ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY

PRE-VALIDATION WORKSHOP OF THE REGIONAL GENERIC DOCUMENTATION DEVELOPED FOR THE IMPLEMENTATION OF AIRPORT COLLABORATIVE DECISION MAKING(A-CDM)

Prisca Nkolo

Regional Officer AGA/ICAO WACAF

12-13 June 2025

ICAO

SESSION 6:
KEY ENABLERS FOR A-CDM IMPLEMENTATION

ICAO

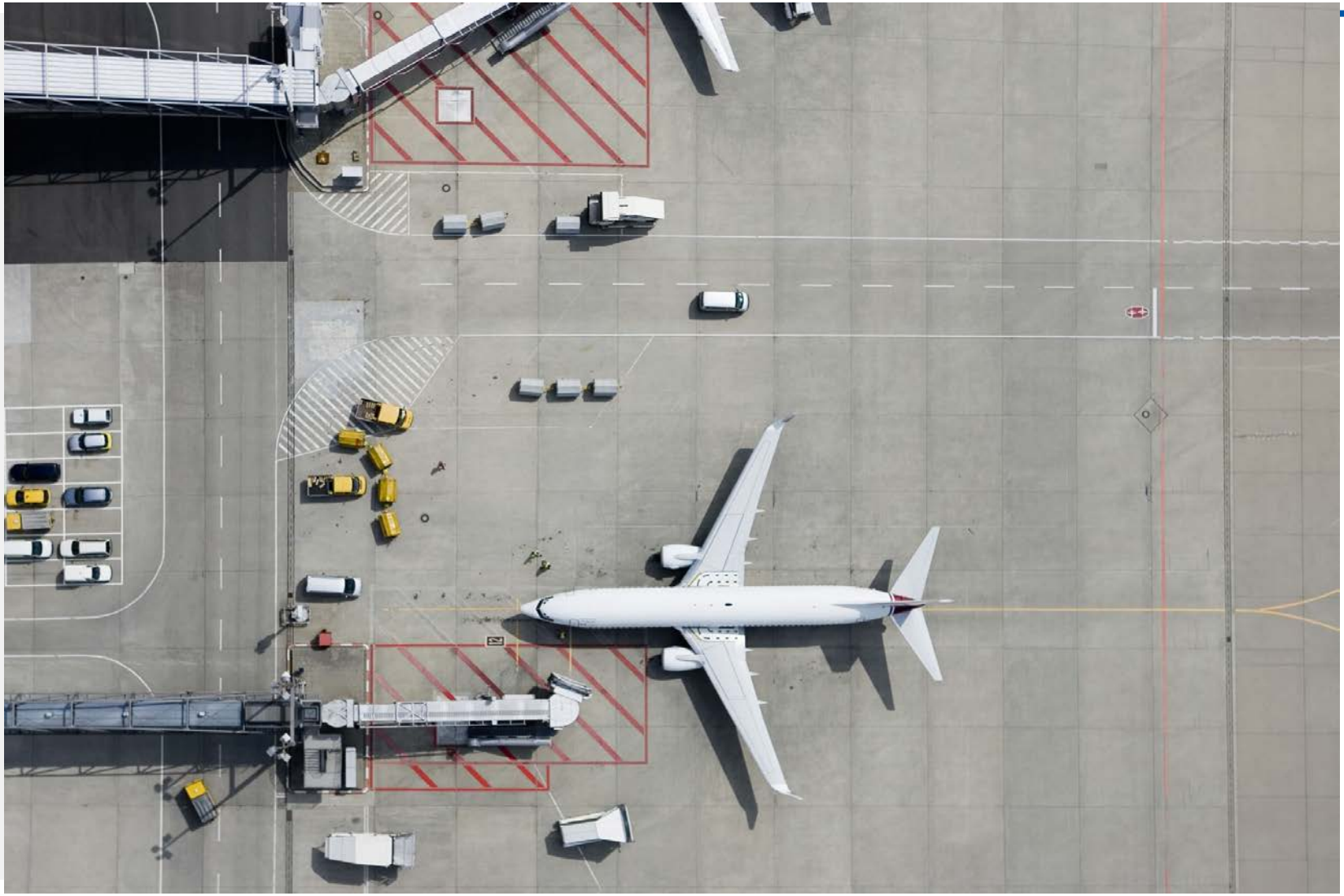
A-CDM Concept

02

A-CDM Key enablers

A=CDM CONCEPT

BACKGROUND



ICAO

INFLUENCES

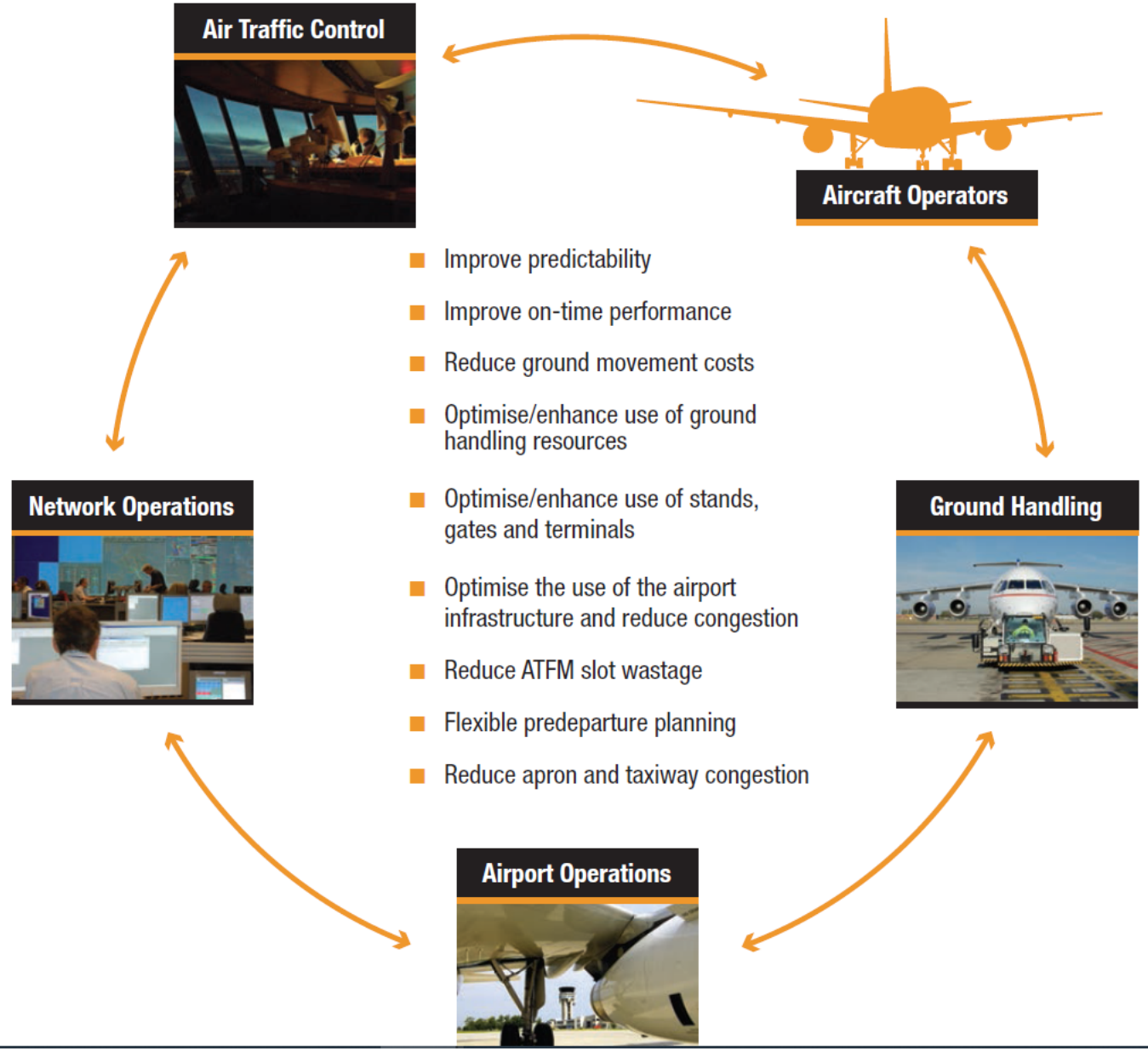
Airports performance **influences** Network performance

IMPACTS

Network performance **impacts** Airport performance

A-CDM PURPOSE

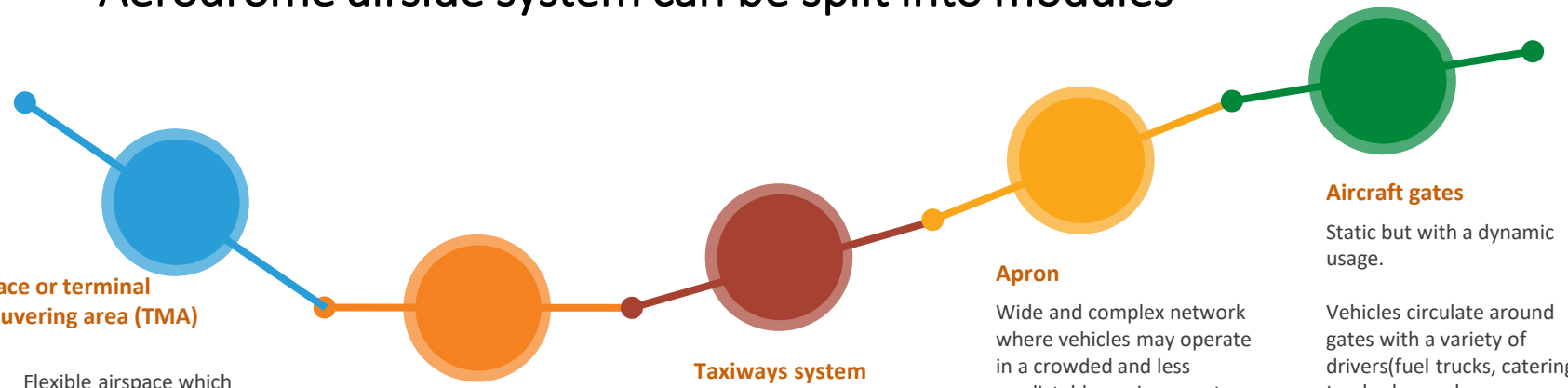
To improve the efficiency and resilience of airport operations by optimizing the use of resources and improving the predictability of air traffic.



ICAO

AERODROME AIRSIDE SYSTEM

Aerodrome airside system can be split into modules



Airspace or terminal maneuvering area (TMA)

Flexible airspace which aircrafts flight along dedicated trajectories.

Main actors are Pilots and approach ATC

Runway system

Composed of paved infrastructure including runways, runway entries and runway exits

Main actors are pilots, ground ATC or ground services

Taxiways system

Composed of taxiways From the runway to the apron

Main actors are pilots, ground ATC or ground services

Apron

Wide and complex network where vehicles may operate in a crowded and less predictable environment

Aircraft gates

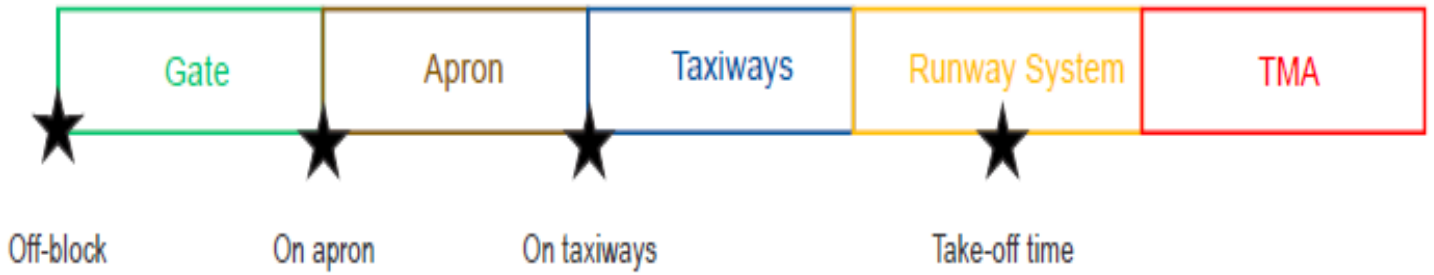
Static but with a dynamic usage.

Vehicles circulate around gates with a variety of drivers(fuel trucks, catering trucks, buses, baggage dollies, etc.)

Each module has a set of inherent characteristics and faces a set of distinct operational issues

A-CDM milestones

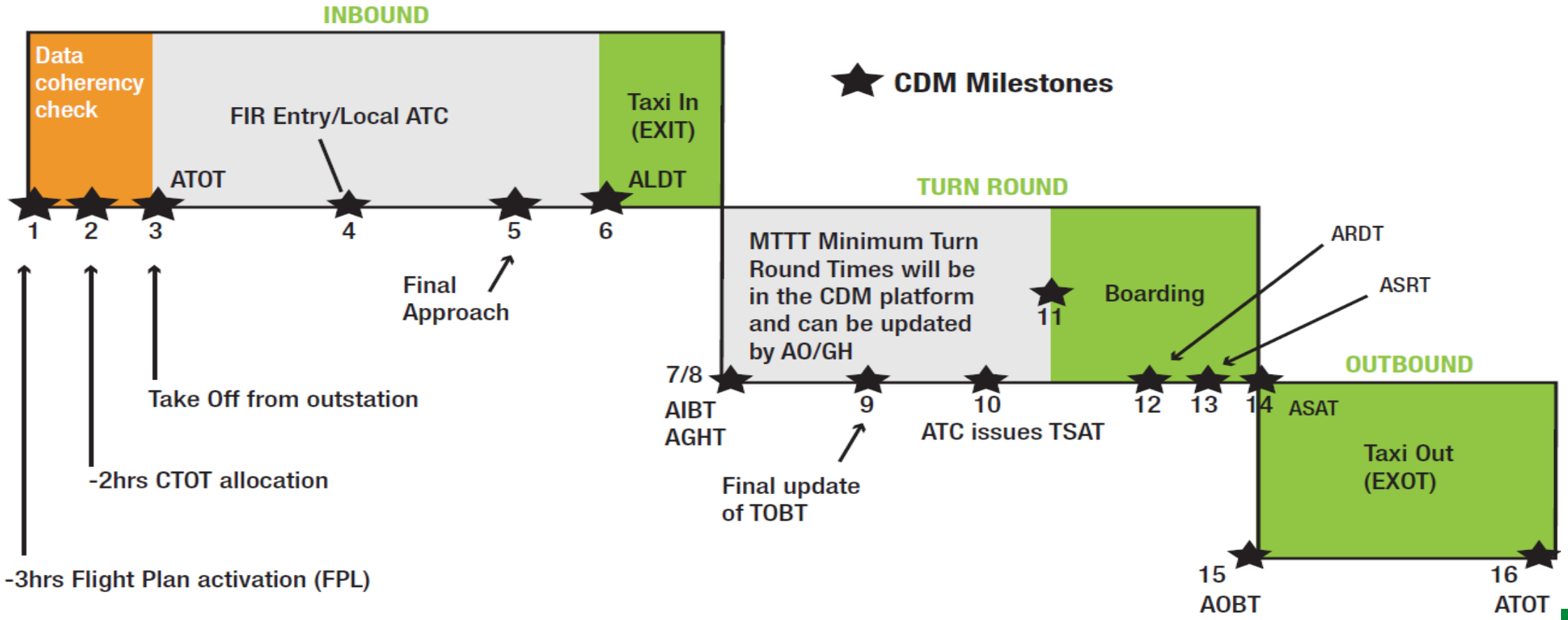
Each module entry and exit can be associated to one or more specific milestones



- A-CDM aims to enhance operations in all modules
- The main objective is the prediction of an accurate Target Off-Block time and Target Start up time which depends on the provision of timely and accurate information
- A-CDM can aim to target any given milestones for improvement
- Some A-CDM projects may choose to target specific modules or sequence of module for optimization
- Required information and tools should be adjusted to the specific local A-CDM approach

A-CDM milestones are articulated into 3 phases: INBOUND- TURNAROUND-OUTBOUND

Each module entry and exit can be associated to one or more specific milestones



Inbound phase

The purpose of A-CDM during the inbound phase is to enhance the distribution and use of advance arrival information to/by stakeholders when the flight is inbound to the airport.

For the inbound phase, A-CDM will:

- enhance the calculation of the estimated in-block times, and consequently improve gate usage and position planning;
- allow the verification of the feasibility of the outbound flight information for any arriving aircraft based on updated arrival information; and
- enhance resource planning, e.g., ground handling.

ICAO

Turnround phase

The purpose of A-CDM in the turnaround phase is to further improve the common situational awareness of all partners and to provide the most accurate estimation of departing aircraft readiness by using reliable off-block times, either EOBT or TOBT.

The use of a TOBT also allows for further enhancements to other A-CDM processes/procedures such as :

- calculation of the predeparture sequence;
- earlier indication that a flight will not be ready, e.g., TOBT cancellation in case of a technical problem with the flight;
- updated information about target take-off times for ATFM, where applicable; and
- enhanced use of other resources, e.g., gate and position planning

ICAO

Outbound phase

The purpose of A-CDM for the outbound phase is to optimize planning of the departing flights.

A-CDM facilitates the sequencing of flights for departure and can assist ATC to sequence flights for the outbound phase(predeparture sequencing).

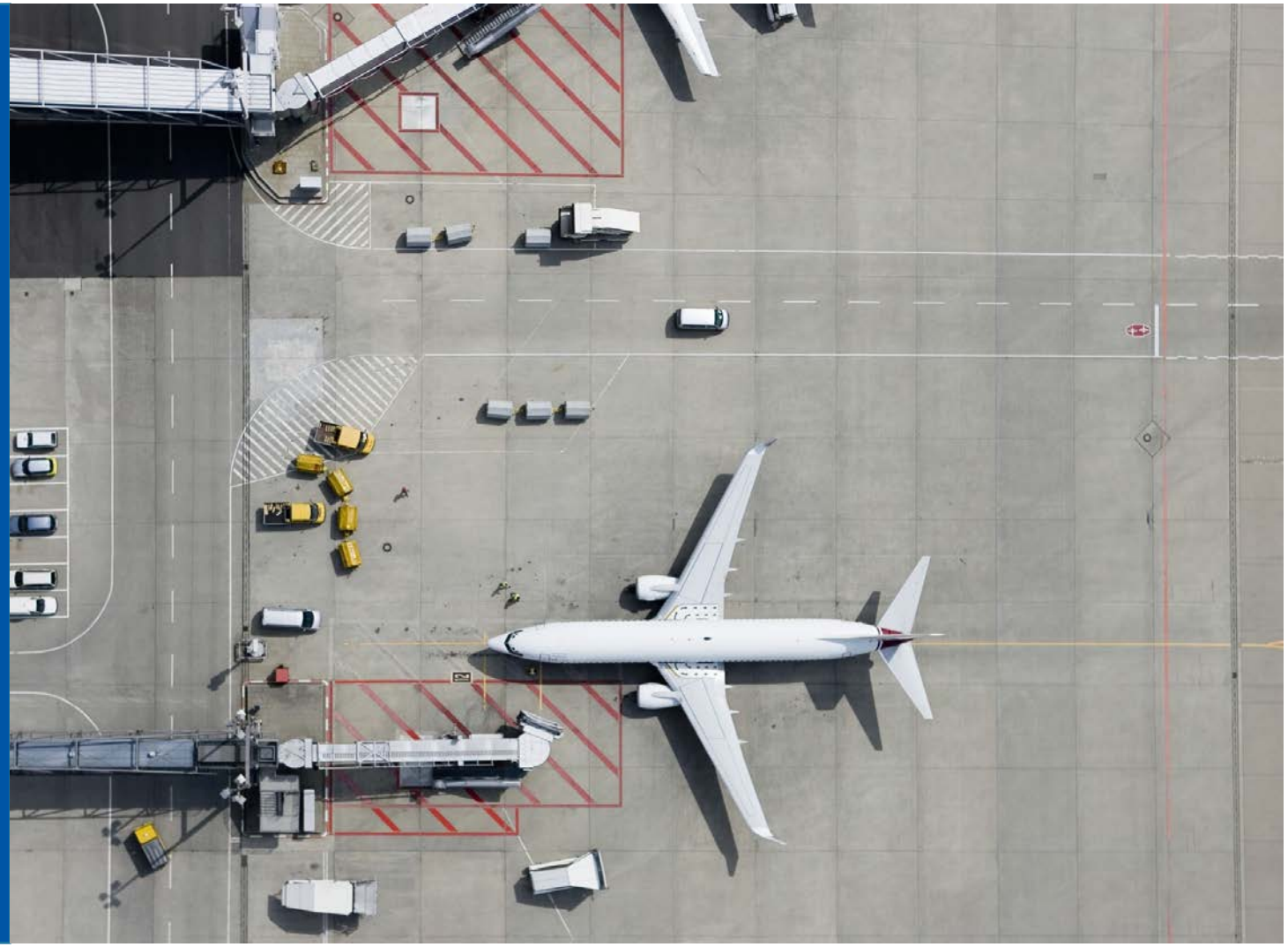
The determination of accurate target start-up approval times (TSAT) is essential to allow traffic flows to be regulated as they move towards the runways more efficiently.

A-CDM principles

- Information sharing serves as the foundation for airport collaborative decision-making. It is the element that ties the stakeholders together in their aim to efficiently coordinate and manage operations.
- The Airport CDM Information Sharing Platform (ACISP), which consists of systems, tools and user interfaces, is the means used to reach that aim, by providing a single, common set of data describing the status and intentions of a flight, together with documented actions from the A-CDM partners on the system.
- The Turn-round Process (Milestones approach) tracks the progress of a flight in the Airport CDM Information Sharing Platform by a continuous sequence of significant events, known as milestones. A successfully completed milestone will trigger the decision-making process for downstream events and influence both the further progress of the flight and the accuracy with which the progress can be predicted.

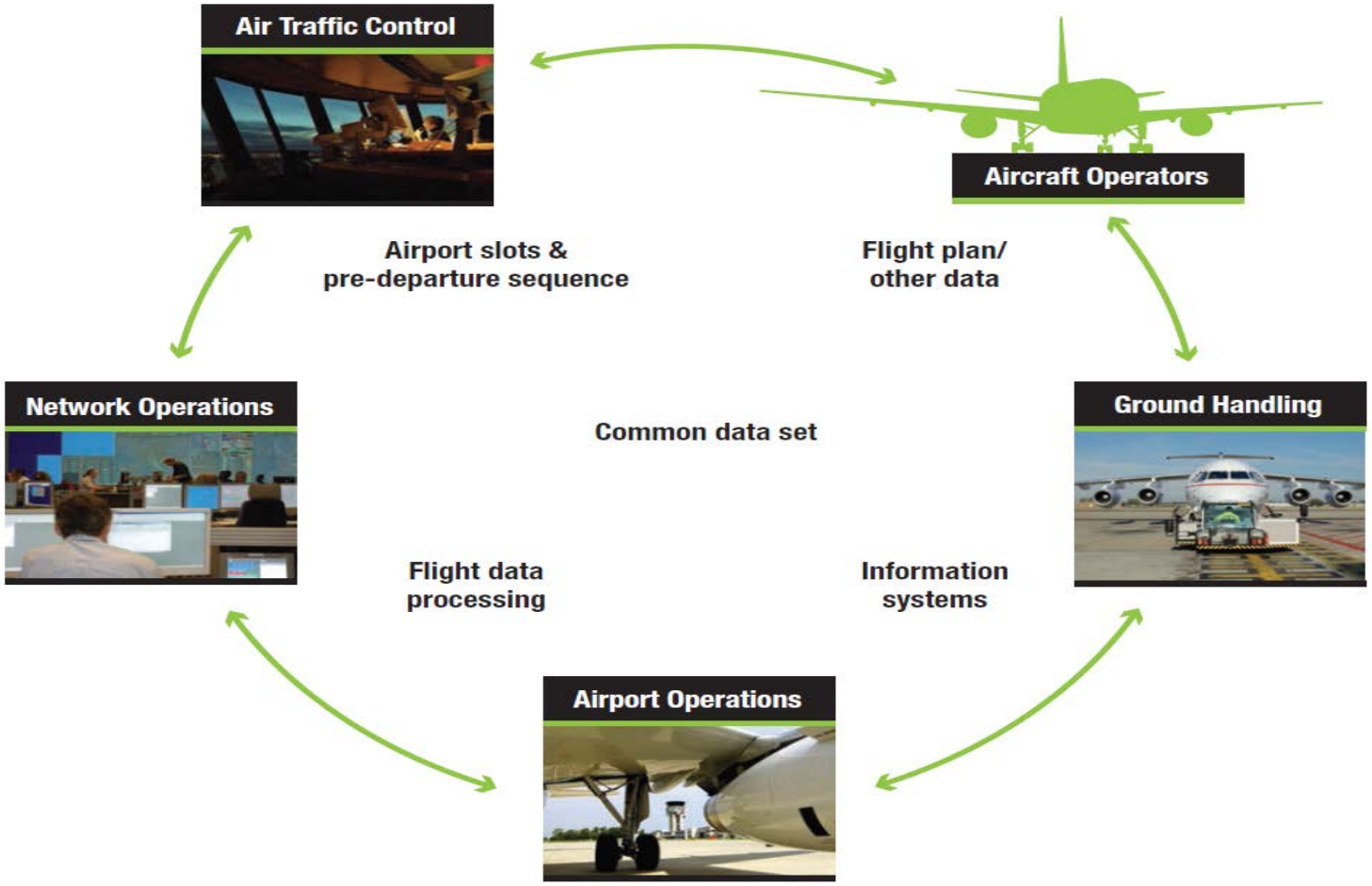
02

A-CDM INFORMATION SHARING ENABLERS



ACIS Enablers	
Operational procedures	**Stakeholders and references**
Surface operation milestones procedure (Doc 9971) ACIS phraseology *Phraseology for the implementation of ACIS.* (PANS-ATM- Doc 4444)	Airport operator ANSP Aircraft operator Ground handling agent
Ground system infrastructure	**Stakeholders and references**
ACIS system *A simple A-CDM dialog system to a more advanced A-CDM Information sharing platform (ACISP) to achieve A-CDM information sharing.*	Airport operator ANSP Aircraft operator Ground handling agent
Training	**Stakeholders and references**
Training in the operational standards and procedures	Airport operator ANSP ATM network function Aircraft operator Ground handling agent

Information sharing



ICAO

Stakeholders' needs and responsibilities

Ground handlers

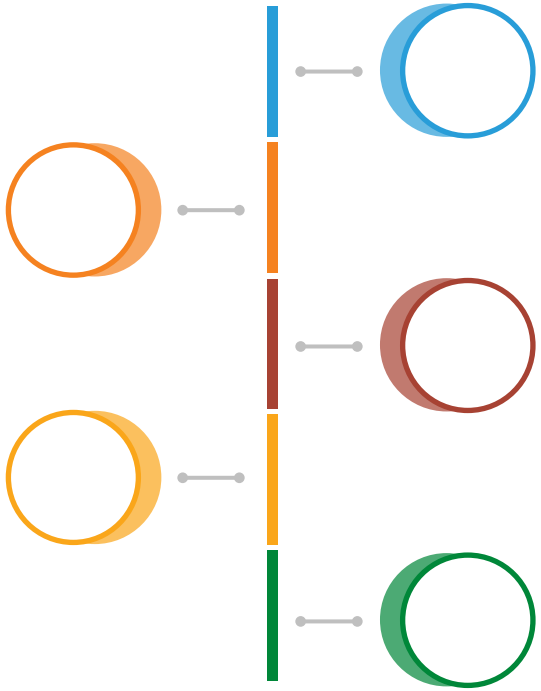
Can provide data related to the progress of turnaround such as TOBT

Needs updated situational information such as planned, estimated and actual time, TOBT,TSAT and TOBT.

Network managers

Provides flight plan data, calculated take-off times, etc.

Needs departure planning information



Airport operators

Provides aerodrome schedule information, resource allocation, gate and position planning

Needs updated situational information such as planned, estimated and actual time, TOBT,TSAT and TOBT.

Aircraft operators

Provides flight plan, planned, estimated and actual times related to progress of turnaround such as TOBT

Needs updated situational information such as planned, estimated and actual time, TOBT, TSAT and TOBT.

ANSPs

Provides updated estimated and actual times for landing and departing flights

Needs updated situational information such as gate/stand allocation or TOBT

ICAO

Mechanisms to exchange information

A-CDM Communication systems should:

- **Provide consistent and secure display of all the relevant information needed**
- **-Enables the sharing of all relevant events**

Systems could be automated or not

In simpler cases involving limited number of participants and limited number of operations, a shared spreadsheet may be enough

Advanced software may be required in complex environment

A-CDM information sharing platform (ACISP) consists in all the tools, systems and equipment used to share data among airport partners

ICAO

Milestones Approach

- The Milestone Approach aims to have an early and accurate prediction by the Aircraft Operator, in order for Air Traffic Control, Airport Operator, and Ground Handlers to anticipate for resources or traffic planning purposes

- It will enable :
  - the optimal allocation of resources and
  - improved predictions of target take-off times, start-up times, taxi times, etc.

ICAO

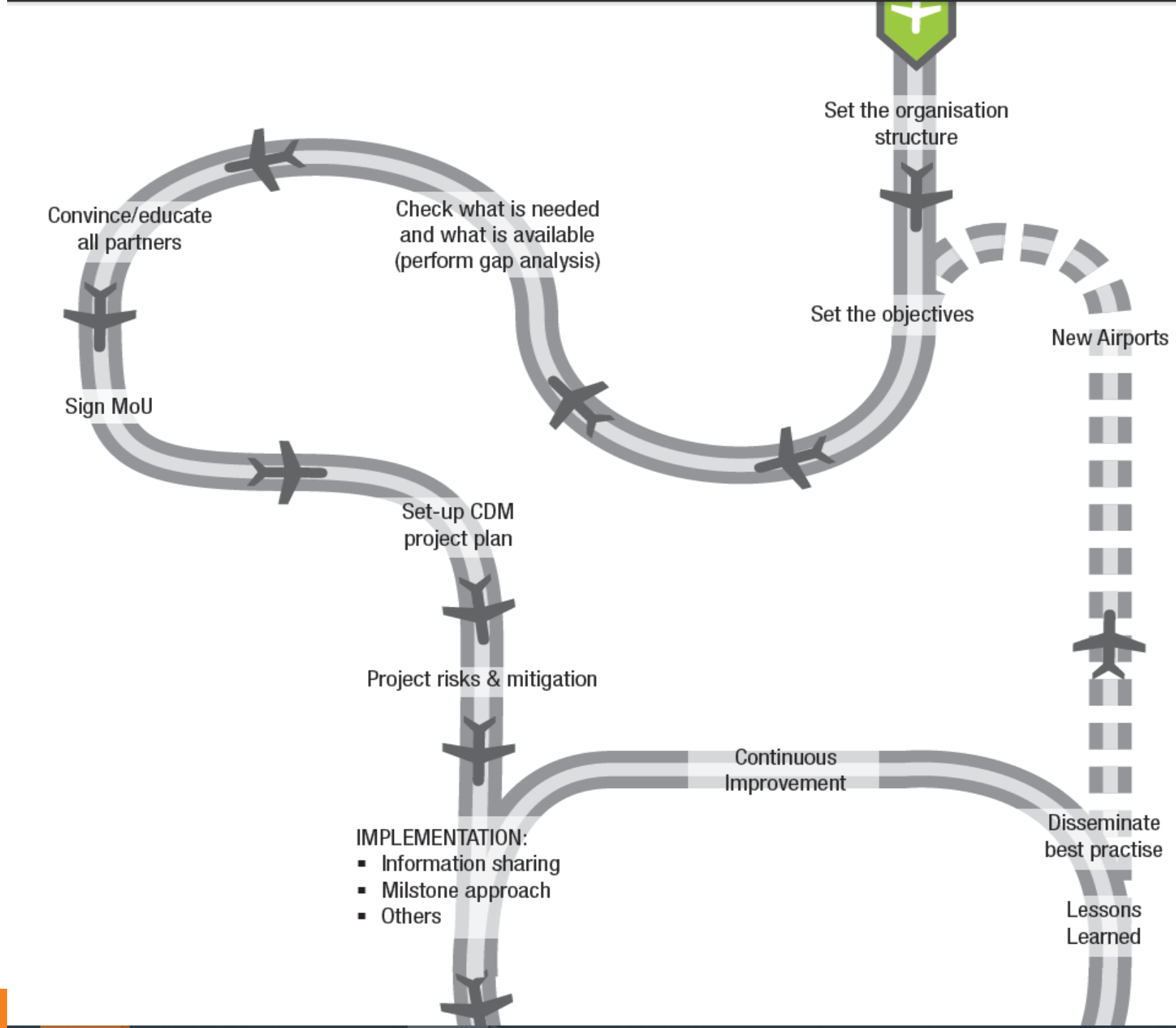
A-CDM milestones

The list of Milestones is indicative.

- ✓ more milestones may need to be included to cover extra information updates on key events, such as works.
- ✓ Local procedures may dictate that some milestones may not be required

Number	Milestones	Time Reference
1	ATC Flight Plan activation	3 hours before EOBT
2	EOBT – 2 hr	2 hours before EOBT
3	Take off from outstation	ATOT from outstation
4	Local radar update	Varies according to airport
5	Final approach	Varies according to airport
6	Landing	ALDT
7	In-block	AIBT
8	Ground handling starts	ACGT
9	TOBT update prior to TSAT	Varies according to airport
10	TSAT issue	TOBT -30 mins to -40 mins
11	Boarding starts	Varies according to airport
12	Aircraft ready	ARDT
13	Start up request	ASRT
14	Start up approved	ASAT
15	Off-block	AOBT
16	Take off	ATOT

Steps to A-CDM implementation



Thank You!

ICAO