PERFORMANCE BASED NAVIGATION IMPLEMENTATION PLAN - SLOVENIA

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DOCUMENT CHANGE RECORD

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1 FOREWORD

As Slovenia is a country with a considerably increasing amount of air traffic, it is important that Slovenian airspace is used as efficiently as possible.
This document contains the information about the development of the roadmap and goals with set milestones to ensure a successful implementation of PBN concept and other identified changes in Slovenian airspace.

Slovenia has elected to implement PBN applications within the national airspace. The Performance Based Navigation Implementation Plan (PBN IP) identifies Performance Based Navigation (PBN), based on the use of GNSS, as the means for modernization of navigation in Slovenia, enabling safety, environment and economic benefits.

The document will be reviewed periodically to ensure consistency and so that any changes in strategy can be taken into account.

States are being encouraged to implement PBN by ICAO through the Assembly resolution 37-11 and are requested to develop a PBN implementation plan. In Europe implementation of PBN is being encouraged through the PCP IR (EU 716/2014) and the EASA PBN rulemaking activity (EU 2018/1048).

European legislation requires that all terminal operations are to be in accordance with PBN. With the implementation of PBN, it is important that the current terrestrial navigation facilities infrastructure is reviewed to ensure it supports safety criteria while achieving efficiencies. These efficiencies will be realized through re-evaluation and rationalization of ground navigation facilities.

The navigation infrastructure is a key element in PBN and transition to this environment is linked towards a Global Navigation Satellite System (GNSS) and a move away from dependence on traditional ground-based navigation infrastructure such as VOR and NDB facilities. This requires the analyses of current navaid infrastructure and its proposal for rationalization. The Slovenia Control will assess the NAVAID infrastructure in order to ensure that it is sufficient for the proposed operations, including reversionary modes where reasonable.

1.1 Purpose of PBN

The principal goal of PBN implementation process is to ensure safety, and as far as possible to allow fair and equitable access for all stakeholders. PBN involves area navigation procedures that are more accurate and allow for shorter and more direct routes. They are primarily based on global navigation satellite systems (GNSS).

Traditionally air navigation has relied on ground-based navigation aids to assist aircraft to fly safely during instrument (IFR) flights. The major change in air navigation over the next 10 years is a progressive transition worldwide PBN routes, departure and arrival procedures as well as approach procedures.

Since the PBN concept has already been implemented in Slovenia ENR segment with the implementation of RNAV 5 navigation specification and with implementation of Free Route (FRA) concept this PBN IP proposes changes within TMA and APP segment of all Slovenian international airports. PBN applications have already been implemented in Terminal Airspace of Airport Ljubljana with the implementation of RNAV 1 SIDs and STARs, but the layout of entire concept will be re-evaluated and re-designed.

To make a safe transition to the new PBN environment, operators and users will need to ensure that their equipment, procedures and training meet acceptable standards.

1.2 Benefits and objectives of PBN

- improving and maintaining the safety of flight operations by accurately guiding aircraft
- achieving optimized flight paths, reducing flight times and fuel consumption
- implementing of more precise final approach procedures
- reducing aircraft emissions and avoiding noise-sensitive areas
- improving traffic flows by means of redesigning flight paths within terminal areas
- increasing of predictability of the flight path
- increasing airspace capacity by reducing the lateral and longitudinal separation between aircraft
- improving the overall economic benefits of operations through optimization of navigation infrastructure

1.3 Objectives of navaid infrastructure:

- possible rationalization and optimization of navigational infrastructure (removing or replacing of conventional navigation aids that are not part of MON and are not required for reversionary operations)
- considerations for supporting reversionary operations where appropriate
- encourage airspace users to equip with a PBN capability
- reduction of unnecessary operational costs (maintenance of navaids and procedures)
- enabling stakeholder engagement in the change process (need for use)
- usage of navaid signal with neighboring ANSP (through contractual meaning)

2 AIRSPACE CHANGE KEY TASKS

The key tasks in this document introduces a process for a collaborative approach to:

- Design of PBN airspace concept within FIR Ljubljana from GND up to FL245
- Revision and re-evaluation of all existing instrument procedures
- Implementation of PBN TMA and APP operations at all international airports
    - RNAV/RNP 1 SIDs and STARs
    - RNP approach procedures at all instrument runways (published with LNAV, LNAV/VNAV and LPV minima where appropriate)
- Current status of usage of all instrument procedures
- Current status of the usage of ground navigation facilities
    - Optimization and rationalization of ground navigation facilities
- Current status of aircraft capability (NAV equipment)
- Re-design and re-classification of current airspace volumes
- Implementation of PBN helicopter routes (PinS)
- Assessment of usage of VFR routes and reporting points

2.1 Considered stakeholders

Coordination is critical with the aviation community through collaboration. This will assist all stakeholders in understanding operational goals, determining requirements, and considering future strategies. In order to provide greater picture to all aviation stakeholders in Slovenia, appropriate consultation and promulgation of information will be one of the highest priorities of all airspace change proposals. Appropriate consultation mechanisms will be set up, ensuring that all relevant stakeholders are given an opportunity to be involved.

- Civil Aviation Agency (CAA)
- Ministry of Infrastructure
- Ministry of Defence
- Ministry of the Interior (Police)
- Ministry of Environment and Spatial Planning
- Slovenia Control, Ltd (ANSP - Air Navigation Service Provider)
- Airspace users (Relevant airliners, NAC – National AeroClub members, ATOs – Approved Training Organizations, AOPA)
- Aerodrome operators (international and national airports for VFR users)
- City Municipalities in airport areas
- Local communities

3 REFERENCE DOCUMENTS

International documents

- Global Air Navigation Plan (GANP)
- ICAO Resolution 37-11
- PBN manual (ICAO Doc. 9613)
- European Airspace Concept Handbook for PBN Implementation (Edition 3.0)
- European ATM Master Plan
- European Route Network Improvement Plan (Part 1: European Airspace design Methodology – Guidelines),
- PCP IR (EU 716/2014)
- PBN Regulation (EU 2018/1048)
- European Navaid Infrastructure Planning Handbook including MON (1.0 draft)
- European GNSS Contingency/Reversion Handbook for PBN Operations (draft ed.1)
- Local Single Sky Implementation (LSSIP-2019)

Slovenian documents

- Analiza navigacijske infrastructure v FIR Ljubljana (V 1.0)
- Certifikacijske specifikacije o oblikovanju in določanju postopkov instrumentalnega letenja in drugih pogojev za vzletanje in pristajanje zrakoplovov (Ur.l.RS, št. 41)
- Priročnik organizacije za oblikovanje letalskih procedur (005-2/21-2017, V 1.0)
- Postopek uvajanja sprememb v zračnem prostoru (CAA; ANS.PRC-15)

4 PBN NAVIGATION SPECIFICATIONS DESCRIPTION

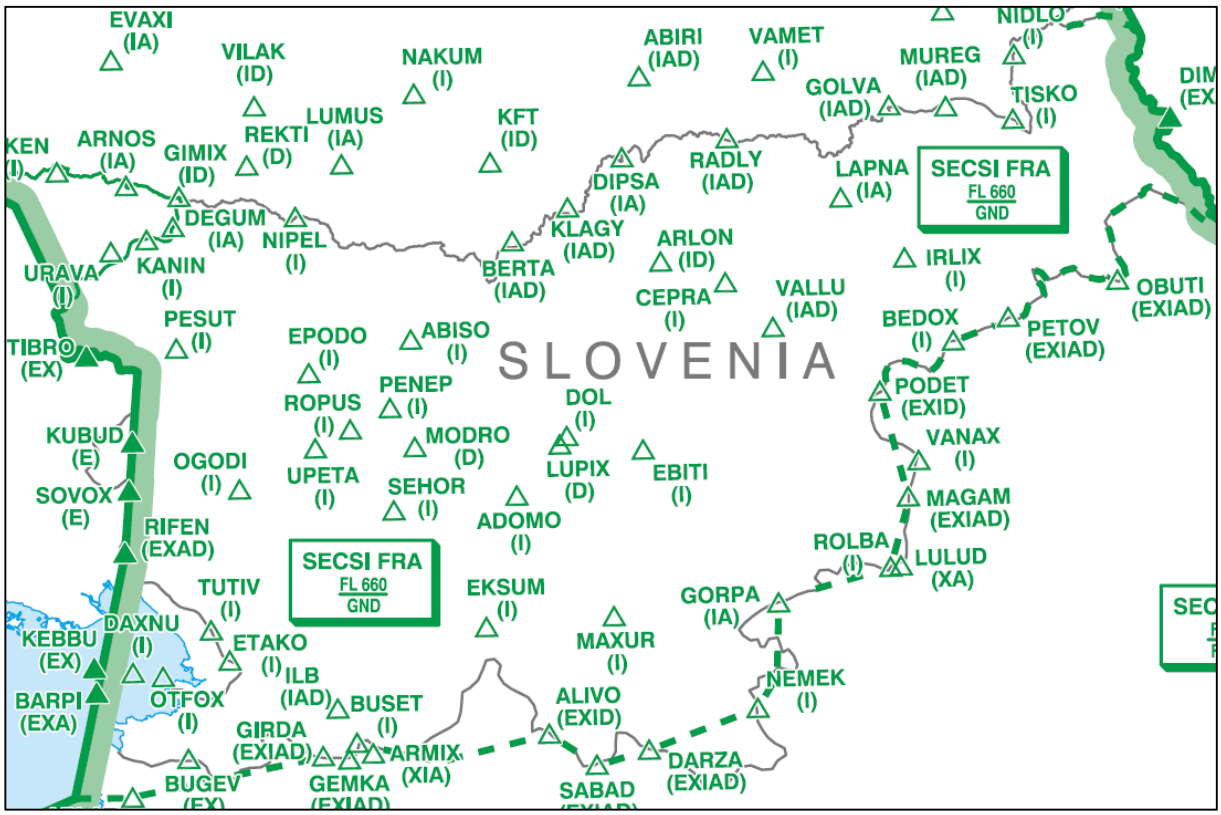
4.1 Enroute airspace (implementing RNAV 5)

According to PBN Manual:
The carriage of RNAV 5 is prescribed on specific routes or for specific areas/flight levels of their airspace. RNAV 5 operations are based on the use of RNAV equipment which automatically determines the aircraft position in the horizontal plane using input from one or a combination of the following types of position sensors, together with the means to establish and follow a desired path GNSS, VOR/DME, DME/DME, INS or IRS.

In Slovenia the RNAV 5 concept has been implemented with implementation of RNAV lower and upper routes and later with the upgrade and implementation of the Free Route concept. However, some lower routes still exist over the areas where no ATC surveillance service exists (TMA Portorož and TMA Maribor).

RNAV 5 implementation timeline in FIR Ljubljana (according to AUR.2005 6)

NAV application	IR Target	Status
Free Route (FL310+)	1. 1. 2022	Implemented
ATS Routes (FL150+)	3. 12. 2020	Implemented
ATS Routes (FL150-)	25. 1. 2024	Implemented



4.2 Terminal airspace (implementing RNAV 1 / RNP 1)

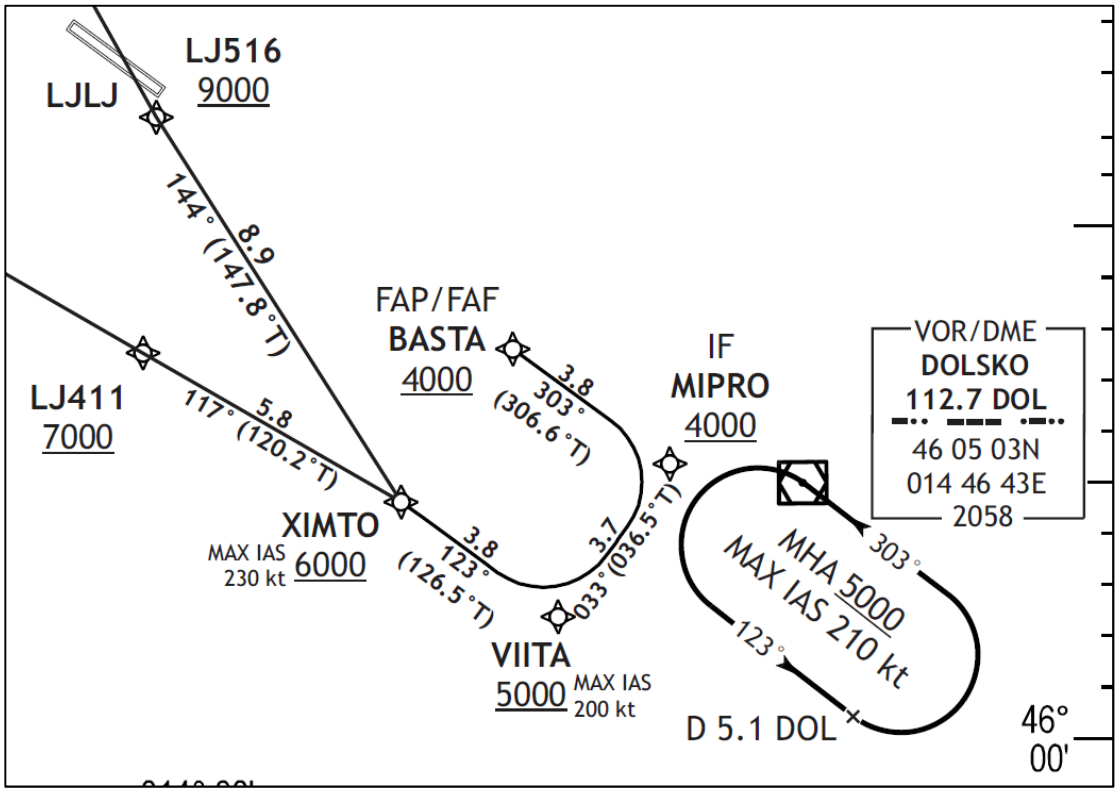
4.2.1 RNAV 1

According to PBN Manual:
The RNAV 1 specification is applicable primarily for SIDs and STARS. It also applies to IAPs up to the FAF and missed approach segment. The RNAV 1 specification is primarily developed for RNAV operations in a radar environment (for SIDs radar coverage is expected prior to the first RNAV course change) however the RNP 1 specification is intended for similar operations outside radar coverage (see 4.2.2.).

The following navigation criteria are defined: GNSS, DME/DME and DME/DME/IRU.

RNAV 1 implementation timeline in FIR Ljubljana (according to AUR.2005 4/5)

NAV application	IR Target	Status
SID/STAR LJLJ	25. 1. 2024	Implemented



4.2.2 RNP 1

According to PBN Manual:
The RNP 1 specification provides a means to develop routes for connectivity between the en-route structure and terminal airspace with no or limited ATS surveillance, with low to medium density traffic. Within this chapter, arrival and departure procedures are referred to as SIDs and STARs, but are intended to also apply to initial and intermediate approach segments.

The RNP 1 specification is based upon GNSS. While DME/DME-based RNAV systems are capable of RNP 1 accuracy, this navigation specification is primarily intended for environments where the DME infrastructure cannot support DME/DME area navigation to the required performance. The increased complexity in the DME infrastructure requirements and assessment means it is not practical or cost-effective for widespread application. This navigation specification is intended for environments where ATS surveillance is either not available or limited.

RNP (Required Navigation Performance) allows an aircraft to fly a specific path between two three-dimensionally defined points in space. The key difference between RNAV and RNP is that RNP requires on-board performance monitoring and alerting so that the pilot is notified early of any reduced satellite coverage, and is therefore a more robust system.

RNP 1 implementation timeline in FIR Ljubljana (according to AUR.2005 4/5)

NAV application	IR Target	Status
SID/STAR LJPZ*	25. 1. 2024	Started
SID/STAR LJMB*	25. 1. 2024	Planned
SID/STAR LJCE*	25. 1. 2024	Planned

(*) There are 3 airports within FIR Ljubljana with no surveillance

4.3 Implementing RNP approach

According to PBN Manual:
This chapter addresses approach applications based on GNSS which are classified as RNP APCH in accordance with the PBN concept and give access to minima designated as LNAV LNAV/VNAV or LPV minima.

RNAV instrument approach procedures can be augmented with lateral and vertical guidance – called Approach procedures with Vertical guidance (APV). These do not meet the requirements established for precision approach and landing operations.
RNP approach procedures down to LNAV, LNAV/VNAV and LPV minima are authorized by EASA.

RNP APCH down to LPV minima is based on augmented GNSS (EU-EGNOS) and may give access to a different range of minima, depending on the performance of the navigation systems and the assessment. This approach is considered as an APV.

RNP APCH down to LNAV/VNAV minima is based on GNSS signal for lateral guidance and Baro-VNAV system using barometric pressure altitude for vertical guidance. This approach is considered as an APV.

RNP APCH down to LNAV minima is based on GNSS signal for lateral guidance only. There is no vertical guidance in LNAV

RNP approach procedures provide instrument approaches to runways. RNP APCH procedures are well suited for providing instrument approaches to runways that do not currently have adequate ground-based navigation facilities to support an instrument approach or to back up existing ground-based navigation procedures.

RNP APCH procedures with APV allow precision-like guidance to runways without the need for ground infrastructure and provide a simplified solution for precise vertical guidance to runways. According to this plan approach procedures with vertical guidance (APV) for all instrument runway ends, will be implemented either as the primary approach or as a back-up for precision approaches.

RNP approach timeline in FIR Ljubljana (according to AUR.2005 1/2/3)

NAV application	IR Target	Status
RNP APP LJPZ	3. 12. 2020	Started
RNP APP LJLJ	25. 1. 2024	Planned
RNP APP LJCE	25. 1. 2024	Planned
RNP APP LJMB	25. 1. 2024	Planned

5 PBN IR 2018/1048 REQUIREMENTS

- Provision of PBN
- Aircraft equipment and flight crew suitably qualified
- Promotion of APV approaches (LPV minima) in the form of EGNOS
- Safety, capacity and efficiency
- Establishment of transition plan from ATM/ANS provider
- Full implementation of PBN environment as a primary use until 6. 6. 2030

Snapshot of EU PBN Reglatory requirements

PBN IR Article 4 and 7 Applicability of AUR.2005 with PCP IR *(AF#1[2])*		Applies 03/12/2020	Applies 01/01/2022	Applies 25/01/2024	Applies 06/06/2030
Art 4	Transition Plan (*or significant updates)* approved *(living document)*[1]	x[1]		x[1]	x[1]
AUR 2005 1/2/3	RNP APCH at IREs without Precision Approach (PA)	x			
	RNP APCH at all IREs (with PA), including IREs at PCP airports.			x	
AF#1	RNP 1+ RF SID and STAR at PCP Airports[2]			x[2]	
AUR 2005 4/5	RNAV 1 or RNP 1(+ RF) SID and STAR - one per IRE			x	
	RNAV 1 or RNP 1(+RF) for all SID and STARs				x
AUR 2005 6	RNAV 5 ATS Routes (excl. SIDs/STARs) at and above FL150	x			
	RNAV 5 ATS Routes (excl. SIDs/STARs) below FL150			x	
AF#3	Free route airspace above FL310 (with FUA)		x[3]		
AUR.2005 7	Helicopter RNP 0.3 (or RNAV 1/RNP1(+RF)) SID/STAR - one per IRE			x	
	Helicopter RNP 0.3 (or RNAV 1/RNP1(+RF)) for all SID/STAR				x
	Helicopter RNP 0.3 or RNAV 1/RNP1 ATS Routes (excl. SIDs/STARs) at and above FL150	x			
	Helicopter RNP 0.3 or RNAV 1/RNP1 ATS Routes (excl. SIDs/STARs) below FL150			X	

Note 1 *–The transition plan will have several iterations; Article 4 requires that the draft/significant updates to the plan must be approved by the competent authority prior to it being implement. The obligations in the transition plans would need to be commensurate with the target date obligations.*

Note 2 *–The PCP IR has an implementation date of 1 JAN 2024, which could be expected to be aligned with AIRAC cycle in the future.*

Note 3 *–Free Routes Airspace (PCP IR AF#3) is associated with RNAV 5 as the requirement for RNAV 5 is published in ICAO Doc 7030. (Free Route Airspace is distinguished from Direct Route Airspace, which should have been implemented as of January 2018)*

6 PORTOROŽ AIRPORT (LJPZ)

6.1 Current status description

Portorož airport with its CTR and TMA airspace is a non-surveillance environment. Currently all designed instrument procedures are conventional based on VOR/DME and NDB. The airport has runway 15/33.

Instrument procedures based on **NDB** includes the following:

- Standard instrument departures (8 procedures) *,
- Standard instrument arrivals (4 procedures),
- NDB approach**

Instrument procedures based on **VOR**/**DME** includes the following:

- Standard instrument departures (6 procedures) *,
- Standard instrument arrivals (3 procedures),
- VOR approach**

**Standard instrument departures are designed for runway 33 only. Departure procedures for RWY 15 are designed as a visual departures due to challenging terrain in runway direction. Visual departures are connected with VOR and NDB facility and joined with instrument departure procedures from runway 33.*

***APP covers design of Initial, Intermediate, Final and Missed approach segments with Holding*

Status and timeline for Portorož Airport

NAV application	Plan	NAV. specification	NAV infrastructure
SID/STAR	Implemented	Conventional	VOR/DME POR VOR/DME ILB NDB PZ
APP	Implemented	Conventional	VOR/DME POR NDB PZ
RNAV SID/STAR	**25. 3. 2021**	RNP 1	GNSS
RNP APP	**25. 3. 2021**	RNP APP	GNSS, EGNOS

6.2 Considered airspace change process tasks for LJPZ

A. Implementation of PBN according to timeline table

B. Check MON (VOR/DME, DME/DME)

- Analyze of DME/DME signal for usage in RNP-1 environment

C. Identification of enablers and constraints

- Vicinity of FIR boundary
- G class airspace in FIR Zagreb (missed approach procedure, circling, holding)
- Environmental assessment

D. Airspace users PBN capability analyses

E. Re-assessment and optimization of current instrument procedures

- Assessment of NDB procedures withdrawal
- Re-assessment / re-design of VOR procedures

F. Navaid assessment

- Assessment of VOR/DME POR
- Assessment of VOR/DME ILB
- Analyze for withdrawal of NDB PZ

7 LJUBLJANA AIRPORT (LJLJ)

7.1 Current status

Ljubljana airport is the only airport within FIR Ljubljana where arrivals and departures are executed under ATS surveillance. In the end of year 2017, the PBN concept had been implemented in Ljubljana terminal airspace, with the implementation of RNAV SIDs and STARs based on RNAV 1 navigational specification with usage of GNSS signal only. DME/DME usage for RNAV has not been considered due to insufficient DME facilities on the ground. Besides PBN there are conventional instrument procedures in use based on VOR/DME. The airport has runway 12/30.

Instrument procedures based on **VOR**/**DME** includes the following:

- Standard instrument departures (19 procedures),
- Standard instrument arrivals (12 procedures),
- VOR approach*,

ILS approach*

Instrument RNAV-1 procedures based on **GNSS** includes the following:

- Standard RNAV instrument departures (3 procedures),
- Standard RNAV instrument arrivals (14 procedures),
- RNAV Holding procedure (2).

**APP covers design of Initial, Intermediate, Final and Missed approach segments with Holding*

Status and timeline for Ljubljana Airport

NAV application	Plan	NAV. specification	NAV infrastructure
SID/STAR	Implemented	Conventional	VOR/DME
APP	Implemented	Conventional	ILS, VOR (DME)
PBN SID/STAR	Implemented	RNAV 1	GNSS
RNP APP	**21. 4. 2022**	RNP APP	GNSS, EGNOS

7.2 Considered airspace change process tasks for LJLJ

A. Implementation of PBN according to timeline table

B. Check MON (VOR/DME, DME/DME)

- Analyze of DME/DME signal for usage in RNAV-1 environment
- Analyze of VOR/DME coverage for ENR and TMA

C. Airspace re-design

- Lower limit of TMA LJ 1 airspace determined with MSL (G airspace MSL)
- Airspace change for straight out instrument departures for RWY 30
- Study for instrument approaches to non-instrument RWY 12
- Redesign / reclassification of TMA airspace volumes (protection of actual instrument procedures),
- Redesign of CTR Ljubljana

D. Operators - Airspace users PBN capability analyses

E. Re-assessment and optimization of current instrument procedures

- Re-design if ILS M/A (turn at altitude, MKR W withdrawal)
- Re-design if ILS APP (OM, MM withdrawal, use of DME distance)
- Re-design of existing RNAV SIDs and STARs
- Analyze of conventional SIDs withdrawal (except RDR SIDs)
- Re-assessment of current conventional procedures

F. Navaid assessment

- Assessment of VOR/DME DOL
- Assessment of VOR/DME LBL
- Assessment of VOR/DME ILB
- Assessment of MKR W withdrawal (re-assessment of ILS M/A)
- Assessment of OM, MM withdrawal (re-assessment of ILS APP)

8 MARIBOR AIRPORT (LJMB)

8.1 Current status

Maribor airport with its CTR and TMA airspace is a non-surveillance environment. Currently all designed instrument SIDs and STARs are conventional based only on two local NDBs. (Some procedures use VOR DOL and VOR ZAG). There are two types of approaches based on ILS and NDB. The airport has runway 14/32.

Instrument procedures based on **NDB** includes the following:

- Standard instrument departures (10 procedures),
- Standard instrument arrivals (5 procedures),
- NDB approach*

ILS approach*

**APP covers design of Initial, Intermediate, Final and Missed approach segments with Holding*

Status and timeline for Maribor Airport

NAV application	Plan	NAV. specification	NAV infrastructure
SID/STAR	Implemented	Conventional	NDB
APP	Implemented	Conventional	ILS, NDB
PBN SID/STAR	**18. 5. 2023**	RNP 1	GNSS
PBN APP	**18. 5. 2023**	RNP APP	GNSS, EGNOS

8.2 Considered airspace change process tasks for LJMB

A. Implementation of PBN according to timeline table

B. Check MON (VOR/DME, DME/DME)

- Analyze of DME/DME signal for usage in RNP-1 environment

C. Identification of enablers and constraints

- Redesign / reclassification of TMA airspace volumes (protection of actual instrument procedures)
- Vicinity of FIR boundary

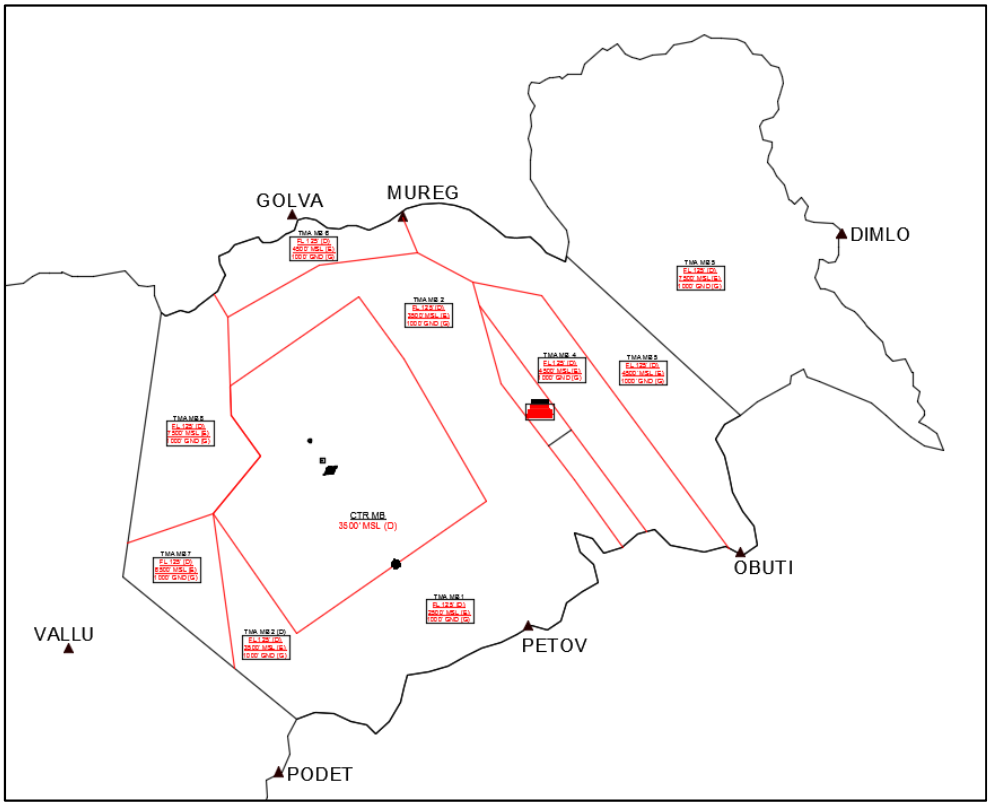
D. Operators - Airspace users PBN capability analyses

E. Re-assessment and optimization of current instrument procedures

- Re-assessment of current conventional procedures

F. Navaid assessment

- Assessment of NDB MR
- Assessment of NDB MI
- Assessment of OM, MM withdrawal (re-assessment of ILS APP)



9 CERKLJE OB KRKI AIRPORT (LJCE)

9.1 Current status

Cerklje ob Krki airport with its CTR airspace is a non-surveillance environment. Currently the airport is VFR only without use of any instrument procedures. Slovenia Control had been mandated to design a complete set of conventional instrument procedures and design a new layout of terminal airspace for protection. Currently all conventional procedures are in the phase of design. Instrument PBN procedures are planned to be implemented subsequently. The airport has one runway 09/27, however instrument departures are going to be designed for both runway ends and approach procedures will be designed for runway 09 only.

Implementation of conventional procedures includes:

- ILS approach*,
- VOR approach*,
- NDB approach*,
- Standard instrument departures (9 procedures),

**APP covers design of Initial, Intermediate, Final and Missed approach segments with Holding*

Status and timeline for Cerklje ob Krki Airport

NAV application	Plan	NAV. specification	NAV infrastructure
SID/STAR	**22. 4. 2021**	Conventional	VOR/DME NDB
APP	**22. 4. 2021**	Conventional	ILS, VOR(DME), NDB
PBN SID/STAR	**2. 11. 2023**	RNP 1	GNSS
PBN APP	**2. 11. 2023**	RNP APP	GNSS, EGNOS

9.2 Considered airspace change process tasks for LJCE

A. Implementation of PBN according to timeline table

B. Implementation of conventional instrument procedures according to timeline table

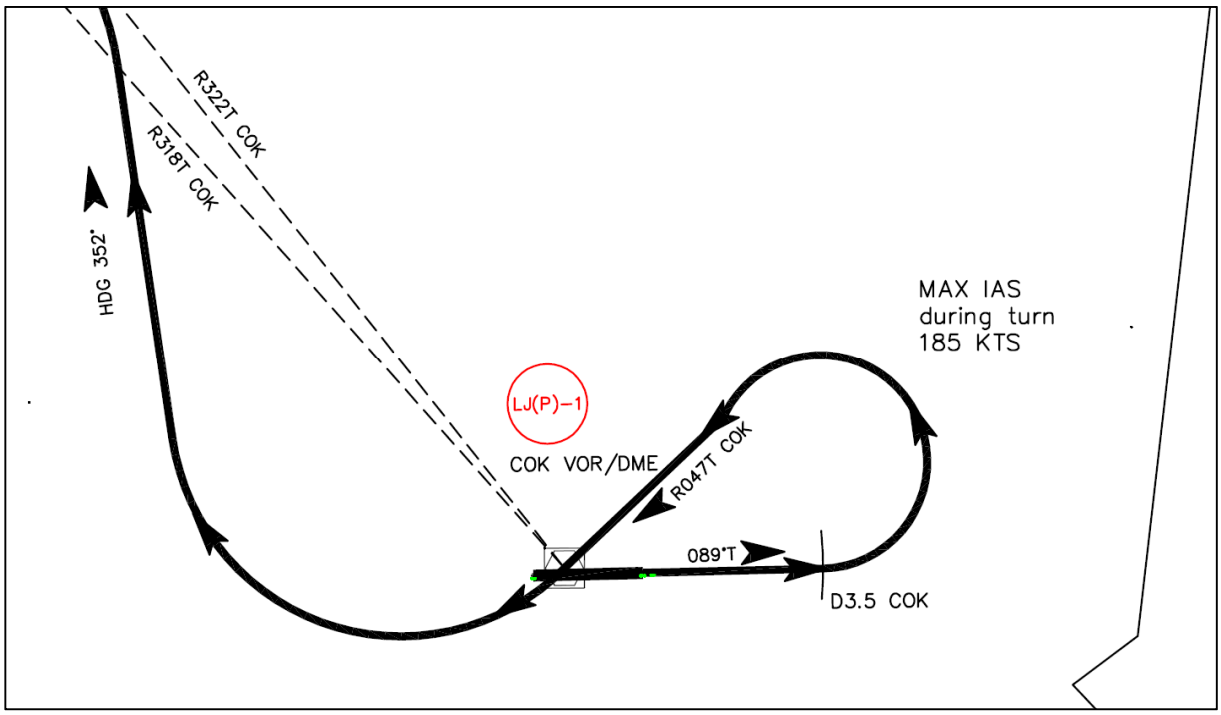
C. Check MON (DME/DME)

- Analyze of DME/DME signal for usage in RNP-1 environment

D. Identification of enablers and constraints

- Design of TMA airspace volumes (protection of actual instrument procedures)
- Vicinity of FIR boundary
- PBN and conventional capability of military aircraft
- Special aircraft categories (multiple)

E. Operators - Airspace users PBN capability analyses



10 PBN IMPLEMENTATION PLAN REVIEW

The following tables show which project tasks are planned for specific airport in FIR Ljubljana. The column PLAN shows a desired date of implementation.

RNAV 5

NAV application	IR Target	Plan
Free Route (FL310+)	1. 1. 2022	Implemented
ATS Routes (FL150+)	3. 12. 2020	Implemented
ATS Routes (FL150-)	25. 1. 2024	Implemented

RNAV 1 / RNP 1

NAV application	IR Target	Plan
RNAV-1 SID/STAR LJLJ	25. 1. 2024	21. 4. 2022*
RNP-1 SID/STAR LJPZ	25. 1. 2024	25. 3. 2021
RNP-1 SID/STAR LJMB	25. 1. 2024	18. 5. 2023
RNP-1 SID/STAR LJCE	25. 1. 2024	2. 11. 2023

*Re-assessment of current procedures

RNP approach

NAV application	IR Target	Plan
RNP APP LJLJ	25. 1. 2024	21. 4. 2022
RNP APP LJPZ	3. 12. 2020	25. 3. 2021
RNP APP LJMB	25. 1. 2024	18. 5. 2023
RNP APP LJCE	25. 1. 2024	2. 11. 2023

11 LONG TERM PROPOSALS

11.1 Implementation of PBN Helicopter routes (PinS)

The helicopter community abroad identified a need for gradual generalisation of IFR approach and departure RNAV procedures based on the Point In Space (PinS) concept. PinS may be considered for hospital heliports with an interlinked network of low altitude IFR flights. Specifically, these procedures include:

- Low-level routes in obstacle-rich environments reducing exposure to icing environments;
- Seamless transition from en route to terminal route;
- More efficient terminal routing in an obstacle-rich or noise-sensitive terminal environment, specifically in consideration of helicopter emergency service IFR operations between hospitals;
- Transitions to helicopter point-in-space approaches and for helicopter departures.

12 OTHER PROPOSALS

Comments

13 ABBREVATIONS

- AD Aerodrome
- AOPA Aircraft Owners and Pilots Association
- ATC Air Traffic Control
- ATO Approved Training Organization
- ATS Air Traffic Services
- CAA Civil Aviation Agency
- CAS Controlled Airspace
- CTR Controlled Zone
- DME Distance Measuring Equipment
- ECAC European Civil Aviation Conference
- ENR Enroute
- EWA EGNOS Working Agreement
- FIR Flight information Region
- FL Flight Level
- FRA Free Route Airspace
- FRT Fixed Radius Track
- FT Feet
- FUA Functional Use of Airspace
- GA General Aviation
- GND Ground
- GNSS Global Navigation Satellite System
- ICAO International Civil Aviation Agency
- ILS Instrument Landing System
- IFR Instrument Flight Rules
- IRE Instrument Runway End
- IR Implementing Rule
- KT Knots
- MSL Mean Sea Level
- MON Minimum Operational Network
- NAC National AeroClub
- NDB Non-directional Beacon
- NM Nautical Mile
- PBN Performance Based Navigation
- PCP Pilot Common Project
- PinS Point in Space
- RNAV Area Navigation
- RNP Required Navigation Performance
- RF Radius to Fix
- RWY Runway
- SARP Standards and Recommended Practices
- SES Single European Sky

- SID Standard Instrument Departure
- STAR Standard Instrument Arrival
- TMA Terminal Control Area
- UAV Unmanned Aerial Vehicle
- VFR Visual Flight Rules
- VOR/DME Very High frequency omnidirectional radio range collocated with Distance Measuring Equipment