance of the DPI messages.

(2) This set of criteria needs to be fulfilled during the DPI Operational Evaluation in order to put the DPI messages into Operations.

(3) The criteria have been split into 5 groups:
   1. Sanity Checks
   2. Quality of Data
   3. Predictability
   4. ATFCM Behaviour
   5. Operational Readiness

(4) The “Sanity Checks” Indicators show the percentages of DPI messages that were considered to be erroneous, missing,…

(5) The “Quality of Data” Indicators evaluate the number of updates received via DPI messages and evaluate the taxi-time.

(6) The “Predictability” Indicators compare the DPI data with data of other sources such as flight plan data in terms of accuracy and the time when the updates have been received.

(7) The “ATFCM Behaviour” Indicators compare the DPI data with expected ATFCM Operational behaviour such as Adherence to ATFM Slots, suspensions by Flight Activation Monitoring (FAM),…

(8) The “Operationals Readiness” Indicators show if the AOP-NOP Operations, CDM Operations or Advanced ATC TWR Operations and the corresponding DPI messages are sufficiently mature to be put into operations at NMOC.

(9) The Indicators that are shown with a yellow background are also part of the CDM Completeness Criteria (see Doc Ref 1) that are applicable to CDM Airport implementation projects (only).

6.2 Sanity Checks

6.2.1 General

(1) The below mentioned quality indicators are applicable to normal circumstances and shall be achieved for 95% of the flights or DPI messages.

6.2.2 DPI Syntax Error Indicator

(1) The purpose of these statistics is to show the percentage of DPI messages that contain a syntax error.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>DPI_with_Syntax_Error</td>
<td>0 %</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
6.2.3 UnCorrelated DPI Messages Indicators

(1) The purpose of these statistics is to show the percentage of DPI messages which could not be correlated to flight data by ETFMS.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>P-DPI_UnCorrelated</td>
<td>0%</td>
<td>&lt;0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2.1</td>
<td>E-DPI_UnCorrelated</td>
<td>0%</td>
<td>&lt;0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2.2</td>
<td>T-DPI-t_UnCorrelated</td>
<td>0%</td>
<td>&lt;0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>2.3</td>
<td>T-DPI-s_UnCorrelated</td>
<td>0%</td>
<td>&lt;0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>2.4</td>
<td>A-DPI_UnCorrelated</td>
<td>0%</td>
<td>&lt;0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>2.5</td>
<td>C-DPI_UnCorrelated</td>
<td>0%</td>
<td>&lt;0.1%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

6.2.4 Rejected & Ignored DPI messages Indicators

(1) The purpose of these statistics is to show the number of DPI messages which could not be processed by ETFMS.

(2) ETFMS validates the DPI messages and if a message does not comply with the validation criteria, ETFMS will send a reply message to the originator.

(3) This is the percentage of DPI messages that could not be processed by ETFMS. Examples are:
   - DPI message received too early or too late
   - DPI message not in correct sequence
   - Provided take-off time out of bounds

(4) The following table shows the total percentage of DPI message which could not be processed:

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>DPI_RejectedIgnored</td>
<td>0%</td>
<td>&lt;=1%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

6.2.5 DPI messages Not Fully Processed Indicators

(1) The purpose of these statistics is to show the percentage of DPI messages that were not fully processed by ETFMS. Examples of such message are:
   - Unknown SID
   - Unknown Aircraft Type
   - …

(2) The table below shows the percentage of not-fully processed DPI messages per DPI-type:

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>P-DPI_Not_Fully_Processed</td>
<td>0%</td>
<td>&lt;= 1%</td>
<td>1%</td>
</tr>
<tr>
<td>4.1</td>
<td>E-DPI_Not_Fully_Processed</td>
<td>0%</td>
<td>&lt;= 1%</td>
<td>1%</td>
</tr>
<tr>
<td>4.2</td>
<td>T-DPI-t_Not_Fully_Processed</td>
<td>0%</td>
<td>&lt;= 1%</td>
<td>1%</td>
</tr>
<tr>
<td>4.3</td>
<td>T-DPI-s_Not_Fully_Processed</td>
<td>0%</td>
<td>&lt;= 1%</td>
<td>1%</td>
</tr>
<tr>
<td>4.4</td>
<td>A-DPI_Not_Fully_Processed</td>
<td>0%</td>
<td>&lt;= 1%</td>
<td>1%</td>
</tr>
</tbody>
</table>
6.2.6 DPI Completeness Indicators

1. The purpose of these statistics is to show the number of received DPI messages compared to the number of departures from the airport concerned.

2. The table shows the percentage of flights for which at least one P-DPI, E-DPI, T-DPI-t, T-DPI-s and A-DPI has been received. It also shows the percentage of flights for which a C-DPI has been received and the percentage of flights for which no DPI at all was received.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>P-DPI_Completeness</td>
<td>100%</td>
<td>&gt;=98.0%</td>
<td>100%</td>
</tr>
<tr>
<td>5.1</td>
<td>E-DPI_Completeness</td>
<td>100%</td>
<td>&gt;=99.5%</td>
<td>100%</td>
</tr>
<tr>
<td>5.2</td>
<td>T-DPI-t_Completeness</td>
<td>100%</td>
<td>&gt;=99.5%</td>
<td>99.5%</td>
</tr>
<tr>
<td>5.3</td>
<td>T-DPI-s_Completeness</td>
<td>100%</td>
<td>&gt;=99.5%</td>
<td>100%</td>
</tr>
<tr>
<td>5.4</td>
<td>A-DPI_Completeness</td>
<td>100%</td>
<td>&gt;=99.5%</td>
<td>99.5%</td>
</tr>
<tr>
<td>5.5</td>
<td>C-DPI_Completeness</td>
<td>0%</td>
<td>&lt;=2%</td>
<td>4%</td>
</tr>
<tr>
<td>5.6</td>
<td>Flights_without_DPIs</td>
<td>0%</td>
<td>&lt;0.5%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

Notes:
1) The yellow colour shows that it is also part of the CDM Completeness Criteria (see Doc Ref 1).
2) The P-DPI completeness is expected to be lower because of CNL and Refile after EOBT – 3h should not contain P-DPI messages

6.3 Quality of Data

6.3.1 DPI Update Rate Indicators

1. The purpose of these statistics is to show flights for which many DPI message updates of the same type have been sent. Further investigations may be required to identify if this is normal behaviour (for the evaluated day) or if there is an area for improvement for the airport.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.21</td>
<td>P-DPI_UpdateRate_1</td>
<td>100%</td>
<td>70% - 100%</td>
<td>99%</td>
</tr>
<tr>
<td>6.22</td>
<td>P-DPI_UpdateRate_2</td>
<td>0%</td>
<td>&lt;=30%</td>
<td>1%</td>
</tr>
<tr>
<td>6.23</td>
<td>P-DPI_UpdateRate_3</td>
<td>0%</td>
<td>&lt;=20%</td>
<td>0%</td>
</tr>
<tr>
<td>6.24</td>
<td>P-DPI_UpdateRate_3+</td>
<td>0%</td>
<td>&lt;=10%</td>
<td>0%</td>
</tr>
<tr>
<td>6.21</td>
<td>E-DPI_UpdateRate_1</td>
<td>100%</td>
<td>89% - 100%</td>
<td>99%</td>
</tr>
<tr>
<td>6.22</td>
<td>E-DPI_UpdateRate_2</td>
<td>0%</td>
<td>&lt;=10%</td>
<td>1%</td>
</tr>
<tr>
<td>6.23</td>
<td>E-DPI_UpdateRate_3</td>
<td>0%</td>
<td>&lt;=1%</td>
<td>0%</td>
</tr>
<tr>
<td>6.24</td>
<td>E-DPI_UpdateRate_3+</td>
<td>0%</td>
<td>&lt;=1%</td>
<td>0%</td>
</tr>
<tr>
<td>6.21</td>
<td>T-DPI-t_UpdateRate_1</td>
<td>100%</td>
<td>65% - 100%</td>
<td>89%</td>
</tr>
<tr>
<td>6.6</td>
<td>T-DPI-t_UpdateRate_2</td>
<td>0%</td>
<td>&lt;=35%</td>
<td>10%</td>
</tr>
<tr>
<td>6.7</td>
<td>T-DPI-t_UpdateRate_3</td>
<td>0%</td>
<td>&lt;=20%</td>
<td>1%</td>
</tr>
<tr>
<td>6.8</td>
<td>T-DPI-t_UpdateRate_3+</td>
<td>0%</td>
<td>&lt;=5%</td>
<td>1%</td>
</tr>
<tr>
<td>6.21</td>
<td>T-DPI-s_UpdateRate_1</td>
<td>100%</td>
<td>40% - 100%</td>
<td>89%</td>
</tr>
<tr>
<td>6.10</td>
<td>T-DPI-s_UpdateRate_2</td>
<td>0%</td>
<td>&lt;=40%</td>
<td>10%</td>
</tr>
</tbody>
</table>
6.3.2 IFPS Inconsistency Indicators

(1) The purpose of these statistics is to show the number of Aircraft Type, Registration and EOBT inconsistencies that have been derived from DPI messages.

(2) Assuming that the Airport has better information about ARCTYP and REG than can be derived from FPL data, any positive value can be considered as a benefit of DPI messages.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>DPI_ARCTYP_Inconsistency</td>
<td>No target</td>
<td>Any value is an improvement</td>
<td>0%</td>
</tr>
<tr>
<td>7.2</td>
<td>DPI_REG_Inconsistency</td>
<td>No target</td>
<td>Any value is an improvement</td>
<td>5%</td>
</tr>
<tr>
<td>7.3</td>
<td>DPI_EOBT_Inconsistency</td>
<td>No target</td>
<td>Any value is an improvement</td>
<td>2%</td>
</tr>
</tbody>
</table>

6.4 Predictability

6.4.1 Filing Time Behaviour Indicators

(1) These indicators show the filing-time of the DPI messages compared to the:

- TTOT in the message
  The purpose of these statistics is to show average prediction time of the DPI messages. The prediction time is the time that the provided TTOT is in the future. For example: Is the TTOT from the DPIs 20 minutes in the future or 2 hours in the future?

- Flight plan derived ETOT (EOBT+taxitime) or the CTOT
  The purpose of these statistics is to show average prediction time of the provided TTOTs compared to the flight data in ETFMS. For example: do DPIs provide an estimate at 20 minutes before the ETOT/CTOT or at 2 hours before the ETOT/CTOT?

- ATOT (from FSA messages)
  The purpose of these statistics is to show the average prediction time of the provided TTOTs compared to the Actual Take-Off Time (ATOT) derived from the FSA message.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>P-DPI_AvgFilTime_Before_turnaroundTTOT</td>
<td>None yet</td>
<td>180 – 1200 + VTT</td>
<td>600</td>
<td>180 – 1200 + VTT</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8.1</td>
<td>E-DPI_AvgFilTime_Before_TTOT</td>
<td>180 + VTT</td>
<td>100 – 180 + VTT</td>
<td>172</td>
<td>180 – 180 + VTT</td>
<td>60 – 120 + VTT</td>
<td></td>
</tr>
<tr>
<td>8.2</td>
<td>T-DPI_l_AvgFilTime_Before_TTOT</td>
<td>120 + VTT</td>
<td>60 – 120 + VTT</td>
<td>103</td>
<td>120 + VTT</td>
<td>60 – 120 + VTT</td>
<td></td>
</tr>
<tr>
<td>8.3</td>
<td>T-DPI-s_AvgFilTime_Before_TTOT</td>
<td>40 + VTT</td>
<td>25 – 40 + VTT</td>
<td>32</td>
<td>40 + VTT</td>
<td>25 – 40 + VTT</td>
<td></td>
</tr>
<tr>
<td>8.4</td>
<td>A-DPI_AvgFilTime_Before_TTOT</td>
<td>Avg VTT</td>
<td>5 – 30</td>
<td>13</td>
<td>Avg VTT</td>
<td>5 – 30</td>
<td></td>
</tr>
</tbody>
</table>
### DPI & FUM Implementation Road Map

**Reference:** DPI & FUM_Impl_RM

**Edition:** 2.001

#### DPI & FUM Implementation Road Map - 9

**Indicator Name:**  
- **P-DPI_AvgFilTime_Before_ETOTCTOT**  
- **E-DPI_AvgFilTime_Before_ETOTCTOT**  
- **T-DPI-t_AvgFilTime_Before_ETOTCTOT**  
- **T-DPI-s_AvgFilTime_Before_ETOTCTOT**  
- **A-DPI_AvgFilTime_Before_ETOTCTOT**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0</td>
<td>P-DPI_AvgFilTime_Before_ETOTCTOT</td>
<td>None yet</td>
<td>180 –1200+VTT</td>
<td>600</td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.1</td>
<td>E-DPI_AvgFilTime_Before_ETOTCTOT</td>
<td>180+VTT</td>
<td>100 – 180+VTT</td>
<td>184</td>
<td>184</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.2</td>
<td>T-DPI-t_AvgFilTime_Before_ETOTCTOT</td>
<td>120+VTT</td>
<td>60 – 120+VTT</td>
<td>95</td>
<td>95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.3</td>
<td>T-DPI-s_AvgFilTime_Before_ETOTCTOT</td>
<td>40+VTT</td>
<td>25 – 40+VTT</td>
<td>39</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4</td>
<td>A-DPI_AvgFilTime_Before_ETOTCTOT</td>
<td>Avg VTT</td>
<td>5 – 30</td>
<td>19</td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### DPI & FUM Implementation Road Map - 10

**Indicator Name:**  
- **P-DPI_AvgFilTime_Before_ATOT**  
- **E-DPI_AvgFilTime_Before_ATOT**  
- **T-DPI-t_AvgFilTime_Before_ATOT**  
- **T-DPI-s_AvgFilTime_Before_ATOT**  
- **A-DPI_AvgFilTime_Before_ATOT**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0</td>
<td>P-DPI_AvgFilTime_Before_ATOT</td>
<td>None yet</td>
<td>180 –1200+VTT</td>
<td>600</td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.1</td>
<td>E-DPI_AvgFilTime_Before_ATOT</td>
<td>180+VTT</td>
<td>100 – 180+VTT</td>
<td>189</td>
<td>189</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.2</td>
<td>T-DPI-t_AvgFilTime_Before_ATOT</td>
<td>120+VTT</td>
<td>60 – 120+VTT</td>
<td>98</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.3</td>
<td>T-DPI-s_AvgFilTime_Before_ATOT</td>
<td>40+VTT</td>
<td>25 – 40+VTT</td>
<td>32</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.4</td>
<td>A-DPI_AvgFilTime_Before_ATOT</td>
<td>Avg VTT</td>
<td>5 – 30</td>
<td>15</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The Indicators 10.1 – 10.4 are based upon non-regulated flights only.

### 6.4.2 Take-Off-Time (TOT) Predictability Accuracy Indicators - 1

**Indicators:**
- **FPL_Avg_Abs_ETOT_to_ATOT**: \( \text{avg}(\text{abs}(\text{ATOT}-(\text{EOBT+StandardTaxiTime}))) \)
- **T-DPI-t_Avg_Abs_TTOT_to_ATOT**: \( \text{avg}(\text{abs}(\text{ATOT} – \text{TTOT})) \)
- **T-DPI-s_Avg_Abs_TTOT_to_ATOT**: \( \text{avg}(\text{abs}(\text{ATOT} – \text{TTOT})) \)
- **A-DPI_Avg_Abs_TTOT_to_ATOT**: \( \text{avg}(\text{abs}(\text{ATOT} – \text{TTOT})) \)

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name 1)</th>
<th>Target Value [min]</th>
<th>Acceptable Range [min]</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>FPL_Avg_Abs_ETOT_to_ATOT 2)</td>
<td>0</td>
<td>&lt;= 15</td>
<td></td>
</tr>
<tr>
<td>11.2</td>
<td>T-DPI-t_Avg_Abs_TTOT_to_ATOT</td>
<td>0</td>
<td>&lt;= 12</td>
<td></td>
</tr>
<tr>
<td>11.3</td>
<td>T-DPI-s_Avg_Abs_TTOT_to_ATOT</td>
<td>0</td>
<td>&lt;= 10</td>
<td></td>
</tr>
<tr>
<td>11.4</td>
<td>A-DPI_Avg_Abs_TTOT_to_ATOT</td>
<td>0</td>
<td>&lt;= 5</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1) These statistics are based upon the last received message of that type.
2) “FPL” includes FPL+DLA+CHG messages
3) The yellow colour shows that it is also part of the CDM Completeness Criteria (see Doc Ref 1).

### 6.4.3 Take-Off-Time (TOT) Predictability Accuracy Indicators - 2

1) A second method of determining the Take-Off-Time (TOT) Predictability is by determining the percentage of messages that are within a pre-defined range.

2) It starts with calculating the absolute average differences between the ATOT and the TOTs from different messages. Then the percentage of messages that are within a certain accuracy, for example 10 min is calculated.

3) The Comparison between the different message types shall be done by comparing the Performance Indicator of each message type.

4) The ATOT is derived from FSA messages.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name 1)</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.1</td>
<td>FPL_Predictability_10min_Acc</td>
<td>100%</td>
<td>No range</td>
<td>69%</td>
</tr>
<tr>
<td>12.6</td>
<td>P-DPI_Predictability_10min_Acc (tTTOT)</td>
<td>100%</td>
<td>&gt;= FPL percentage</td>
<td>73%</td>
</tr>
<tr>
<td>12.7</td>
<td>P-DPI_Predictability_10min_Acc (eTTOT)</td>
<td>100%</td>
<td>&gt;= FPL percentage</td>
<td>73%</td>
</tr>
<tr>
<td>12.2</td>
<td>E-DPI_Predictability_10min_Acc (tTTOT)</td>
<td>100%</td>
<td>&gt;= FPL percentage</td>
<td>73%</td>
</tr>
<tr>
<td>12.8</td>
<td>E-DPI_Predictability_10min_Acc (eTTOT)</td>
<td>100%</td>
<td>&gt;= FPL percentage</td>
<td>73%</td>
</tr>
<tr>
<td>12.3</td>
<td>T-DPI-t_Predictability_10min_Acc (tTTOT)</td>
<td>100%</td>
<td>5% better than FPL</td>
<td>78%</td>
</tr>
<tr>
<td>12.9</td>
<td>T-DPI-t_Predictability_10min_Acc (eTTOT)</td>
<td>100%</td>
<td>5% better than FPL</td>
<td>78%</td>
</tr>
<tr>
<td>12.4</td>
<td>T-DPI-s_Predictability_10min_Acc</td>
<td>100%</td>
<td>10% better than FPL</td>
<td>83%</td>
</tr>
<tr>
<td>12.5</td>
<td>A-DPI_Predictability_10min_Acc</td>
<td>100%</td>
<td>&gt;=95%</td>
<td>98%</td>
</tr>
</tbody>
</table>

Notes:
1) These statistics are based upon the last received message of that type. In order to be able to compare data, these indicators are produced on non-regulated flights only.
2) “FPL” includes FPL+DLA+CHG messages.

### 6.5 ATFCM Behaviour

#### 6.5.1 Adherence to ATFM Slot Tolerance Window Indicators

1) The purpose of these statistics is to compare the DPI Target Take-Off Time (TTOT) with the CTOT in order to determine if the AOP-NOP, CDM or Advanced ATC TWR Airport is usually providing a TTOT before the STW, inside the STW or after the STW.

2) These indicators show the percentage of A-DPI messages for regulated flights that have a TTOT inside the Slot Tolerance Window (default value: -5 - +10) around the CTOT.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.1</td>
<td>A-DPI_Inide_STW</td>
<td>100 %</td>
<td>&gt;= 90%</td>
<td>89%</td>
</tr>
</tbody>
</table>

3) Overall figures of the OPERATIONAL Adherence to ATFM Slots (based upon the ATOT from FSA messages) must be better than 80%.
6.5.2 Adherence to Departure Tolerance Window Indicators

(1) The purpose of these statistics is to compare the DPI Target Take-Off Time (TTOT) of non-regulated flights with the last received OBT+Taxi-Time in order to determine if the AOP-NOP, CDM or Advanced ATC TWR Airport is usually providing a TTOT in accordance with the Departure Tolerance Window (DTW).

(2) These indicators show the percentage of A-DPI messages for non-regulated flights that have an TTOT inside the Departure Tolerance Window (default value: -15 - +15) around the last received OBT+DPI_TaxiTime.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1</td>
<td>A-DPI_inside_DTW</td>
<td>100 %</td>
<td>&gt;= 80%</td>
<td>72%</td>
</tr>
</tbody>
</table>

6.6 Operational Readiness

(1) In order for an airport to be ready to be integrated operationally with the ATM network, it is required that local AOP-NOP, CDM or Advanced ATC TWR operations are sufficiently mature.

(2) It is essential to have done sufficient testing with operational data with the NMOC in order to detect most special cases (e.g. night and weekend operations) and identify solutions.

(3) It is essential that most operations staff, including handling staff, pilots, TWR,... have become used to the newly introduced AOP-NOP, CDM or Advanced ATC TWR working methods and tools. The impact on the network of staff learning new working practices and inevitable making mistakes should be reduced to the absolute minimum.

(4) For these reasons, it is required that a AOP-NOP, CDM or Advanced ATC TWR airport provides DPI data for live traffic during an uninterrupted period of at least 7-14 days to the ETFMS test system before the DPIs are sent to the ETFMS Operational system.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Value</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.1</td>
<td>Long duration test</td>
<td>1 month</td>
<td>7 days</td>
<td>21 days</td>
</tr>
</tbody>
</table>

6.7 TOBT and TSAT quality

(1) The TOBT and TSAT values are disseminated via CHMI, the NOP Portal and B2B web services, in order to increase the situational awareness of stakeholders of the departures.

(2) In addition, the EOBT update service for airlines is based on the TOBT value.

(3) TOBT and TSAT values of a sufficient quality are therefore desirable.

(4) The indicators used, measure the presence rate as well as the acceptance rate of the TOBT and TSAT values in the different DPI messages (in percentages):
<table>
<thead>
<tr>
<th>DPI Type</th>
<th>TOBT Present (%)</th>
<th>TSAT Present (%)</th>
<th>TOBT Rejected (%)</th>
<th>TSAT Rejected (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-DPI</td>
<td>0%</td>
<td>0%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>T-DPI-t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-DPI-s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref</th>
<th>Indicator Name</th>
<th>Target Value</th>
<th>Acceptable Range</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.1</td>
<td>E-DPI TOBT Present (%)</td>
<td>No target</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.2</td>
<td>T-DPI-t TOBT Present (%)</td>
<td>No target</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.3</td>
<td>T-DPI-s TOBT Present (%)</td>
<td>100%</td>
<td>&gt;95%</td>
<td></td>
</tr>
<tr>
<td>17.4</td>
<td>T-DPI-t TSAT Present (%)</td>
<td>No target</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.5</td>
<td>T-DPI-s TSAT Present (%)</td>
<td>100%</td>
<td>&gt;=95%</td>
<td></td>
</tr>
<tr>
<td>17.6</td>
<td>E-DPI TOBT Rejected</td>
<td>0.0%</td>
<td>&lt;=3%</td>
<td></td>
</tr>
<tr>
<td>17.7</td>
<td>T-DPI-t TOBT Rejected</td>
<td>0.0%</td>
<td>&lt;=3%</td>
<td></td>
</tr>
<tr>
<td>17.8</td>
<td>T-DPI-s TOBT Rejected</td>
<td>0.0%</td>
<td>&lt;=3%</td>
<td></td>
</tr>
<tr>
<td>17.9</td>
<td>T-DPI-t TSAT Rejected</td>
<td>0.0%</td>
<td>&lt;=3%</td>
<td></td>
</tr>
<tr>
<td>17.10</td>
<td>T-DPI-s TSAT Rejected</td>
<td>0.0%</td>
<td>&lt;=3%</td>
<td></td>
</tr>
</tbody>
</table>
7 FUM Evaluations

7.1 Communication and Message Syntax

7.1.1 Purpose

(1) The purpose of the “Communication and Message Syntax” test is to verify if the messages are addressed to the correct AFTN address and if the connection is in place.

(2) An initial and quick verification of message syntax will save time during testing with live data.

(3) Note that this process mainly applies to FUM messages that are provided via the AFTN network. The ELDT values can also be provided via B2B web services and in such cases the B2B evaluation process is followed (refer to the NM B2B web service documentation for further details).

7.1.2 How

(1) On request of an airport the NMOC can provide a sample of FUMs. Such FUMs are extracted from ETFMS log-files and are provided via e-mail. It is possible to provide FUMs for a whole day or a part of the day. The airport is expected to use the off-line FUMs for local system testing such as validation of the parsing of FUMs.

(2) Note that ETFMS needs to be specially configured in order to produce FUMs (in log files).

(3) Step 1: Transmission of off-line copies of messages using E-mail for initial validation of syntax.

(4) Step 2: Provide on-line FUMs from an ETFMS system to the airport system.

(5) These messages usually contain live data.

7.1.3 How long

(1) One or several e-mails may be provided.

(2) The initial trials may last from several minutes to 1 hour with the purpose of testing the connections.

7.1.4 Report

(1) The NMOC may answer any questions and comments related to the provided off-line copies via e-mail.

(2) The results of the connection test may be provided via phone or e-mail.

7.1.5 Follow-up

(1) If the report identifies significant problems it will be necessary to find solutions and repeat the test. In all other cases the Evaluation of Live Data will be planned.
7.2 Evaluation of Live Data

7.2.1 Purpose

(1) The purpose of the Evaluation of Live Data is to offer the airport the opportunity to evaluate the use of FUMs for their operations and integration into their systems.

7.2.2 How

(1) The test consists of the transmission of FUM messages for Live/Operational traffic to an address at the airport.
(2) The FUM messages will be transmitted via AFTN to the address specified by the airport. This may be the AFTN address of a test system or of an operational system.
(3) The NMOC will log the outgoing messages for off-line analysis.

7.2.3 How long

(1) During the first hour of the trial, addressing, format and common understanding by applications will be verified.
(2) This provision of data could last from several hours to approximately 1 week.
(3) At a later stage of FUM trials it could also be envisaged to repeat the trials during special circumstances such as strike, runway closure, de-icing…

7.2.4 What

(1) It will be up-to the airport to do the analysis using its own tools.
(2) The NMOC is available for answering questions about special cases.

7.2.5 Follow-up

(1) If the report identifies significant problems it will be necessary to find solutions and repeat the test.

7.3 Operational Trial

(1) No specific operational trials are foreseen for FUM messages.
8 Contacts

(1) For details on Project management issues, DPI, FUM message specifications and Operational matters related to DPI Evaluations:

Mr. Hans Koolen
Senior Expert ATFCM and Airport CDM
EUROCONTROL
Network Operations – Airports Unit
Rue de la Fusée 96
B-1130 Bruxelles
Tel: +32 2 729 9876
Fax: +32 2 729 9189
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(2) For other questions on DPI & FUM:

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Expert Airport CDM
EUROCONTROL
Network Operations – Airports Unit
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B-1130 Bruxelles
Tel: +32 2 729 3938
E-mail: ioana.suciu.ext@eurocontrol.int
The following table provides an overview of all the steps to be taken for a DPI Operational Evaluation, including an estimation of the duration.

<table>
<thead>
<tr>
<th>Ref nr</th>
<th>Description</th>
<th>Est Dur [days]</th>
<th>Estd Dur [weeks]</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Communication and Message Syntax</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>T1.1</td>
<td>Actual tests</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T1.2</td>
<td>Report writing and Review</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>Evaluation of Live Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2.1</td>
<td>Evaluation - I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>T2.1.1</td>
<td>Execution, data analysis, report writing by NMOC</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>T2.1.2</td>
<td>Analysis and Review of the report by Airport</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>T2.1.3</td>
<td>Possible Adjustment of system and procedures</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>T2.2</td>
<td>Evaluation - II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>T2.2.1</td>
<td>Execution, data analysis, report writing by NMOC</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>T2.2.2</td>
<td>Analysis and Review of the report by Airport</td>
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<td></td>
</tr>
<tr>
<td>T2.2.3</td>
<td>Possible Adjustment of system and procedures</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>T2.3</td>
<td>Evaluation - III</td>
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<td></td>
</tr>
<tr>
<td>T2.3.1</td>
<td>Execution, data analysis, report writing by NMOC</td>
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<td></td>
</tr>
<tr>
<td>T2.3.2</td>
<td>Analysis and Review of the report by Airport</td>
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<td></td>
</tr>
<tr>
<td>T2.3.3</td>
<td>Possible Adjustment of system and procedures</td>
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<td></td>
</tr>
<tr>
<td>T2.4</td>
<td>DPI Operational Evaluation Review meeting</td>
<td>1 0.2</td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>ATFCM Impact Assessment</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>T3.1</td>
<td>Execution of test by NMOC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T3.2</td>
<td>Data analysis, Report writing and review by NMOC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T3.3</td>
<td>Review by AOP-NOP, CDM or Advanced ATC TWR Airport</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>Operation Trial</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T4.1</td>
<td>Operational Trial - I</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T4.2</td>
<td>Analysis, Report writing and review - I</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T4.3</td>
<td>Operational Trial - II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T4.4</td>
<td>Report writing and review - II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T4.5</td>
<td>Review and analysis of the report by the Airport</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>Operations (including preparation for Operations)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>T5.1</td>
<td>Continous provision of Operational DPls</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>T5.2</td>
<td>GoNoGo Decision</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>T5.3</td>
<td>Final preparations for Operations</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>T6</td>
<td>Post Operations Support</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>T6.1</td>
<td>Post Operations support</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td>21.2</td>
<td></td>
</tr>
</tbody>
</table>