الهيئة العامة للطيران المدني
CIVIL AVIATION AUTHORITY
QATAR قطر

QATAR NATIONAL AIR NAVIGATION PLAN

RANP/NANP TF/2

17TH – 19th February 2025

Cairo, Egypt

Gonca Demiroz

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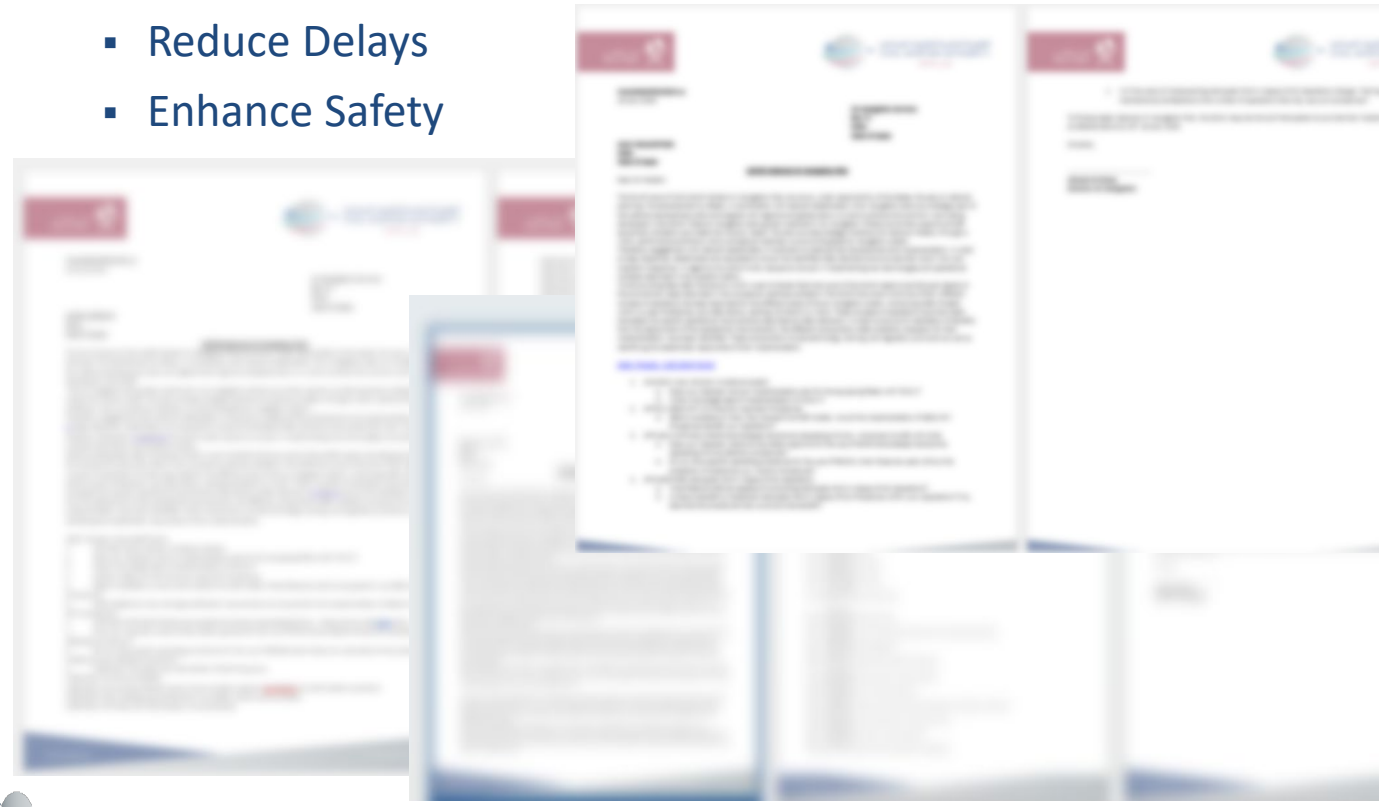
PROCESS

- Initial Draft
  - 29th of February 2024
- Stakeholder Consultation
  - Questionnaire Preparation and Feedback Process/ Objectives of Collaboration
  - Improve Airspace Efficiency And Capacity
  - Reduce Delays
  - Enhance Safety



Performance Based Approach (PBA) and QNANP

- Alignment with ICAO Global and Regional Plans
  - Based on ICAO Global Air Navigation Plan to achieve measurable outcomes.
  - By using PBA, our NANP aligns with Aviation System Block Upgrades (ASBU)
    - QATAR AND Identified Performance Areas:

✓Capacity,
✓Efficiency,
✓Predictability,
✓Safety,
✓Security,
✓Interoperability,
✓Environment.

PERFORMANCE AMBITIONS

CAPACITY

En-route Airspace capacity, Airport Throughput

EFFICIENCY

Flight Time and Distance

PREDICTABILITY

Punctuality

SAFETY

Maintain and Improve Safety

QNANP

SECURITY

Improve Security Systems and Resilience

INTEROPERABILITY

Improve AIDC and OLDI

ENVIRONMENT

Optimizing ATS Route

SID-STAR Trackmiles Reduction

CCO_CDO

COOPERATION

Focusing on Regional and Global Shared Goals

Performance Based Approach (PBA) and QNANP

- Focus on outcomes and key performance indicators (KPIs)
  - A Performance Based Approach within the QNANP sets clear objectives, targets, and KPIs.
  - Airspace Enhancement Projects (Such as green SIDs-STARs CCO/CDO implementation)

- Data Driven Decision Making
  - Traffic Forecasts (ATFM)
  - Delays Statistics
  - Safety Reports

Performance Based Approach (PBA) and QNANP

- Continuous Improvements Cycle
  - Performance Assessments
  - Updates in Procedures and Infrastructure Projects
  - Analyzing Issues and Mitigating Risks
- Cross Domain Integration
  - Connectivity with ATM/CNS/AIM/MET for national strategy

- Qatar prioritizes objectives linked to 2024 ICAO Mid Office Meetings Outcomes

Monitoring the Implementation and Reporting

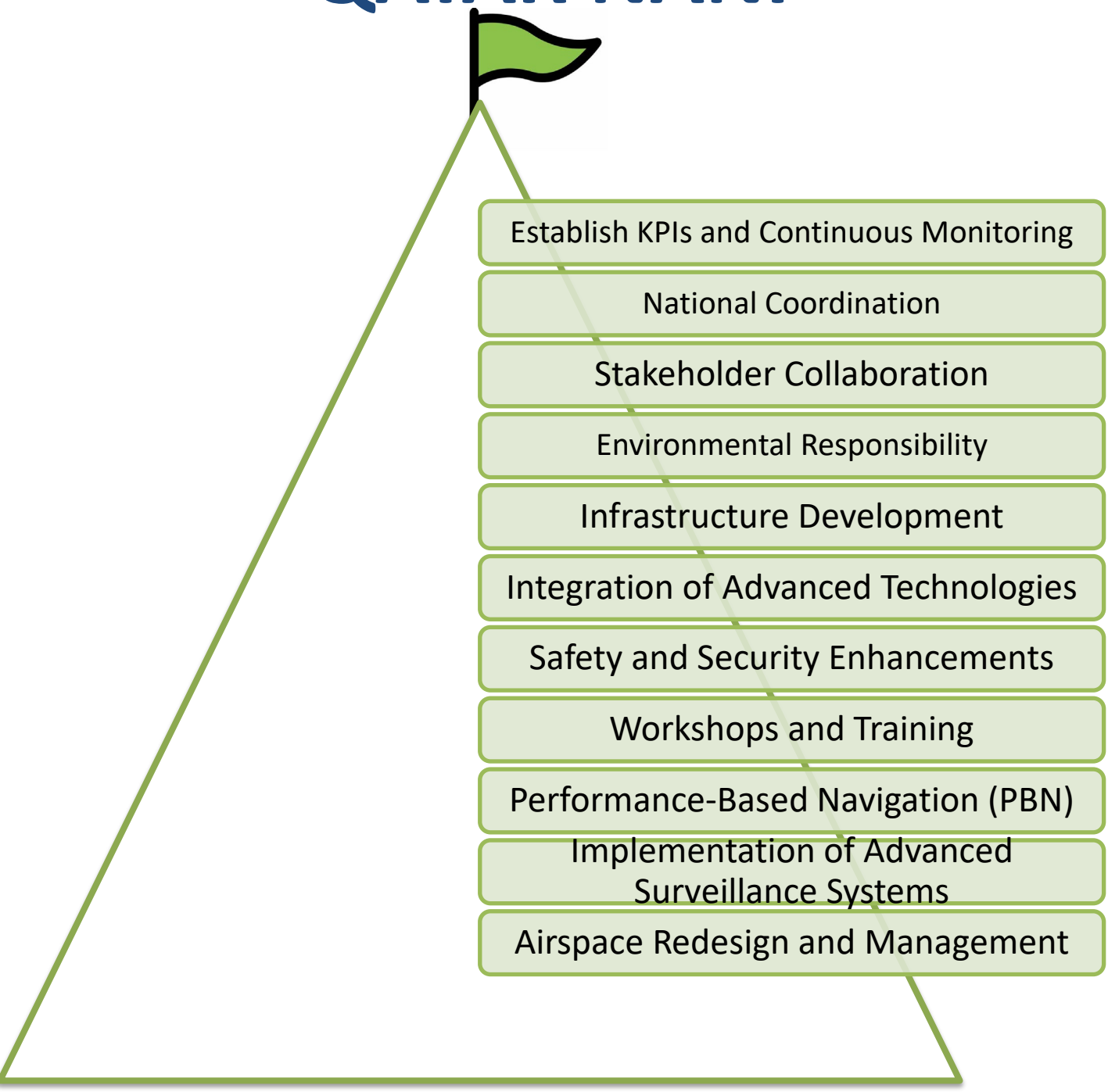
For annual implementation monitoring

- Appendix A. Air Navigation Systems Performance Based Framework

- Appendix B. Status of ASBU Threads/ Elements Implementation in Qatar

Qatar keeps monitoring ASBU Threads/ Elements as these evolve.

KEY COMPONENTS OF QATAR NANP



Conclusion

Qatar aims to enhance its airspace by following the listed key components.

By fostering collaboration with key stakeholders and embracing innovation, Qatar will solidify its status as a hub for global aviation excellence.

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THANK YOU

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Appendix A. Air Navigation Systems Performance Based Framework

(1) ICAO defined 11 Key Performance Areas. Include the list of KPAs and its definition.
(2) Performance Objectives. These objectives have been selected from the catalogue of performance objectives.
(3) Scope of each KPA
(4) KPIs based on the ICAO list of KPIs.
(5) The selected variant to measure KPI.
(6) The Baseline of each KPI.
(7) The Status of each KPI.
(8) The Target of the KPI.
(9) Selected ASBU elements /operational improvements for each operational environment.
(10) Target Implementation Date.

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date
1	2	3	4	5	6	7	8
FIR	Capacity (Capacity, throughput & utilisation)	En-route airspace capacity	**KPI 06** Variant 2: airspace occupancy count	35 movements /hr.	56 movements /hr.	Enhanced Airspace and FIR implementation; FRTO B0/4; FRTO B1/1	Implemented
OTHH	Capacity (Capacity, throughput & utilisation)	Airport peak throughput	**KPI 10** Variant AD: IFR Operations (arrivals + departures)	75 movements /hr.	86 movements /hr.	Independent Parallel Operations; Re-Categorisation Wake Turbulence Separation Minima; Visual Guided Approach (Qatar Airways); Reduced Runway Separation Minima; High	Implemented

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date
1	2	3	4	5	6	7	8
						Intensity Runway Operation; Distance-Based Separation Tool; APTA B0/1; APTA B0/2; APTA B0/7; RSEQ B0/1; RSEQ B0/2	
OTBD OTHH	Efficiency (Flight time & distance)	Reduce taxi-out additional time	**KPI 02** Variant 2: Advanced (computed with departure gate and runway data)	7.88 mins/flight 9.24 mins/flight	7 mins 8 mins	SURF B0/1; RSEQ B0/2	Implemented
OTBD OTHH	Efficiency (Flight time & distance)	Reduce taxi-in additional time	**KPI 13** Variant 2: Advanced (computed with landing runway and arrival gate data)	2.88 mins/flight 1.31 mins/flight	2.5 mins 1 min	SURF B0/1	Implemented
OTBD OTHH	Predictability (Punctuality)	Increase the number (%) of scheduled flights adhering	**KPI 01** Variant 2A: % of departures within ± 15 minutes	52% of flights 72% of flights	50% of flights 90% of flights	RSEQ B0/2	Implemented

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date
1	2	3	4	5	6	7	8
		to the scheduled off-block time.	of scheduled time of departure				
OTBD OTHH	Predictability (Punctuality)	Increase the number (%) of scheduled flights adhering to the scheduled on-block time.	**KPI 14** Variant 2A: % of arrivals within ± 15 minutes of scheduled time of arrival	44% of flights 52% of flights	50% of flights 90% of flights	ACDM B0/1; ACDM B0/2	Implemented
FIR	Safety (Maintain or improve safety) *Note: Occurrences where ATC was the main cause or a major contributory factor*	Maintain or improve operational safety outcomes	**KPI 20** Variant 2.1 National accident occurrence level	0 accident/year	0 accident/year	SURF B0/1; SURF B0/2 SURF B0/3; SNET B0/1 SNET B0/2 SNET B0/3 SNET B0/4; ACAS B1/1; FRTO B0/4	Implemented
OTBD OTHH	Safety (Maintain or improve safety) *Note: Occurrences where ATC was*	Reduce number of runway incursions	**KPI 21** The actual number of runway incursions at an aerodrome	OTBD: 6 incursions/year OTHH: 3 incursions /year	0.1 (1 per 10,000 mvts)	SURF B0/1; SURF B0/2	Implemented

Scope/ Applicability	KPA & Focus Area	Performance Objective	KPI/ Variant	KPI Baseline	KPI Target	Operational Improvements (ASBU Elements/Enablers & Non ASBU)	Target Date
1	2	3	4	5	6	7	8
	the main cause or a major contributory factor						
OTBD OTHH	Safety (Maintain or improve safety) *Note: Occurrences where ATC was the main cause or a major contributory factor*	Reduce number of runway excursions	**KPI 22** The actual number of runway excursions at an aerodrome	OTBD: 0 excursions/ year OTHH: 0 excursions/ year	OTBD: 0 excursions/ year OTHH: 0 excursions/ year	SURF B0/3	Implemented
FIR	Safety (Maintain or improve safety) *Note: Occurrences where ATC was the main cause or a major contributory factor*	Maintain or improve safety in the air	**KPI 23** Variant 1: Number of airproxes Variant 2: TCAS alerts	5 airprox/year 4 TCAS alerts/year	SPIs alert levels	Procedures review Safety Nets review Training improvement Random sampling by Standard and Competency Unit	Implemented

Appendix B. Status of ASBU Threads/ Elements Implementation in Qatar

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
ACAS	**Airborne Collision Avoidance System (ACAS)**					
ACAS B1/1	ACAS Improvements Operational	1	APP / ACC	Implemented		QCAA QCAR No. 25 of 2018, Amending QCAR 002 of 2016 on Air Operations, Subpart D Instruments, Data, Equipment CAT.IDE. A.155 (ACAS). Additional information provided in AIP Qatar GEN 1.5
ACAS B2/1	New collision avoidance system ACAS systems use ADS-B information and selective interrogations of nearby aircraft to determine their position and velocity and issue collision avoidance "resolution advisories" to flight crews.		APP ACC	Awaiting Developments		ADSB + horizontal deviations
ACAS B2/2	New collision avoidance capability as part of an overall detect and avoid system for RPAS To provide the airborne collision avoidance function as a last resort safety net for RPAS pilots.		APP ACC	Awaiting Developments		
ACDM	**Airport Collaborative Decision Making**					
ACDM B0/1	Airport CDM Information Sharing (ACIS)	1	TWR	Implemented		
ACDM B0/2	Integration with ATM Network function	1	TWR	Implemented		
ACDM B2/1	Airport Operations Plan (AOP)		TWR	Awaiting Developments		Awaiting Aerodrome Operator Developments

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
ACDM B2/2	Airport Operations Centre (APOC)		TWR	Awaiting Developments		Awaiting Aerodrome Operator Developments
ACDM B2/3	Total Airport Management (TAM)		TWR	Awaiting Developments		Awaiting Aerodrome Operator Developments
ACDM B3/1	Full integration of ACDM and TAM in TBO		TWR	Awaiting Developments		Awaiting Aerodrome Operator Developments
AMET	**Meteorological Information**					
AMET B0/1	Meteorological observations products	1	MET	In Progress	Q4/2025	Only lightning Information is still not operational and planned to be implemented at the end of 2025.
AMET B0/2	Meteorological forecast and warning products	1	MET	Implemented		
AMET B0/3	Climatological and historical meteorological products	1	MET	Implemented		
AMET B0/4	Dissemination of meteorological products	1	MET	In Progress	Q4/2025	Only for IWXXM It is still not operational and planned to be implemented in the last quarter of 2025
AMET B1/1	Meteorological observations information	2	MET	Implemented		
AMET B1/2	Meteorological forecast and warning information	2	MET	Implemented		
AMET B1/3	Climatological and historical meteorological information	2	MET	Implemented		
AMET B1/4	Dissemination of meteorological information	2	MET	Implemented		
AMET B2/1	Meteorological observations information		MET	Awaiting Development		
AMET B2/2	Meteorological forecast and warning information		MET	Awaiting Development		
AMET B2/3	Climatological and historical meteorological information		MET	Awaiting Development		
AMET B2/4	Meteorological information service in SWIM		MET	Awaiting Development		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
AMET B3/1	Meteorological observations information		MET	Awaiting Development		
AMET B3/2	Meteorological forecast and warning information		MET	Awaiting Development		
AMET B3/3	Climatological and historical meteorological information		MET	Awaiting Development		
AMET B3/4	Meteorological information service in SWIM		MET	Awaiting Development		
AMET B4/1	Meteorological observations information		MET	Awaiting Development		
AMET B4/2	Meteorological forecast and warning information		MET	Awaiting Development		
AMET B4/3	Climatological and historical meteorological information		MET	Awaiting Development		
AMET B4/4	Meteorological information service in SWIM		MET	Awaiting Development		
APTA	**Improve Arrival And Departure Operations**					
APTA B0/1	PBN Approaches (with basic capabilities)	1	APP	Implemented		LNAV/VNAV implemented on all OTHH Rwy ends. LNAV/VNAV implemented on OTBD Rwy 33. LNAV/VNAV not feasible on Rwy 15.
APTA B0/2	PBN SID and STAR procedures (with basic capabilities)	1	APP	Implemented		
APTA B0/3	SBAS/GBAS CAT I precision approach procedures	2	APP	In Progress	2025	GLS approach
APTA B0/4	CDO (Basic)	1	APP	Implemented		
APTA B0/5	CCO (Basic)	1	APP	Implemented		
APTA B0/6	PBN Helicopter Point in Space (PinS) Operations	2				Not foreseen for implementation in Qatar
APTA B0/7	Performance based aerodrome operating minima – Advanced aircraft	1		In Progress	2026	QCAA QCAR Air Operations AMC/GM to Part-SPA (Revision 1) No. 25 of 2018, SUBPART E: LOW VISIBILITY OPERATIONS (LVO) AMC6 SPA.LVO.100 Low visibility

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
						operations. Implementation of PBAOM has not yet started.
APTA B0/8	Performance based aerodrome operating minima – Basic aircraft	2		Not Started		
APTA B1/1	PBN Approaches (with advanced capabilities)	2	APP	Implemented		RNP APP as NPA capability to +10C
APTA B1/2	PBN SID and STAR procedures (with advanced capabilities)	2	APP	Implemented		
APTA B1/4	CDO (Advanced)	2	APP	In Progress	2027	
APTA B1/5	CCO (Advanced)	2	APP	In Progress	2027	
APTA B2/1	GBAS CAT II/III precision approach procedures		APP	In Progress	2025	GLS approach
APTA B2/2	Simultaneous operations to parallel runways		APP	Implemented		
APTA B2/3	PBN Helicopter Steep Approach Operations		APP			Not foreseen for implementation in Qatar
APTA B2/4	Performance based aerodrome operating minima – Advanced aircraft with SVGS		APP	Awaiting Developments		
APTA B3/1	Parallel approaches without vertical guidance		APP	Awaiting Developments		
APTA B3/2	Implementation of A-RNP to support non-complex simultaneous independent parallel approaches		APP	Awaiting Developments		
ASUR	**Surveillance systems**					
ASUR B0/1	Automatic Dependent Surveillance – Broadcast (ADS-B)	1	ACC	Implemented		
ASUR B0/2	Multilateration cooperative surveillance systems (MLAT)	1	ACC	Implemented		
ASUR B0/3	Cooperative Surveillance Radar Downlink of Aircraft Parameters (SSR-DAPS)	1	ACC / SUR	Implemented		
ASUR B1/1	Reception of aircraft ADS-B signals from space (SB ADS-B)	2	ACC			Not foreseen for implementation in Qatar

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
ASUR B2/1	Evolution of ADS-B and Mode S		ACC	In Progress		
ASUR B2/2	New community-based surveillance system for airborne aircraft (low and higher airspace)		ACC	Awaiting Developments		
ASUR B3/1	New non-cooperative surveillance system for airborne aircraft (medium altitudes)		ACC	Awaiting Developments		
ASUR-B4/1	Further evolution of ADS-B and MLAT		ACC	Awaiting Developments		
COMI	**Communication infrastructure**					
COMI B0/1	Aircraft Communication Addressing and Reporting System (ACARS)	2	ACC / COM	Implemented		
COMI B0/2	Aeronautical Telecommunication Network/ Open System Interconnection (ATN/OSI)	2	ACC / COM	Implemented		
COMI B0/3	VHF Data Link (VDL) Mode 0/A	2	ACC / COM	Implemented		
COMI B0/4	VHF Data Link (VDL) Mode 2 Basic	2	ACC / COM	Implemented		
COMI B0/5	Satellite communications (SATCOM) Class C Data	2				Not foreseen for implementation in Qatar
COMI B0/6	High Frequency Data Link (HFDL)	2				Not foreseen for implementation in Qatar
COMI B0/7	ATS Message Handling System (AMHS)	1		Implemented		AMHS is implemented with the following States: -Bahrain - Kuwait - Oman - Saudi Arabia - UAE
COMI B1/1	Ground-Ground Aeronautical Telecommunication Network/Internet Protocol Suite (ATN/IPS)	1		Implemented		Voice Hotlines, Surveillance, SITA
COMI B1/2	VHF Data Link (VDL) Mode 2 Multi-Frequency	2		Implemented		
COMI B1/3	SATCOM Class B Voice and Data	2				Not foreseen for implementation in Qatar
COMI B1/4	Aeronautical Mobile Airport Communication	2		Awaiting Development		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
	System (AeroMACS) Ground-Ground					
COMI B2/1	Air-Ground ATN/IPS		ACC	Implemented		
COMI B2/2	Aeronautical Mobile Airport Communication System (AeroMACS) aircraft mobile connection			Awaiting Development		
COMI B2/3	Links meeting requirements for non-safety critical communication			Awaiting Development		
COMI B3/3	L-band Digital Aeronautical Communication System (LDACS)			Awaiting Development		
COMI B3/4	Links meeting requirements for safety-critical communication			Awaiting Development		
COMS	**ATS Communication Service**					
COMS B0/1	CPDLC (FANS 1/A & ATN B1) for domestic and procedural airspace	2	ACC / COM	Implemented		
COMS B0/2	ADS-C (FANS 1/A) for procedural airspace	2	ACC			Not foreseen for implementation in Qatar
COMS-B1/1	PBCS Approved CPDLC (FANS 1/A+) For domestic and procedural airspace		COM			Not foreseen for implementation in Qatar
COMS B1/1	PBCS approved CPDLC (FANS 1/A+) for domestic and procedural airspace	2	ACC			Not foreseen for implementation in Qatar
COMS B1/2	PBCS approved ADS-C (FANS 1/A+) for procedural airspace	2	ACC			Not foreseen for implementation in Qatar
COMS B1/3	SATVOICE (incl. routine communications) for procedural airspace	2	ACC			Not foreseen for implementation in Qatar
COMS B2/1	PBCS approved CPDLC (B2) for domestic and procedural airspace		ACC			Not foreseen for implementation in Qatar

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
COMS B2/2	PBCS Approved ADS-C (B2) for domestic and procedural airspace		ACC			Not foreseen for implementation in Qatar
COMS B2/3	PBCS approved SATVOICE (incl. routine communications) for procedural airspace		ACC			Not foreseen for implementation in Qatar
COMS B3/1	Extended CPDLC (B2 incl. Adv-IM and dynamic RNP) for dense and complex airspace		ACC			Not foreseen for implementation in Qatar
COMS B3/2	Extended ADS-C (B2 incl. Adv-IM and dynamic RNP) for dense and complex airspace		ACC			Not foreseen for implementation in Qatar
CSEP	**Cooperative Separation**					
CSEP B1/2	Visual Separation on Approach (VSA)	2	COM	Not Implemented		Long-term Plan
CSEP B1/3	Performance Based Longitudinal Separation Minima	2	APP	Awaiting Development		
CSEP B1/4	Performance Based Lateral Separation Minima	2	APP	Awaiting Development		
CSEP B2/1	Interval Management (IM) Procedure		APP	Awaiting Development		
CSEP B2/2	Cooperative separation at low altitudes		APP	Awaiting Development		UAV/RPAS
CSEP B2/3	Cooperative separation at higher airspace			Awaiting Development		
CSEP B3/1	Interval Management (IM) Procedure with complex geometries			Awaiting Development		
CSEP B3/2	Remain Well Clear (RWC) functionality for UAS/RPAS			Awaiting Development		
CSEP B4/1	Airborne separation			Awaiting Development		
DAIM	**Digital Aeronautical Information Management**					
DAIM B1/1	Provision of quality-assured aeronautical data and information	1	AIM	Implemented		
DAIM B1/2	Provision of digital Aeronautical Information Publication (AIP) data sets	2	AIM	Implemented		
DAIM B1/3	Provision of digital terrain data sets	1	AIM	Implemented		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
DAIM B1/4	Provision of digital obstacle data sets	1	AIM	Implemented		
DAIM B1/5	Provision of digital aerodrome mapping data sets	2	AIM	In Progress	Q2/2025	
DAIM B1/6	Provision of digital instrument flight procedure data sets	2	AIM	In Progress	Q4/2025	
DAIM B1/7	NOTAM improvements	2	AIM	Implemented		
DAIM B2/1	Dissemination of aeronautical information in a SWIM environment		AIM	Implemented		
DAIM B2/2	Daily Airspace Management information to support flight and flow		AIM	Not Started		
DAIM B2/3	Aeronautical information to support higher airspace operations		AIM	Not Started		
DAIM B2/4	Aeronautical information requirements tailored to UTM		AIM	Not Started		
DAIM B2/5	NOTAM replacement		AIM	Not Started		
DATS	**Digital Aerodrome Air Traffic Services**					
DATS B1/1	Remotely Operated Aerodrome Air Traffic Services	2	TWR	Awaiting Development		OTHH VTWR Project
FICE	**Flight and Flow Information for a Collaborative Environment (FF-ICE)**					
FICE B0/1	Automated basic inter-facility data exchange (AIDC)	1		Implemented		OLDI is established with Bahrain and UAE. OLDI with Saudi on test.
FICE B2/1	Planning Service			Awaiting Development		
FICE B2/2	Filing Service			Awaiting Development		
FICE B2/3	Trial Service			Awaiting Development		
FICE B2/4	Flight Data Request Service			Awaiting Development		
FICE B2/5	Notification Service			Awaiting Development		
FICE B2/6	Publication Service			Awaiting Development		
FICE B2/7	Flight information management service for higher airspace operations			Awaiting Development		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
FICE B2/8	Flight information management service for low-altitude operations			Awaiting Development		
FICE B2/9	Flight information management support for inflight re-planning			Awaiting Development		
FICE B3/1	Flight information management services for enhanced trajectory operations			Awaiting Development		
FICE B4/1	Integrated flight information management system for end-to-end global flight planning			Awaiting Development		
FICE B4/2	Real-Time Participation of operators in flight information			Awaiting Development		
FRTO	**Improved operations through enhanced en-route trajectories**					
FRTO B0/1	Direct routing (DCT)	2	ACC	Implemented		
FRTO B0/2	Airspace Planning and Flexible Use of Airspace (FUA)	1	ACC	Achieved/ Implemented		
FRTO B0/3	Pre-validated and coordinated ATS routes to support flight and flow	2	ACC	Awaiting Development		
FRTO B0/4	Basic conflict detection and conformance monitoring	1	ACC	Achieved/ Implemented		
FRTO B1/1	Free Route Airspace (FRA)	2	ACC	Implemented		Cross Border FRA with UAE is in progress.
FRTO B1/2	Required Navigation Performance (RNP) routes	2	ACC	Awaiting Development		
FRTO B1/3	Advanced Flexible Use of Airspace (FUA) and management of real time airspace data	2	ACC	Awaiting Development		
FRTO B1/4	Dynamic sectorisation	2	ACC	Awaiting Development		
FRTO B1/5	Enhanced Conflict Detection Tools and Conformance Monitoring	2	ACC	Awaiting Development		
FRTO B1/6	Multi-Sector Planning	2	ACC	Implemented		
FRTO B1/7	Trajectory Options Set (TOS)	2	ACC	Awaiting Development		
FRTO B2/1	Local components of integrated ATFM and		ACC	Awaiting Development		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
	ATC Planning function (INAP)					
FRTO B2/2	Local components of Dynamic Airspace Configurations (DAC)		ACC	Awaiting Development		
FRTO B2/3	Large Scale Cross Border Free Route Airspace (FRA)		ACC	Awaiting Development		
FRTO B2/4	Enhanced Conflict Resolution Tools		ACC	Awaiting Development		
GADS	**Global Aeronautical Distress and Safety System (GADSS)**					
GADS B1/1	Aircraft Tracking	2				
GADS B1/2	Operational Control Directory	1				Contact details provided in AIP Qatar GEN 3.6 Search and Rescue.
GADS B2/1	Location of an aircraft in Distress					
GADS B2/3	Distress tracking information management					
GADS B2/3	Post Flight Localisation					
GADS B2/4	Flight Data Recovery					
NAVS	**Navigation Systems**					
NAVS B0/1	Ground Based Augmentation Systems (GBAS)	2	NAV	In Progress		Feasibility study 24x7 GBAS operation has been completed in Q1 2025. It further recommends that one more ionospheric analysis be performed to confirm the presence of severe ionospheric scintillation/ increased iono activities.
NAVS B0/2	Satellite Based Augmentation Systems (SBAS)	2	NAV	Not Implemented		
NAVS B0/3	Aircraft Based Augmentation Systems (ABAS)	1	NAV	Implemented		QCAA QCAR No. 002 of 2016 Air Operations Annex V: Part-SPA SPA.PBN.100 PBN Operations; GM1 SPA.PBN.100 PBN operations; and SPA.PBN.105 PBN operational approval.

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
NAVS B0/4	Navigation Minimal Operating Networks (Nav. MON)	1	NAV	Implemented		VOR/DME network provides sufficient coverage.
NAVS B1/1	Extended GBAS	2	NAV	Not Implemented		This element builds upon the basic GBAS systems. Requirement: Improved ionospheric error monitoring and mitigation and enhanced VDB receiver performance.
NAVS B2/1	Dual Frequency Multi Constellation (DF MC) GBAS		NAV	In Progress		This element builds upon the basic GBAS systems.
NAVS B2/2	Dual Frequency Multi Constellation (DF MC) SBAS		NAV	Not Implemented		This module builds upon the basic SBAS systems introduced within Block 0 ANSP, Aircraft manufacturer, Aircraft operator, SBAS service provider
NAVS B2/3	Dual Frequency Multi Constellation (DF MC) ABAS		NAV	Not Implemented		This module builds upon the basic SBAS systems introduced within Block 0 ANSP, Aircraft manufacturer, Aircraft operator, SBAS service provider This element builds upon the basic ABAS systems introduced within Block 0.
NOPS	**Network Operations**					
NOPS B0/1	Initial integration of collaborative airspace management with air traffic flow management	1	ATFM	Implemented		
NOPS B0/2	Collaborative Network Flight Updates	2	ATFM	In Progress	Q4/2025	
NOPS B0/3	Network Operation Planning basic features	2	ATFM	Implemented		
NOPS B0/4	Initial Airport/ATFM slots and A-CDM Network Interface	2	ATFM	Implemented		
NOPS B0/5	Dynamic ATFM slot allocation	2	ATFM	Implemented		
NOPS B1/1	Short Term ATFM measures	2	ATFM	Implemented		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
NOPS B1/2	Enhanced Network Operations Planning	2		Awaiting Development		
NOPS B1/3	Enhanced integration of Airport operations planning with network operations planning	2		Awaiting Development		
NOPS B1/4	Dynamic Traffic Complexity Management	2		Awaiting Development		
NOPS B1/5	Full integration of airspace management with air traffic flow management	2	ATFM	Implemented		
NOPS B1/6	Initial Dynamic Airspace configurations	2		Awaiting Development		
NOPS B1/7	Enhanced ATFM slot swapping	2		Awaiting Development		
NOPS B1/8	Extended Arrival Management supported by the ATM Network function	2		Awaiting Development		
NOPS B1/9	Target Times for ATFM purposes	2		Awaiting Development		
NOPS B1/10	Collaborative Trajectory Options Program (CTOP)	2		Awaiting Development		
NOPS B2/1	Optimised ATM Network Services in the initial TBO context			Awaiting Development		
NOPS B2/2	Enhanced dynamic airspace configuration			Awaiting Development		
NOPS B2/3	Collaborative Network Operation Planning			Awaiting Development		
NOPS B2/4	Multi ATFM slot swapping and Airspace Users priorities			Awaiting Development		
NOPS B2/5	Further airport integration within Network Operation Planning			Awaiting Development		
NOPS B2/6	ATFM adapted for cross-border Free Route Airspace (FRA)			Awaiting Development		
NOPS B2/7	UTM Network operations			Awaiting Development		
NOPS B2/8	High upper airspace network operations			Awaiting Development		
NOPS B3/1	ATM Network Services in full TBO context			Awaiting Development		
NOPS B3/2	Cooperative Network Operations Planning			Awaiting Development		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
NOPS B3/3	Innovative airspace architecture			Awaiting Development		
OPFL	**Improved access to optimum flight levels in oceanic and remote airspace**					
OPFL B0/1	In Trail Procedure (ITP)	2	ACC	N/A		Not foreseen for implementation in Qatar
OPFL B1/1	Climb and Descend Procedure (CDP)	2	ACC	N/A		Not foreseen for implementation in Qatar
OPFL B2/1	Separation minima using ATS surveillance systems where VHF voice communications are not available		ACC	N/A		Not foreseen for implementation in Qatar
OPFL B3/1	Helicopter RNP 0.3 Terminal and En-Route Operations		ACC	In Progress		
OPFL B3/2	Expansion of upper limit of the Reduced Vertical Separation Minima (RVSM) band of flight levels		ACC	In Progress		
OPFL B3/3	Target-to-target separations using Space-based ADS-B data		ACC	In Progress		
RSEQ	**Improved traffic flow through runway sequencing**					
RSEQ B0/1	Arrival Management	1	APP	In Progress		Planned implementation will be in Q2/2026.
RSEQ B0/2	Departure Management	2	APP	Implemented		
RSEQ B0/3	Point merge	2	APP	N/A		Linear Holding/Trombone Implemented
RSEQ B1/1	Extended arrival metering	2		Implemented		
RSEQ B2/1	Integration of arrival and departure management		APP	In Progress		
RSEQ B3/2	Arrival management in terminal airspace with multiple airports		APP	In Progress		
RSEQ B3/3	Increased utilisation of runway capacity by improved real-time runway scheduling		APP	In Progress		
RSEQ B3/4	Improved operator fleet management in runway sequencing		APP	Awaiting Development		
RSEQ B4/1	Departure management in terminal airspace from multiple airports		APP	Awaiting Development		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
RSEQ B4/2	Extended arrival management supporting overlapping operations into multiple airports		APP	Awaiting Development		
SNET	**Ground-based Safety Nets**					
SNET B0/1	Short Term Conflict Alert (STCA)	1	APP	Implemented		
SNET B0/2	Minimum Safe Altitude Warning (MSAW)	1	APP	Implemented		
SNET B0/3	Area Proximity Warning (APW)	1	APP	Implemented		
SNET B0/4	Approach Path Monitoring (APM)	2	APP	Implemented		
SNET B1/1	Enhanced STCA with aircraft parameters	2	APP	Implemented		
SNET B1/2	Enhanced STCA in complex TMA	2	APP	Implemented		
SURF	**Surface operations**					
SURF B0/1	Basic ATCO tools to manage traffic during ground operations	1	TWR	Implemented		
SURF B0/2	Comprehensive situational awareness of surface operations	1	TWR	Implemented		A-SMGCS Level 2 at OTHH/OTBD implemented.
SURF B0/3	Initial ATCO alerting service for surface operations	1	TWR	Implemented		Integrated Controller Working Position (ICWP) will be implemented at OTHH/OTBD by May 2025. ICWP with Level 5 is planned to be implemented by December 2025.
SURF B1/1	Advanced features using visual aids to support traffic management during ground operations	2	TWR	Implemented		
SURF B1/2	Comprehensive pilot situational awareness on the airport surface	2	TWR	Awaiting Development		
SURF B1/3	Enhanced ATCO alerting service for surface operations	2	TWR	Awaiting Development		
SURF B1/4	Routing service to support ATCO surface operations management	2	TWR	Awaiting Development		
SURF B1/5	Enhanced vision systems for taxi operations	2	TWR	Awaiting Development		

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SWIM	System-Wide Information Management					
SWIM-B2/1	Information service provision			Implemented		
SWIM-B2/2	Information service consumption			Implemented		
SWIM-B2/3	SWIM registry			Implemented		
SWIM-B2/4	Air/Ground SWIM for non-safety critical information			Awaiting Development		
SWIM-B2/5	Global SWIM processes			Awaiting Development		
SWIM-B3/1	Air/Ground SWIM for safety critical information			Awaiting Development		
TBO	**Trajectory-based operations**					
TBO B0/1	Introduction of time-based management within a flow centric approach	2	APP			DBS (Distance Base Separation) Tool Implemented
TBO B1/1	Initial integration of time-based decision-making processes	2	APP	Awaiting Development		
TBO B2/1	Pre-departure trajectory synchronisation within a flight centric and network performance approach		APP	Awaiting Development		
TBO B2/2	Extended time-based management across multiple FIRs for active flight synchronisation		APP	Awaiting Development		
TBO B3/1	Network based on-demand synchronisation of trajectory-based operations		APP	Awaiting Development		
TBO B4/1	Total airspace management performance system		APP	Awaiting Development		
WAKE	**Wake Turbulence Separation**					
WAKE B2/1	Wake turbulence separation minima based on seven aircraft groups		APP	Implemented		
WAKE B2/2	Time based wake separation minima for final approach		APP	Awaiting Development		
WAKE B3/1	Dependent parallel approaches		APP	Implemented		

Element ID	Element Title	MID Region Priority	Unit Involved	Status of Implementation	Target Date	REMARKS
WAKE B3/2	Independent segregated parallel operations		APP	Implemented		
WAKE B3/3	Wake turbulence separation minima based on leader/follower static pairs-wise		APP	Implemented		
WAKE B3/4	Enhanced dependent parallel approaches		APP	Implemented		
WAKE-B3/5	Enhanced independent segregated parallel operations			Awaiting Development		
WAKE-B3/6	Time based wake separation minima for departure based on leader/follower static pair-wise			Awaiting Development		
WAKE-B3/7	Time based dependent parallel approaches			Awaiting Development		
WAKE-B3/8	Time based independent segregated parallel operations			Awaiting Development		
WAKE-B4/1	En-route Wake Encounter Ground based Prediction			Awaiting Development		
WAKE-B4/2	En-route wake encounter on-board flight management/mitigation.			Awaiting Development		

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