EUROCONTROL

ASBU Implementation Monitoring Report

ICAO EUR States

Reference Period 2019

IN PARTNERSHIP WITH

ICAO • OACI • ИКАО
国际民航组织 • منظمة الطيران المدني الدولي

Addressing Growth and Realizing the Promise of Twenty-first Century Air Traffic Management (ATM)

Air transport today plays a major role in driving sustainable economic and social development. It directly and indirectly supports the employment of 56.6 million people, contributes over $2.2 trillion to global Gross Domestic Product (GDP), and carries over 2.9 billion passengers and $5.3 trillion worth of cargo annually.

A fully harmonised global air navigation system built on modern performance-based procedures and technologies is a solution to the concerns of limited air traffic capacity and unnecessary gas emissions being deposited in the atmosphere.

The Global Air Navigation Plan (GANP) represents a rolling, 15-year strategic methodology which leverages existing technologies and anticipates future developments based on State/industry agreed operational objectives. The GANP's Aviation System Block Upgrades (ASBU) methodology is a programmatic and flexible global system's engineering approach that allows all Member States to advance their Air Navigation capacities based on their specific operational requirements. The Block Upgrades will enable aviation to realise the global harmonization, increased capacity, and improved environmental efficiency that modern air traffic growth now demands in every region around the world.

The GANP's Block Upgrades are organised in five-year time increments starting in 2013 and continuing through 2028 and beyond. The GANP ASBU planning approach also addresses airspace user needs, regulatory requirements and the needs of Air Navigation Service Providers and Airports. This ensures a single source for comprehensive planning. This structured approach provides a basis for sound investment strategies and will generate commitment from States, equipment manufacturers, operators and service providers. A first updated version of the GANP, with a new planning horizon from 2016 to 2030, was endorsed at the 39th ICAO Assembly in October 2016. The revised sixth edition of the GANP was presented at the 13th Air Navigation Conference in 2018 and had been endorsed at the 40th ICAO Assembly in September 2019.

This resultant framework is intended primarily to ensure that the aviation system will be maintained and enhanced, that ATM improvement programmes are effectively harmonised, and that barriers to future aviation efficiency and environmental gains can be removed at a reasonable cost. In this sense, the adoption of the ASBU methodology significantly clarifies how the ANSP and airspace users should plan for future equipage.

Although the GANP has a worldwide perspective, it is not intended that all Block Modules be required to be applied in every State and Region. Many of the Block Upgrade Modules contained in the GANP are specialised packages that should be applied only where the specific operational requirement exists or corresponding benefits can be realistically projected. The inherent flexibility in the ASBU methodology allows States to implement Modules based on their specific operational requirements. Using the GANP, Regional and State planners should identify those Modules which provide any needed operational improvements. Although the Block Upgrades do not dictate when or where a particular Module is to be implemented, this may change in the future should uneven progress hinder the passage of aircraft from one region of airspace to another.

The regular review of implementation progress and the analysis of potential impediments will ultimately ensure the harmonious transition from one region to another following major traffic flows, as well as ease the continuous evolution towards the GANP's performance targets.

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Abstract

The ICAO/EUROCONTROL ASBU Monitoring Report presents an overview of the deployment planning dates and implementation progress achieved for the ICAO ASBU Block 0 Modules (based on GANP 2016) within the ICAO EUR Region during the reporting year 2019. The Region covers 55 States and all of them provided monitoring information. The LSSIP mechanism was used to collect the data for 43 States, complemented with a dedicated questionnaire for the remaining States outside that mechanism.

The report summarizes the implementation progress of ASBU Block 0 modules and indicates what has been achieved so far, together with the future perspective of implementation in accordance with planning dates reported by States.

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0.1	21/09/2020	First draft	All
0.2	06/10/2020	Comments from ICAO Paris and B0-AMET data	All
0.3	19/10/2020	Final draft (for endorsement by EASPG/02 in December 2020)	All
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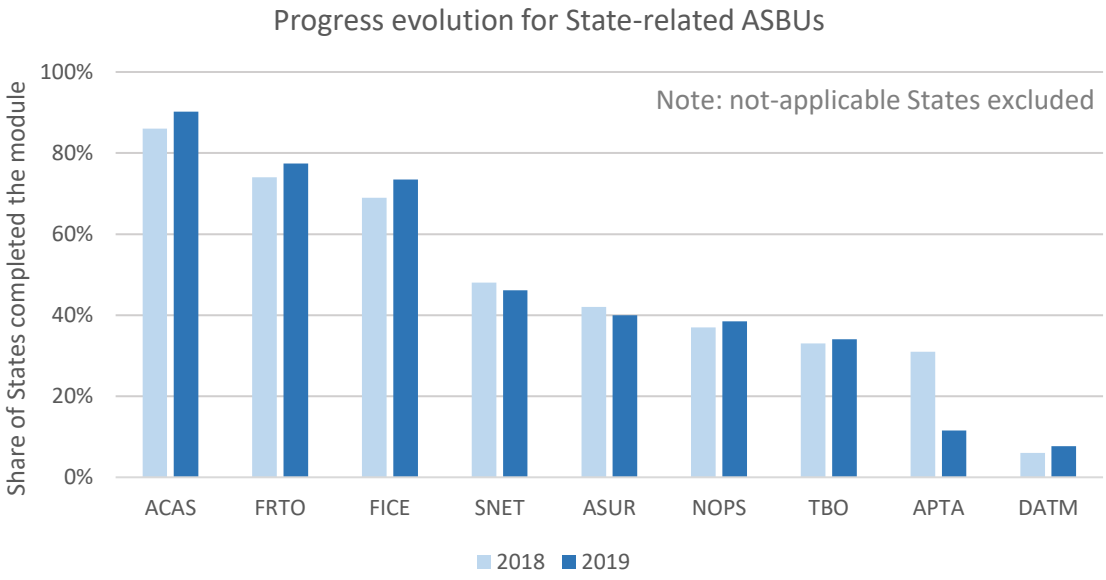
Executive Summary

The sixth edition of the ICAO ASBU Implementation Monitoring Report for the ICAO EUR Region (reference date - December 2019) addresses the deployment of a selected number of ASBU Block 0 Modules (based on the 5th edition of the GANP from 2016) and includes updated detailed progress and status implementation for all 55 States that are accredited to the ICAO EUR Region.

Two complementary processes are in place to collect the monitoring data. On one hand, the information submitted by States participating in the LSSIP mechanism is used; and on the other hand - additional data is collected through the ASBU implementation monitoring questionnaires for the 9 States of the ICAO EUR Region that are outside of the LSSIP reporting mechanism. It should be noted that Israel and Morocco have joined the LSSIP mechanism in 2017 and 2018 respectively.

The core of the document is presented in Chapter 3, which gives a consolidated view of the planning dates foreseen by States/Airports to finalise the implementation of each individual ASBU Block 0 module, together with a view on the implementation progress of the corresponding modules. Detailed information for the 9 States outside the LSSIP mechanism is found in Annex 1.

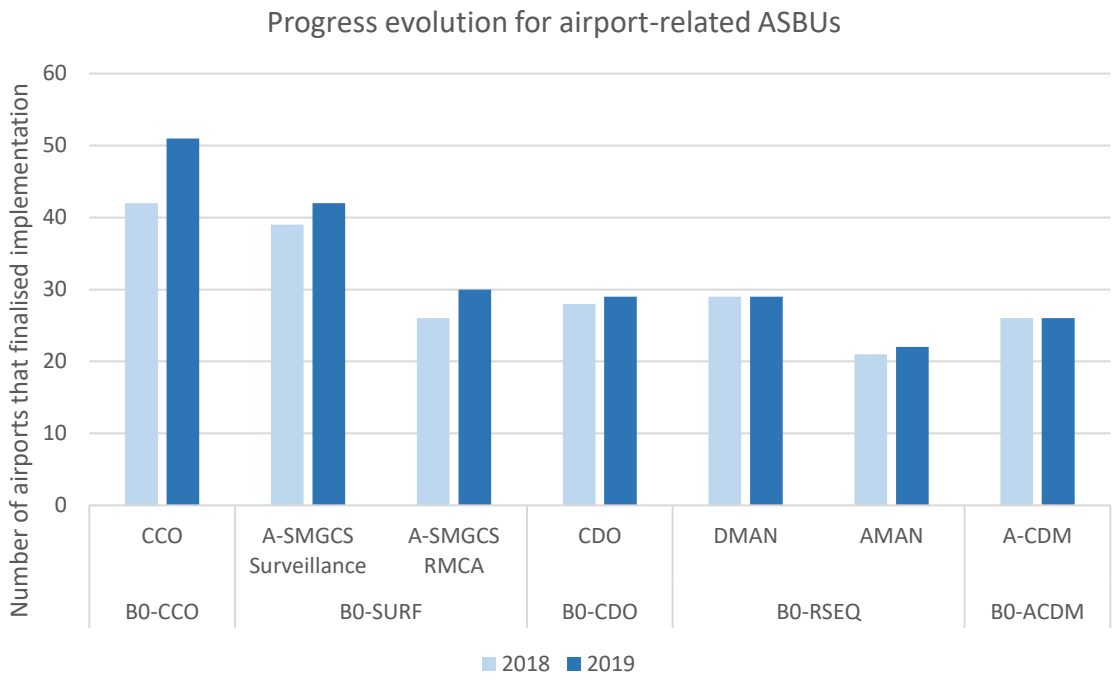
Figure below gives the overall rate of "Completion" (%) for State-related ASBU modules by the end of 2019, excluding those States where the module is considered as "Not Applicable".



As seen in the figure, most of the ASBU modules recorded a slight increase in the implementation progress across EUR Region. The notable drop for **B0-APTA** is explained by the fact that due to requirements of the new PBN Regulation applicable in the European Union (EU), related in particular to the development and formal approval of a "PBN Transition Plan", many EU Member States had to revert the implementation status from "completed" to "ongoing". Similar reasons associated with local organisational and/or operational environment caused the slight decrease for B0-SNET and B0-ASUR.

In terms of the overall cumulative progress achieved so far, the best-performing modules are **B0-ACAS (90%), B0-FRTO (77%) and B0-FICE (73%)**.

Unlike ASBU modules that are implemented at State level, there are a number of modules applicable to airports. For the sake of completeness and due to the fact that in these cases it is extremely difficult to aggregate the corresponding progress at State level, in this edition of the report the progress information for such modules is shown separately. Figure below shows the progress evolution for airport-related ASBU modules within the EUR Region.



The largest progress year-over-year has been recorded for **Continuous Climb Operations (B0-CCO)**, with 9 new airports implementing the module, followed by **B0-SURF: A-SMGCS Runway Monitoring and Conflict Alerting (RMCA)** with 4 new implementers. It should be noted that for some States detailed data per airport is not available, so the values shown above are likely to be slightly underestimated.

B0-AMET is not addressed in the tables and graphs because the data for this 2019 cycle was not available when the report was prepared.

Detailed information per ASBU module is presented in Chapter 3. Additional implementation details from the States that are not part of the LSSIP process are included in Annex 1.

1 Introduction

1.1 Objective and intended audience of the report

The ICAO/EUROCONTROL ASBU Implementation Monitoring Report presents an overview of the planning dates and implementation progress for the ICAO ASBU Block 0 Modules (and its detailed elements) within the entire ICAO EUR Region during the reporting year 2019.

The implementation progress information covers:

- Forty-three States, plus three States where the information is included in another State's implementation progress information, that are part of the LSSIP mechanism;
- Nine States within the ICAO EUR Region that reported their status and plans using a dedicated questionnaire, either included in their regular State Reports for the Air Navigation Services Implementation Support Group of the ICAO EUR Region (ANSISG) meeting or during bilateral GANP ASBU implementation meetings.

It should be noted that in the context of a comprehensive agreement with EUROCONTROL, Israel (in 2017) and Morocco (in 2018) have now joined the LSSIP process and reported their deployment situation in 2019 cycle using that mechanism.

Guided by the GANP, the regional national planning process should be aligned and used to identify those modules which best provide solutions to the operational needs identified. Depending on implementation parameters such as the complexity of the operating environment, the constraints and the resources available, regional and national implementation plans will be developed in alignment with the GANP. Such planning requires interaction between stakeholders including regulators, users of the aviation system, the air navigation service providers (ANSPs), aerodrome operators and supply industry, in order to obtain commitments to implementation.

Accordingly, deployments on a global, regional and sub-regional basis and ultimately at State level should be considered as an integral part of the global and regional planning process through the Planning and Implementation Regional Groups (PIRGs), which is for the ICAO EUR Region the newly established European Aviation System Planning Group (EASPG) (successor to the ICAO European Air Navigation Planning Group (EANPG) after ICAO Council decision from September 2019). The PIRG process will further ensure that all required supporting procedures, regulatory approvals and training capabilities are set in place. These supporting requirements will be reflected in regional online Air Navigation Plans (eANPs) developed by the PIRGs, ensuring strategic transparency, coordinated progress and certainty of investment. In this way, deployment arrangements including applicability dates can also be agreed and collectively applied by all stakeholders involved in the Region.

The ICAO/EUROCONTROL ASBU Implementation Monitoring Report, which contains all information on the implementation process of the ASBU modules, is therefore a key document for the European Aviation System Planning Group (EASPG) to monitor and analyse the implementation within the Region.

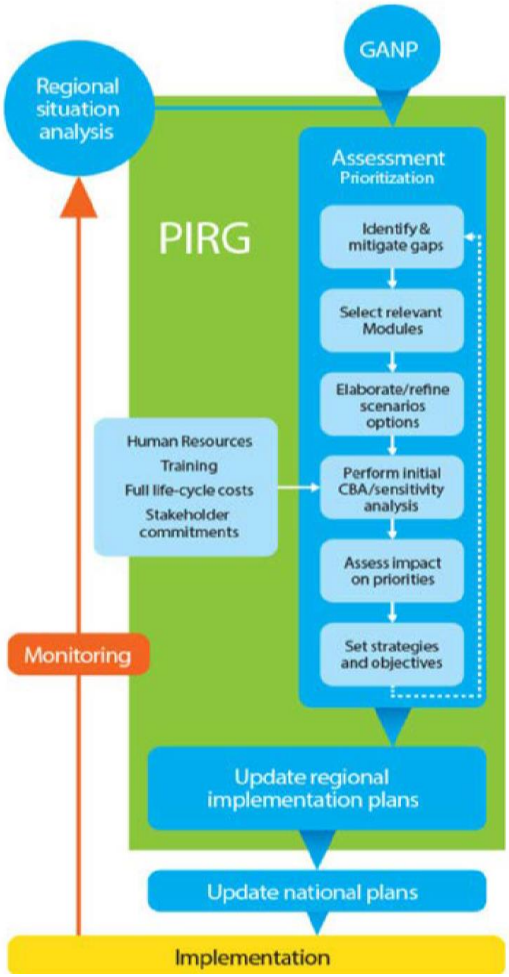


Figure 1. Regional planning

1.2 Background

Following the discussions and recommendations from the Twelfth Air Navigation Conference (AN-Conf/12), the Fourth Edition of the Global GANP based on the Aviation Systems Block Upgrades (ASBU) approach was endorsed by the 38th Assembly of ICAO in October 2013. The Assembly Resolution 38-02 which agreed, amongst others, to call upon States, planning and implementation regional groups (PIRGs), and the aviation industry to provide timely information to ICAO (and to each other) regarding the implementation status of the GANP, including the lessons learned from the implementation of its provisions and to invite PIRGs to use ICAO standardised tools or adequate regional tools to monitor and (in collaboration with ICAO) analyse the implementation status of air navigation systems.

At the EANPG meeting/55, which took place in November 2013, the EANPG agreed that in order to enable monitoring and reporting of the current priorities, a cooperative mechanism would be put in place between ICAO and EUROCONTROL. This mechanism would encompass the utilisation of the EUROCONTROL LSSIP process complemented by a specific ICAO EUR ASBU questionnaire. As a first step, this cooperative regional mechanism would address the initial high priority modules.

Pursuant to EANPG Conclusion 55/02a - the ASBU Block 0 Modules prioritisation table, as provided in Appendix G to EANPG/55 report, was endorsed as the initial version of the EUR ASBU Implementation Plan.

Pursuant to EANPG Conclusion 55/02b - the mechanism for monitoring and reporting the implementation status for ASBU of Priority 1 Modules, is using the combined efforts of EUROCONTROL LSSIP mechanism and the ICAO EUR questionnaire, in an effort to avoid duplication of reporting.

In response to the EANPG/55 conclusions, the regional monitoring of ASBU implementation was announced by a State Letter in September 2014, which invited States to take all necessary measures in order to ensure that a complete overview of the status of ASBU Block 0 implementation (especially on the six ASBU Block 0 modules which had been given the highest priority at EANPG/55, namely, B0-APTA, B0-SURF, B0-FICE, B0-DATM, B0- ACAS and B0-SNET) would become available within the entire ICAO EUR Region.

A first ASBU Implementation Monitoring Report was then prepared during the year 2015 for the reporting/reference period 2014. This report contained information/overviews on the implementation progress of ASBU Block 0 from the 41 ECAC States (direct information and reports through their 2014 LSSIP documents) and from 4 States in the EUR Region which used the specific State Report/questionnaires (in terms of information on the priorities, status of implementation and any relevant references to national documentation for all listed ASBU modules).

The 2014 ICAO/EUROCONTROL ASBU implementation monitoring report was presented, reviewed and endorsed, as the first report regarding the regional monitoring of ASBU implementation in response to EANPG Conclusion 55/03, at the EANPG/57 meeting in November 2015. In order to achieve the aim of a complete overview of the status of ASBU Block 0 implementation from all States within the complete ICAO EUR Region, the EANPG concluded to optimise the reporting process and also invited States to actively support the described ASBU implementation monitoring process, so that the number of responses could be increased and the quality of the reported information could be enhanced in the future.

A revised version of the ASBU implementation questionnaire was developed in 2016 which introduced more detailed guidance material, practical examples and specific explanations on the implementation activities/status that needed to be reported. This new questionnaire was then used for the development of the second report (reference period 2015) in order to increase the number of responses and enhance the quality of the reported information from those States that were not covered by the LSSIP mechanism.

At the 39th ICAO Assembly, the 5th edition of the GANP with updates on the ATM logical infrastructure, the introduction of a minimum path and the performance based implementation concept was endorsed in October 2016. The ICAO Assembly Resolution A39-12 calls upon States, planning and implementation regional groups (PIRGs), and the aviation industry to utilise the guidance provided in the GANP for planning and implementation activities which establish priorities, targets and indicators consistent with globally-harmonised objectives, taking into account operational needs. The 5th version of the GANP (2016-2030) included the obligation for States to map their national or regional programmes against the harmonised GANP, the requirement for active collaboration among States through the PIRGs in order to coordinate initiatives within applicable regional Air Navigation Plans, the provision of tools for States and Regions to develop comprehensive business case analyses as they seek to realise their specific operational improvements, as well as the vision of the evolution of the Global ATM system and the potential requirements for the aviation industry.

The 2015 ICAO/EUROCONTROL ASBU implementation monitoring report was presented at the EANPG/58 meeting in November 2016. The EANPG/58 noted that from the 11 States outside the LSSIP process, 8 States replied to the revised monitoring questionnaire with detailed explanations on their status of ASBU implementation. The EANPG/58 also appreciated that the number and quality of the replies received from the questionnaire represented a considerable improvement in relation to the information obtained on the previous year and did allow a considerable enhancement of the 2015 report. The EANPG/58 highlighted that, as the GANP requires States to report the status of their ASBU implementation, this report was a key document for the EANPG to monitor and analyse the ASBU implementation within the EUR Region. The EANPG/58 finally endorsed the 2015 ICAO/EUROCONTROL ASBU implementation monitoring report with Statement 58/01. The EANPG/58 noted that the endorsed ASBU implementation monitoring report would be forwarded as one of the contributions from the ICAO EUR Region to the annual ICAO Global Air Navigation Report and that relevant parts of the report had been used for the ICAO EUR eANP Vol III.

Following the EANPG Conclusion 55/03, the ASBU Block O modules B0-WAKE, B0-AMET, B0-ASEP, B-OFPL and B0-CCO were not included into the monitoring report mechanisms. As some of these modules especially B0-CCO, which had become one of the key ICAO GANP priorities and its implementation was successfully completed in some States, or B0-AMET which is implemented by a number of States in the Region under the METG work programme objectives, the proposed inclusion of those two B0 modules into the implementation monitoring mechanisms for the 2016 reference period was supported by the meeting with EANPG Conclusion 58/22.

At the combined EANPG/59-RASG/6 meeting which was held at the ICAO EUR/NAT Office in Paris in November 2017, the 2016 ICAO/EUROCONTROL ASBU implementation monitoring report was presented and reviewed. The Meeting noted, with satisfaction, that the 2016 version of the ASBU Implementation Monitoring Report included implementation status/data from all 55 States in the ICAO EUR Region. The support from all States was highly appreciated together with the improved quality of the information received. Based on the feedback received at the ATMGE meetings a new version of the ASBU questionnaire was prepared and endorsed at the EANPG/59. The Meeting noted as well, that as a follow up to the joint ICAO/Arab Civil Aviation Commission(ACAC) GANP ASBU Symposiums in Algiers (September 2016), and in Tunisia (March 2017), the ASBU questionnaires from Algeria, Morocco and Tunisia had been formally submitted before the end of May 2017. During these joint events, which also included participation of the ICAO MID Office and the WACAF Office, three dedicated sessions had been organised by ICAO and EUROCONTROL for the 3 North African States. The EANPG/59 appreciated the impressive collaboration, which is required to achieve the timely completion of the 2016 ICAO/EUROCONTROL ASBU implementation monitoring report, and is also avoiding any duplication of efforts.

Furthermore, the EANPG/59 noted that the endorsed ASBU implementation monitoring report would be again forwarded as one of the contributions from the ICAO EUR Region to the annual ICAO Global Air Navigation Report, that relevant parts of the report will be used for the ICAO EUR eANP Vol III and that data from the report will also be included into the Air Navigation Implementation App on the global ICAO iSTARS portal.

An updated version of the GANP was initially presented at the Thirteenth Air Navigation Conference (AN-Conf/13) in October 2018 and further details on the implementation of the new edition of the GANP as well as the new global GANP portal were prepared for discussion at the 40th ICAO Assembly.

At the combined EANPG/60-RASG/7 meeting which was held at the ICAO EUR/NAT Office in Paris from 26 to 30 November 2018, the 2017 ICAO/EUROCONTROL ASBU implementation monitoring report was presented and reviewed. The Meeting noted that the 2017 version of the ASBU Implementation Monitoring Report included implementation status/data from 54 of the 55 States in the ICAO EUR Region.

The meeting also noted that the 2017 report was again based on the information submitted by 42 States via the EUROCONTROL Local Single Sky Implementation (LSSIP) process and information reported through the ASBU Implementation Monitoring Questionnaires for the 10 (ten) States within the ICAO EUR Region that were outside the LSSIP reporting mechanism. In addition, the ICAO Meteorological Group (METG) tables were included for the implementation status on the B0-AMET module. The EANPG/60 was also presented with a revised reporting format (new xls file) that would give more detailed guidance in the implementation status. The meeting approved the 2017 ASBU implementation monitoring report with EANPG/60&RASG-EUR/07 Decision 08, endorsed the new questionnaire with EANPG/60&RASG-EUR/07 Conclusion 07 and appreciated the impressive collaboration, which is required to achieve the timely completion of the 2017 ICAO/EUROCONTROL ASBU implementation monitoring report and providing contributions to the annual ICAO Global Air Navigation Report, as well as updates of the ICAO EUR Air Navigation Plan (eANP) Vol III and the global ICAO iSTARS portal tools.

During the 40th ICAO Assembly the 6th edition of the GANP was endorsed in October 2019 defining global strategic directions for air navigation and the Assembly Resolution A40-1 (ICAO global planning for safety and air navigation) outlines that the Assembly:

1. Instructs the Council to use the guidance in the Global Air Navigation Plan (GANP) to develop and prioritize the technical work programme of ICAO in the field of air navigation;

2. Urges the Council to provide States with a standardization roadmap, as announced in the GANP, as a basis for the work programme of ICAO;

3. Calls upon States, planning and implementation regional groups (PIRGs), and the aviation industry to utilize the guidance provided in the GANP for planning and implementation activities which establish priorities, targets and indicators consistent with globally-harmonized objectives, taking into account operational needs;

4. Calls upon States to take into consideration the GANP guidelines for the implementation of operational improvements as part of their national strategy to reduce the environmental impact, including CO2 emissions, from international aviation;

5. Calls upon States, PIRGs, and the aviation industry to provide timely information to ICAO, and to each other, regarding the implementation status of the GANP, including the lessons learned from the implementation of its provisions;

6. Invites PIRGs to use ICAO standardized tools or adequate regional tools to monitor and, in collaboration with ICAO, analyse the implementation status of air navigation systems;

7. Instructs the Council to publish the results of the analysis on the regional performance dashboards and in an annual global air navigation report including, as a minimum, the key implementation priorities and accrued environmental benefits associated with the implementation of the operational improvements outlined in the ASBU framework;

8. Urges States that are developing new air navigation plans, for their own air navigation modernization, to coordinate with ICAO and align their plans so as to ensure regional and global compatibility and harmonization; and

9. Instructs the Council to continue developing the GANP, keeping it current with evolving technology and operational requirements.

At the first meeting of the European Aviation System Planning Group (EASPG/1) which was held at the ICAO EUR/NAT Office in Paris from 2 to 5 December 2019, the 2018 ICAO/EUROCONTROL ASBU implementation monitoring report was presented for endorsement. The EASPG appreciated again the participation of all States in the EUR Region and the report was approved with EASPG Conclusion 1/12. As part of this conclusion, the EASPG invited States (outside of LSSIP area) to use the revised EUR ASBU implementation report questionnaires for the reference period 2019 and nominate their national ASBU Monitoring Focal Points.

1.3 Scope of the report

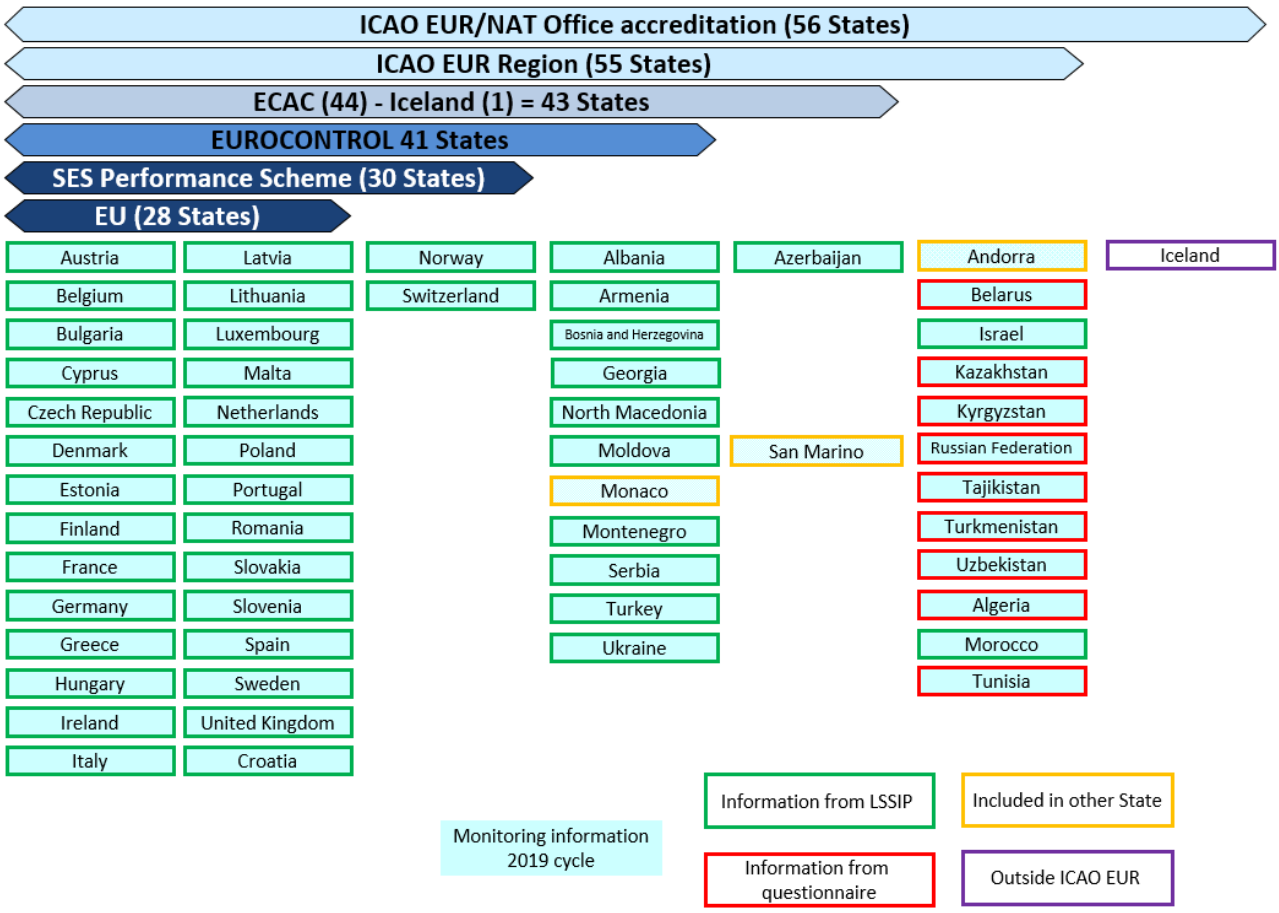
This report addresses the deployment status, with reference date December 2019, for the defined ASBU Block 0 Modules based on GANP Edition 2016.

The report is based, on one hand, on the information submitted by the 43 States which are participating in the LSSIP mechanism and on the other hand from the data which is reported in the ASBU implementation monitoring questionnaires for the 9 States within the ICAO EUR Region that are outside the LSSIP reporting mechanism. It must also be noted that that Monaco, San Marino and Andorra are not addressed separately in this report, neither in related statistics, because for monitoring purposes they are included in other hosting States. Therefore there are 52 Member States considered individually in the statistics of the following chapters.

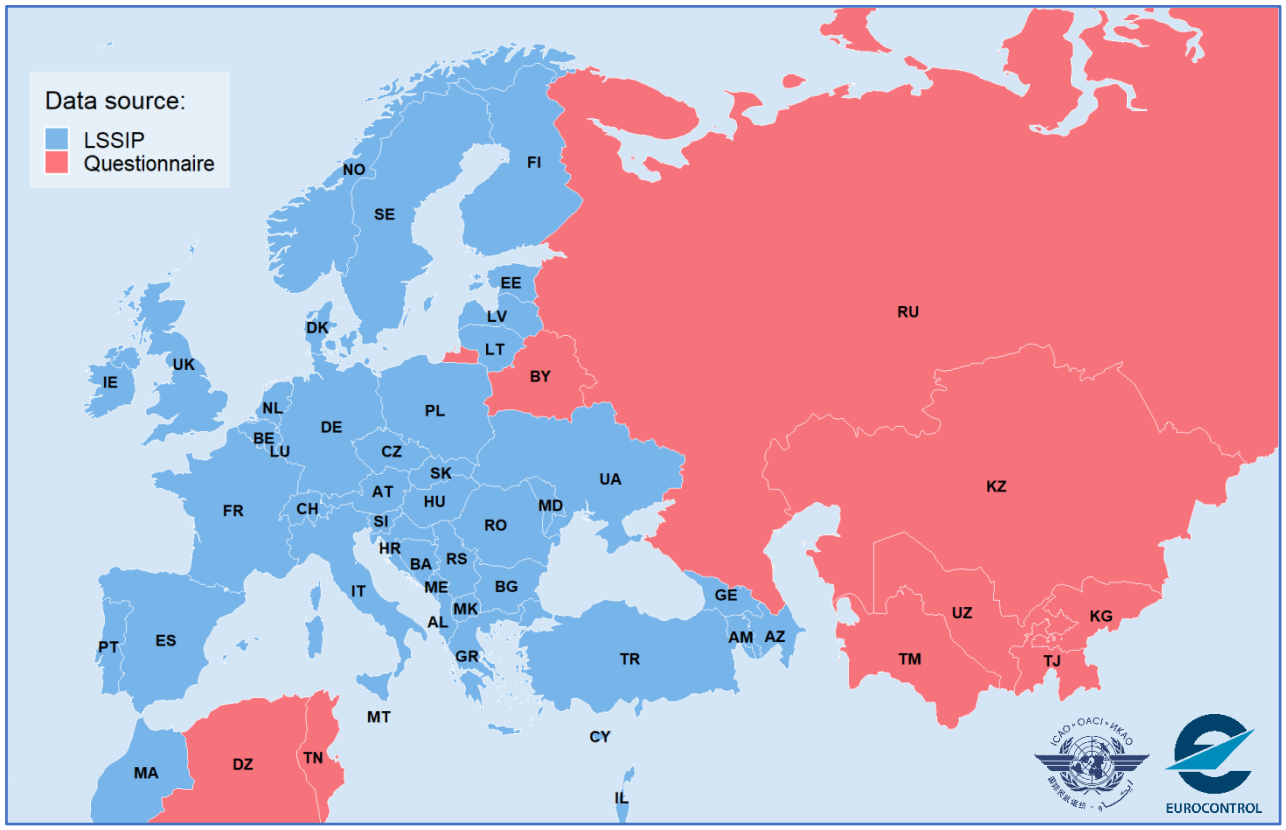
The questionnaire is fully aligned with the implementation objectives as defined in ATM Master Plan Level 3 Implementation Plan (formerly ESSIP objectives) and has been continuously updated and improved for every edition of the report.

In response to the EASPG/1 conclusions, 9 States submitted their ASBU implementation questionnaire to the ANSISG/03 meeting, or (based on several bilateral discussions) to the ICAO EUR/NAT Office and EUROCONTROL before the end of August 2020.

A schematic view on the States covered by this report and their affiliation to relevant organisations and/or regions is presented below:



In order to obtain a better picture of the region covered by this report, the map below shows its geographical scope:



It must be highlighted that this report includes again the updated progress/status of implementation of ASBU Block 0 modules (reference period 2019) **for 55 out of 55 States** that are accredited to the ICAO EUR Region.

2 Methodology for data collection and analysis

Two complementary processes are in place to collect the monitoring data required for the preparation of this report:

1. The EUROCONTROL LSSIP mechanism with 43 participating States.
2. A questionnaire specifically targeted and designed for the remaining 9 States that are accredited to the ICAO EUR Region.

Both processes are briefly described in the paragraphs below.

It must be noted that in the context of the SESAR Joint Undertaking (SJU) Programme a change in terminology was decided concerning some Master Plan related deliverables. The ESSIP Plan should now always be called "European ATM Master Plan Level 3 Implementation Plan" and the ESSIP Report changed to "Master Plan Level 3 Implementation Report". The scope and overall content of the deliverables remain the same.

Concerning the monitoring data related to B0-AMET, it should be noted that the information was prepared and endorsed by the ICAO Meteorology Group (METG) of the EASPG at their last meeting (METG/30 meeting from 22 to 25 September 2020).

2.1 EUROCONTROL LSSIP Process

EUROCONTROL Local Single Sky ImPlementation (LSSIP) process is a robust mechanism to support Single European Sky (SES) and SESAR deployment planning and reporting. At the moment it covers 43 States plus the EUROCONTROL Maastricht Upper Area Control Centre (MUAC). The process sits at the crossroads of multiple performance improvement initiatives synergising the planning and monitoring activities of all stakeholders involved: State civil and military authorities, ANSPs and airport operators, all categories of airspace users. This cyclic process comprises three main components (see figure below):

1. Deployment planning: European ATM Master Plan Level 3 Implementation Plan:

   https://www.eurocontrol.int/publication/european-atm-master-plan-implementation-plan-level-3
2. Deployment reporting and monitoring at local level (LSSIP documents):

   https://www.eurocontrol.int/service/local-single-sky-implementation-monitoring
3. Deployment reporting and monitoring at European level: Master Plan Level 3 Implementation Report:

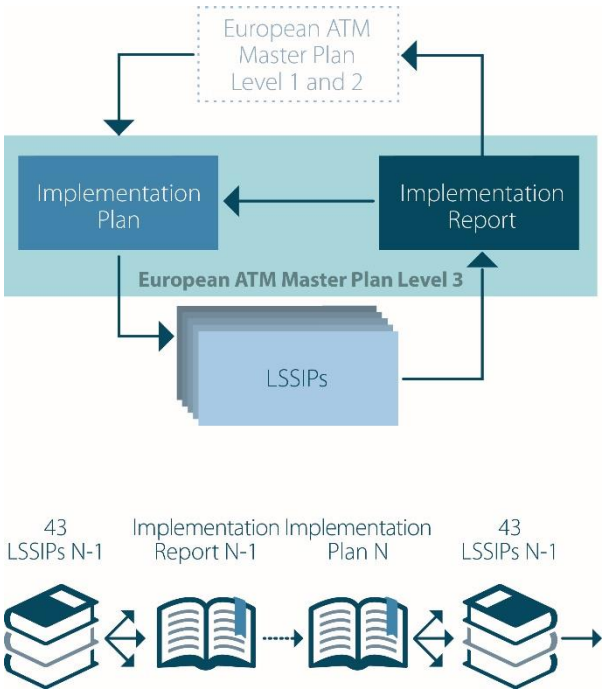
   https://www.eurocontrol.int/publication/european-atm-master-plan-implementation-report-level-3

The European ATM Master Plan Level 3 Implementation Plan (formerly ESSIP Plan) and the Master Plan Level 3 Implementation Report (formerly ESSIP Report) together constitute the Level 3 of the ATM Master Plan as indicated in the figure.

The European ATM Master Plan Level 3 Implementation Plan contains the detailed implementation objectives and Stakeholder Lines of Action (SLoA) to be achieved within coordinated time scales. Its target audience includes planning staff from the various stakeholders participating in the process, both at European and National level. It is produced every year.

The Master Plan Level 3 Implementation Report assesses the level of progress in implementation of objectives at ECAC level for the benefit of all aviation stakeholders. For each of the objectives it highlights critical issues, main reasons for delays, (positive) progress and proposes remedial actions at network level. It is based on information gathered from the LSSIP documents and closes the loop between the monitoring and planning phases of the LSSIP yearly cycle.

Understanding what happened during the reporting period puts into perspective the investments and actions needed to achieve real benefits and enables to steer implementation results.



2.2 ICAO Questionnaire

With the objective to obtain monitoring information and facilitate reporting activities required by the ICAO EUR Region States outside the LSSIP mechanism, an ICAO ASBU Implementation Monitoring Questionnaire was first developed in 2014 and sent out with the State Letter which launched the regional ASBU implementation reporting in September 2014.

After review of the first reports at the ATMGE/21 meeting, and together with the lessons learned/way forward, an updated and comprehensive version of the questionnaire was developed at the ATMGE/22 meeting in order to increase the number of responses and enhance the quality of the reported information. This version (v.3) was presented and endorsed at EANPG/57, so that States could use it for the 2015 reference period of the ASBU implementation monitoring report.

Following the discussions from the ATMGE/23 meeting, an updated version of the ASBU implementation questionnaire was developed which introduced more detailed guidance material, practical examples and specific explanations on the implementation activities/status that needed to be reported. The further revised ASBU implementation report questionnaire (v.4) was presented to the EANPG/58 that agreed the new version of the questionnaire would be attached to the ATMGE State Report format.

The EANPG/58 also recommended that the progress/status of implementation of ASBU Block 0 modules is reported, for monitoring purposes, by States regardless of their assigned priority in the EANPG/55 conclusions.

During the ATMGE/24 meeting another feedback discussion resulted in new/revised version of the ASBU

implementation report questionnaire. The EANPG/59 approved an improved version of the questionnaire (v.5 from 20.10.2017), for the monitoring cycle 2017.

In order to better harmonize the calculation of the implementation percentages, as well as the level of granularity and details for non-ECAC States inputs with the LSSIP mechanism, discussions took place during the ATMGE/26 meeting where an updated version of the ICAO ASBU Implementation Monitoring Questionnaire in Excel format was presented and accepted by the ATMGE participants. This revised State Report format (as v.6 from 15.11.2018) presented, discussed and approved by the EANPG with EANPG/60&RASG-EUR/07 Conclusion 07 (ICAO ASBU Implementation Monitoring within the ICAO EUR Region), together with the updated mapping between ICAO ASBU modules and European ATM Master Plan Implementation Objectives, has been used for the monitoring of the 2018 cycle. An updated version of the questionnaire was developed (v.7 from 17.10.2019) with similar mapping which was then used for this edition of the report.

The following table presents the mapping established between ASBU Block 0 modules and ATM Master Plan Level 3 implementation objectives:

ASBU Block 0 Modules	ATM MP L3 Objectives	
	Objective designator	Objective name
B0-ACAS	ATC16	Implement ACAS II compliant with TCAS II change 7.1
B0-ACDM	AOP05	Airport Collaborative Decision Making (A-CDM)
B0-APTA	NAV10	RNP Approach Procedures to instrument RWY
B0-ASUR	ITY-SPI	Surveillance Performance and Interoperability
B0-CCO	ENV03	Continuous Climb Operations
B0-CDO	ENV01	Continuous Descent Operations
B0-DATM	ITY-ADQ	Ensure Quality of Aeronautical Data and Aeronautical Information
B0-FICE	ITY-COTR	Implementation of ground-ground automated co-ordination processes
B0-FRTO	AOM21.1	Direct Routing
B0-NOPS	FCM01	Implement enhanced tactical flow management services
	FCM03	Collaborative Flight Planning
B0-RSEQ	ATC07.1	AMAN Tools and Procedures
	AOP05 (ASP05)	Define and implement variable taxi-time and pre-departure sequencing procedure (i.e. initial DMAN) according to airport CDM Manual guidelines
B0-SNET	ATC02.2	Short Term Conflict Alert (STCA) - level 2 for en-route operations
	ATC02.8	Ground-Based Safety Nets (APW and MSAW)
	ATC02.9	Short Term Conflict Alert (STCA) for TMAs
B0-SURF	AOP04.1	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)
	AOP04.2	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)
B0-TBO	ITY-AGDL	Initial ATC Air-Ground Data Link Services
B0-AMET	none	none

2.3 Data analysis methodology

The data collected through LSSIP mechanism and the dedicated questionnaire for non-LSSIP reporting States is processed in order to assess the current status and progress achieved in the implementation of ASBU Block 0 Modules, as well as to give a future implementation outlook based on the planning dates reported by States.

Two main groups of ASBU modules can be distinguished:

- **State-related modules**: implemented by one or more local stakeholders and the implementation (usually) takes place at state-wide level. In the case of modules implemented at a lower level (e.g. ACC), this is reflected through the overall status and progress of the module;
- **Airport-related modules**: implemented at airports and therefore should be monitored at airport level for the sake of completeness and more accurate progress determination.

The planning date (i.e. year) indicated is the one corresponding to the implementation of the last activity of the questionnaire or of the LSSIP Stakeholder Lines of Action (SLoA), required to fully complete the deployment of the related ASBU Module. It should be noted that for States/Airports who report a certain module as “Not applicable” or “No plan”, no planning date can be estimated.

The ASBU Module implementation progress is estimated as a share (%) of the required implementation activities that have been reported as completed. Each activity has a certain relative weight that has been established in LSSIP mechanism and used also in questionnaires for non-LSSIP States. However, these weights can be overruled by the values reported by States, if a more detailed and precise information is available.

In cases where State-related ASBU Module (e.g. B0-NOPS and B0-SNET) is covered by more than one ATM Master Plan Level 3 implementation objective, the % indicated is the one corresponding to the average value between the objectives. The planned year of completion for such modules is the one when all of the objectives corresponding to a given module are expected to be completed.

It should be noted as well that SLoAs or questionnaire answers reported as “Not Applicable” are not taken into account in the overall % calculation, while the items reported as “No Plan” impact the overall assessment.

3 Implementation planning and progress assessment

This chapter presents a consolidated overview of the current status and progress in implementation of ASBU Block 0 modules, together with a planning outlook for those States/Airports that have not yet finalized implementation.

Dedicated pages per each ASBU module consist of the following sections:

- **Background**

This section gives an introduction to the ASBU module and associated functionalities that should be implemented, together with the expected performance benefits. It also gives an overview of the links between the ASBU module and corresponding implementation objectives as defined in ATM Master Plan Level 3.

- **Implementation summary in 2019**

Main implementation developments during the last reporting year have been summarized in this section. The textual part aims at further explaining the implementation specificities of each ASBU module within the EUR Region, with a special focus on States that are outside of the well-established LSSIP reporting mechanism. It is enriched with charts showing the progress versus the previous reporting year and summarizing current implementation status and future outlook across States/Airports.

It should be noted that all the values for State-related modules are shown as a relative share with respect to the total number of States in the EUR Region (52), while for the Airport-related modules they are given in absolute terms, since the total applicability area is not known in advance and could change over the years (new airports becoming applicable for a certain modules).

- **Map view**

The information contained in the maps was extracted from the reported implementation plans and progress taken from the LSSIP database and from the ASBU questionnaire of the State Report. The date indicated is the one corresponding to the implementation of the last activity of the questionnaire or of the implementation objective(s), required to fully complete the deployment of the ASBU.

Two maps are shown for each ASBU module:

- ***Planning*** - shows the current implementation status and planned years of completion;
- ***Progress*** – shows the implementation progress achieved so far for a specific State/Airport.

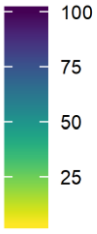
For airport-related modules, information is presented at airport-level whenever data with sufficient granularity is available. In all other cases, only general state-level status and progress are given.

The following colour schemes are used for this edition of the report:

Implementation status and planned years of completion:

Completed in 2019 or before
Planned for 2020
Planned for 2021
Planned for 2022
Planned for 2023 or after
No Final Plan
Not applicable

Implementation progress (%)



3.1 B0-ACAS: ACAS Improvements

Background

The main goal of B0-ACAS is to provide short-term improvements to existing Airborne Collision Avoidance Systems (ACAS) to reduce nuisance alerts while maintaining existing levels of safety, which will in turn reduce trajectory perturbation and increase safety in cases where there is a breakdown of separation.

It is recognized as one of the modules that must be implemented globally, and therefore must be designated as part of the minimum path to achieve global interoperability. In light of that, ICAO agreed to mandate the improved ACAS (version 7.1) for new installations as of 1 January 2014 and for all installations no later than 1 January 2017.

B0-ACAS is represented by the following ATM Master Plan objectives:

Objective ID	Objective name
ATC16	Implement ACAS II compliant with TCAS II change 7.1

Implementation summary in 2019

Given the fact that the envisaged deadlines for this module have already passed, a high completion rate of 88% (46 States) is well expected.

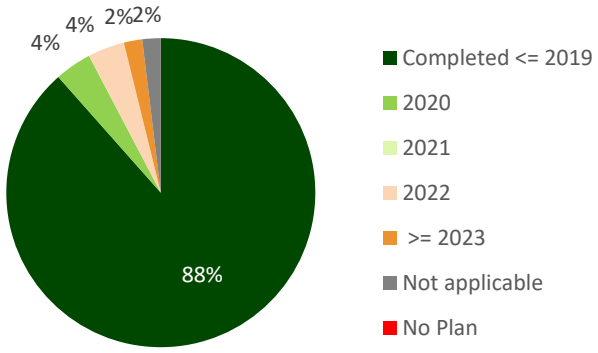
Only Algeria reported completion during 2019, which represents an increase of 3% compared to last year.

The main reason for delay in a few remaning States is a rather slow progress in equipage of military transport-type aircraft with ACAS II capability. The planned implementation dates in these States range from 2020 to 2023.

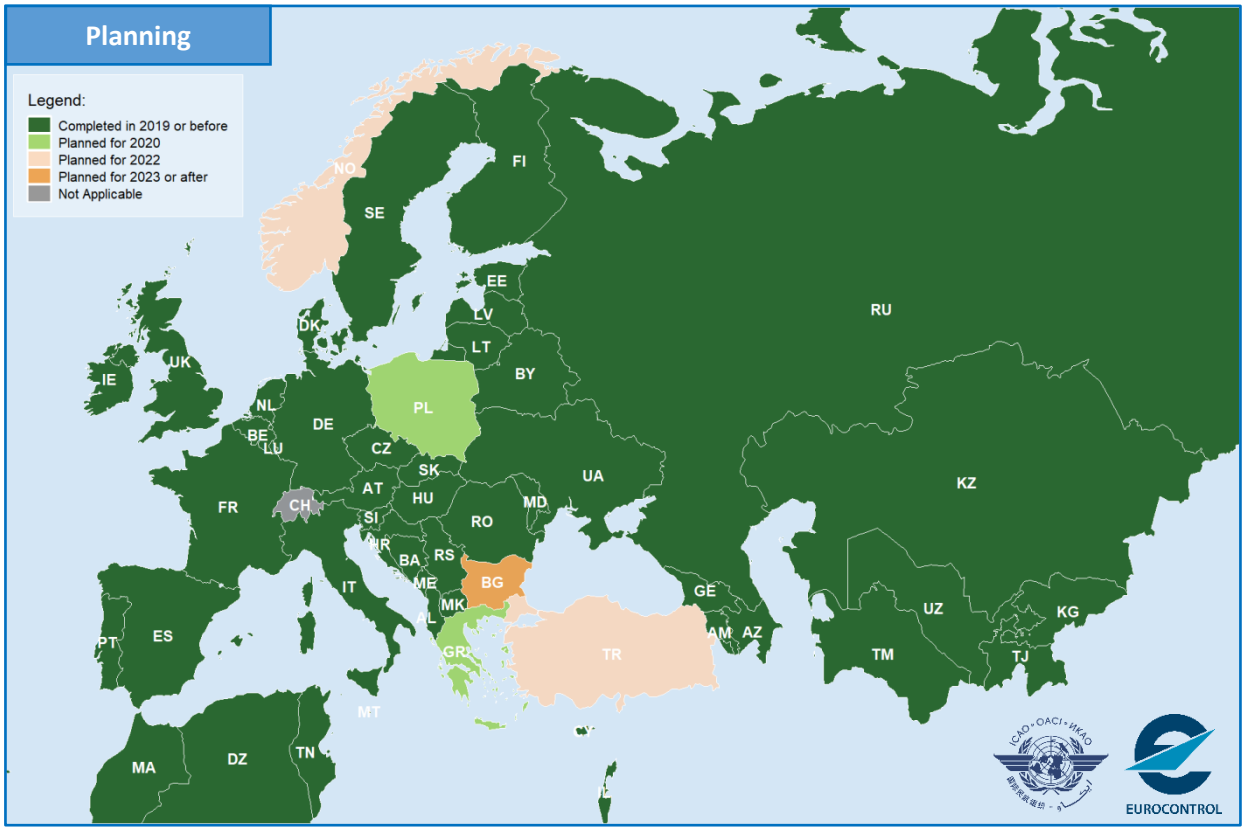
Switzerland declared this objective as not applicable.

Progress (2019 vs 2018)

Current status and future outlook



Map view


Planning
Legend:
Completed in 2019 or before
Planned for 2020
Planned for 2022
Planned for 2023 or after
Not Applicable
NO
SE
FI
EE
LV
LT
DK
UK
IE
NL
BE
LU
DE
PL
BY
RU
CZ
SK
AT
HU
UA
KZ
FR
CH
SI
MD
RO
HR
BA
RS
BG
IT
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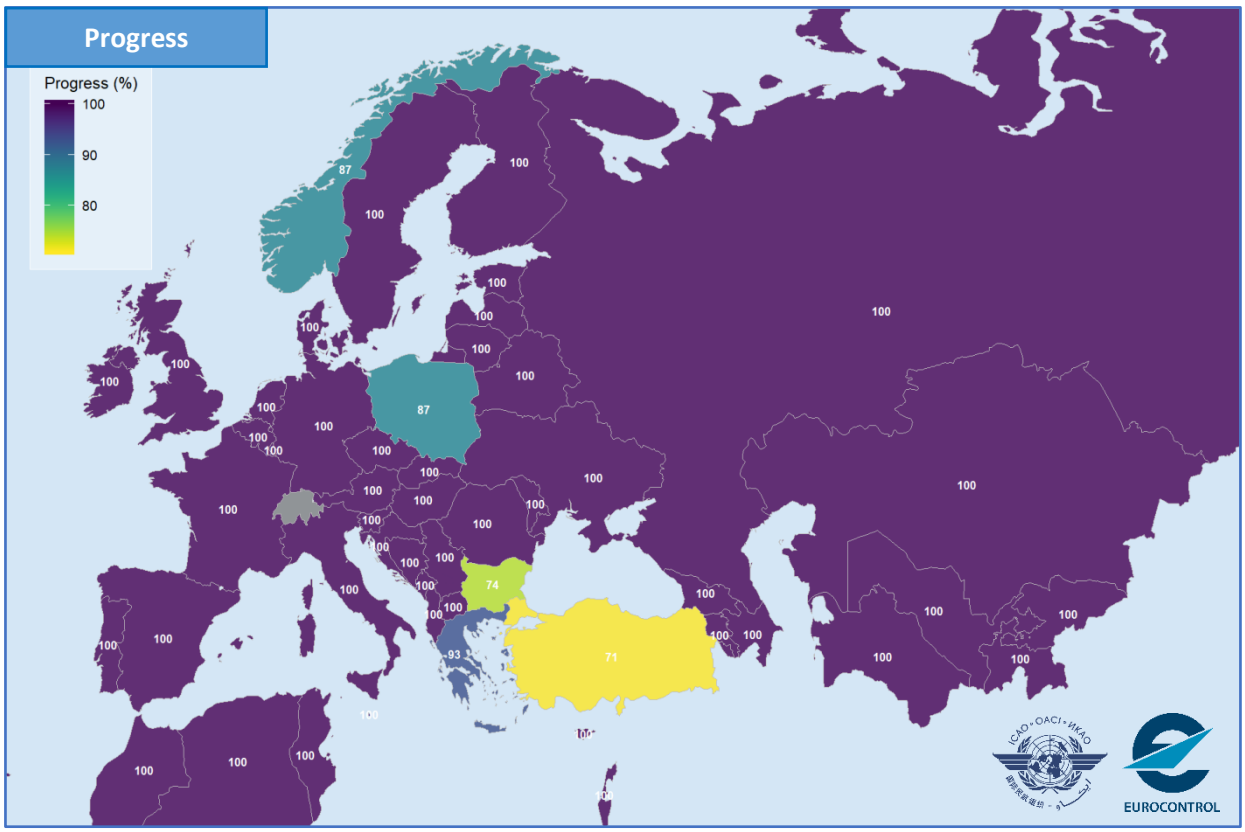

Progress
Progress (%)
100
90
80
EUROCONTROL

3.2 B0-ACDM: Improved airport operations through Airport-CDM

Background

B0-ACDM aims to deliver airport operational improvements through the way operational partners at airports work together. It is enabled by collaborative applications that will allow the sharing of surface operations data among the different stakeholders on the airport. This will improve surface traffic management, reducing delays on movement and manoeuvring areas and enhancing safety, efficiency and situational awareness.

B0-ACDM is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
AOP05	Airport Collaborative Decision Making (A-CDM)

Implementation summary in 2019

The implementation of the module is very much driven by the operational needs derived from the levels of traffic at each individual airport. Therefore for most of the States, the module is only of potential interest to the main airport of the State as, for the other airports, the traffic is not high enough to justify the investments.

Although no new completions of B0-ACDM were recorded during 2019, 11 airports have already achieved progress greater than 50%, with Vienna (LOWW), Dublin (EIDW), Warszawa (EPWA) and Lisboa (LPPT) airports being closest to completion and reaching above 90% of progress so far.

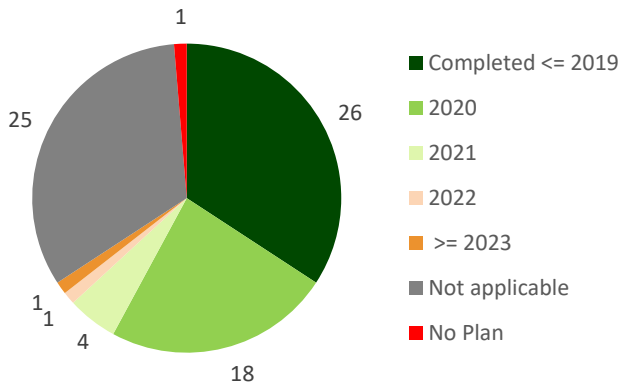
According to current plans, a significant progress is expected for the next reporting cycle, as the vast majority of airports (18) intend to implement this module during 2020.

For most of the non-LSSIP reporting States within EUR Region this module is considered not applicable or not planned because of the lack of operational needs.

Progress (2019 vs 2018)

No airports have finalized implementation during 2019

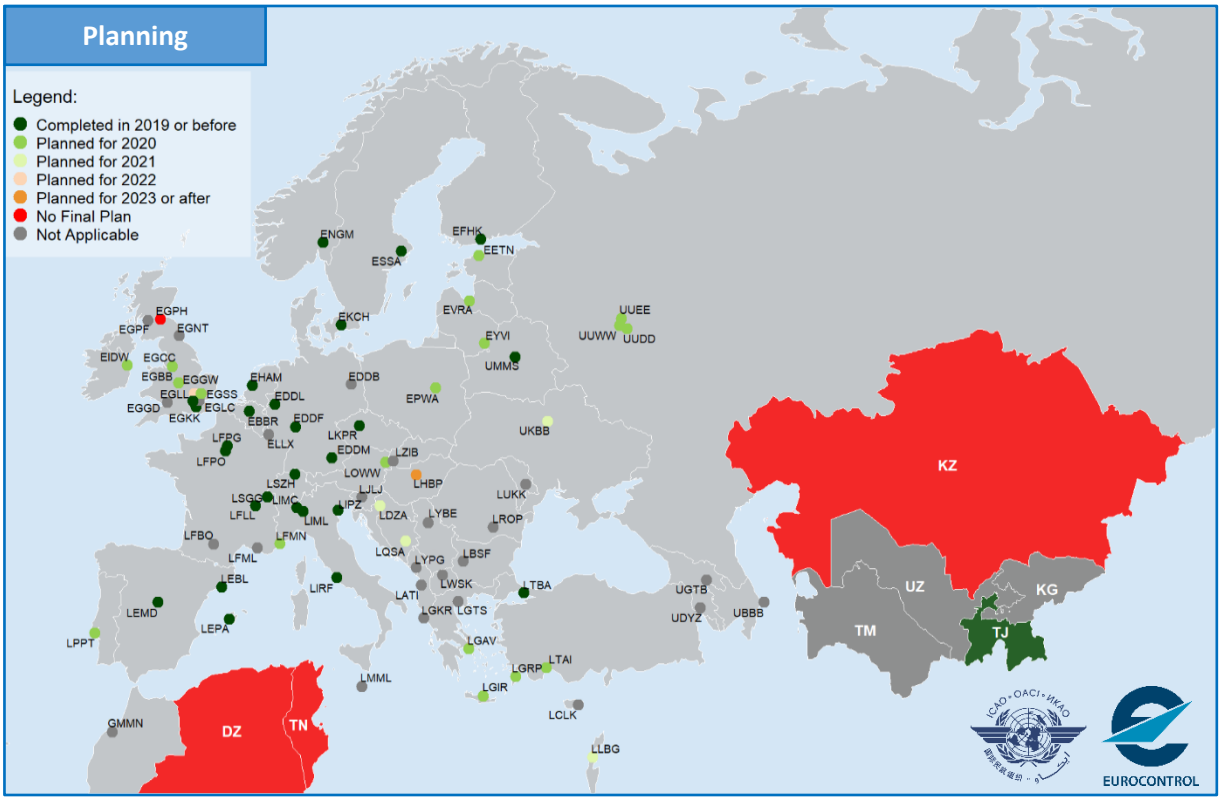
Current status and future outlook*

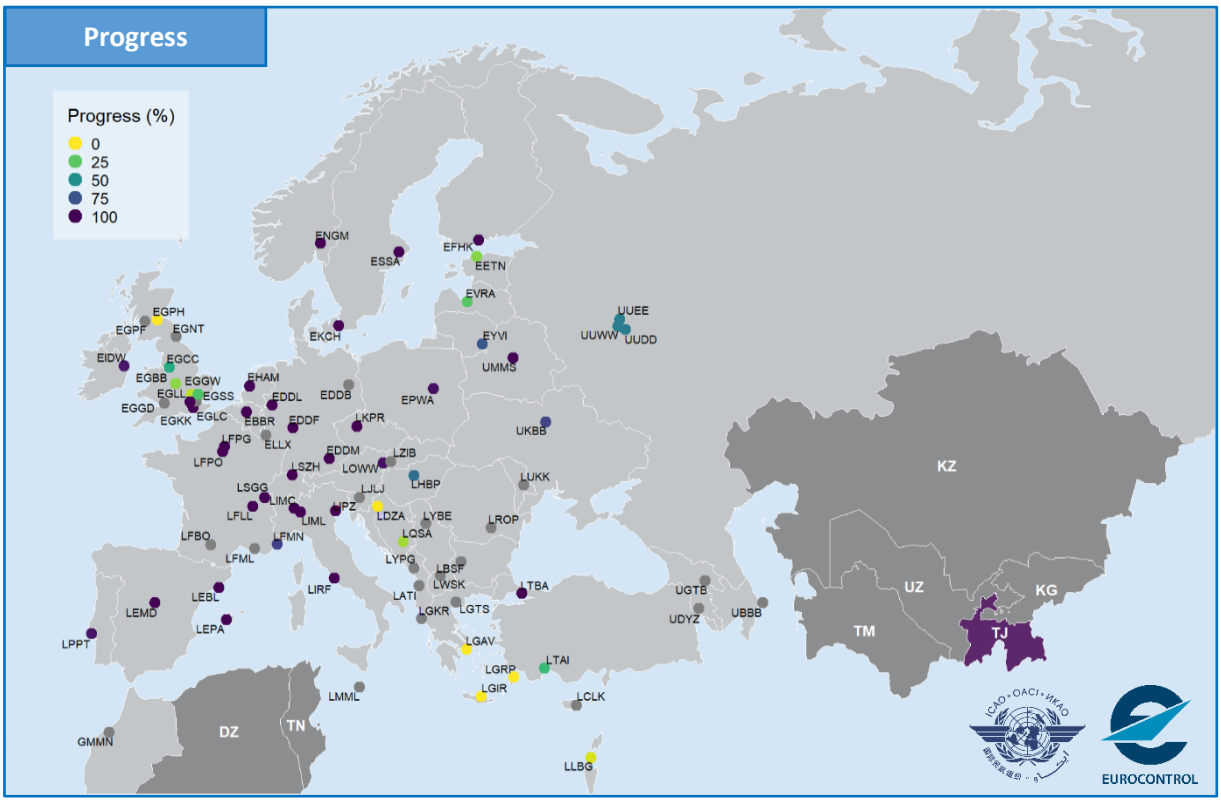


*number of airports

Belarus (at Minsk National Airport (UMMS)) and Tajikistan reported it as completed, while in Russian Federation the work is ongoing to implement A-CDM at Vnukovo (UUWW), Domodedovo (UUDD) and Sheremetyevo (UUEE) airports.

Map view*





* For airport-related modules, information per airport is shown only where data with sufficient granularity is available. Therefore, for some States only general state-level status and progress are presented.

3.3 B0-APTA: Optimization of Approach Procedures including vertical guidance

Background

The use of performance-based navigation (PBN) and ground-based augmentation system (GBAS) landing system (GLS) procedures will enhance the reliability and predictability of approaches to runways, thus increasing safety, accessibility and efficiency. This is possible through the application of basic global navigation satellite system (GNSS), Baro-vertical navigation (VNAV), satellite-based augmentation system (SBAS) and GLS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.

This module is applicable to all instrument and precision instrument runway ends, and non-instrument runway ends and represents the first step towards universal implementation of GNSS-based approaches. It is recognized as one of the modules that has to be implemented globally, and therefore must be designated as part of the minimum path to achieve global interoperability.

B0-APTA is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
NAV10	RNP Approach Procedures to instrument RWY

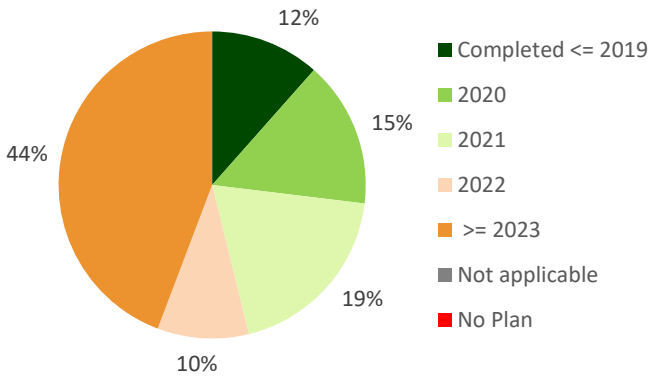
Implementation summary in 2019

The implementation progress of the module suffered a 19% reduction during the reporting year. This dip is explained by the fact that due to requirements of the PBN Regulation applicable in the European Union (EU), related in particular to the development and formal approval of a "PBN Transition Plan", many EU Member States had to revert the implementation status from "completed" to "ongoing".

However it is important to note that the functionality and the availability of "APV procedures" is still in place, even for the States which have reverted the "completed" status. Also many States have implemented the module at the main airports, even if the functionality is not yet fully deployed all across the States, therefore the module is not yet reported as "completed" (e.g Almaty and Nur-Sultan airports in Kazakhstan are already compliant while at State level the module will be finalised in 2025).

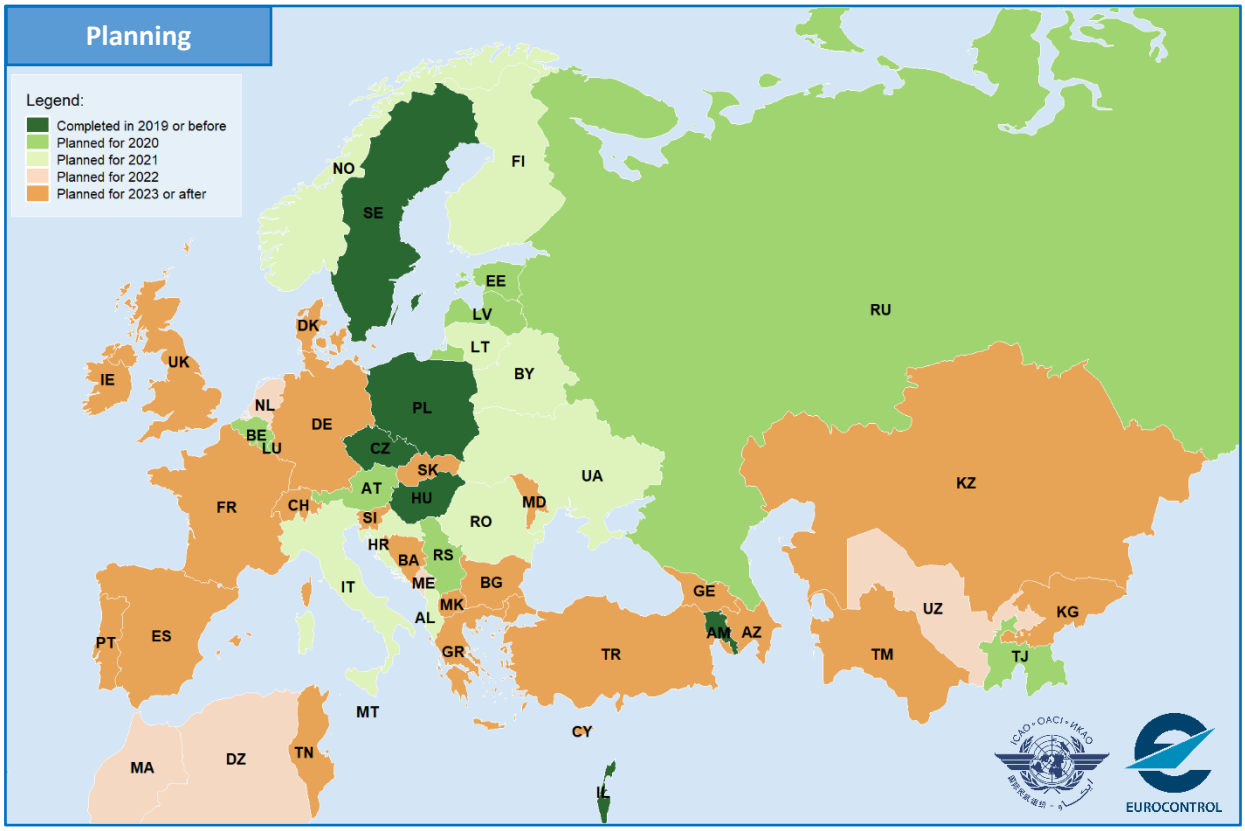
Progress (2019 vs 2018)

Current status and future outlook



Overall, the vast majority of States expect completion by 2024, while a very limited number report plans going up to 2029/2030. The sustained progress by the non-LSSIP States is very much appreciated as most of them expect to complete the module before 2023 (Russian Federation and Tajikistan in 2020, Belarus in 2021, Uzbekistan in 2022, Tunisia in 2023).

Map view


Planning
Legend:
Completed in 2019 or before
Planned for 2020
Planned for 2021
Planned for 2022
Planned for 2023 or after
NO
SE
FI
EE
LV
LT
RU
DK
UK
IE
BY
NL
DE
PL
BE
LU
CZ
SK
AT
HU
UA
KZ
FR
CH
SI
RO
MD
HR
BA
RS
IT
ME
BG
GE
MK
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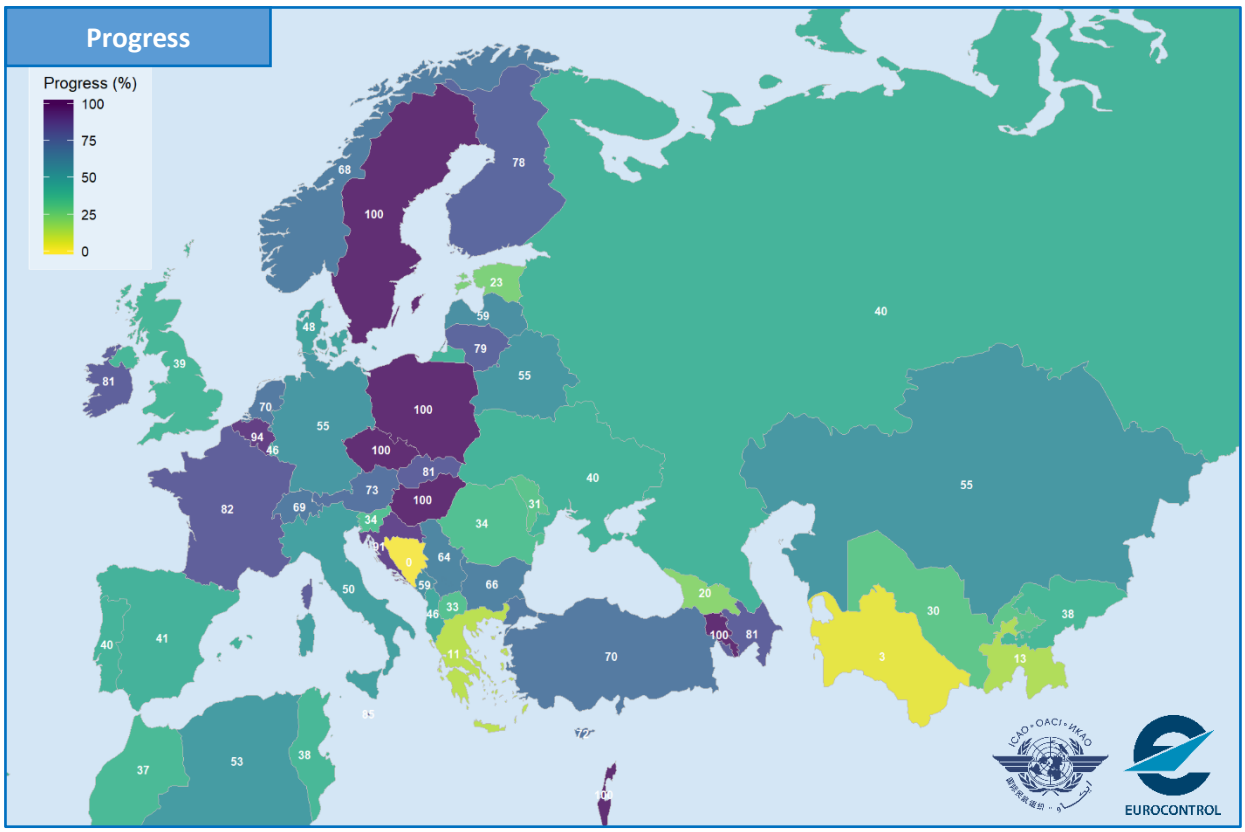
IL
EUROCONTROL


Progress
Progress (%)
100
75
50
25
0
EUROCONTROL

3.4 B0-ASUR: Initial capability for ground surveillance

Background

B0-ASUR aims at providing initial capability for lower cost of ground surveillance supported by new technologies such as ADS-B and wide area multilateration (WAM) systems. This capability will be expressed in various ATM services, e.g. traffic information, search and rescue and separation provision.

B0-ASUR is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ITY-SPI	Surveillance Performance and Interoperability

Note: The ITY-SPI objective addresses the interoperability of surveillance data as well as the carriage of avionics supporting the deployment of the surveillance technologies identified in the module.

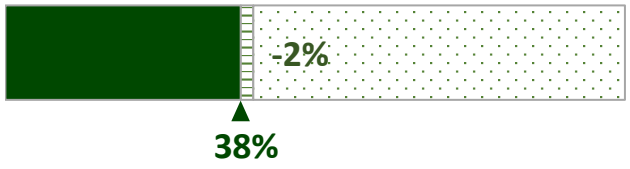
Implementation summary in 2019

Implementation of the module continued in 2019 all across the Region, even if the overall completion rate at State level shows a very marginal reduction. The reports from the States show a clear tendency of the ANSPs towards more interoperability between the surveillance systems through the use of the ASTERIX protocol, creating the premises for potential surveillance data exchanges.

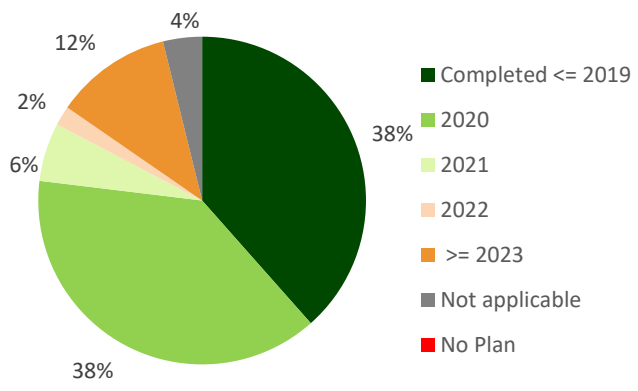
They also confirm the interest of the ANSPs towards the deployment of new technologies (ADS-B and/or WAM), complementing the current SSR Mode 3 A/C and PSR systems in anticipation of the infrastructure optimisation and rationalisation.

It is expected that within the EUR Region the module will see a substantial increase of its completion rate by 2021, with all States being ready by 2025 at the latest. There is a good level of completion among the non-LSSIP States, with Belarus, Russian Federation, Tajikistan, Tunisia and Turkmenistan having reported the finalisation of the implementation, while the other States expect completion by 2023/2025.

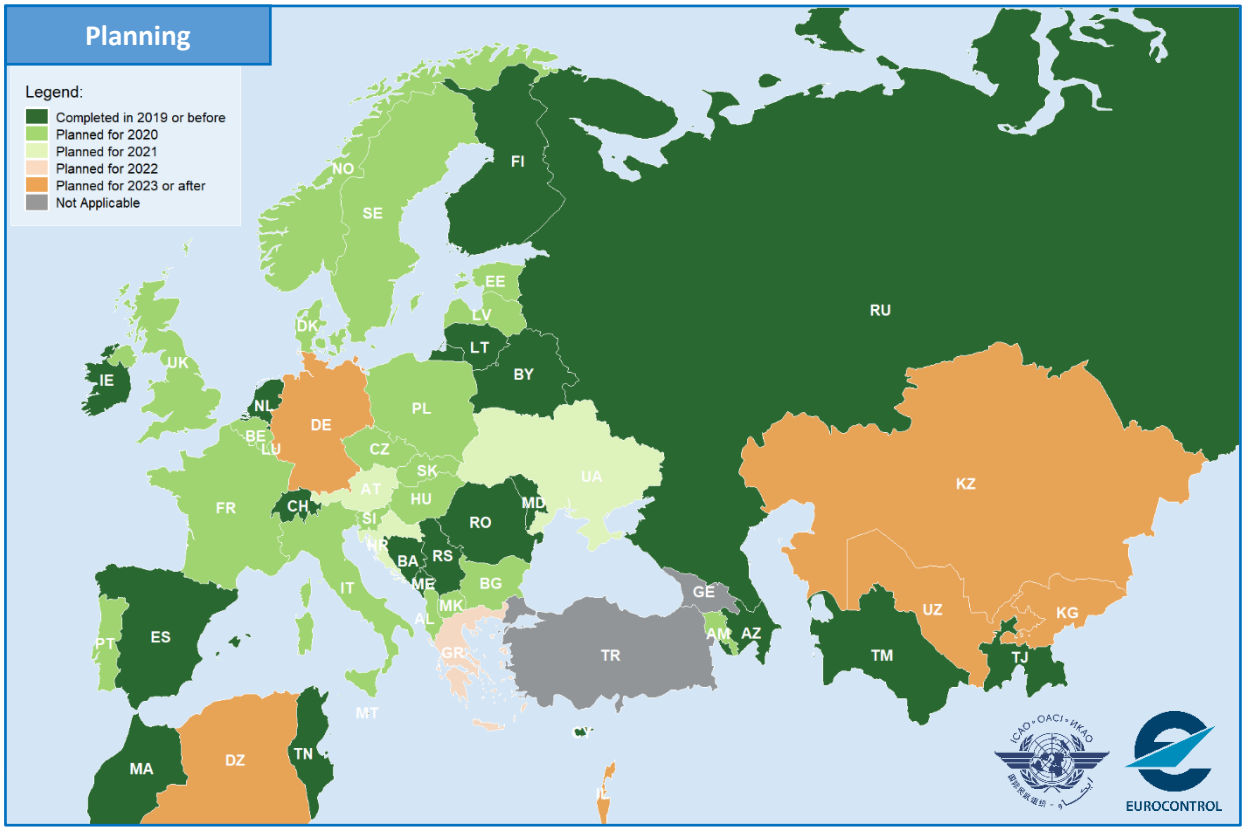
Progress (2019 vs 2018)



Current status and future outlook



Map view


Planning
Legend:
Completed in 2019 or before
Planned for 2020
Planned for 2021
Planned for 2022
Planned for 2023 or after
Not Applicable
NO
SE
FI
EE
LV
LT
RU
DK
UK
IE
NL
BE
LU
DE
PL
BY
CZ
SK
UA
AT
HU
MD
RO
FR
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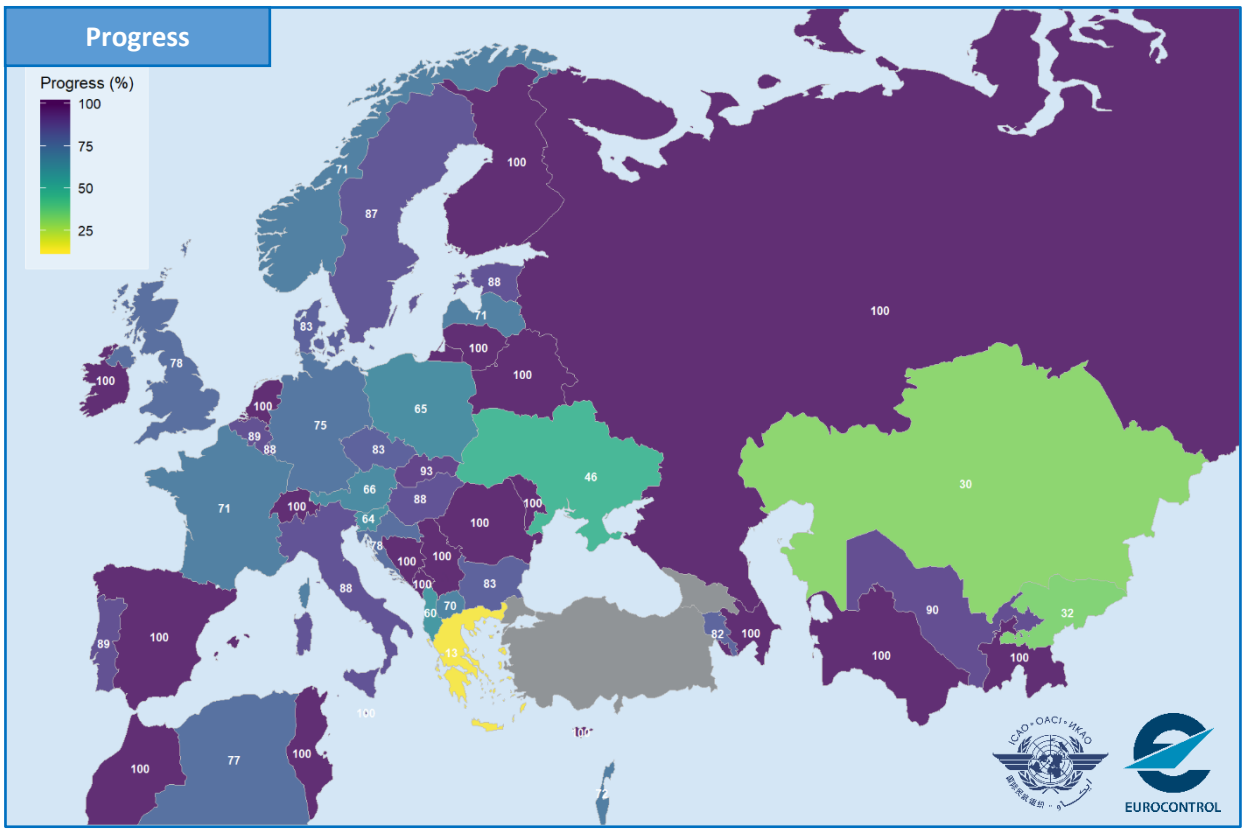

Progress
Progress (%)
100
75
50
25
EUROCONTROL

3.5 B0-CCO: Improved flexibility and efficiency in departure profiles - continuous climb operations (CCO)

Background

Continuous Climb Operation (CCO) is an aircraft operating technique facilitated by the airspace and procedures design and assisted by appropriate ATC procedures, allowing the execution of a flight profile optimised to the performance of aircraft, leading to significant economy of fuel and environmental benefits in terms of noise and emissions reduction.

B0-CCO aims at improving departure procedures that allow an aircraft to fly its optimum aircraft profile taking account of airspace and traffic complexity. It is implemented in conjunction with performance-based navigation (PBN) to provide opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb profiles, and increase capacity at congested terminal areas.

This module is currently supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ENV03	Continuous Climb Operations

Implementation summary in 2019

This module shows a very good progress over the years. By the end of 2019, 51 airports within LSSIP-reporting States declared completion – 9 more compared to last year. Another 19 airports intend to implement the module by the end of 2020 according to current plans.

A total of 26 airports do not have plans for implementation or consider the module as not-applicable.

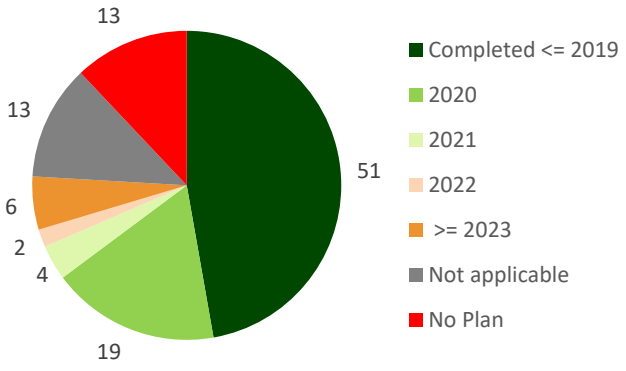
Among non-LSSIP States, Belarus declared completion in 2016, while almost all remaining States intend to implement it by 2023 at the latest (with the exception of some smaller airports in Kazakhstan – by 2025). Uzbekistan has not yet planned the implementation of this module.

Progress (2019 vs 2018)

+ 9 airports

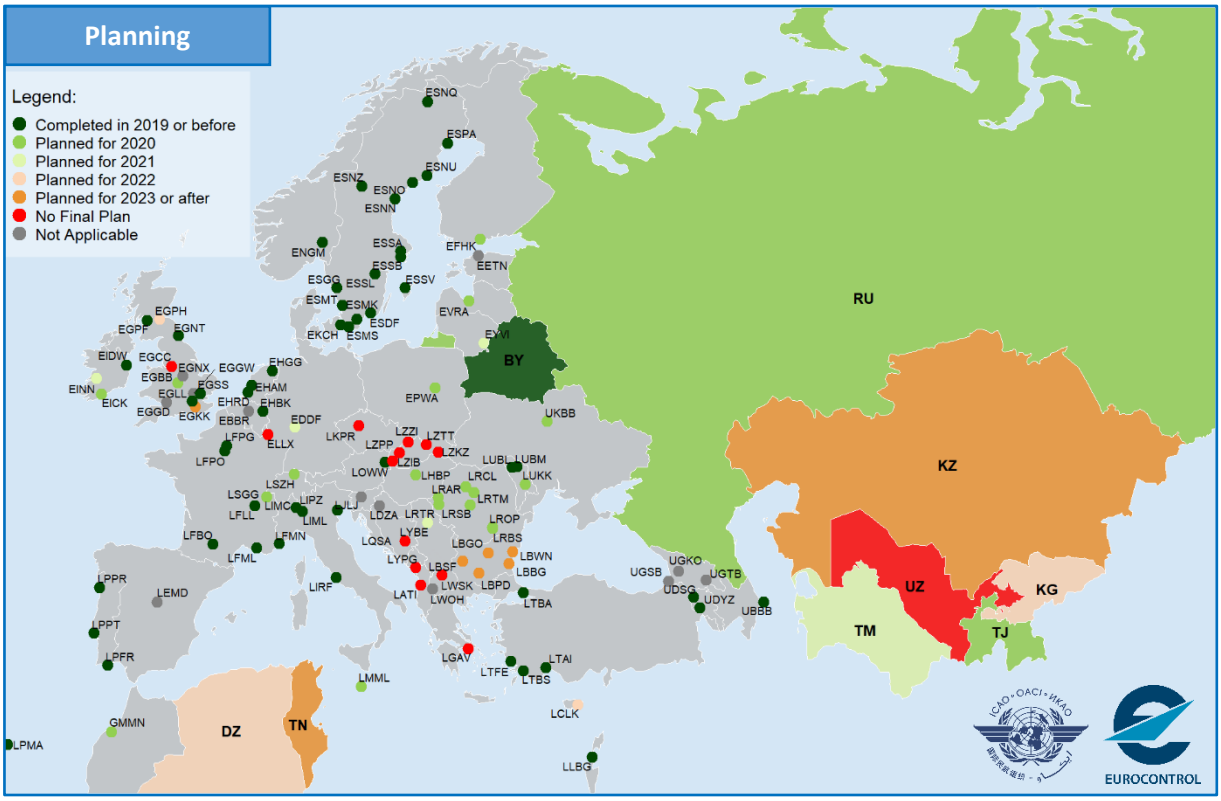
(EGNT, EGPF, LFPO, LFPG, LFML, LFLL, LFBO, LFMN, UBBB)

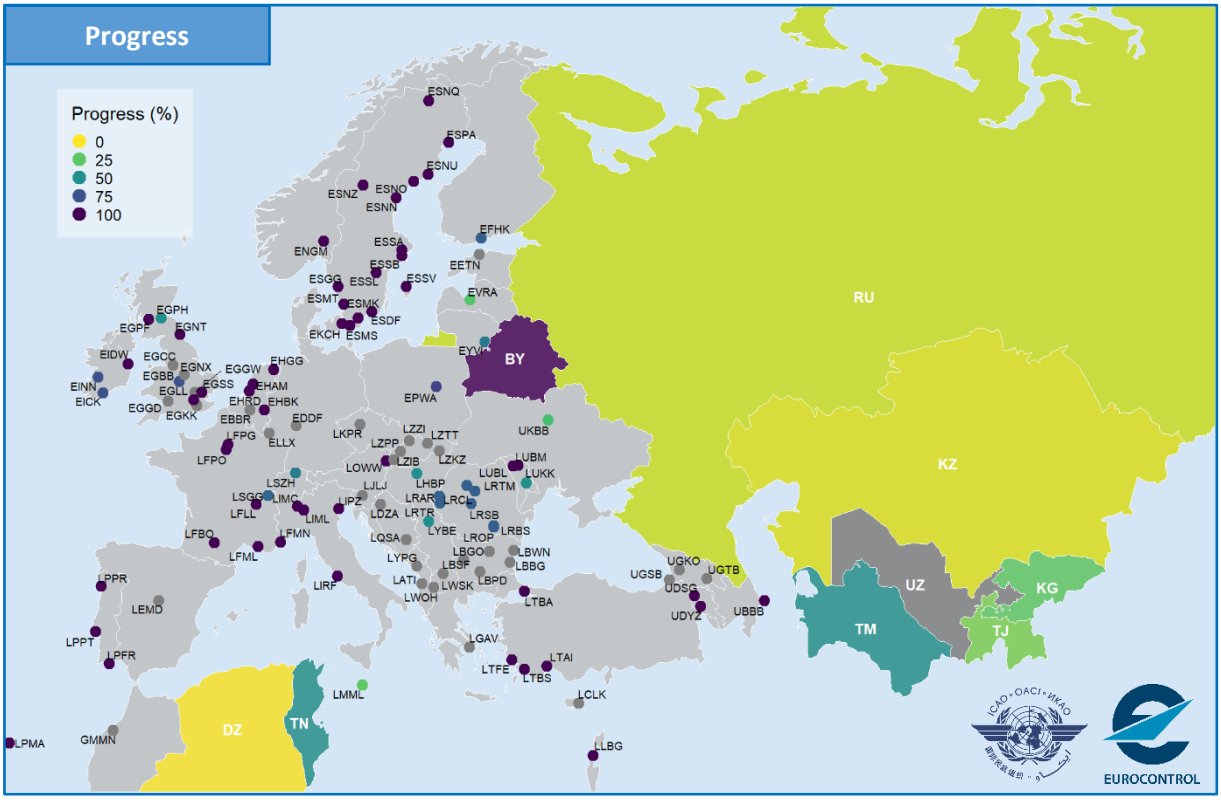
Current status and future outlook*



*number of airports

Map view*





* For airport-related modules, information per airport is shown only where data with sufficient granularity is available. Therefore, for some States only general state-level status and progress are presented.

3.6 B0-CDO: Improved flexibility and efficiency in descent profiles (CDO)

Background

Continuous Descent Operation (CDO) is an aircraft operating technique aided by appropriate airspace and procedure design and appropriate ATC clearances enabling the execution of a flight profile optimized to the operating capability of the aircraft, with low engine thrust settings and, where possible, a low drag configuration, thereby reducing fuel burn and emissions during descent. The optimum vertical profile takes the form of a continuously descending path, with a minimum of level flight segments only as needed to decelerate and configure the aircraft or to establish on a landing guidance system (e.g. ILS).

B0-CDO is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ENV01	Continuous Descent Operations

Implementation summary in 2019

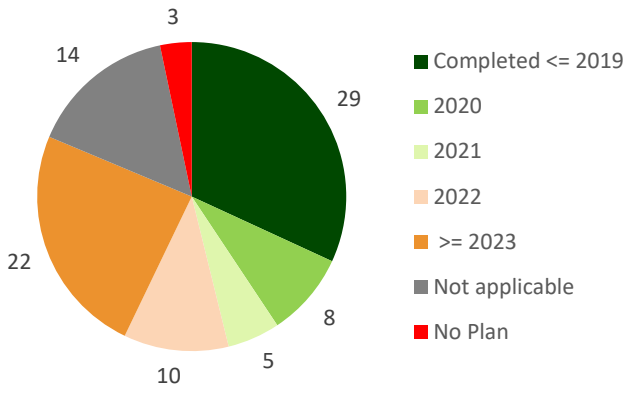
The implementation of CDO procedures in EUR Region is progressing well. One more airport declared completion during 2019 – Newcastle Airport (EGNT). The implementation is currently ongoing at 45+ airports (for some States the information at airport level is not available).

Progress (2019 vs 2018)

+1 airport

(EGNT)

Current status and future outlook*



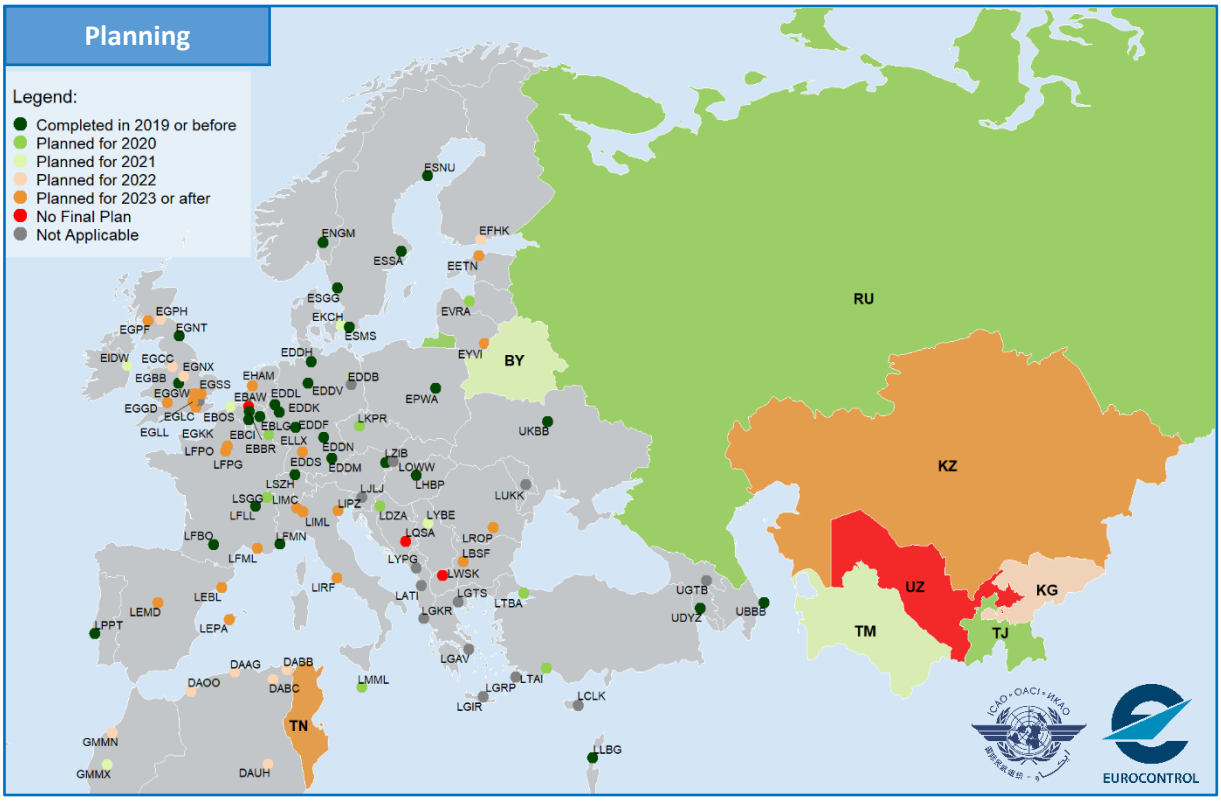
*number of airports

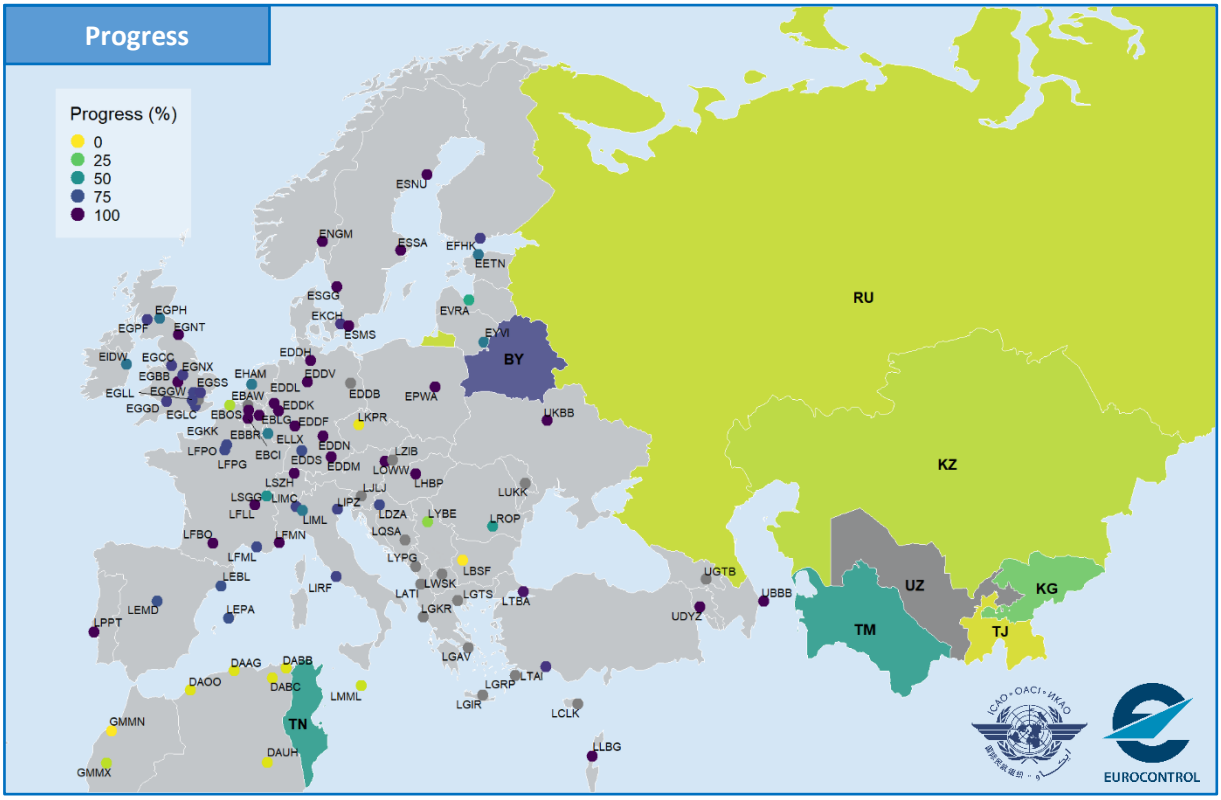
Actions related to monitoring performance are the most challenging for implementation. It should be noted that some airports have already implemented conventional CDO procedures, while the design and implementation in PBN conditions is still ongoing. It was also reported that some airports are performing CDO only at the pilot requests, some others only at night time.

Among the non-LSSIP reporting States, Kazakhstan intends to implement CDO procedures at Nur-Sultan (UACC) and Almaty (UAAA) airports next year, while Algeria has plans for implementation at 5 airports by 2022. In most of the remaining States the implementation is also ongoing, with envisaged deadlines ranging from 2020 to 2023.

According to current plans reported, the most significant progress is expected during 2022 and after 2023.

Map view*





* For airport-related modules, information per airport is shown only where data with sufficient granularity is available. Therefore, for some States only general state-level status and progress are presented.

3.7 B0-DATM: Service Improvement through Digital Aeronautical Information Management

Background

B0-DATM includes the initial introduction of digital processing and management of information from origination to publication through Aeronautical Information Service (AIS)/Aeronautical Information Management (AIM) implementation, use of aeronautical exchange model (AIXM), migration to electronic Aeronautical Information Publication (AIP) and better quality and availability of data.

Bringing essential contribution to interoperability, ensuring better data quality, safe-guarding and validation of data throughout the process and harmonization/synchronization with adjacent States, this module is recognized by ICAO as one of the modules that must be implemented globally in the earliest available time frame in order to deliver maximum benefits for the aviation stakeholders.

B0-DATM is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ITY-ADQ	Ensure Quality of Aeronautical Data and Aeronautical Information

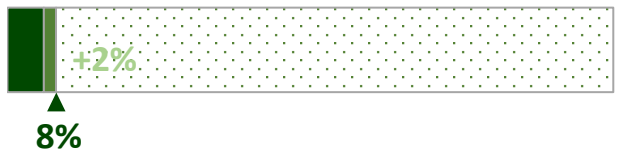
Implementation summary in 2019

This module is essential for ensuring better quality of aeronautical data and aeronautical information. It is therefore encouraging to see that all States in the EUR Region are active in its implementation as nobody has reported “Not applicable” or “No plan”.

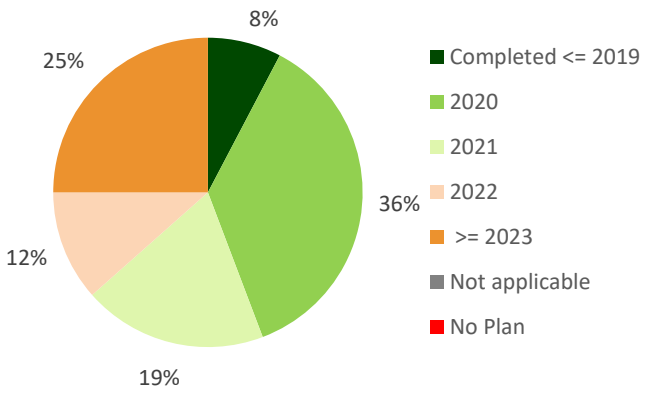
However, the implementation is slow in particular due to its complexity, involving a very wide range of data originators, the need to introduce process automation and supporting systems and sometimes a lack of resources from some of the involved stakeholders.

The average implementation progress in States is slightly above 50%. Based on the current plans it is expected that the vast majority of the States in the EUR Region will finalise the implementation between 2020 and 2023 with very few States extending the implementation up to 2025 or beyond.

Progress (2019 vs 2018)

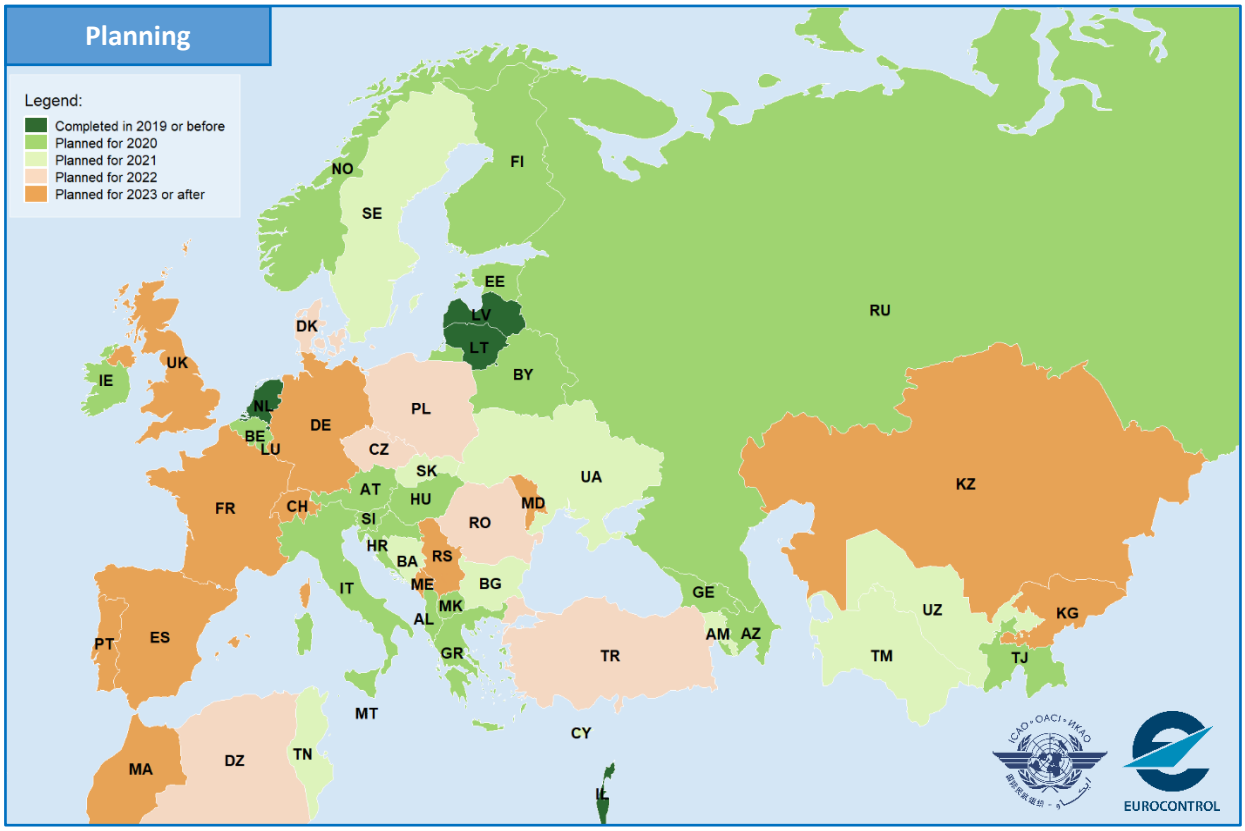


Current status and future outlook



All non-LSSIP States report the implementation as being “Ongoing”. Completion is expected in 2020 for Belarus, Russian Federation and Tajikistan, to be followed in 2021 by Tunisia and in 2022 by Algeria. The remaining States (Kazakhstan and Kyrgyzstan) expect fo finalise the deployment in 2025.

Map view


Planning
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Completed in 2019 or before
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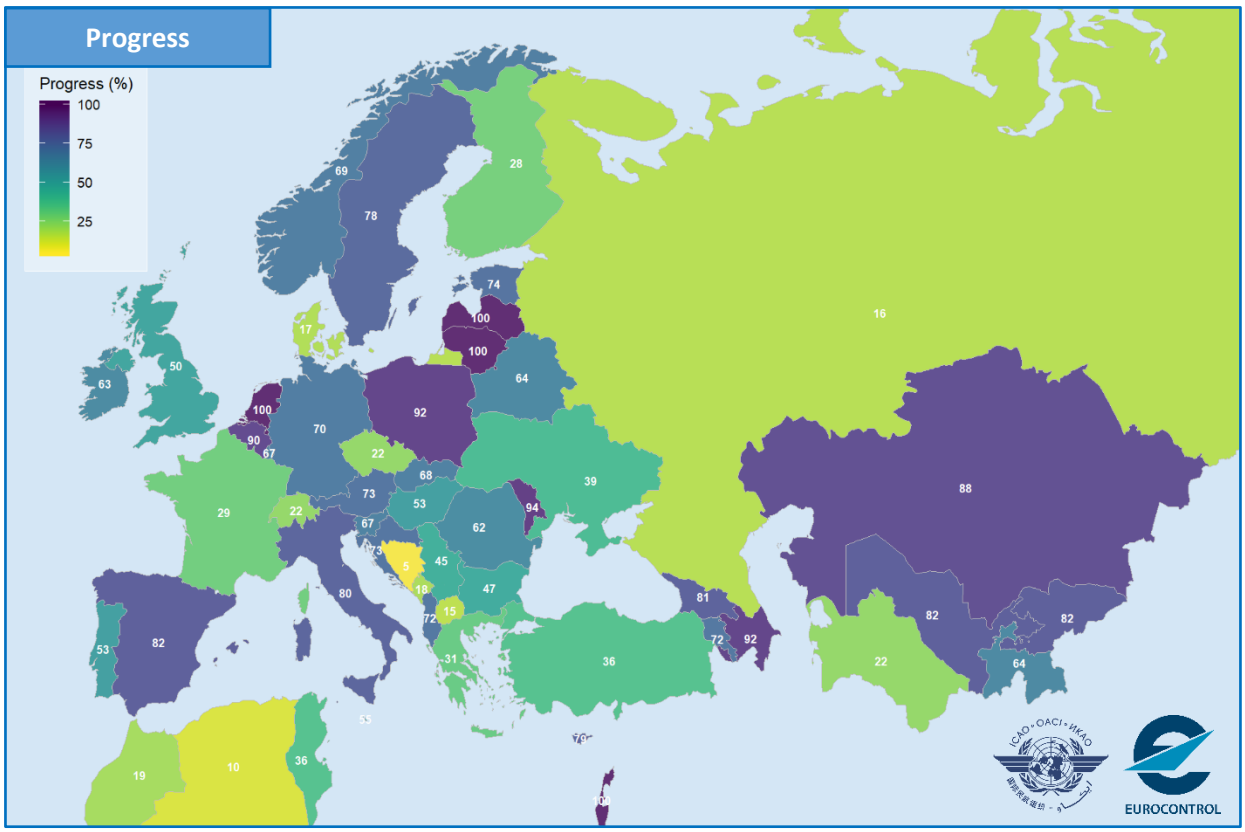

Progress
Progress (%)
100
75
50
25
EUROCONTROL

3.8 B0-FICE: Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

Background

B0-FICE aims at improving coordination between Air Traffic Service Units (ATSUs) by means of ATS Inter-facility Data Communication (AIDC). AIDC is the necessary first step for all improvements in FF-ICE, ATFM and collaborative decision-making and the baseline of future advanced information management processes.

The implementation of this module should result in reduced controller workload and increased data integrity, reduced en-route holding, standardized interfaces and procedures, more accurate flight plan information for receiving ATS units and reduced risk of coordination errors. As such, B0-FICE is recognized as one of the modules that has to be implemented globally, and therefore must be designated as part of the minimum path to achieve global interoperability.

B0-FICE is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ITY-COTR	Implementation of ground-ground automated co-ordination processes

Implementation summary in 2019

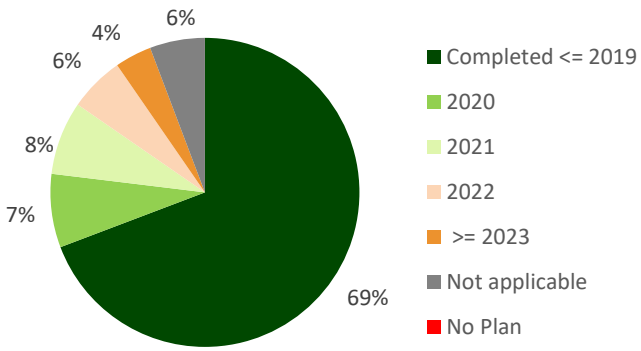
The reports provided by the States show a very good level of implementation of the system-supported information exchanges in the process of coordination and transfer. Actually, the ATS basic messages in support of notification, coordination and revision of flight information are already implemented virtually in the entire EUR Region. All but one State already have the technical capability implemented and at least one bilateral connection between air traffic services units is reported as operational.

Currently the focus is towards the enrichment of the set of implemented messages, moving from basic to more complex dialogue processes, as well as towards the multiplication of the bilateral connections.

The reports also reveal the widespread deployment of systems compliant with EUROCONTROL's OLDI (On-Line Data Interchange) Specification all over the EUR Region.

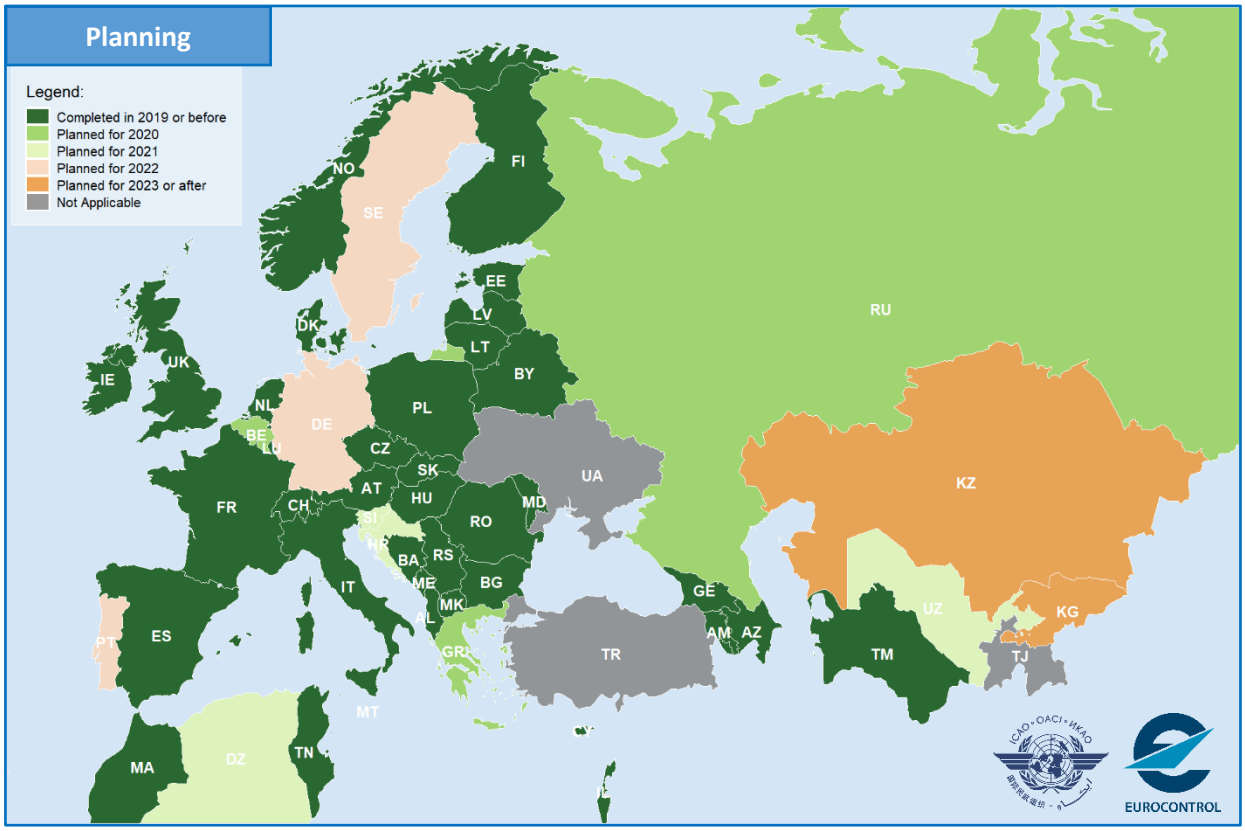
Progress (2019 vs 2018)

Current status and future outlook



Within the non-LSSIP States, Belarus, Tunisia and Turkmenistan have finalised the implementation of the module. The next scheduled completion is for 2020 (Russian Federation), to be followed in 2021 by Algeria and Uzbekistan. It should be noted that all States reporting the implementation still ongoing have at least one bilateral system-to-system connection in operational use.

Map view


Planning
Legend:
Completed in 2019 or before
Planned for 2020
Planned for 2021
Planned for 2022
Planned for 2023 or after
Not Applicable
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LV
LT
DK
IE
UK
NL
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LU
DE
PL
BY
CZ
SK
AT
HU
UA
RU
KZ
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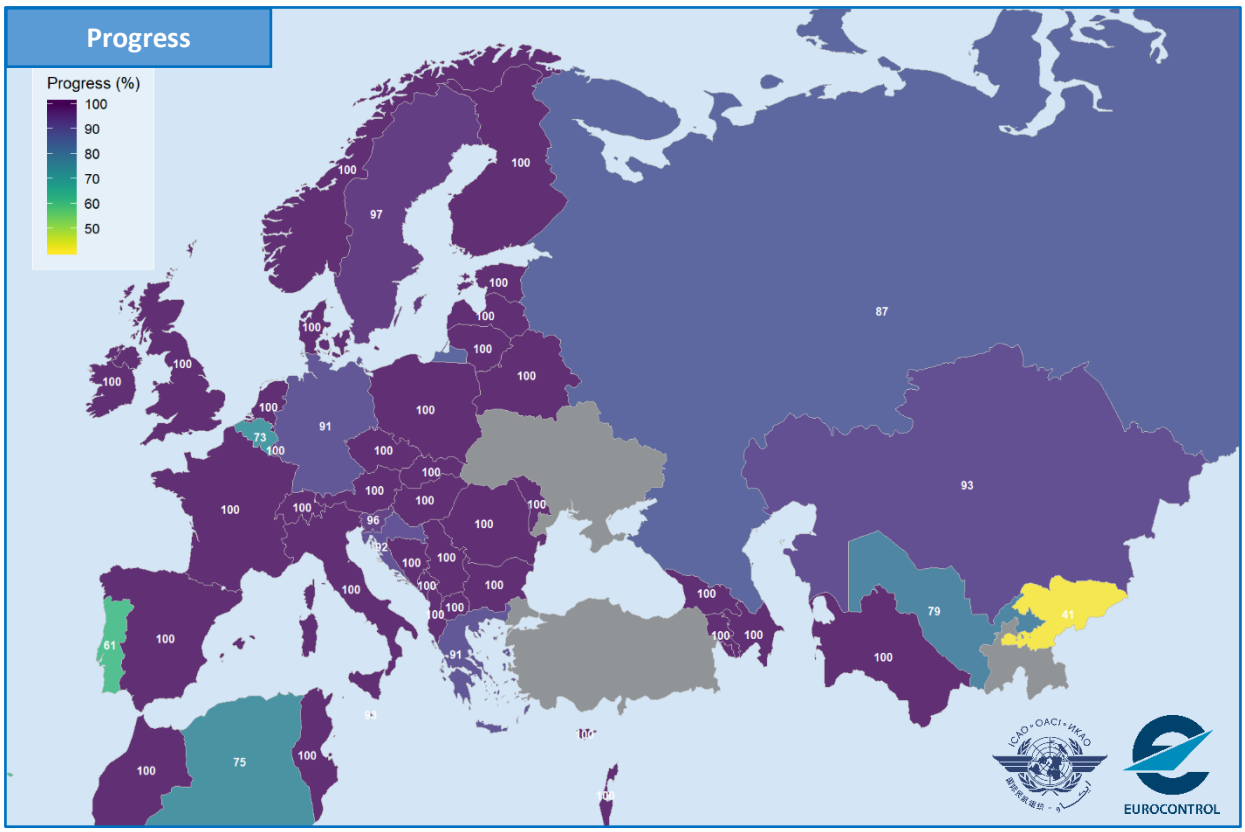

Progress
Progress (%)
100
90
80
70
60
50
EUROCONTROL

3.9 B0-FRTO: Improved operations through enhanced en-route trajectories

Background

The implementation of B0-FRTO is meant to allow the use of airspace which would otherwise be segregated (i.e. special use airspace), along with flexible routing adjusted for specific traffic patterns. It will result in better access to airspace, greater routing possibilities and trajectories closer to the individual optimum by reducing constraints imposed by permanent airspace design. As a consequence, this leads to the reduction of flight length and fuel burn, as well as congestion on trunk routes and busy crossing points.

At the moment, B0-FRTO is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
AOM21.1	Direct Routing

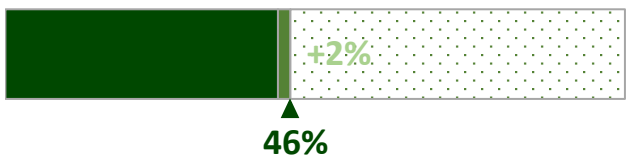
Implementation summary in 2019

The functionality addressed by the module, in particular the deployment of direct routes is seen by many implementers as an interim step towards the deployment of more advanced functionalities (e.g. Free Route Airspace - FRA). From this perspective, the vast majority of States which have already implemented FRA or are in the process of implementing it, have reported the module as “Not Applicable” as they have chosen to skip this interim phase of direct routing and went straight for the more advanced features.

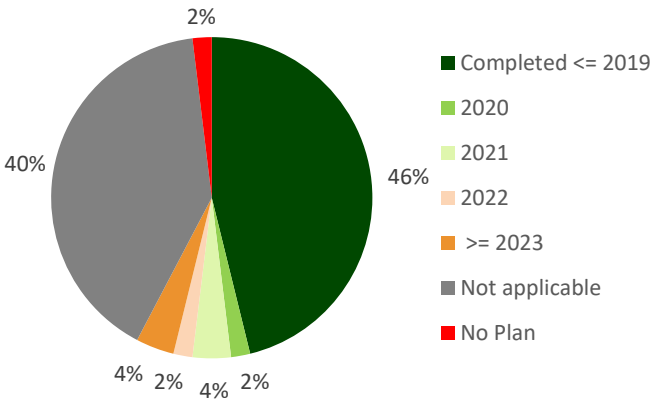
This explains the relatively high percentage of “Not Applicable” reports. In many of these cases, in particular in the LSSIP States, actually more advanced features than what is required by the module are deployed.

The remaining “Not applicable” (or “No Plan”) reported notably by the non-LSSIP States are justified by the lack operational needs. Among these States, Belarus and Uzbekistan have reported completion, while Algeria, Russian Federation, Tajikistan and Tunisia have the implementation planned or ongoing.

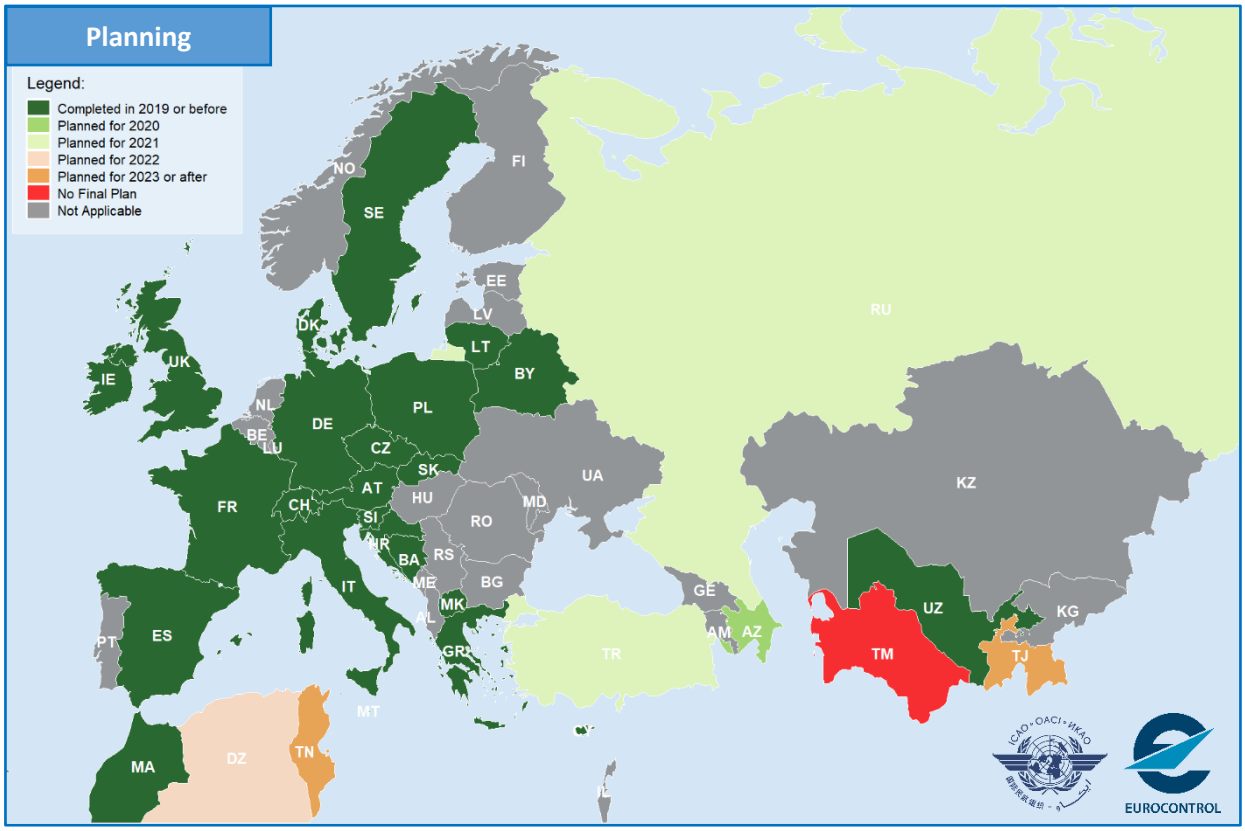
Progress (2019 vs 2018)



Current status and future outlook



Map view


Planning
Legend:
Completed in 2019 or before
Planned for 2020
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Planned for 2023 or after
No Final Plan
Not Applicable
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LU
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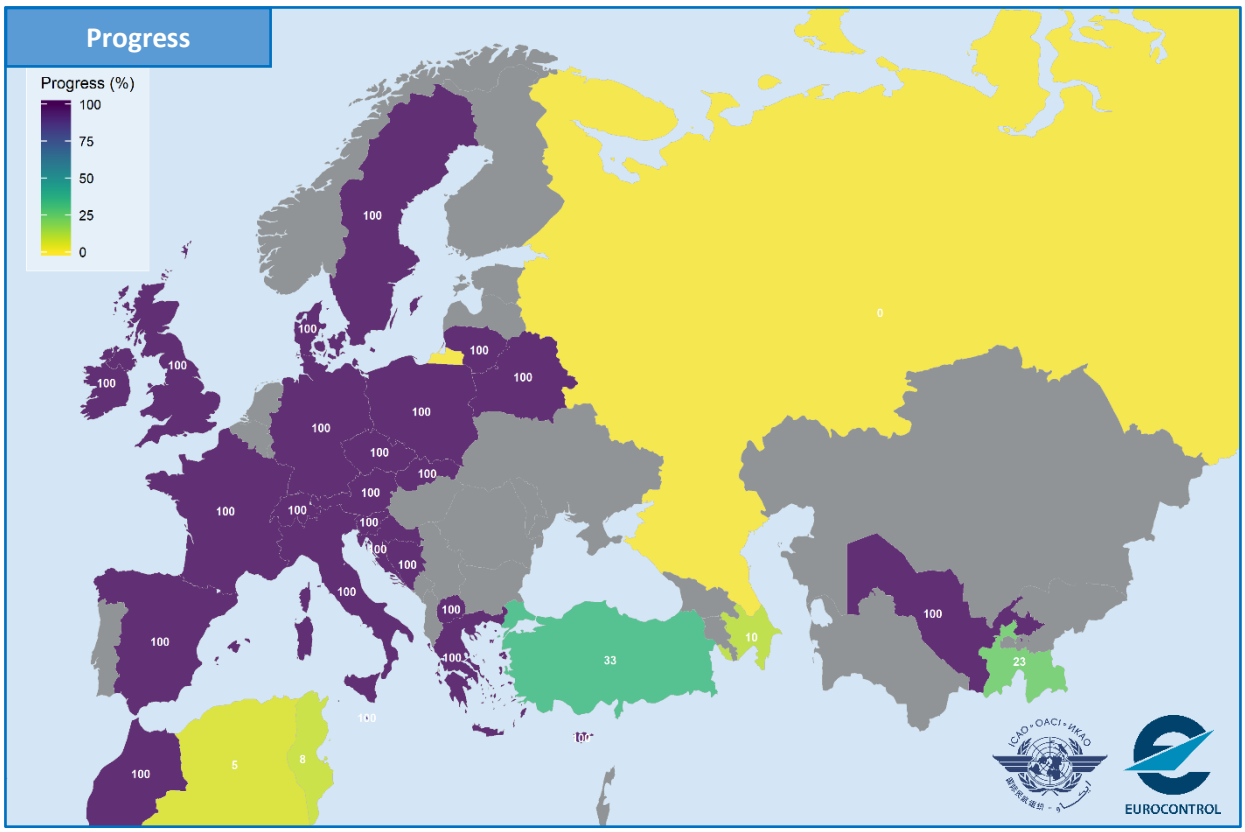

Progress
Progress (%)
100
75
50
25
0
EUROCONTROL

3.10 B0-NOPS: Improved flow performance through planning based on a network-wide view

Background

Air Traffic Flow Management (ATFM) is used to manage the flow of traffic in such a way to minimize delays and maximize the use of entire airspace. Collaborative ATFM can regulate traffic flows involving departure slots, smooth flows and manage rates of entry into airspace along traffic axes, manage arrival time at waypoints or Flight Information Region (FIR)/sector boundaries and reroute traffic to avoid saturated areas. ATFM may also be used to address system disruptions including crisis caused by human or natural phenomena.

B0-NOPS is supported by the following ATM Master Plan objectives:

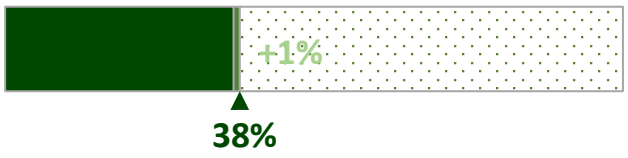
Objective ID	Objective name
FCM01	Implement enhanced tactical flow management services
FCM03	Collaborative Flight Planning

Implementation summary in 2019

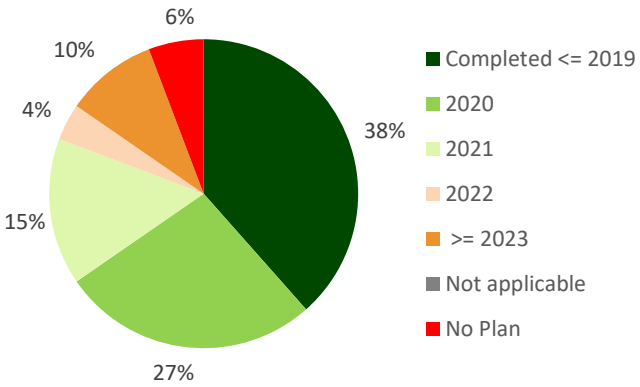
The module relies on the exchange and update of flight plan information allowing the provision of a network view of the air traffic situation.

The implementation of the module addresses the initial submission of flight plans as well as flight update messages, i.e. activation messages from the ANSPs when aircraft take off or enter other ANSPs' areas of responsibility, reports based on ANSPs' real-time surveillance data and, once the ATC Unit has assumed control of the flight, update messages allowing the provision of the downstream ATC Units with more accurate flight plan information, improving their traffic situation awareness and reducing the workload and disruption caused by last minute updates or missing flight plans.

Progress (2019 vs 2018)

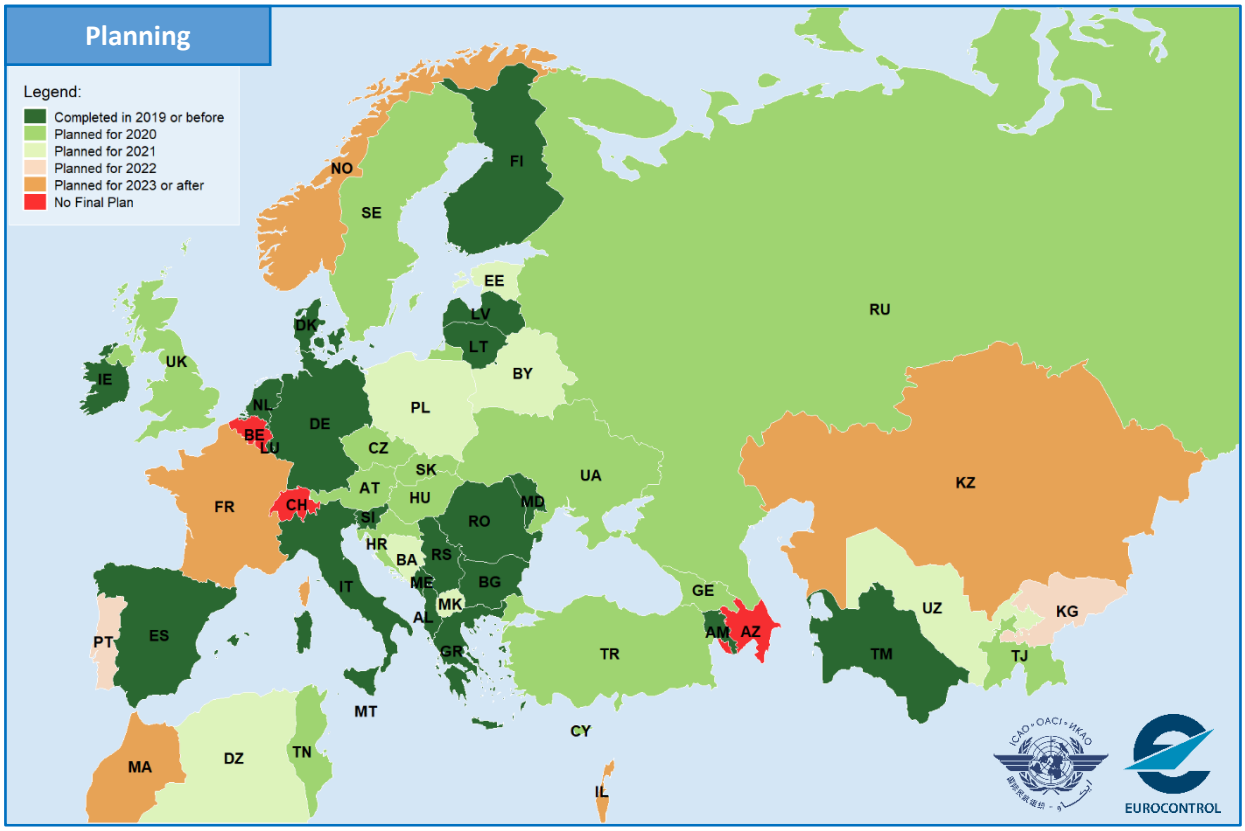


Current status and future outlook



The module defines therefore an incremental increase in functionalities. The flight plan submissions as well as information about activation of the flights are quite well implemented and expected to be finalised all over the Region by 2021/2022, to be followed shortly (2023) by the functionalities addressing the flight plan updates in the tactical phase. Among the non-LSSIP States the module is reported as completed by Turkmenistan. In 2020 Russian Federation, Tunisia and Tajikistan are expected to finalise the deployment, to be followed in 2021 by Algeria, Belarus and Uzbekistan.

Map view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Completed in 2019 or before
Planned for 2020
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Planned for 2022
Planned for 2023 or after
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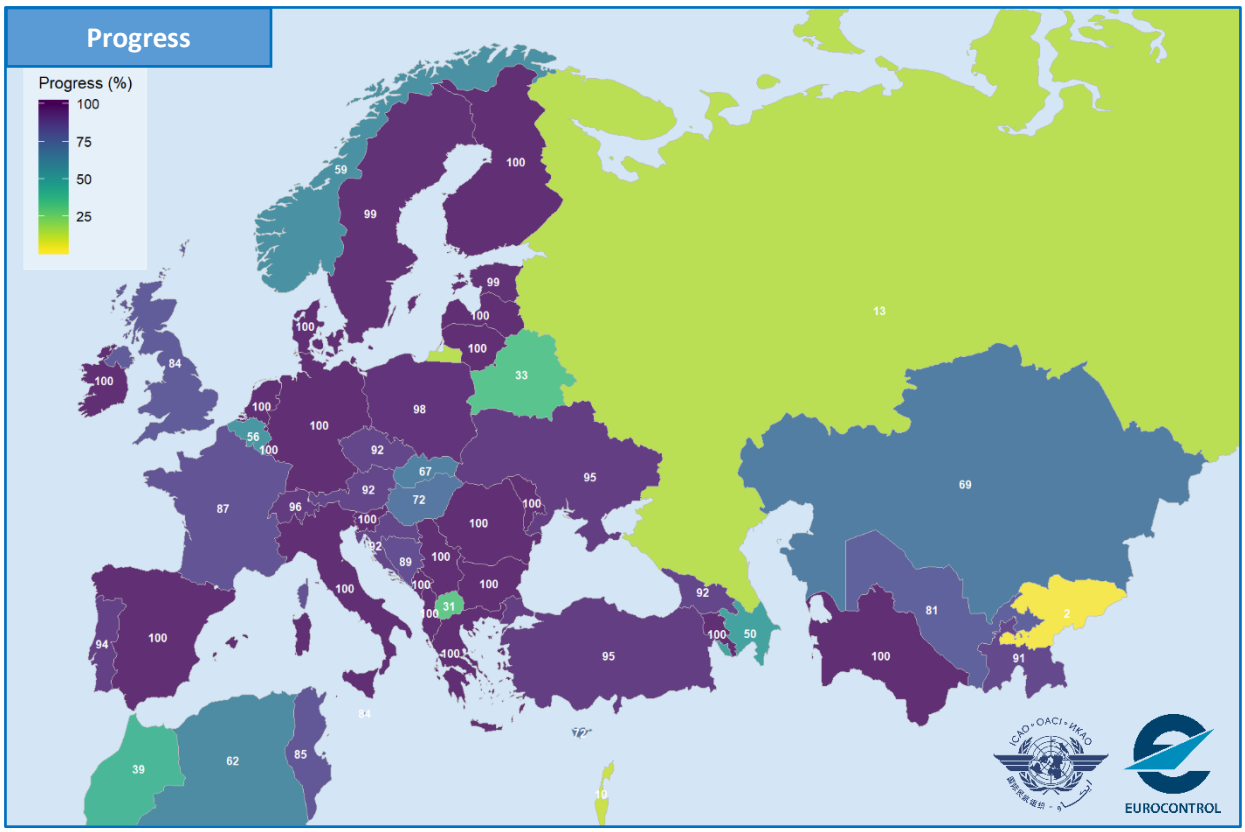

Progress
Progress (%)
100
75
50
25
EUROCONTROL

3.11 B0-RSEQ: Improved traffic flow through runway sequencing (AMAN/DMAN)

Background

B0-RSEQ aims at managing arrivals and departures (including time-based metering) to and from a multi-runway aerodrome or locations with multiple dependent runways at closely proximate aerodromes, to efficiently utilize the inherent runway capacity. The implementation of this block will result in optimized utilization of terminal and runway resources due to harmonized arriving traffic flow from en-route to terminal and aerodrome, as well as streamlined departure traffic flow and smooth transition into en-route airspace. Reduced holding and low level vectoring would also bring environmental benefits.

Runway sequencing procedures are widely used at aerodromes globally. However, some locations might have to confront environmental and operational challenges that will increase the complexity of development and implementation of technology and procedures to realize this module.

B0-RSEQ is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ATC07.1	AMAN Tools and Procedures
AOP05 (ASP05)	Define and implement variable taxi-time and pre-departure sequencing procedure (i.e. initial DMAN) according to airport CDM Manual guidelines

Implementation summary in 2019

The implementation of AMAN and (initial) DMAN has a steady progress over the years, despite the fact that not many completions were reported in 2019 – only Warszawa airport (EPWA) has implemented AMAN since last year.

Significant progress is expected during 2020, with 3 and 11 airports planning to implement AMAN and initial DMAN respectively. Many airports still report this module as not applicable, mostly due to low traffic conditions.

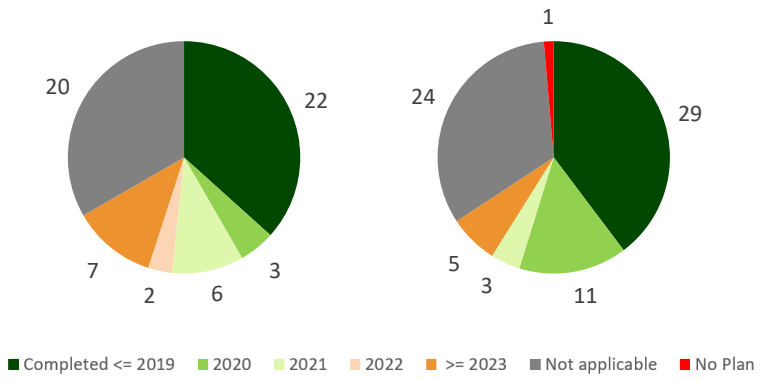
As for the non-LSSIP reporting States, AMAN (and/or DMAN) implementation is planned in Algeria, Belarus, Tunisia, Russian Federation and Uzbekistan.

It should be noted that some States (e.g. Algeria and Belarus) already anticipate delays in implementation due to ongoing COVID-19 crisis.

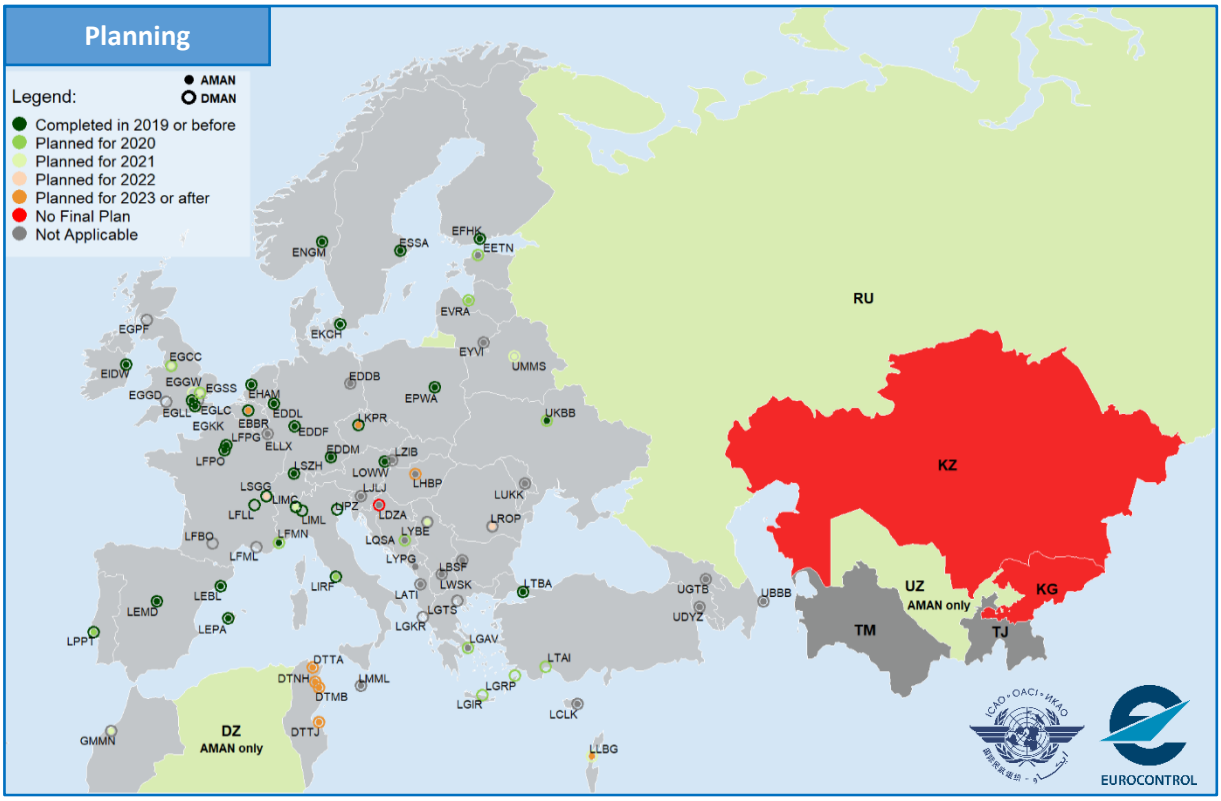
Progress (2019 vs 2018)

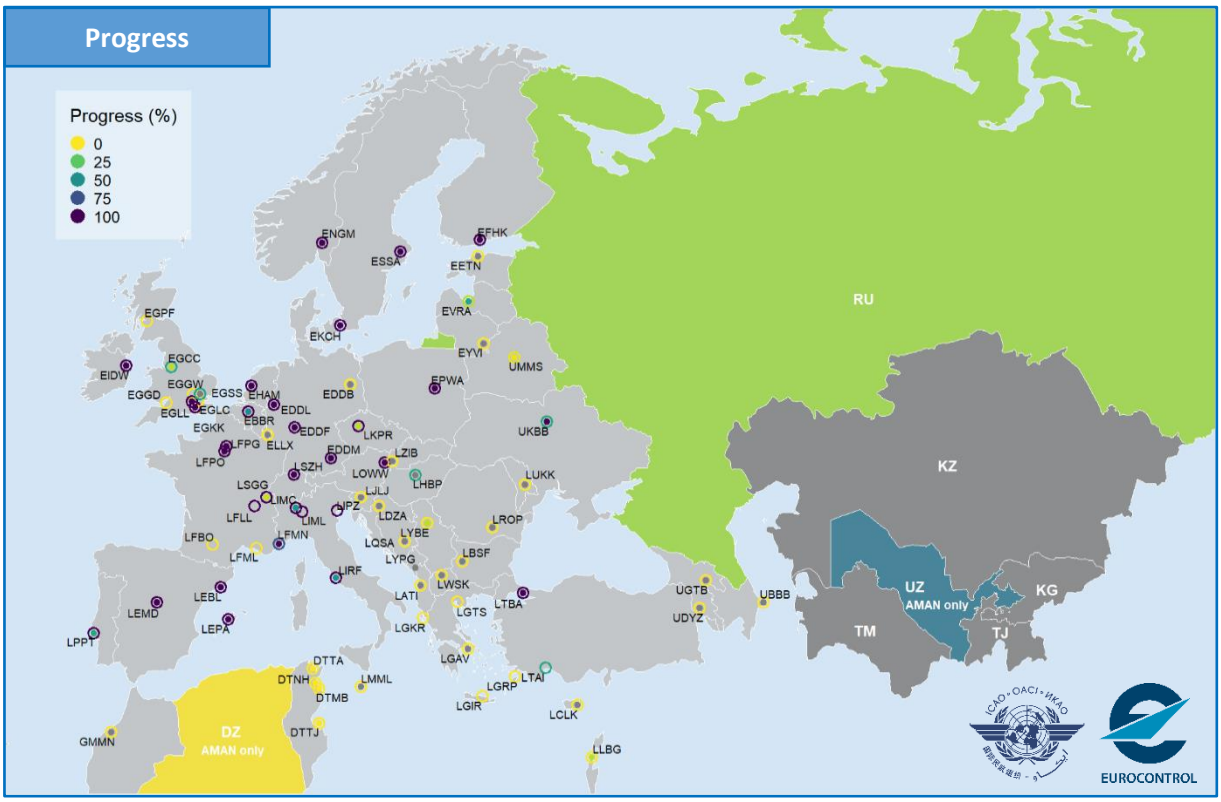
AMAN	*Initial DMAN*
+ 1 airport (EPWA)	-

Current status and future outlook



Map view*





* For airport-related modules, information per airport is shown only where data with sufficient granularity is available. Therefore, for some States only general state-level status and progress are presented.

3.12 B0-SNET: Increased effectiveness of ground-based safety nets

Background

B0-SNET enables monitoring of flights while airborne to provide timely alerts to air traffic controllers of potential risks to flight safety (such as Short-Term Conflict Alerts (STCA), Area Proximity Warnings (APW) and Minimum Safe Altitude Warnings (MSAW)). Ground-based safety nets make an essential contribution to safety and remain required as long as the operational concept remains human-centred.

It should be noted that expected safety benefits grow with the increase of traffic density and complexity. However, not all ground-based safety nets are relevant for each environment.

B0-SNET is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ATC02.2	Short Term Conflict Alert (STCA) - level 2 for en-route operations
ATC02.8	Ground-Based Safety Nets (APW and MSAW)
ATC02.9	Short Term Conflict Alert (STCA) for TMAs

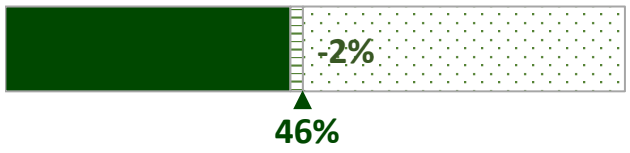
Implementation summary in 2019

This module combines several safety nets in different operational environments and therefore it is very difficult to assess the overall implementation status for a certain State.

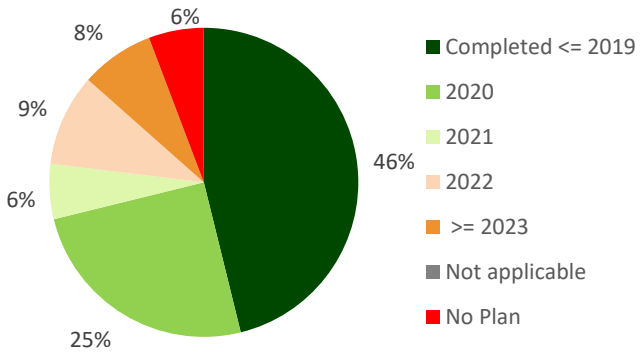
Short Term Conflict Alert (STCA) Level 2 in en-route environment is implemented throughout the whole EUR Region, except Greece and Belarus (planned for 2021), while the STCA in TMAs it is still being implemented in several States with most of them planning completion by the end of 2020.

Area Proximity Warning (APW) and Minimum Safe Altitude Warning (MSAW) are also widely implemented. ATM Master Plan objective ATC02.8 also includes Approach Path Monitor (APM), which is a reason for delay in vast majority of LSSIP-reporting States.

Progress (2019 vs 2018)

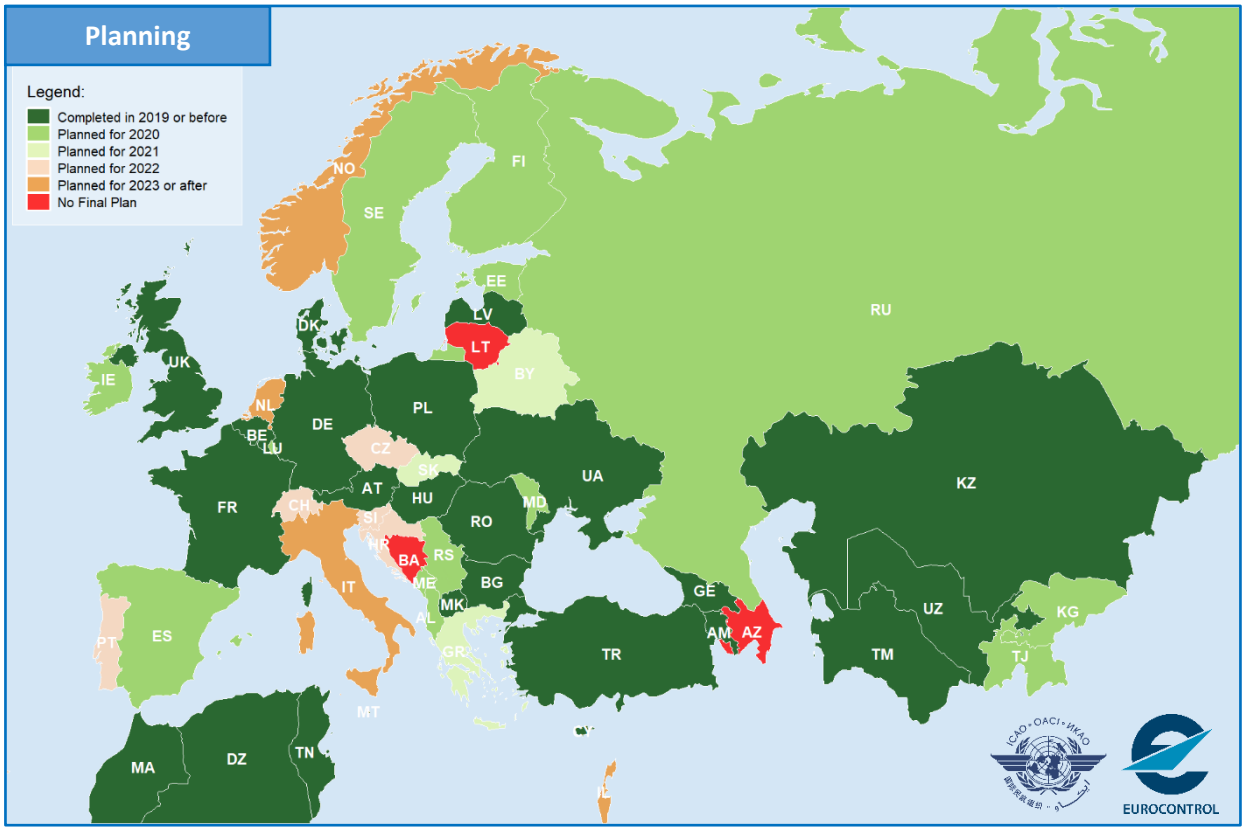


Current status and future outlook



Taking into account all of the above, it should be noted that for the purpose of this report State is considered to have status "completed" only after all of the abovementioned safety nets have been implemented. This implies that in some States certain safety nets are already implemented, despite the overall status being not yet "completed", which is also confirmed by the high progress achieved (see "progress" map).

Map view


Planning
Legend:
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Planned for 2022
Planned for 2023 or after
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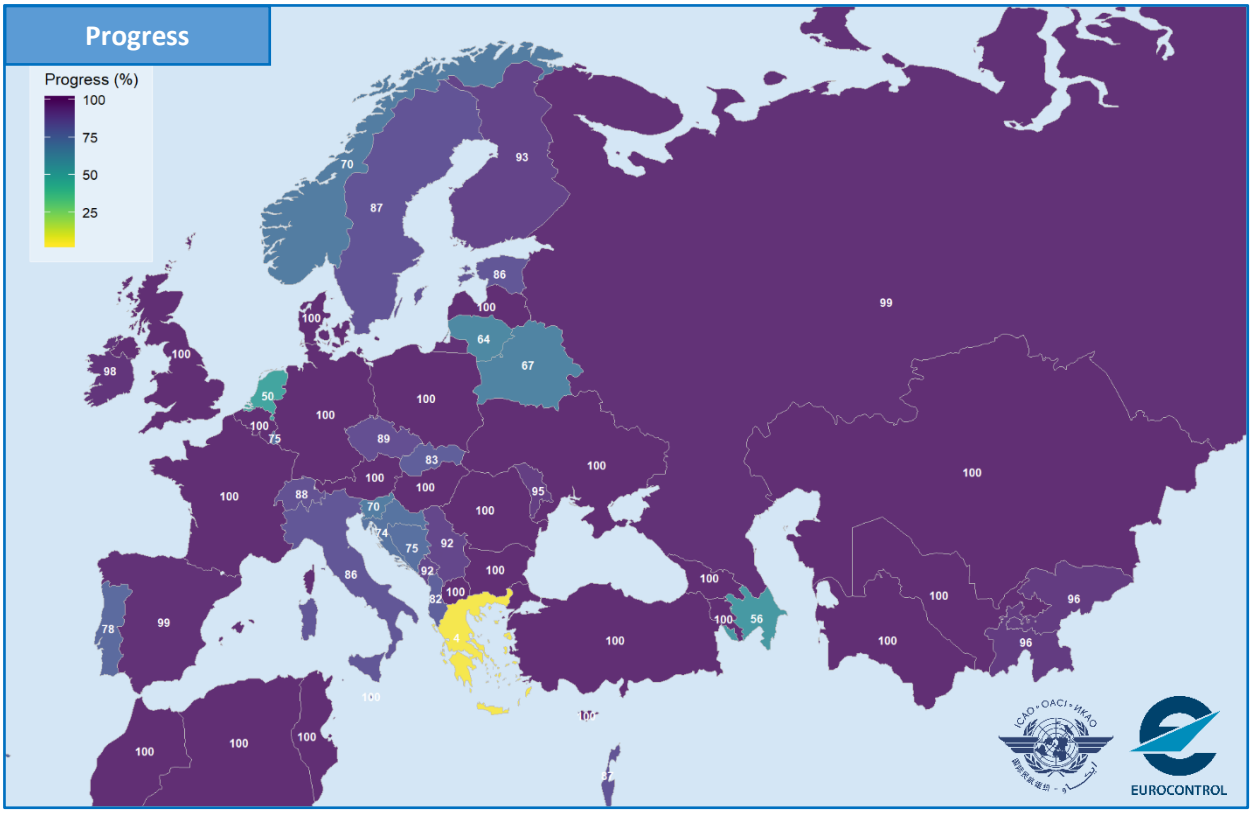

Progress
Progress (%)
100
75
50
25
EUROCONTROL

3.13 B0-SURF: Safety and efficiency of surface operations (A-SMGCS levels 1-2)

Background

Advanced-Surface Movement Guidance and Control System (A-SMGCS) is a system providing routing, guidance and surveillance for the control of aircraft and vehicles in order to maintain the declared surface movement rate under all weather conditions within the aerodrome visibility operational level (AVOL), while maintaining the required level of safety.

In its recent guidance material for A-SMGCS implementation, EUROCONTROL defined the following four A-SMGCS services:

- Surveillance Service
- Airport Safety Support Service
- Routing Service
- Guidance Service

B0-SURF is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
AOP04.1	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)
AOP04.2	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)

Implementation summary in 2019

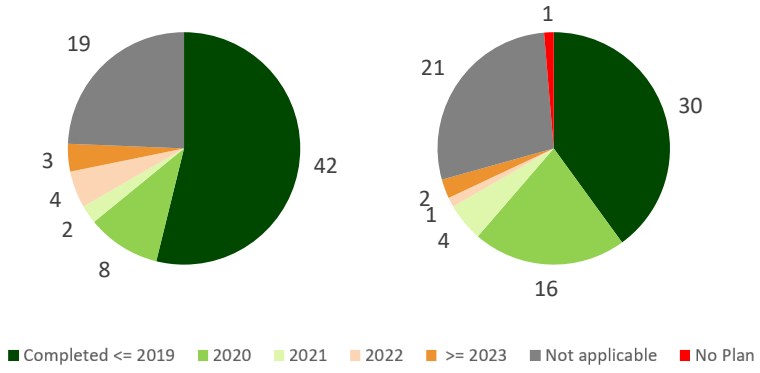
The implementation of A-SMGCS systems at airports within EUR Region is progressing well. By the end of 2019, A-SMGCS Surveillance is operational at 42 airports, 30 of which also have the RMCA functionality. Significant progress is expected during 2020, especially with regards to RMCA upgrade.

Among the non-LSSIP reporting States, A-SMGCS is currently operational at Minsk National Airport (UMMS) in Belarus, Almaty (UAAA) and Nursultan (UACC) airports in Kazakhstan (surveillance only), together with a number of airports in Russian Federation (completed or ongoing). There are also plans to implement the module at Manas International Airport (UCFM) in Kyrgyzstan.

Progress (2019 vs 2018)

A-SMGCS Surveillance	*A-SMGCS RMCA*
+ 3 airports	**+ 4 airports**
(EDDL, LIML, EGLL)	**(UMMS, EDDL, LPPT, EGLL)**

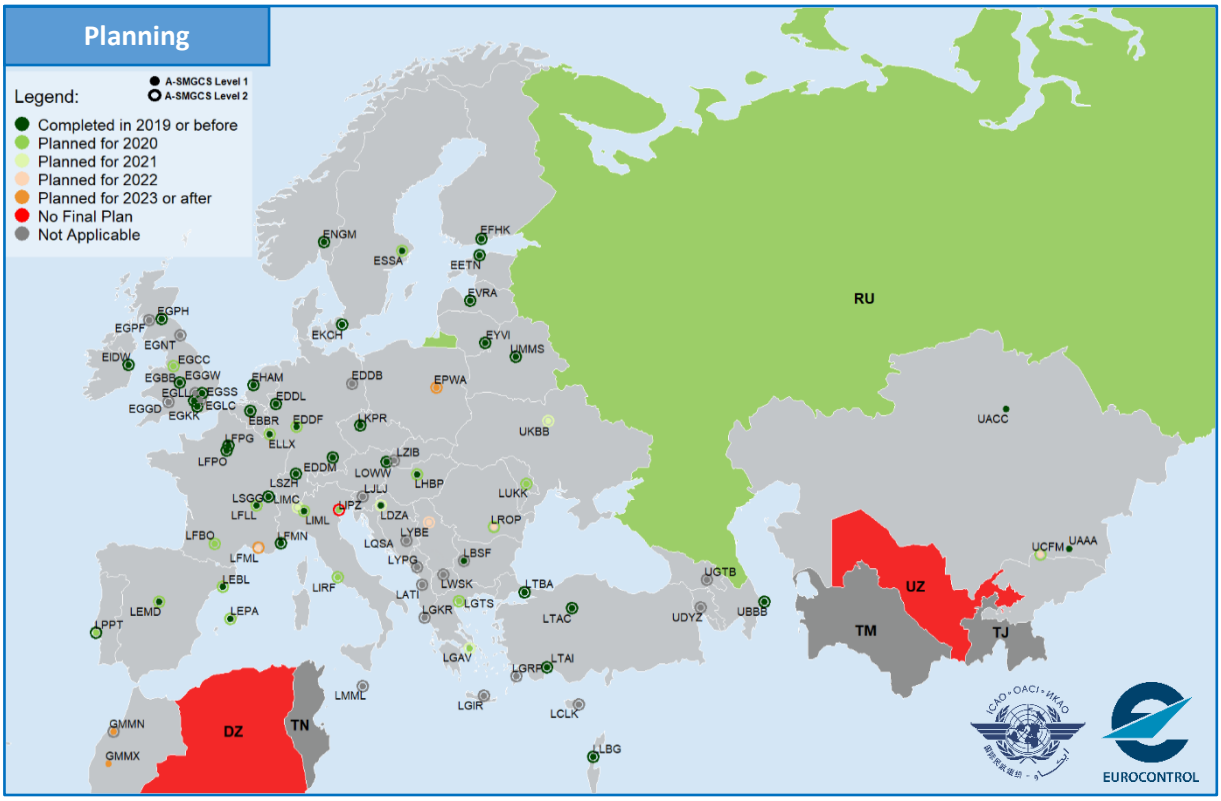
Current status and future outlook

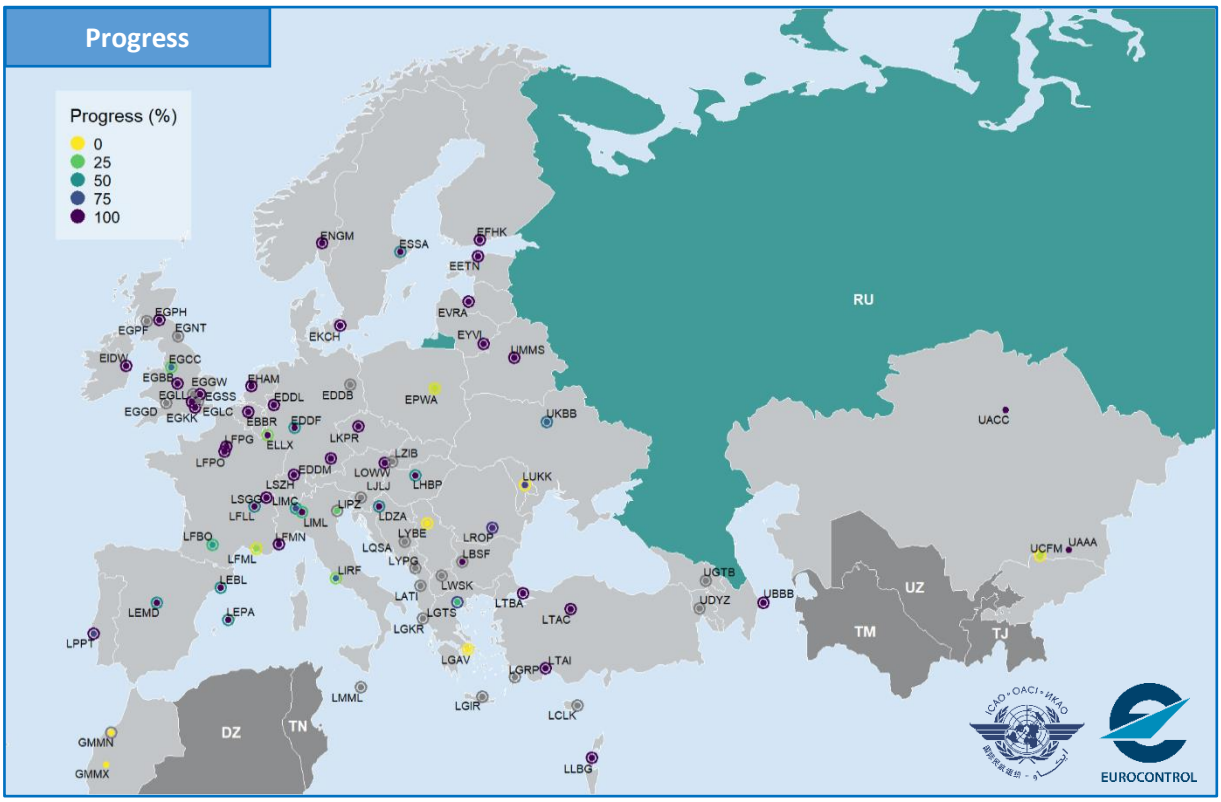


+20 more airports in Russian Federation (completed or ongoing)

In the remaining non-LSSIP States, this module is not applicable or not planned due to low traffic and lack of operational needs.

Map view*





* For airport-related modules, information per airport is shown only where data with sufficient granularity is available. Therefore, for some States only general state-level status and progress are presented.

3.14 B0-TBO: Improved safety and efficiency through the initial application of data link en-route

Background

B0-TBO implies the implementation of a set of data link applications supporting surveillance and communications in air traffic services, which will lead to flexible routing, reduced separation and improved safety.

While the main performance benefits are expected in the area of capacity (by reducing controller workload), it also provides significant contribution to safety (through increased situational awareness, reduced occurrences of misunderstandings, solution to stuck microphone situations etc.), flexibility and efficiency.

B0-TBO is supported by the following ATM Master Plan objectives:

Objective ID	Objective name
ITY-AGDL	Initial ATC Air-Ground Data Link Services

Note: Objective ITY-AGDL covers only CPDLC. Therefore, ADS-C application is not covered by this report.

Implementation summary in 2019

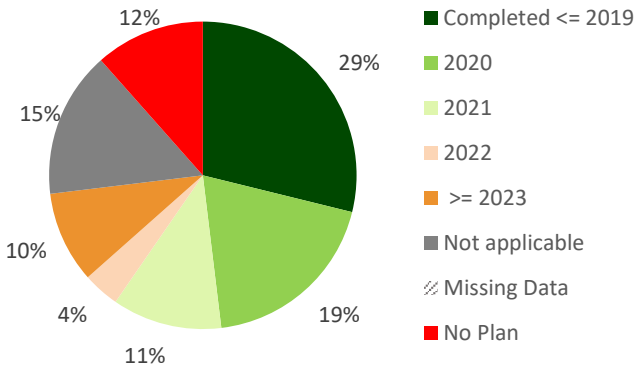
Implementation of the module is complex as it involves investments by the air navigation service providers, airspace users as well as communication service providers. Also the amount and the distribution of traffic should be of such nature so as to justify these investments and to bring operational as well as business benefits.

Therefore, the implementation is slower than initially expected and several States consider the module as “Not applicable” or report not having any implementation plans, due to the lack of operational needs and due to low levels of traffic.

Among the States still implementing the module, most expect to be ready by 2020/2021, however full completion within the entire applicability area will not be reached before 2025.

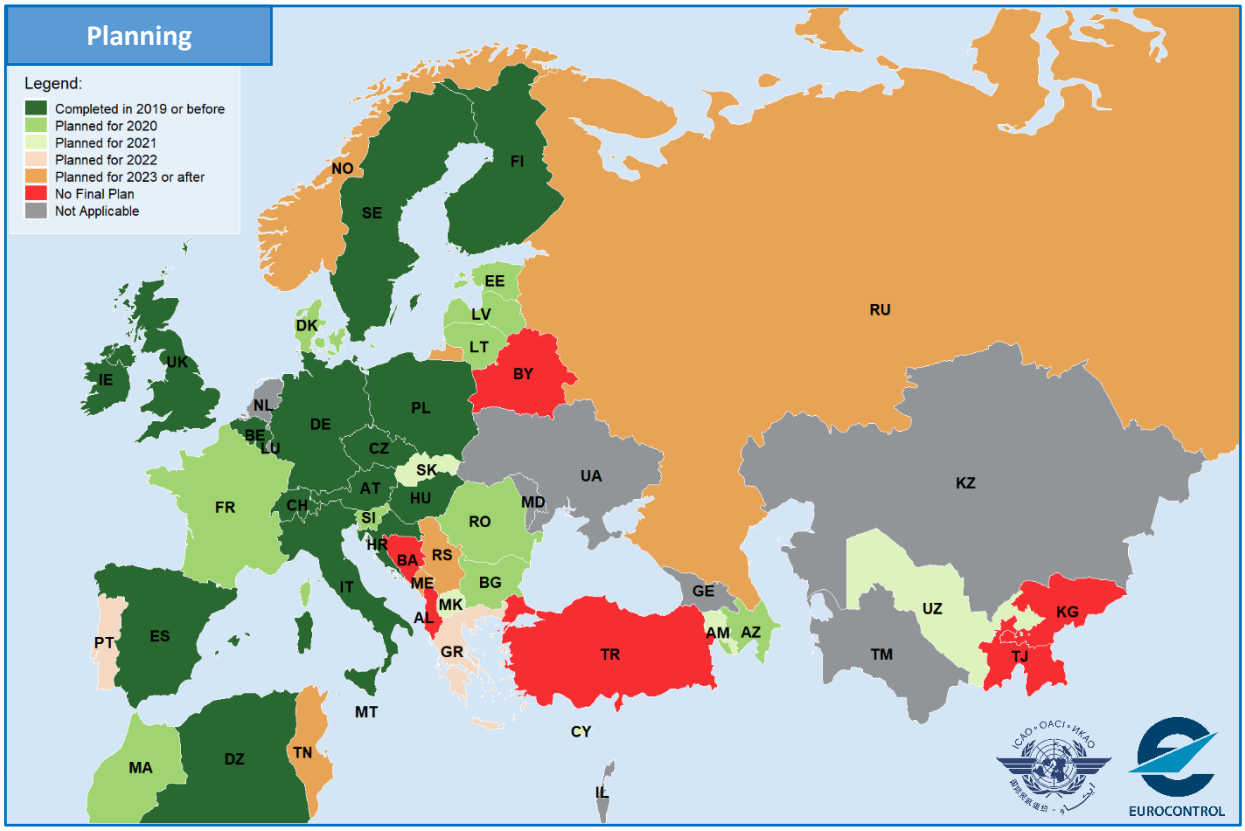
Progress (2019 vs 2018)

Current status and future outlook



Within the non-LSSIP States, several States do not have plans to implement, due to the lack of operational needs (Belarus, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan). Among the implementing States, Algeria has reported completion, while Uzbekistan expects to be ready in 2021 and Russian Federation as well as Tunisia in 2025.

Map view


Planning
Legend:
Completed in 2019 or before
Planned for 2020
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No Final Plan
Not Applicable
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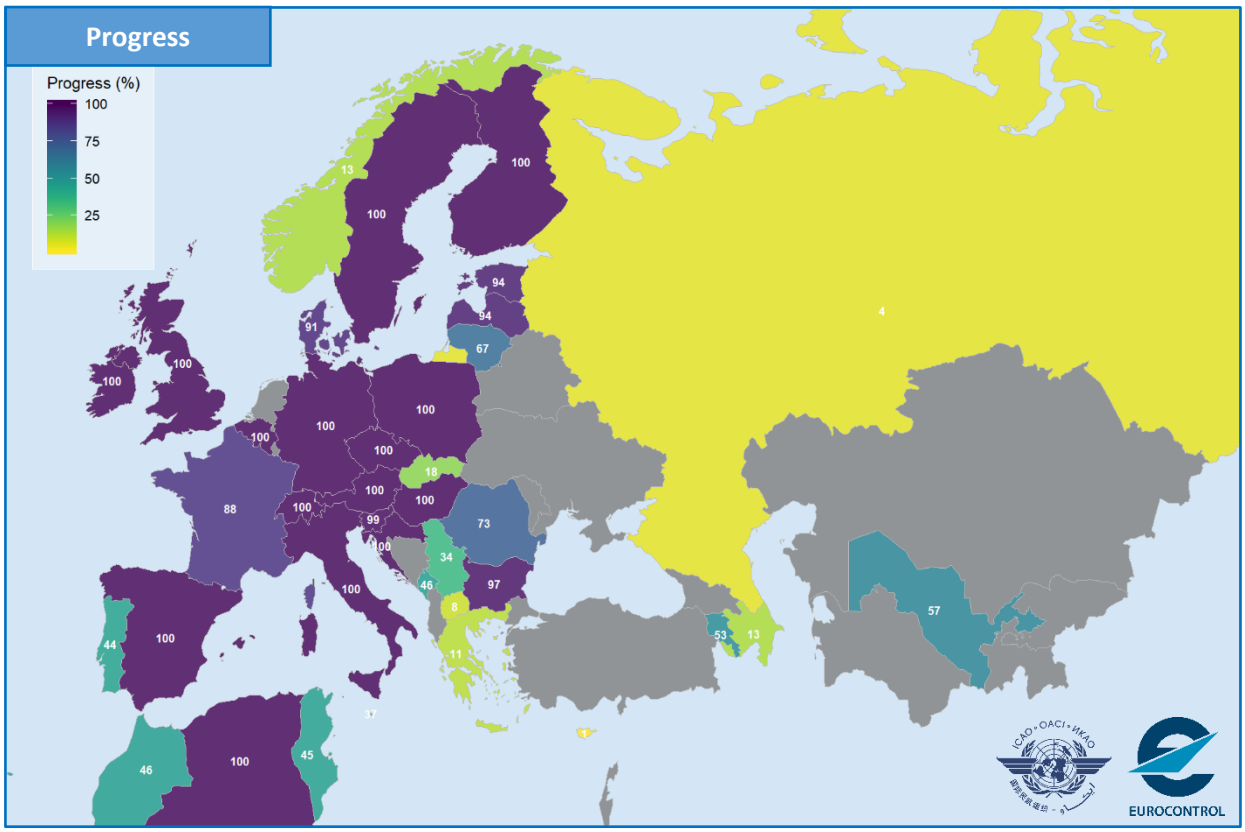
Progress
Progress (%)
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75
50
25
EUROCONTROL

3.15 B0-AMET: Meteorological information supporting enhanced operational efficiency and safety*

DESCRIPTION AND PURPOSE

Global, regional and local meteorological information:

a) forecasts provided by world area forecast centres (WAFC), volcanic ash advisory centres (VAAC) and tropical cyclone advisory centres (TCAC);
b) aerodrome warnings to give concise information of meteorological conditions that could adversely affect all aircraft at an aerodrome including wind shear; and
c) SIGMETs to provide information on occurrence or expected occurrence of specific en-route weather phenomena which may affect the safety of aircraft operations and other operational meteorological (OPMET) information, including METAR/SPECI and TAF, to provide routine and special observations and forecasts of meteorological conditions occurring or expected to occur at the aerodrome.

This module includes elements which should be viewed as a subset of all available meteorological information that can be used to support enhanced operational efficiency and safety.

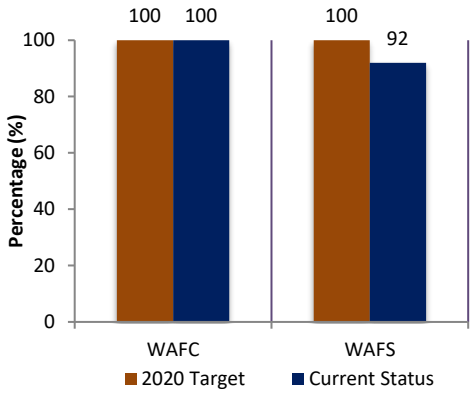
APPLICABILITY CONSIDERATION

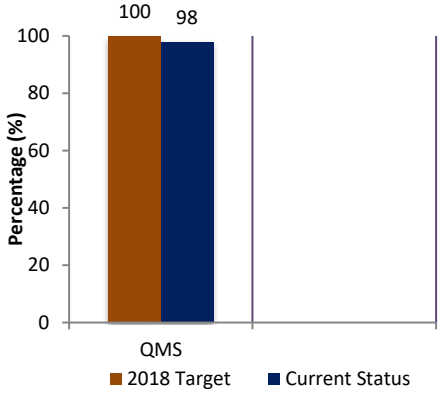
Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.

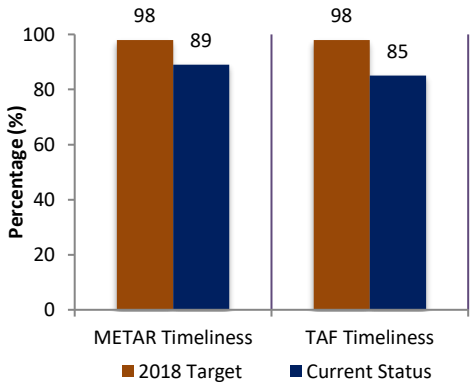
Elements	*Applicability*	*Performance Indicators/Supporting Metrics*	*Targets*
WAFS	**All** States	Indicator: % of States using WAFS data. Supporting metric: number of States having implemented SADIS FTP	100% by Dec 2020
QMS	**All** States	Indicator: % of States having implemented QMS for MET Supporting metric: number of States having implemented QMS for MET	100% by Dec 2020
METAR Availability	**All** States	Indicator: % of States providing METAR as per requirements in the ANP, Volume II Table MET II-2 Supporting metric: number of States providing METAR as per requirements in the ANP Volume II Table MET II-2	98% by Dec 2020
TAF Availability	**All** States	Indicator: % of States providing TAF as per requirements in the ANP, Volume II Table MET II-2 Supporting metric: number of States providing TAF as per requirements in the ANP Volume II Table MET II-2	98% by Dec 2020
METAR Timeliness	**All** States	Indicator: % of States providing METAR in the time required as defined in Annex 3 Supporting metric: number of States providing METAR in the time required as defined in Annex 3	98% by Dec 2020
TAF Timeliness	**All** States	Indicator: % of States providing TAF in the time required as defined in Annex 3 Supporting metric: number of States providing TAF in the time required as defined in Annex 3	98% by Dec 2020
SIGMET Availability	**All** with a FIR	Indicator: % of States providing SIGMET Supporting metric: number of States providing SIGMET	100% by Dec 2020

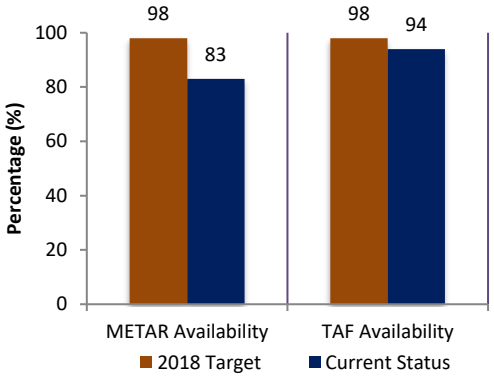
* The source of monitoring information for this module is the ICAO EUR METG.

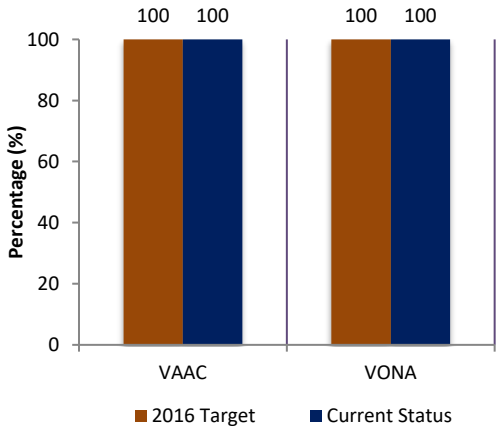
SIGMET Format	**All** with a FIR	Indicator: % of States providing SIGMET format in accordance with WMO AHL in the List of EUR SIGMET and AIRMET headers Supporting metric: number of States providing SIGMET format in accordance with WMO AHL in the List of EUR SIGMET and AIRMET headers	100% by Dec 2020
VAAC	**France, United Kingdom**	Indicator: % of VAACs in or serving the EUR Region that provide Annex 3 volcanic ash products (Volcanic Ash Advisories (VAA) and Volcanic Ash Advisories in Graphic Form (VAG)) Supporting metric: number of States hosting a VAAC having implemented VAA/VAG	100% by Dec 2020
VONA	**Italy, Russian Federation, Spain**	Indicator: % of Volcano Observatories in the EUR Region that provide volcano observatory notice for aviation (VONA) as per the Handbook on the International Airways Watch (IAVW) (Doc 9766) Supporting metric: number of States with Volcano Observatory having implemented VONA	100% by Dec 2020
WAFC	**United Kingdom**	Indicator: % of WAFCs in the EUR Region that provide Annex 3 World Area Forecast System (WAFS) data Supporting metric: number of States hosting a WAFC having implemented Annex 3 WAFS data	100% by Dec 2020

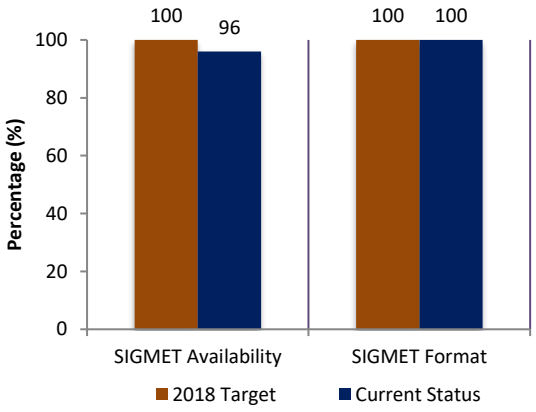

100
100
100
92
100
80
60
40
20
0
Percentage (%)
WAFC
WAFS
2020 Target
Current Status

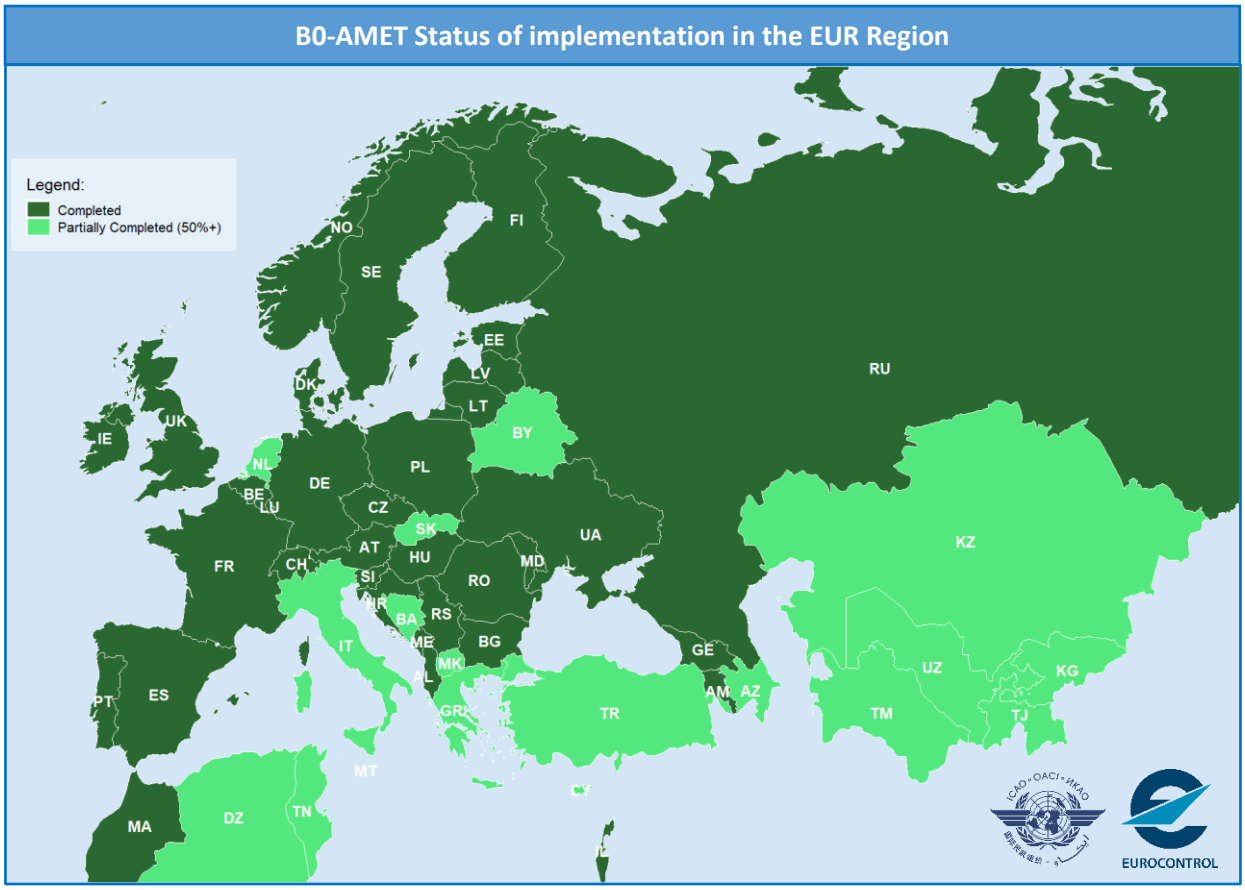

100
98
100
80
60
40
20
0
Percentage (%)
QMS
2018 Target
Current Status


98
89
98
85
100
80
60
40
20
0
Percentage (%)
METAR Timeliness
TAF Timeliness
2018 Target
Current Status


98
83
98
94
100
80
60
40
20
0
Percentage (%)
METAR Availability
TAF Availability
2018 Target
Current Status


100
100
100
100
100
80
60
40
20
0
Percentage (%)
VAAC
VONA
2016 Target
Current Status


100
96
100
100
100
80
60
40
20
0
Percentage (%)
SIGMET Availability
SIGMET Format
2018 Target
Current Status



The progress for B0-AMET is acceptable (with approximately 92% implementation).

Note: These high-level implementation elements are not applicable to Andorra, Monaco and San Marino.

Legend

- Completed
- Partially Completed (50%+)
- Partially Completed/Late (50%-)
- Not Started/Not Implemented
- Not Applicable
- Missing Data

Module	Elements	Albania	Algeria	Armenia	Austria	Azerbaijan	Belarus	Belgium	Bosnia and	Bulgaria	Croatia	Cyprus	Czechia	Denmark	Estonia	Finland
B0-AMET	WAFS															
	QMS															
	METAR availability															
	TAF availability															
	METAR timeliness															
	TAF timeliness															
	SIGMET availability															
	SIGMET format															
	VAAC															
	VONA															
	WAFC															

Module	Elements	France	Georgia	Germany	Greece	Hungary	Ireland	Israel	Italy	Kazakhstan	Kyrgyzstan	Latvia	Lithuania	Luxembourg	Malta	Monaco
B0-AMET	WAFS															
	QMS															
	METAR availability															
	TAF availability															
	METAR timeliness															
	TAF timeliness															
	SIGMET availability															
	SIGMET format															
	VAAC															
	VONA															
	WAFC															

Module	Elements	Montenegro	Morocco	Netherlands	North	Norway	Poland	Portugal	Republic of	Romania	Russian	Serbia	Slovakia	Slovenia	Spain	Sweden
B0-AMET	WAFS															
	QMS															
	METAR availability															
	TAF availability															
	METAR timeliness															
	TAF timeliness															
	SIGMET availability															
	SIGMET format															
	VAAC															
	VONA															
	WAFC															

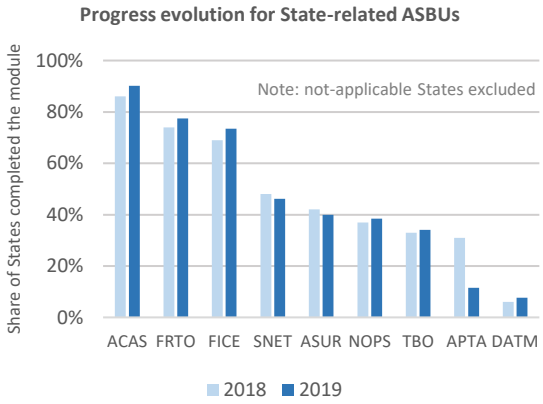
Module	Elements	Switzerland	Tajikistan	Tunisia	Turkey	Turkmenistan	Ukraine	United	Uzbekistan
B0-AMET	WAFS								
	QMS								
	METAR availability								
	TAF availability								
	METAR timeliness								
	TAF timeliness								
	SIGMET availability								
	SIGMET format								
	VAAC								
	VONA								
	WAFC								

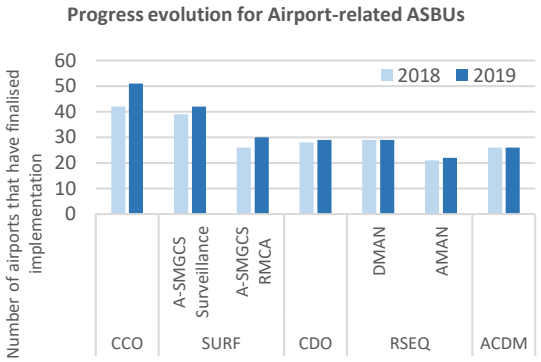
4 Conclusions

This Chapter summarises the planning and progress information presented in Chapter 3 and gives a future outlook on the expected implementation progress in the following period.

Current progress

The figures below give an overall view on the progress achieved so far in the implementation of ASBU Block 0 modules, together with a year-over-year comparison. Information is shown separately for State-related (left) and airport-related (right) modules, due to the difference in their applicability areas.





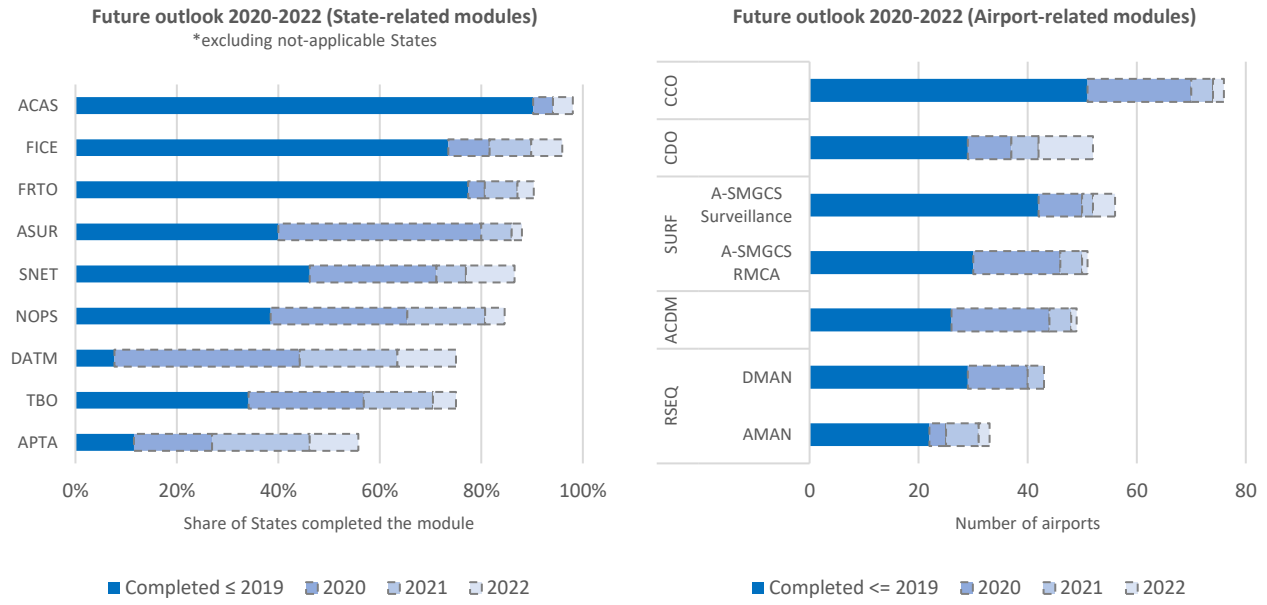
As seen in the figures above, the top performers among State-related ASBUs are **B0-ACAS (90%), B0-FRTO (77%) and B0-FICE (73%)**, while among the modules implemented at airports* the leaders are **B0-CCO** (51 airports) and **B0-SURF** (A-SMGCS Surveillance at 42 airports and A-SMGCS RMCA at 30 airports). No new implementations of **B0-ACDM** and **B0-RSEQ (DMAN)** have been recorded this year.

The notable drop for **B0-APTA** is explained by the fact that, due to requirements of the new PBN Regulation applicable in the European Union (EU), related in particular to the development and formal approval of a "PBN Transition Plan", many EU Member States had to revert the implementation status from "completed" to "ongoing". Similar reasons associated with local organisational and/or operational environment caused the slight decrease for B0-SNET and B0-ASUR.

* For some States detailed data per airport is not available, so the values are likely to be slightly underestimated.

Future outlook

The figures below present the expected future evolution of the ASBU Block 0 modules in terms of the share of States completed the module (for State-related modules – left), and the number of airports that have finalised implementation (for Airport-related modules – right). The values are calculated based on the planning dates reported by States/Airports within the ICAO EUR Region. The values for future years are shown as increments versus 2019 (e.g. B0-ASUR is expected to be finalized in 80% of States by end 2020 – 40% has been achieved by the end of 2019 and 40% progress is expected during 2020).



Regarding State-related modules, the largest progress in implementation in 2020 is expected for **B0-ASUR (+40%) and B0-DATM (+37%)**, followed by **B0-SNET, B0-NOPS and B0-TBO** where an improvement of around +25% is expected. According to currently reported planning dates, 6 out of 9 modules will be finalized by 80% or more States by the end of 2022. Significant improvement for B0-APTA is expected only after 2023, mainly because of the EU States where the implementation of PBN procedures is mandated by the new regulation that came into force in 2019.

As for the modules implemented at airports, **B0-CCO** is not only the current best performer with 51 airports that have reported completion, but is also expected to have the largest improvement in 2020 with 19 more implementers, followed by **B0-ACDM** (+18 airports) and **B0-SURF: A-SMGCS RMCA** (+16 airports).

B0-AMET is not addressed in the tables and graphs because the data is only available in tabular form from the METG since 2017.

It should also be noted that the EASPG/2 meeting will have to discuss the transition from the 5th edition to the 6th edition of the GANP. Due to the changes in the Block 0 modules, the introduction of the Basic Building Blocks (BBBs) and increased granularity in the form of newly introduced ASBU elements in the new version of the GANP, the EASPG will have to define the regional priorities and how the implementation will be monitored in a similar way as it was done by the EANPG/55 meeting in 2013, when this collaborative process was initiated.

5 Recommendations

Based on the analysis of the reported implementation status and the lessons learned from the development of this version of the report, the following high level recommendations are proposed:

Recommendation 1:

Continue to ensure that no duplication of reporting activities will be requested from the States, meaning that the data available through existing reporting mechanisms such as the LSSIP shall be always used.

Recommendation 2:

States need a continuous support with ASBU workshops in individual States or group of States so that implementation data can be (again) made available from all 55 States. This will support that the regional developments and deployment actions can be coordinated across the whole EUR Region and that interoperability can be ensured at the highest level.

Recommendation 3:

States are invited to further address carefully the completeness of the reported data and their timely availability. In this context, States are encouraged to ask for additional support and clarification, if required.

6 Acronyms

A	
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
A-CDM	Airport Collaborative Decision Making
ADQ	Aeronautical Data Quality
ADS-B	Automatic Dependent Surveillance - Broadcast
AGDL	Air-Ground Data Link
AMAN	Arrival Manager
ANSP	Air Navigation Service Provider
AOP	Airport Operations
APTA	Airport Accessibility
APV	Approach with Vertical Guidance
ASBU	Aviation System Block Upgrades
ASM	Airspace Management
A-SMGCS	Advanced Surface Movement Guidance and Control System
ASUR	Alternative Surveillance
ATC	Air Traffic Control
ATM	Air Traffic Management
ATMGE	Air Traffic Management Group-East
AU	Airspace Users
C	
CDO	Continuous Descent Operations
COTR	Coordination and Transfer
D	
DATM	Digital Aeronautical Information Management
DMAN	Departure Manager
E	
EAD	European AIS Database
EANPG	European Air Navigation Planning Group
EASA	European Aviation Safety Agency
EASPG	European Aviation System Planning Group
EC	European Commission
ECAC	European Civil Aviation Conference
ENV	Environment
ESSIP	European Single Sky Implementation
EU	European Union
F	
FCM	Flow and Capacity Management
FICIE	Flight and Flow Information for a Collaborative Environment
FIR	Flight Information Region
FMTP	Flight Message Transfer Protocol
FOC	Full Operational Capability
FRTO	Free-Route Operations
G	
GANP	Global Air Navigation Plan
I	
ICAO	International Civil Aviation Organisation
ITY	Interoperability
INF	Information Management
IP	Internet Protocol
IR	Implementing Rule
L	
LoA	Letter of Agreement
LPV	Localizer Performance with Vertical Guidance
LSSIP	Local Single Sky Implementation
M	
MIL	Military Authorities
MUAC	Maastricht Upper Area Control Centre
NAV	Navigation
NM	Network Manager
NOPS	Network Operations
O	
OI	Operational Improvements
OLDI	On-Line Data Interchange
P	
PBN	Performance Based Navigation
PCP	Pilot Common Project
PIRG	Planning and Implementation Regional Group
PRISME	Pan-European Repository of Information Supporting the Management of EATM
R	
RATS	Remote Air Traffic Services
REG	Regulatory Authorities
RNAV	Required Navigation Performance
RSEQ	Runway Sequencing
S	
SBAS	Satellite-Based Augmentation System
SES	Single European Sky
SESAR	Single European Sky ATM Research
SLoA	Stakeholder Lines of Actions
SNET	Safety NETs
SPI	Surveillance Performance and Interoperability
SURF	Surface Operation
SWIM	System-Wide Information Management
T	
TBA	Trajectory-Based Operations
TCAS	Traffic Alert and Collision Avoidance System
TMA	Terminal Control Area
V	
VDL	VHF Digital Link
W	
WAKE	WAKE Turbulence Separation

Annex 1 – Detailed information for non-LSSIP States

B0-ACAS

State	Comment	Status and progress	Year of implementation
Algeria	–	Completed	2019
Belarus	Aircraft operators provide regular training for flight crew members based on the training programmes designed for flights with TCAS II version 7.1 (Operations Manual, Part D, Annex 5) approved by the Department of Aviation. Flight procedures using TCAS II version 7.1 (Operations Manual, Part A, Item 17.3.7.) have been developed and approved. Requirement to verify the activation of TCASII before take-off has been included in the checklists. Aircraft maintenance services and the training of aircraft maintenance technicians are accomplished in accordance with the Aircraft Maintenance Manuals developed by the aircraft operators and approved by the Director of the Department of Aviation. MELs are established per aircraft types and approved by the Director of the Department of Aviation. According to the manufacturer's provisions, ACASII upgrade (TCAS II version 7.1) does not require introducing amendments into the Aircraft Maintenance Programme and MEL. ACAS II (TCAS II version 7.1) performance monitoring is carried out by the Aircraft Operator's Quality Manager, taking into consideration pilot observations recorded in logbooks. Certification of activities is accomplished pursuant to the existing Aviation Rules AP 6.01-2012 (02190) "Certification of civil aircraft operator activities".	Completed	2015
Kazakhstan	-	Completed	2018
Kyrgyzstan	All aircraft are equipped version 7.1 in July 2017. Airworthiness certification for ACAS II version 7.1 and operational approval for ACAS II version 7.1 equipped aircraft procedures are implemented.	Completed	2017
Russian Federation	1. Aviation authorities issue permissions to operate international flights solely to aircraft equipped with ACAS II version 7.1. All a/c that operate flights in EUROCONTROL airspace are ACAS II version 7.1 equipped. 2. According to national regulations, flight crew shall inform the ATC unit concerned on a manoeuvre performed to comply with TCAS RA 3. An incident reporting template has been adopted in the Russian Federation	Completed	2019
Tajikistan	All aircraft registered in Tajikistan have installed TCAS 7.1 in 2016.	Completed	2016
Tunisia	Tunisian registered aircraft are all equipped with TCAS version 7.1 Regarding the monitoring, Air operators are invited to comply with manufacture procedures - ATC RA monitoring provision implemented	Completed	2015
Turkmenistan	All aircraft (which are required to be equipped with ACAS) registered in Turkmenistan have been already equipped, or have scheduled maintenance program to install ACAS II/TCAS 7.1 before the Annex 10 deadline. RA investigation process has been implemented together with other AIRPROX, LHD reports, etc.	Completed	2015
Uzbekistan	All aircraft (which are required to be equipped with ACAS) registered in Uzbekistan have been already equipped, or have scheduled maintenance program to install ACAS II/TCAS 7.1 before the Annex 10 deadline. RA monitoring is part of the normal reporting process, similar to AIRPROX, LHD reports, etc.	Completed	2019

B0-ACDM

State	Comment	Status and progress	Year of implementation
Algeria	The sharing platform procured is a CSA (aerodrome safety committee), but without LoA or MoU signed by partners.	No plan	-
Belarus	The following improvements have been achieved at **Minsk National Airport**: Local Air Navigation Service (ANS) procedures for information sharing have been implemented through Letters of Agreement (LoAs). Special checklists using Kobra automated system have been implemented in order to perform apron operations, monitor the compliance with maintenance schedule and manage the resources available. Agreements between the aerodrome operators and aircraft operators define variable taxi-time and pre-departure sequencing procedure. CDM procedures have been implemented.	Completed	2016
Kazakhstan	No intention (yet) to plan or implement it - the amount of traffic does not justify automation.	No plan	-
Kyrgyzstan	LoAs with airport operator and airport stakeholders (for airport functions) for coordination/cooperation are in place. Consultation with airspace users is currently done via bi-lateral meetings (ANSP-AO or Airport-AO).	Not Applicable	-
Russian Federation	- Work is underway to establish and configure A-CDM platforms in **UUDD, UUWW, UUEE**. - Stakeholders have developed and agreed the ground handling schedule, including turnaround flights. The procedures are applied to plan and perform ground handling.	Ongoing (58%)	2020
Tajikistan	Instructions and special procedures for coordination/cooperation between airports and ANSP are in place. Formalisation of arrangements with airspace users (as described in CDM functionality) were finalised.	Completed	2018
Tunisia	No current plans, but could be implemented in **Tunis Carthage, Djerba Zarzis, Monastir H. Bourguiba** and **Enfidha-Hammamet** airports, taking into consideration the traffic growth (studies in progress).	No plan	–
Turkmenistan	Turkmenistan is not within the area of applicability of this airport related objective.	Not Applicable	–
Uzbekistan	No implementation planned for aerodromes of Uzbekistan, as all aerodromes, the national airline (Uzbekistan airlines) and ANSP are in one company. Discussions with foreign airlines are done on an ad/hoc or when necessary basis.	Not Applicable	–

B0-APTA

State	Comment	Status and progress	Year of implementation
Algeria	Design and Publish RNP approach procedures to LNAV, LNAV/VNAV and LPS minima to RWs served by precision approach has kicked off in **Alegiers, Oran, Constantine, Annaba, Habbi Mesaoud and Bejai** without LPV. Procedures to LNAV, LNAV/VNAV and LPV minima are developed for all applicable airports/runway ends in Alegiers, Oran, Constantine, Annaba, Habbi Mesaoud and Bejai without LPV.	Ongoing (53%)	2022
Belarus	National PBN Implementation Plan was developed, and it was approved on 24 June 2010. National Airspace Concept was approved on 17 December 2014. Automated aeronautical facilities (flight procedures design system, aeronautical charting system, airspace design system) have been upgraded and adapted to support the Aeronautical Information Exchange Model (AIXM) 5.1. Coordinates data are published in Belarus AIP in WGS-84 (since 17 December 2009). APV Procedures have been designed.	Ongoing (55%)	2021
Kazakhstan	RNP approach to LNAV/VNV or LPV minima were completed at the airfields of **Almaty and Nur-Sultan**. At the aerodromes of **Atyrau, Aktau, Shymkent, Ust-Kamenogorsk** and **Usharal**, work is planned to begin in 2020 - 2021. The execution period for the remaining airfields is 2021-2025. WGS-84: all coordinates data in AIP with effective date of 30th of March 2017 are published in WGS-84 in accordance with ICAO Annex 15 requirements.	Ongoing (55%)	2025
Kyrgyzstan	The Kyrgyz Republic plans to fulfil this goal after installing a GPS performance monitoring station. Plan until 2029.	Ongoing (38%)	2029
Russian Federation	1. Approach procedures are implemented based on 2014 PBN Implementation Plan of the Russian Federation. 2. PZ-90.11 system identical to WSG-84 is applied.	Ongoing (40%)	2020
Tajikistan	At the present time all coordinates along airways and DMEs are calculated by WGS-84 and published in AIP. Calculation of SID/STAR ongoing.	Ongoing (13%)	2020
Tunisia	According to national PBN plan, all international airports in Tunisia will have APV procedures by the end of 2023. All runways of the 4 main Tunisian International airports (**DTTA, DTNH, DTMB and DTTJ**) will be provided with an APV Baro VNAV procedures, by 2023 -10 RWYs-in total.	Ongoing (38%)	2023
Turkmenistan	Work on a national PBN implementation plan has started, but has not been completed.	Ongoing (3%)	2030
Uzbekistan	1. WGS-84 co-ordinates data have been defined for all applicable airports, except for airports **Namangan, Bukara, Termez** and **Nukus**. 2. WGS-84 co-ordinates data have been published in AIP for all applicable airports, except for airports Namangan, Bukara, Termez and Nukus. 3. There are 11 international airports in Uzbekistan with **Tashkent** being the main airport. Tashkent has 2 parallel runways (210m apart) with 08L CAT II, 26 R CAT I, 08R CAT I, 26L VOR/DME approaches. **Navoi** airport has ILS CAT II on both runways and all other airports have either CAT I on some runways or VOR/NDB approaches. The implementation of a national PBN plan has started. GNSS procedures for all international airports reflected in the national PBN plan.	Ongoing (30%)	2022

B0-ASUR

State	Comment	Status and progress	Year of implementation
Algeria	5 SSR Mode C Sensors and 1 PSR are installed in the northern part of Algiers FIR. Since 2008 ADS-C is used for surveillance functions in the southern part of the Algiers FIR. For the southern and northern part of the Algiers FIR the deployment of ADS-B and SSR Mode S ground stations are planned within the framework of the Project PDGEA.	Ongoing (77%)	2023
Belarus	Safety assessment of the existing CNS facilities is carried out in accordance with the national regulations. Interoperability of surveillance data from all ground surveillance systems and relevant surveillance data processing systems is provided. Surveillance data are not transmitted to other ANS providers since this is not required. Safety assessment is carried out for all existing ground surveillance systems, surveillance data processing systems and "ground-ground" communication systems used for dissemination and processing of surveillance data. Safety assessment is accomplished when any changes are introduced into the systems and relevant procedures. State aircraft are not equipped with Mode S Elementary Surveillance equipment and ADS-B Out transponders.	Completed	2016
Kazakhstan	The following protocols for transferring information from information sources (PSR, SSR, ADS-B, SMR) are applied: CAT1, CAT2, CAT 10, CAT 21, CAT23, CAT 34, CAT 48 - comply with the requirements of the ASTERIX format described in the EUROCONTROL STANDARD DOCUMENT FOR SURVEILLANCE DATA EXCHANGE documents, there are CAT 1, CAT2 - meet the requirements of the Russian Asterix format, developed by VNIIRA - OVD, CAT 10 - complies with the requirements of the ASTERIX format, developed by THALES. There is no data exchange in these protocols with neighbouring states and there are no plans yet to organize the exchange. Mode S elementary - 40% aircraft equipped, Mode S enhanced and ADS-B Out - work is being carried out to determine requirements for equipping the aircraft.	Ongoing (30%)	2025
Kyrgyzstan	ANSP of Kyrgyz Republic surveillance equipment equipped Mode S and ADS-B. Plan to finish by 2023.	Ongoing (32%)	2023
Russian Federation	Risk assessment is carried out for surveillance systems under consideration in various configurations with the existing surveillance infrastructure. Data exchange is performed based on existing requirements.	Completed	2020
Tajikistan	Tajikistan has installed SSR radar at **Dushanbe** and **Hujand** airports. A MLAT system (ERA) covering the whole FIR was installed in 2013. Surveillance data is shared with all other airports.	Completed	2013
Tunisia	3 primary radars, 5 secondary radars Mode S and 3 ADS-B are already implemented. Tunis ATM is fully capable Mode S and ADS-B extended squitter data processing. The Percentage of applicable transport type State aircraft equipped will be 100% by June 2021.	Completed	2019
Turkmenistan	The airspace over Turkmenistan is covered with SSR Mode 3A/C surveillance radars (range up to 400 km). At all 5 aerodromes additional PSR radars (range 110-120 km) were installed. There are no plans for ADS-B, ADS-C or MLAT installations.	Completed	2000
Uzbekistan	After new ATC system installation, Uzaeronavigation has installed SSR Mode 3A/C and PSR radars which cover most (90%) of the airspace in Uzbekistan. At **Tashkent** airport an ASR has been installed (80 NM coverage). The Mode 3A/C surveillance radars coverage is up to 200 NM and PSR coverage is also around 200 NM. 8 aerodromes have a SSR or PSR/SSR radar installation and 3 aerodromes (**Namangan, Karshi** and **Andizan**) have no radar installed. There are currently no plans for ADSB/ADSC/MLAT installations. An agreement on data exchange was signed with the Republic of Kyrgyzstan. It is planned to sign agreements with other States.	Ongoing (90%)	2023

B0-CCO

State	Comment	Status and progress	Year of implementation
Algeria	This objective is postponed for the month of March 2022 (Due to the spread of the Covid-19).	Planned	2022
Belarus	CCO techniques have been developed. Training of ATM personnel has been provided	Completed	2016
Kazakhstan	**Nur-Sultan** and **Almaty** airports serving the major of international flights are planned to be introduced with CCO by the end of 2020. Other airports are planned to be introduced with CCO by the end of 2025.	Ongoing (5%)	2025
Kyrgyzstan	Ongoing	Ongoing (25%)	2022
Russian Federation	CCO rules and procedures are developed within the scope of terminal flight procedures design in accordance with 2014 PBN Implementation Plan of the Russian Federation.	Ongoing (8%)	2020
Tajikistan	National PBN implementation plan has been developed and PBN implementation will be gradually started after completion of WGS-84 data. CCOs/CDOs are a part of the national PBN plan.	Ongoing (20%)	2020
Tunisia	As part of the implementation of PBN, a study of the overall airspace design will allow the implementation of the CCO and the CDO by the end of 2023.	Ongoing (50%)	2023
Turkmenistan	Full scale CCOs/CDOs are currently not implemented in Turkmenistan, but aircraft are cleared for STARs without level-offs. Departure Clearances include the climb up to the filed FL.	Ongoing (50%)	2021
Uzbekistan	Due to low traffic no implementation planned.	No plan	–

B0-CDO

State	Comment	Status and progress	Year of implementation
Algeria	In accordance with the National PBN plan implementation, ENNA plans to implement CDOs for **Algiers, Oran, Annaba, Constantine** and **Hassi Messaoud** airports. This objective is postponed for the month of March 2022 (Due to the spread of the Covid-19).	Ongoing (5%)	2022
Belarus	Regulations are being updated to include rules and procedures for the application of CDO techniques. CDO techniques are included into the Training Manual for Flight Crew Members.	Ongoing (80%)	2021
Kazakhstan	**Nur-Sultan** and **Almaty** airports serving the major of international flights are planned to be introduced with CDO by the end of 2020. Other airports are planned to be introduced with CDO by the end of 2025.	Ongoing (10%)	2025
Kyrgyzstan	-	Ongoing (23%)	2022
Russian Federation	CDO rules and procedures are developed within the scope of terminal flight procedures design in accordance with 2014 PBN Implementation Plan of the Russian Federation.	Ongoing (8%)	2020
Tajikistan	National PBN implementation plan has been developed and PBN implementation will be gradually started after completion of WGS-84 data. CCOs/CDOs are a part of the national PBN plan.	Ongoing (5%)	2020
Tunisia	As part of the implementation of PBN, a study of the overall airspace design will allow the implementation of the CCO and the CDO by the end of 2023.	Ongoing (45%)	2023
Turkmenistan	Full scale CCOs/CDOs are currently not implemented in Turkmenistan, but aircraft are cleared for STARs without level-offs. Departure Clearances include the climb up to the filed FL	Ongoing (45%)	2021
Uzbekistan	Due to low traffic no implementation planned.	No plan	–

B0-DATM

State	Comment	Status and progress	Year of implementation
Algeria	This objective will be implemented after implementation of the new AIM system postponed for the month of June 2022 (Due to the spread of the covid-19).	Ongoing (10%)	2022
Belarus	QMS for Aeronautical Information Services was implemented in 2014. ISO Certificate 9001: implemented in 2015 No. BY228888Q-U, was issued by Bureau Veritas on 26 June 2017. Additionally safety management and security management objectives are included in the QMS as described in Art 10 of EU regulation 73/2010. Data quality requirements have been implemented as per Annex 15, in terms of completeness, timeliness, consistency, accuracy, resolution and integrity, in accordance with the Order of the Department of Aviation No. 139 dd 07 July 2015 "On approval of the regulation for the provision of aeronautical information". Aeronautical data are provided in AIXM 4.5 format. Upon upgrade of the database and software for creation of aeronautical charts the aeronautical data will be provided as datasets (AIP, TOD, Aerodrome Mapping Data) in AIXM 5.1 format, pursuant to Annex 15. Agreements have been concluded between aeronautical information providers and data originators for the exchange of aeronautical data/information, in accordance with the Order of the Department of Aviation No. 139 dd 07 July 2015 "On approval of the regulation for the provision of aeronautical information". LoAs for Provision or Aeronautical Information and Data Integration between AIS of Belarus and AIS of Latvia and AIS of Lithuania have been agreed.	Ongoing (64%)	2020
Kazakhstan	AMDB data (Aerodrome mapping database) for the aerodromes of **Nursultan** and **Almaty** prepared. For other aerodromes, these works are not yet planned - this information was not requested by users.	Ongoing (88%)	2025
Kyrgyzstan	-	Ongoing (82%)	2025
Russian Federation	The regulation on aeronautical information development quality management is pending approval. The regulation on verification and validation of flight procedures design is under development. Research on a single AXIM 5.1 standard development is planned to be conducted. Development of eAIP software and hardware is in progress (adjustment stage).	Ongoing (16%)	2020
Tajikistan	Integrated briefing (AIS, FPL, MET and ATFM information) was implemented at all international airports. AIM QMS development is ongoing, cooperation with CAIGA established, but QMS aspects need to be verified.	Ongoing (64%)	2020
Tunisia	QMS fully implemented: Certification of the Management System for the Quality of the AIS and the AIO of the Tunisian Airports according to the international standard ISO 9001 (2015 version).	Ongoing (36%)	2021

Turkmenistan	An integrated briefing function (AIS, FPL, MET and partially ATFM information) was implemented in Ashgabat during 2003. The 4 other international airports (Turkmenbashi, Turkmenabat, Dashoguz and Mary) have no integrated briefing functionality and the briefing data is/will be prepared in Ashgabat.	Ongoing (22%)	2021
Uzbekistan	Data quality requirements standards, implementation of common dataset and digital exchange formats, establish formal arrangements satisfied is part of the WGS-84 program, which has started after State approval. Annual QMS audit is successfully completed.	Ongoing (82%)	2021

B0-FICE

State	Comment	Status and progress	Year of implementation
Algeria	The current system includes Basic OLDI messages (ABI, ACT, PAC, LAM) and some AIDC messages. An OLDI connection exists between **Algiers ACC** and **Aix-en-Provence ACC** and is fully operational since 2006. The future ATC system (as part of the PDGEA project) will implement the Full OLDI protocol and the AIDC protocol. The implementation of flight data processing and exchange systems, notification process and initial coordination process is finalized. The revision and abrogation of the coordination process will be finalized after the implementation of the new ATC system (31/12/2021).	Ongoing (75%)	2021
Belarus	OLDI connection (ABI, ACT, REV, PAC, MAC, LAM) was implemented between **Minsk ACC** and the following adjacent ATS centres: with **Lviv ACC** in December 2004, with **Kyiv ACC** in May 2005, with **Riga ACC** in July 2006, with **Vilnius ACC** in December 2006, with **Warsaw ACC** in July 2007, with **St-Petersburg ACC** in March 2014, with **Moscow ACC** in July 2015. Relevant amendments have been introduced into LoAs with the adjacent ATS Centres.	Completed	2015
Kazakhstan	All listed functionalities of the B0-FICE were tested and validated within FAT, SAT and further modernization of the ATC system. All the processes are in operational use. Basic flight data (BFD) and Change to Basic flight data (CFD) processes are achieved by FPL2012 messaging. OLDI is organized in the directions within Kazakhstan and with Russia: **Samara - Aktobe**, **Samara - Nur-Sultan**. Work is ongoing in the direction **Almaty - Bishkek** (a digital channel has been organized, the OLDI server in Bishkek is expected to be ready). Work in other areas is planned in the long term.	Ongoing (93%)	2025
Kyrgyzstan	-	Ongoing (41%)	2025
Russian Federation	Basic voiceless OLDI is used in 80% of interactions between automated ATC systems. Advanced OLDI functionality is implemented in two automated ATC systems. Basic voiceless OLDI functionality is featured in all newly developed automated ATC systems.	Ongoing (87%)	2020
Tajikistan	ATC System (Master from Peleng) was installed in 2012, but ground-ground ATC system functionality was not installed.	Not applicable	/
Tunisia	- Current FDPs support the different levels of data online exchange (OLDI messages), including COD and PAC - Current FDPs are fully capable to handle AIDC /OLDI and/or FMTP protocols. OLDI is also used between **Tunis ACC** and **Djerba** system is based on FMTP protocols. - **Roma** and **Malta ACCs** are completely linked via OLDI to **Tunis ACC**. - OLDI connection implementation studies with **Algiers** and **Marseille ACCs** is in progress - Connection with PENS network in progress. Contract with PENS in progress, upgrade and support already implemented and tested	Completed	2014
Turkmenistan	-	Completed	2019
Uzbekistan	The current ATC System (Thomson/Peling Master) includes AFTN and FPL/FDPS/RDPS functionalities. The automatic G/G ATC system coordination functionality is operational in **Tashkent ACC** with coordination between ACC, APP and TWR. The coordination (COTR) between **Samarkand** and **Nukus ACC**, and with any other adjacent ACC is done via phone. ANP will announce tendering for the new ATC system for Uzbekistan that will include the ground-ground automated co-ordination functionalities.	Ongoing (79%)	2021

B0-FRTO

State	Comment	Status and progress	Year of implementation
Algeria	A formal letter has been sent to EUROCONTROL to include DAAA FIR into NM ATFM area of responsibility which will provide the necessary means to implement the actions. This objective is postponed for the month of March 2022 (Due to the spread of the COVID-19).	Ongoing (5%)	2022
Belarus	Road Map for implementation of free route operations in Belarus airspace has been developed. Relevant consultations with EUROCONTROL experts have been held. Working meeting was organized on 04-05 April 2018 at EUROCONTROL office in order to discuss operational aspects of FRA implementation in Belarus, using simulation of air traffic environment. Taking into account EUROCONTROL recommendations, free route operations in Belarus airspace were implemented starting from 08 November 2018, in the airspace layer of FL 305 to FL 660 during the time period of 23.00h to 05.00h UTC.	Completed	2018
Kazakhstan	No intention (yet) to plan or implement it - the amount of traffic does not justify automation.	Not applicable	/
Kyrgyzstan	-	Not applicable	/
Russian Federation	Concept development is planned.	Planned	2021
Tajikistan	The Tajikistan Main Air Navigation Center includes an ATFM Unit which provides some describe services. Already one direct route coordinated with Afghanistan and published in AIP.	Ongoing (23%)	2025
Tunisia	Will be implemented at the end of 2023.	Ongoing (8%)	2023
Turkmenistan	No implementation planned in Turkmenistan.	No plan	/
Uzbekistan	-	Completed	2018

B0-NOPS (FCM01: Enhanced Tactical Flow Management Services)

State	Comment	Status and progress	Year of implementation
Algeria	Eurocontrol FMP has been installed in **Algiers ACC** and **Algiers ACC** is considered as an adjacent area for operational purposes. We include in the PDGEA project the following elements of the present Module: - Receive and process ATFM data from the NM. - Inform NM of flight activations and estimates for ATFM purposes. The remaining elements (re-routings inside FDPA, aircraft holding, Departure Planning Information) are not applicable and therefore not planned. A formal letter has been sent to EUROCONTROL to include DAAA FIR into NM ATFM area of responsibility. The implementation of this objective is postponed for the end of 2021 (Due to the spread of the COVID-19).	Ongoing (43%)	2021
Belarus	FMP was established at **Minsk ACC** in 2010. Information about traffic flows is disseminated by the FMP to all interested users. If necessary, ATFM measures can be taken by ATC in Minsk FIR. In order to arrange for applying ATFM measures in Belarus airspace and adjacent states, the following agreements have been concluded: - Agreement for Air Traffic Flow Management between EUROCONTROL and the Department of Aviation No. 00/74 dd 05/07/2000 as amended by Protocol dd 31/07/2008. - Agreement for Coordination of Flights over Belarus airspace aiming at reducing overload in congested areas within CFMU zone dd May 2010.	Ongoing (33%)	2021
Kazakhstan	The ETFM system is in test operation since procuring in 2019. The following activities are not yet planned for implementation because the amount of traffic does not justify the automation: - receiving and processing ATFM data from the NM - informing NM of flight activations and estimates for ATFM purposes - informing NM of re-routings inside FDPA for ATFM purposes - informing NM of aircraft holding for ATFM purposes - supplying NM with Departure Planning Information (DPI)	Ongoing (62%)	2025
Kyrgyzstan	-	Planned	2022
Russian Federation	The functions are planned to be implemented as part of an upgrade of the Russian Joint ATM System Main Centre and all zonal centers.	Ongoing (15%)	2020
Tajikistan	-	Completed	2019
Tunisia	- FMP (Flow management position) implemented at **Tunis ACC**; - Fully linked to Network Manager Operations Center NMOC systems; - Tunis FMP linked to ETFMS system through CIFLO. - ATFM activities are provided as an adjacent FMP; - FSA messages are sent by Tunis and Djerba FDPs to the NM ETFMS operational system since July 2016; - new support via PENS will be carried out after implementation of ACDM in the main Tunisian airports.	Ongoing (70%)	2020
Turkmenistan	-	Completed	2018

Uzbekistan	Was planned in Eurasia coordination council Plan. An ATFM unit has been established in **Tashkent ACC**, as published in AIP ENR 1.9, which coordinates with military units and other ACCs. Some of the ATFM functions are performed and ATFM measures are coordinated with all adjacent ATFMUs in neighbouring States. One of the activities of the Eurasia coordination council is the establishment of a sub-regional ATFM Center and Uzbekistan is supporting these developments.	Ongoing (82%)	2021

B0-NOPS (FCM03: Collaborative Flight Planning)

State	Comment	Status and progress	Year of implementation
Algeria	Current system processes FPLs derived from RPLs, FPL handling is managed by a converter. Other functions will be included in the new system (PDGEA). This objective will be implemented after the implementation of the new ATC system postponed at the end of 2021 (Due to the spread of the COVID-19).	Ongoing (80%)	2021
Belarus	Flight plan messages in ICAO format are processed manually. FPL and ACH messages are processed manually. Flight plan message processing in ADEXP format is not provided. Automatic provision of AFP messages is not accomplished.	Ongoing (33%)	2021
Kazakhstan	The ETFM system is in test operation since procuring in 2019. The following activities are not yet planned for implementation because the amount of traffic does not justify the automation: - automatic procession of FPLs derived from RPLs - flight plan message processing in ADEXP format - processing of APL and ACH messages - automatic provision of AFP messages for missing flight plans, change of route, diversion, change of flight rules or flight type, requested cruising level, aircraft type or equipment	Ongoing (75%)	2025
Kyrgyzstan	Planned for 2022	Ongoing (4%)	2022
Russian Federation	1. Messages are processed in accordance with ICAO SARPs. 2. The generation of PLN from RPL disabled on 08.02.2019 in accordance with national rules.	Ongoing (10%)	2020
Tajikistan	ICAO FPLs are processed	Ongoing (81%)	2020
Tunisia	Latest function implemented through new FDPs systems in 2014.	Completed	2014
Turkmenistan	-	Completed	2017
Uzbekistan	After new ATC system installation.	Ongoing (80%)	2021

B0-RSEQ (ATC07.1: AMAN)

State	Comment	Status and progress	Year of implementation
Algeria	The future system (PDGEA) will integrate the Arrival sequencing function for Airports with Approach services, especially for **Algiers Approach**. This objective will be implemented after the implementation of the new ATC postponed at the end of 2021 (Due to the spread of the COVID-19).	Ongoing (25%)	2021
Belarus	AMAN/DMAN functions will be implemented at the new Automated ATC System to be put into operation at **Minsk-2** aerodrome. Technical requirements for AMAN have been developed. Due to the current economic situation resulting from COVID-19, activities has been suspended.	Ongoing (3%)	2021
Kazakhstan	No intention (yet) to plan or implement it - the amount of traffic does not justify automation.	No plan	/
Kyrgyzstan	Plan for a later date. Depends on adjacent countries.	No plan	/
Russian Federation	1. AMAN is integrated in 2 automated ATC systems, procedures are designed and applied in 1 automated ATC system for approaches in 1 TMA. It is planned to integrate 9 AMAN tools.	Ongoing (20%)	2021
Tajikistan	No implementation planned for airports in Tajikistan (the largest airport **Dushanbe** has currently 40-45 flights per day).	Not applicable	/
Tunisia	To be implemented at **Tunis Carthage, Djerba Zarzis, Monastir H. Bourguiba** and **Enfidha-Hammamet** airports, taking into consideration the traffic growth.	Planned	2025
Turkmenistan	No implementation planned for the international airports in Turkmenistan (**Ashgabat** airport has currently 60 aircraft movements per day, **Turkmenbashi** airport has around 20 movements per day, **Turkmenabat** and **Dashoguz** airports have around 15 movements per day and **Mary** airport has 10 movements per day).	Not applicable	/
Uzbekistan	After new ATC system installation.	Ongoing (61%)	2021

B0-RSEQ (AOP05 – ASP05: Initial DMAN)

State	Comment	Status and progress	Year of implementation
Algeria	-	No plan	/
Belarus	DMAN functions will be implemented at the new Automated ATC System to be put into operation at **Minsk-2** aerodrome.	Planned	2021
Kazakhstan	No intention (yet) to plan or implement it - the amount of traffic does not justify automation.	No plan	/
Kyrgyzstan	-	No plan	/
Russian Federation	-	Ongoing (10%)	2020
Tajikistan	No implementation planned for airports in Tajikistan (the largest airport **Dushanbe** has currently 40-45 flights per day).	Not applicable	
Tunisia	To be implemented at **Tunis Carthage, Djerba Zarzis, Monastir H. Bourguiba** and **Enfidha-Hammamet** airports, taking into consideration the traffic growth.	Planned	2025
Turkmenistan	No implementation planned for the international airports in Turkmenistan (**Ashgabat** airport has currently 60 aircraft movements per day, **Turkmenbashi** airport has around 20 movements per day, **Turkmenabat** and **Dashoguz** airports have around 15 movements per day and **Mary** airport has 10 movements per day).	Not applicable	/
Uzbekistan	-	No plan	/

B0-SNET (ATC02.2: STCA Level 2 for en-route)

State	Comment	Status and progress	Year of implementation
Algeria	The current system includes the STCA function.	Completed	2004
Belarus	STCA Level 1 has been implemented for TMA and for ATS routes. Activities for implementation of STCA Level 2 are planned.	Planned	2021
Kazakhstan	The STCA function and associated procedures have been implemented in line with Kazakhstan regulations at all ATC centres providing radar services throughout the country since 2013.	Completed	2013
Kyrgyzstan	All ATC systems in the Kyrgyzyz Republic meet these requirements.	Completed	2009
Russian Federation	This functionality is included in the equipment standard and is applied by all operating automated ATC systems.	Completed	/
Tajikistan	ATC System (Master Plan Peleng) was installed in 2012 and STCA functionality was installed for CWPs in ACC.	Completed	2012
Tunisia	Functionalities implemented through the current SDP system.	Completed	2014
Turkmenistan	-	Completed	2018
Uzbekistan	The current ATC System (Thomson/Peling Master which was installed after QNH implementation in 2014) includes STCA functions. The system is installed in all 3 ACCs (**Tashkent, Samarkand, Nukus**).	Completed	2018

B0-SNET (ATC02.8: APW and MSAW)

State	Comment	Status and progress	Year of implementation
Algeria	The current system includes the MSAW end APW function.	Completed	2004
Belarus	-	Completed	2018
Kazakhstan	Ground systems have been upgraded to support the APW function. APW function is in operational use. Ground systems have been upgraded to support the MSAW function. MSAW function is in operational use.	Completed	2013
Kyrgyzstan	Minimum Safe Altitude Warning implement - 100% in 2009. Area Proximity Warning implemented only in ATC system **Issyk-Kul.**	Ongoing (88%)	2020
Russian Federation	This functionality is included in the equipment standard and is applied by all operating automated ATC systems.	Completed	-
Tajikistan	ATC System (Master from Peleng) was installed in 2012 and APW functionality was installed for CPWs in ACC. With the new ATC System installation, MSAW was not put into operation (lack of terrain data), the final integration of MSAW could be started after completion of WGS-84 project.	Ongoing (88%)	2020
Tunisia	Functionalities implemented through the current SDP system.	Completed	2014
Turkmenistan	-	Completed	2018
Uzbekistan	The current ATC System (Thomson/Peling Master which was installed after QNH implementation in 2014) includes STCA functions. The system is installed in all 3 ACCs (**Tashkent, Samarkand, Nukus**).	Completed	2018

B0-SNET (ATC02.9: STCA for TMAs)

State	Comment	Status and progress	Year of implementation
Algeria	-	Completed	2004
Belarus	-	Completed	2018
Kazakhstan	The STCA function in TMA and associated procedures have been implemented in line with Kazakhstan regulations at all ATC centres providing radar services throughout the country since 2019.	Completed	2019
Kyrgyzstan	-	Completed	2018
Russian Federation	-	Ongoing (98%)	2020
Tajikistan	-	Completed	2018
Tunisia	Functionalities implemented through the current SDP system.	Completed	2014
Turkmenistan	-	Completed	2018
Uzbekistan	-	Completed	2018

B0-SURF (AOP04.1: A-SMGCS Surveillance)

State	Comment	Status and progress	Year of implementation
Algeria	Surface radar with basic software installed at **Algiers** aerodrome. This system is used by ATC for visualisation.	No plan	/
Belarus	A-SMGCS Level 1 system was put into operation at **Minsk-2** aerodrome on 01 September 2016. Ground vehicles have been equipped with ADS-B transponders. A-SMGCS operational procedures have been implemented.	Completed	2016
Kazakhstan	A-SMGCS level 1 is installed at **Almaty** and **Nur-Sultan**. There are no plans for A-SMGCS installation at other airports. A-SMGCS procedures (including transponder operating procedures) are not published in national AIP. Vehicles operating on the manoeuvring area of airports equipped with ADS-B transponders.	Ongoing (88%)	2025
Kyrgyzstan	Kyrgyz Republic will install surveillance equipment at **Manas international airport.**	Ongoing (22%)	2022
Russian Federation	1. There is no mandatory requirement for the equipment of aircraft by mode S transponders. 2. There is no mandatory requirement for the equipment of vehicles by mode S transponders. 3. Implementation of terminal area surveillance and control systems is carried out in accordance with the Internal plan. The plan provides for the equipment of **20 aerodromes**. The different configurations of equipment are operational at **15 aerodromes**. At aerodromes with MLAT, Mode S transponders are being installed on ground vehicles. 4. Transponder application procedure for **11 aerodromes** was published in AIP. 5. MLAT is implemented at **12 aerodromes.**	Ongoing (51%)	2020
Tajikistan	No implementation planned for airports in Tajikistan (the largest airport **Dushanbe** has currently 40-45 flights per day).	Not applicable	/
Tunisia	No need to implement A-SMGCS in Tunisian airports.	Not applicable	/
Turkmenistan	No implementation planned for the international airports in Turkmenistan (**Ashgabat** airport has currently 60 aircraft movements per day, **Turkmenbashi** airport has around 20 movements per day, **Turkmenabat** and **Dashoguz** airports have around 15 movements per day and **Mary** airport has 10 movements per day).	Not applicable	/
Uzbekistan	Due to low traffic no implementation planned.	No plan	/

B0-SURF (AOP04.2: A-SMGCS RMCA)

State	Comment	Status and progress	Year of implementation
Algeria	-	No plan	/
Belarus	A-SMGCS (former level 2) implemented with commissioning of the second runway. Aiming at improving A-SMGCS procedures, MLAT system for **Minsk-2** aerodrome implemented.	Completed	2019
Kazakhstan	A-SMGCS level 2 is not yet planned - the amount of traffic does not justify automation.	No plan	/
Kyrgyzstan	SE "Kyrgyzaeronavigatsia" plans system with predict and detect of conflict function at **Manas international airport.**	Planned	2020
Russian Federation	-	Ongoing (46%)	2020
Tajikistan	No implementation planned for airports in Tajikistan (the largest airport **Dushanbe** has currently 40-45 flights per day).	Not applicable	/
Tunisia	No need to implement A-SMGCS in Tunisian airports	Not applicable	/
Turkmenistan	No implementation planned for the international airports in Turkmenistan (**Ashgabat** airport has currently 60 aircraft movements per day, **Turkmenbashi** airport has around 20 movements per day, **Turkmenabat** and **Dashoguz** airports have around 15 movements per day and **Mary** airport has 10 movements per day).	Not applicable	/
Uzbekistan	Due to low traffic no implementation planned.	No plan	/

B0-TBO

State	Comment	Status and progress	Year of implementation
Algeria	-	Completed	2019
Belarus	-	No plan	/
Kazakhstan	No intention (yet) to plan or implement it - the amount of traffic does not justify automation.	Not applicable	/
Kyrgyzstan		No plan	
Russian Federation	A pilot project has been initiated to implement a fragment of VDL-2 -based CPDLC.	Ongoing (4%)	2025
Tajikistan	Not planned. There are no interested users.	No plan	/
Tunisia	Functionality is in the new ATC system, will be used according to traffic growth and ATC capacities needs.	Ongoing (45%)	2025
Turkmenistan	No implementation planned for Turkmenistan.	Not applicable	/
Uzbekistan	-	Ongoing (57%)	2021

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