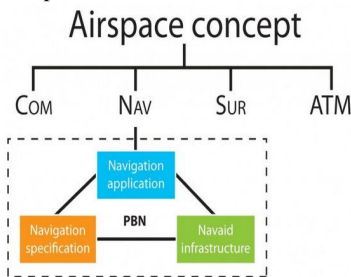


EXPLORING THE SUBJECT OF PERFORMANCE-BASED NAVIGATION AND ITS BENEFITS

I and everyone else involved in the domain of aviation can see the increases in demands on airspace capacity resulted by the continuing growth of aviation therefore emphasizing the need for optimum utilization of available airspace. This will be the problem the solution of which I want to expose.

For start, I want to clarify what Performance-Based Navigation(PBN) is and how it is applied in this case. PBN is a framework for defining performance requirements in “navigation specifications”. PBN framework can be applied to an air traffic route, instrument procedure, or defined airspace. PBN provides a basis for the design and implementation of automated flight paths as well as for airspace design and obstacle clearance. The two main components of PBN framework are Area Navigation (RNAV) and Required Navigation



Performance (RNP). Once the required performance level is established, the aircraft’s own capability determines whether it can safely achieve the specified performance and qualify for the operation.

Performance-based navigation seeks to initiate a shift from sensor-based specifications to a set of requirements which are performance-based and not tied to a particular set of navigation systems and on-board techniques.

PBN is one of several enablers of an Airspace Concept (Fig. 1). The others are Communications, ATS Surveillance and ATM. The PBN Concept comprises three components: Navigation Specification, Navaid Infrastructure and the Navigation Application.

I can figure out several solutions dependent on RNAV and RNP implementation including:

- Trajectory-Based Operations (Highways, Holding patterns)
- Arrivals/Departures at High-Density Airports (Offset flight path)
- Flexible Terminals and Airports
- Optimized Profile Descent

So, all these implementations will allow more efficient use of airspace (route placement, fuel efficiency and noise mitigation), facilitate the operational approval process civil aviation authorities by providing a limited set of navigation specifications intended for global use, reduces the need to maintain sensor-specific routes and procedures and so forth.

Our sky is a limited resource, and as air travel continues to be a vital part of our lifestyle and our economy, we must learn how to manage it more wisely.

Supervisor – M.M. Bogunenko, associate professor