DRAFT NextGen Enterprise Human Factors GEN (BLI 1A11B)

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Program Overview

- The Enterprise Human Factor Development program will provide integrated guidance on human performance considerations to concept development, validation, and implementation teams.
- Research efforts to identify and mitigate systemic human factors considerations may yield the following benefits:
 - Increasing the utilization rate of concepts and systems among controllers;
 - Ensuring controller acceptance of concepts and systems;
 - Increasing safety through the mitigation of known human factors risks; and
 - + Decreasing controller workload through improved tools and techniques.





NextGen ATC/TechOps Human Factors

What are the benefits to the FAA?

Human factors high-level (enterprise) guidance to assist with the evolution of the NAS infrastructure and its workforce

What determines success?

- Successful transition of Human Factors products.
- Early identification of HF opportunities, to minimize a program's cost, safety and operational risks.





NextGen ATC/TechOps HF "Team"

Sponsors and Customers

- ANG NextGen
- AJM ATO Program Management Office ("PMO")
- AJI ATO Safety and Technical Training
- AJV ATO Mission Support Services
- AJT ATO Air Traffic Services
- AJW ATO Technical Operations

ANG-C1 Program Management

- PM Bill Kaliardos
 - In recent years changed from Jerome Lard, to Stephanie Kreseen, to Bill





First, a few slides on NextGen and TBO...





Candidate Capabilities for TBO (early)...







....and supporting technologies (1 of 2)

Function Category	Capabilities	Supporting Technologies
PBN	RNAV STAR Optimum Profile Descent (OPD) RNAV SIDs RNP / RNP with RF leg Established on RNP (EoR)*	FMS/ RNAV (LNAV/VNAV), RNP, RNP- AR, A-RNP
Strategic Planning / Flow Management	Airspace Flow Program (AFP), Ground Delay Program (GDP) Collaborative Decision-Making* Collaborative Trajectory Options Program (CTOP)* TM Coordination and Planning	TFMS/ FSM SWIM, TFMS, Operator Ground Automation TFMS/ FSM TBFM/ TM Ops Dashboard and Planning Tool
Route Management	Automated Reroutes Pre-Departure Rerouting* Airborne Rerouting*	TFMS/ ERAM PDRR ABRR





....and supporting technologies (2 of 2)

Function Category	Capabilities	Supporting Technologies
Time-Based Scheduling (Airborne and Surface)	Arrival Metering Coupled Scheduling/Extended Metering Departure Metering (scheduling) into Arrival Stream Departure Metering (scheduling) into En Route stream Terminal Metering Runway/Surface Balancing Surface Scheduling and Metering	TBFM/ GIM-S T-to-T, IDAC EDC, IDAC TSAS TFDM
En Route and Terminal Spacing Tools	Delay Countdown Timer Speed Advisories In-Trail Final Approach Spacing Indicators Path Stretch Advisories Slot Markers, Speed Advisories, and Sequence En Route Time of Arrival Control (TOAC)	TBFM/ DCT/MRL GIM-S ATPA Path Stretch TSAS TBFM, FMS/ RTA
Surface Management	Tower Data Communications for Pre-Departure Clearance Electronic Flight Data* Airport Configuration Management	Tower Data Link Services TFDM
Enterprise Enablers	Information and Data Exchange Air-Ground Data Communication Enhanced Weather Data, Reporting, and Integrated Products	SWIM En Route Initial Services NWP, CSS-Wx





Expected Accomplishments in FY 18-19 (under previous BLI, funded in FY 16-17)

- PBN Human Performance Metrics
 - Tools and methods to "measure" and mitigate PBN ops from a ATC HF perspective
- Established-on-RNP (EoR) HF Implementation Guidance
 - Guidance for facilities for EoR implementation, from primarily a ATC HF perspective
- Time/Speed/Spacing Integration
 - Recommendations on HF integration for suites of NextGen tools/procedures (vs. individual tools), from primarily a ATC HF perspective. Focus is on Time/Speed/Spacing tools and earl TBO.
- ATC Skill Degradation from Use of NextGen Tools
 - Documentation of potential cognitive skill degradation risks from long-term use of NextGen decision support tools. Focus is on subset of Time/Speed/Spacing tools and early TBO. Risk mitigations will also be provided.





Anticipated Research, FY 18 – 20 Funding (Enterprise HF)

- HF Integration Considerations of Time/Speed/Spacing Tools, Part 2
- Early-TBO Training, Front-end development and recommendations for detailed development
- HF integration of UAS compliance with ATC visual procedures
- HF integration for TBO
- HF Cross-domain automation enhancements
- HF Traffic Flow Management concept development





Considerations for FY 21-Funded Research

- This research can address cross-program "enterprise" aspects
 - E.g., identifying HF opportunities to improve interoperability of capabilities through design, procedures, and training.
- This research can not directly support specific concept development programs
- Most NextGen programs do not involve NextGen HF
- Acquisition of new capabilities is owned by programs who determine the extent of their HF efforts
- HF = HF research + HF application





Questions?

NextGEN

