

2003 FAA National Software Conference

Database Integrity

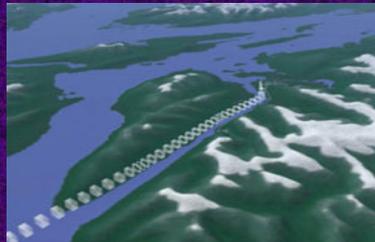
Database Integrity (Navigation Database)



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Background

- Current Type Certifications do not address Navigation Databases.
- Current operational rules address navigation databases but do not support the Aeronautical Data Chain concept.
- New operations are requiring Database Assurance
 - P-RNAV requirements defined in JAA TGL-10 (1/11/2000)
 - GPS WAAS
 - RNP RNAV

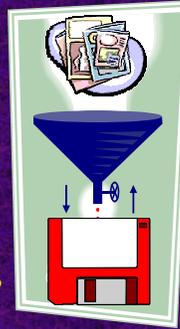


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Reasons for assuring navigation database integrity

- Source errors from originating authorities
- Incompatibility between data supplier coding and FMS decoding
- Data processing errors
- No clear definition of organizational responsibilities
- Varying capabilities between avionics systems



Scope of approval process

- 1000+ different design approvals
- 5 FMS vendors, 5 GPS vendors, +/-10 products per vendor
- One U.S. domestic data supplier (Jeppesen), two international vendors (Lido, EAG)
- Hundreds of FAR Part 121 operators, thousands of FAR Part 91 operators
- Aeronautical information updated every 28 days – globally



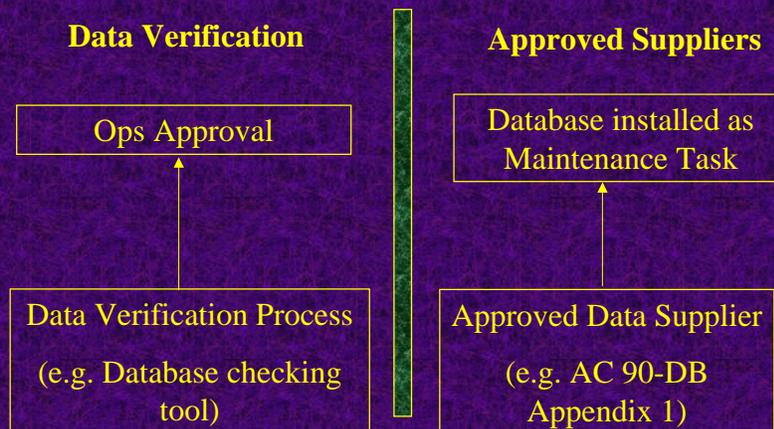
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Issues related to database certification

- For government-supplied data, the state government assumes responsibility for any incorrect data. Downstream parties can assume state-supplied data is correct.
- Consensus that approval must not re-approve every database or delivery
- Goal is to eliminate redundant approvals
- Allow a single approval for each company
- Approve the processes – not the vast amounts of data
- What triggers an approval?
- What is the actual approval process?

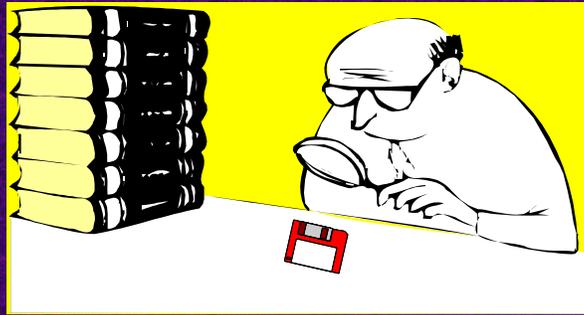
Two Different Approval Paths



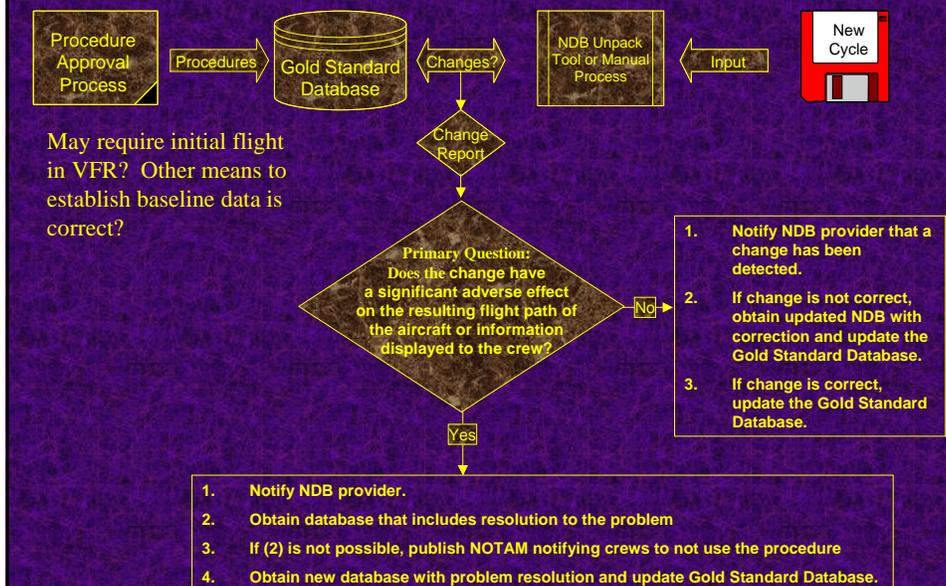
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Data Verification Process



Data Verification Process Overview



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Verification Process

- PROs:
 - Does not require DO-200A compliance
- CONs:
 - Initial data verification can be expensive or difficult (to establish gold standard)
 - Each operator has to check the data (even though common data delivered to many operators)
- Conclusion:
 - Achievable but may not be cost effective
 - Some procedures (critical data) may require verification even when data is received from an approved supplier

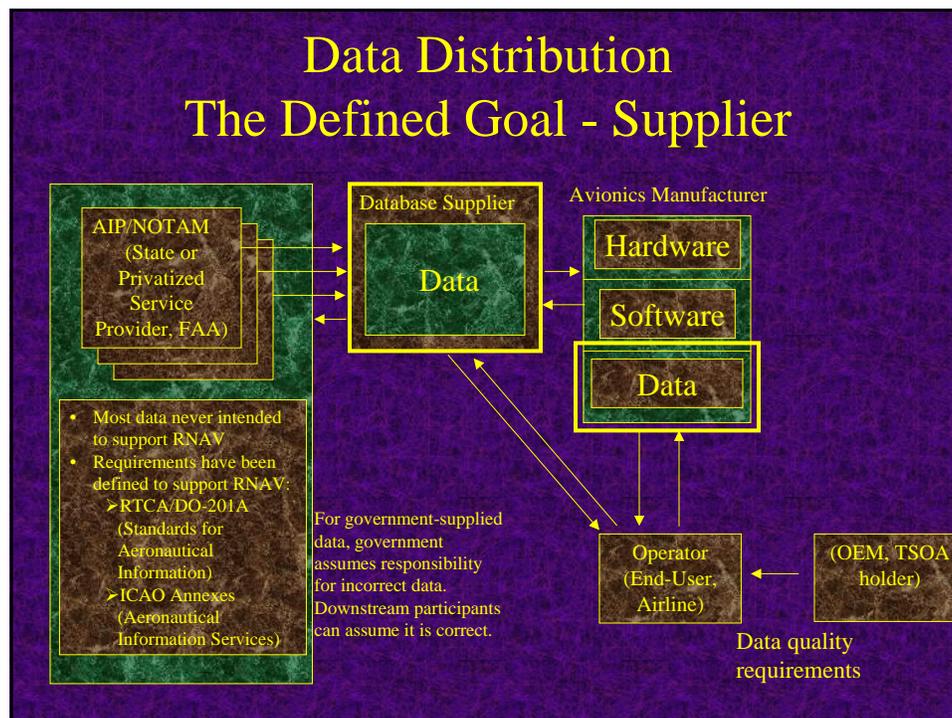
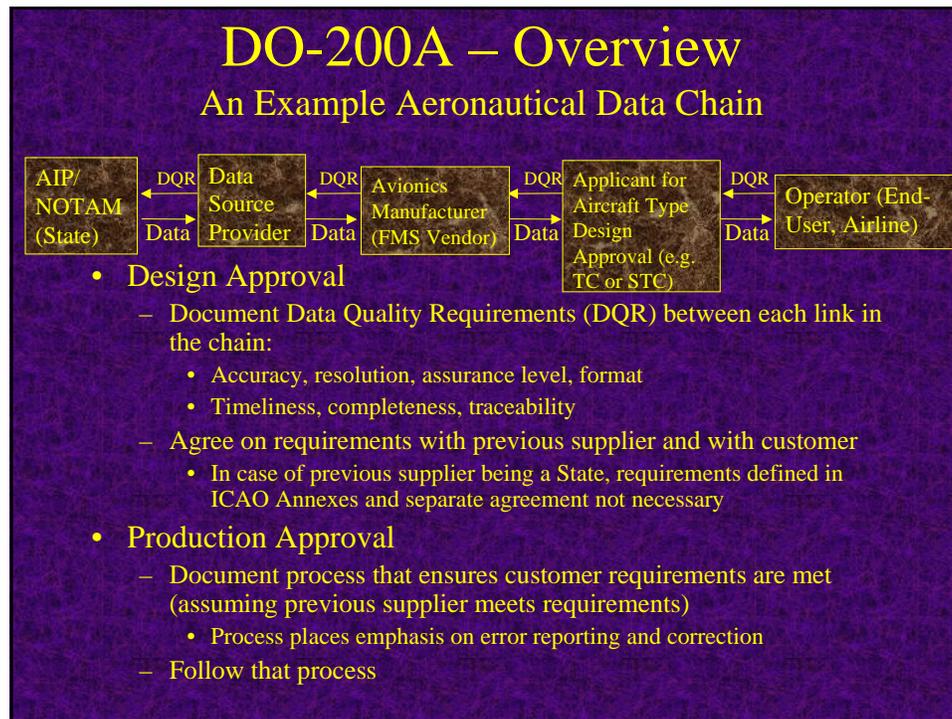


Approval of Data Suppliers



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Supplier Approval Overview

- Data supplier to comply with DO-200A
 - Document procedures
 - Document data quality requirements
- FAA to conduct an audit of DO-200A compliance
 - Utilize avionics and software expertise
 - Initial audit and subsequent audits as appropriate
 - Outcome of successful audit is data supplier approval
- Evidence of approval is Letter of DO-200A Compliance

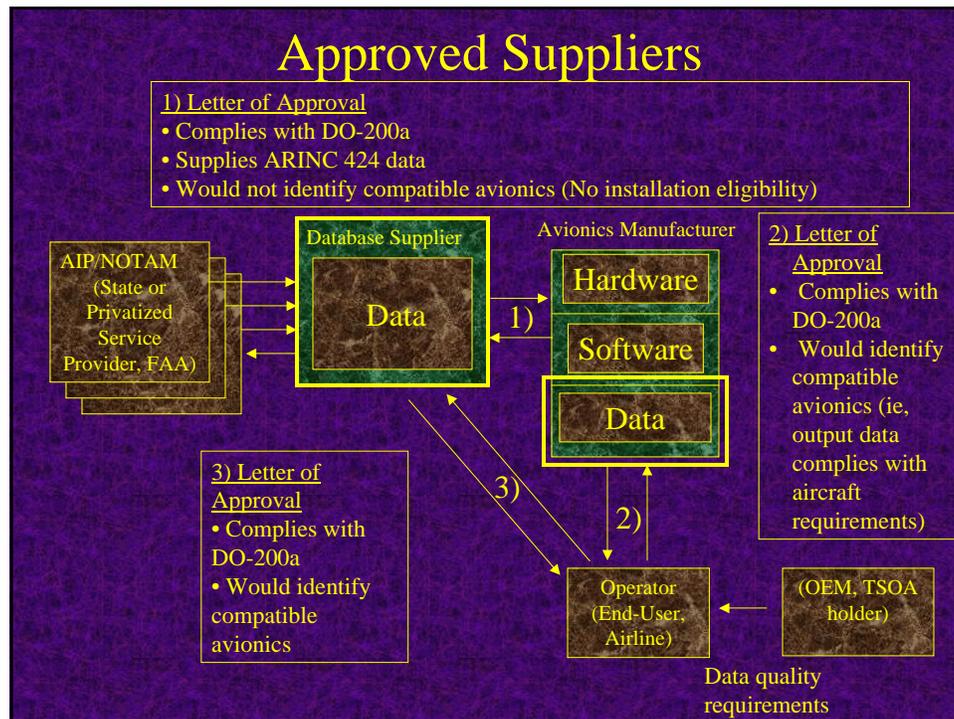
Letter of Approval



- Letter signed by ACO
- Leverages from 14 CFR 21.305(d)
 - Approval of parts, processes in any other manner approved by the Administrator.
- Applicant defines data quality requirements, compatibility with avionics if appropriate (application integrator only)
- Establishes ability to process data consistent with those requirements
- Changes to data requirements and process managed as minor/major modifications per terms defined in approval letter

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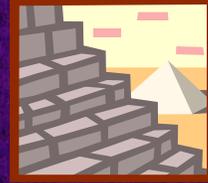
Letter of Approval

- PROs:
 - Most flexibility to obtain initial approval & accommodate changes
 - Tailored to most closely match JAA database approval (production organization approval)
- CONS:
 - New = requires explanation, training
 - Working to determine if it is acceptable to JAA
- Conclusion:
 - Adaptable, requires more definition & cooperation, need to identify if it would be acceptable to JAA

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Next Steps



- Develop integrated Advisory Circular 90-DB that addresses both types of approval:
 - Approved suppliers OR
 - Data verification
- Coordinate AC through Terminal Area Operations Aviation Rulemaking Committee (TAOARC) database WG.
- FAA / Industry review of Draft AC-90-DB with proposed guidelines at the next TAOARC meeting planned to take place in October 2003.

Questions?