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JPDO "Snap Shot" Series:
Network-Centric Operations

The Net-Centric Vision

Net-Centric Operations encompasses an essential element of the Next Generation Air Transportation System (NextGen). NextGen's successful accomplishment involves the development and implementation of a range of new technologies. These include satellite-based navigation of aircraft, advanced weather dissemination, information-gathering capabilities, and a dynamically interactive air traffic control system. An inherent requirement to the development and application of these groundbreaking capabilities is the application of Net-Centric Operations.

Net-Centric Operations has been called the heart of NextGen. It will provide the critical exchange of digital information, air-to-air, and air-to-ground, as well as connect with crucial satellite-based information sources. It involves the instant sharing of information and data among users, systems, and networks.

Functional Concept

Net-Centric Operations involves the development of two key capabilities: the Net-Centric Infrastructure and Net-Centric Information Services.

The Net-Centric Infrastructure will provide the framework for reliable communications and data connectivity. This includes the ground-to-air and air-to-air information sharing, along with connectivity to key satellite-based information sources. This infrastructure will provide access control— the framework for the transport of data— bandwidth allocation, and network monitoring and diagnostics. Cyber security requirements, particularly important in the international environment, will be critical in the development of the infrastructure.

Net-Centric Information Services supply essential information through the infrastructure to the appropriate users, in a timely and secure manner. Information will be tailored to various needs throughout the air transportation system. This will include surveillance and navigational information, aeronautical data, and real-time weather information.

Net-Centric in the Global Environment

The goal of NextGen, and this is especially true in the development of Net-Centric Operations, is to assure seamless global interoperability of key capabilities and services. Accordingly,

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the JPDO is working with the international community to develop the criteria needed to establish the operational service-level protocols and agreements to make this a reality.

The benefits of this kind of capability, particularly as it supports the application and deployment of other ground–breaking improvements in air traffic operations, represents a unique synergy of people, processes, systems, and economics. A net-enabled view promotes efficiency by focusing on factors such as on-time departure and arrival, flight duration, and gate-to-gate fuel efficiency. Net-enabled, collaborative decision-making by all stakeholders, particularly for users in the global environment, remains a key factor for efficient transportation management.

NextGen Linkages

ICAO Global Plan Initiatives:

- Situational Awareness (GPI-9)
- Functional Integration of Ground Systems with Airborne Systems (GPI-12)
- Decision–Support Systems and Alerting Systems (GPI-16)
- Data Link Applications (GPI-17)
- Aeronautical Information (GPI-18)
- Meteorological Systems (GPI-19)
- Navigation Systems (GPI-21)
- Communication Infrastructure (GPI-22)

SESAR Key Performance Areas:

- Access and Equity
- Capacity
- Cost Effectiveness
- Efficiency
- Flexibility
- Global Interoperability
- Predictability
- Safety
- Security