

FAA National Software Conference, May 2002

Airborne Software Activities

FAA's Aircraft Certification Software Activities



Barbara Lingberg
May 14, 2002

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Briefing Outline

- Past (1996-2001)
- Present (2002 and 2003 Plans)
- Future (beyond 2003)



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- ### Past Accomplishments
- Software Grand Design (96-01)
 - Streamlining Software Aspects of Certification (97-98)
 - <http://shemesh.larc.nasa.gov/ssac/>
 - Technical Re-Usable Software Team (99-00)
 - Establishing Annual Software Conference (99)
 - Establishing Software Training (97 & on)
 - Research Activities
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Past Accomplishments (cont)



- **Software Notices Completed (97-01)**
 - 8110.77 → .95 Field Loadable Software
 - 8110.78 → .89 Legacy Software
 - 8110.79 → .93 Parts Manufacturers Approval of Field Loadable Software
 - 8110.81 → .90 Software Review Process
 - 8110.82 → .92 Previously Developed Software
 - 8110.83 → .91 Software Tool Qualification
 - 8110.84 → .94 User Modifiable Software
 - 8110.85 Software Change Impact Analysis
 - 8110.86 Software Conformity
 - 8110.87 Level of FAA Involvement

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**Present
(2002 & 2003)**



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FY 02 Software Activities

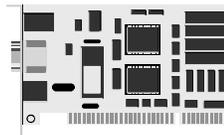


- **Integrated Modular Avionics (IMA)**
- **Object-Oriented Technology (OOT) Workshop & Guide**
- **Software Policy / Guidance**
- **Software Training**
- **Certification Authorities Software Team (CAST)**
- **Software & Digital Systems Safety (SDSS) Research**
- **Complex Electronic Hardware**
- **Manufacturing Software Vision**
- **Other Software Activities**

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Integrated Modular Avionics (IMA) Team

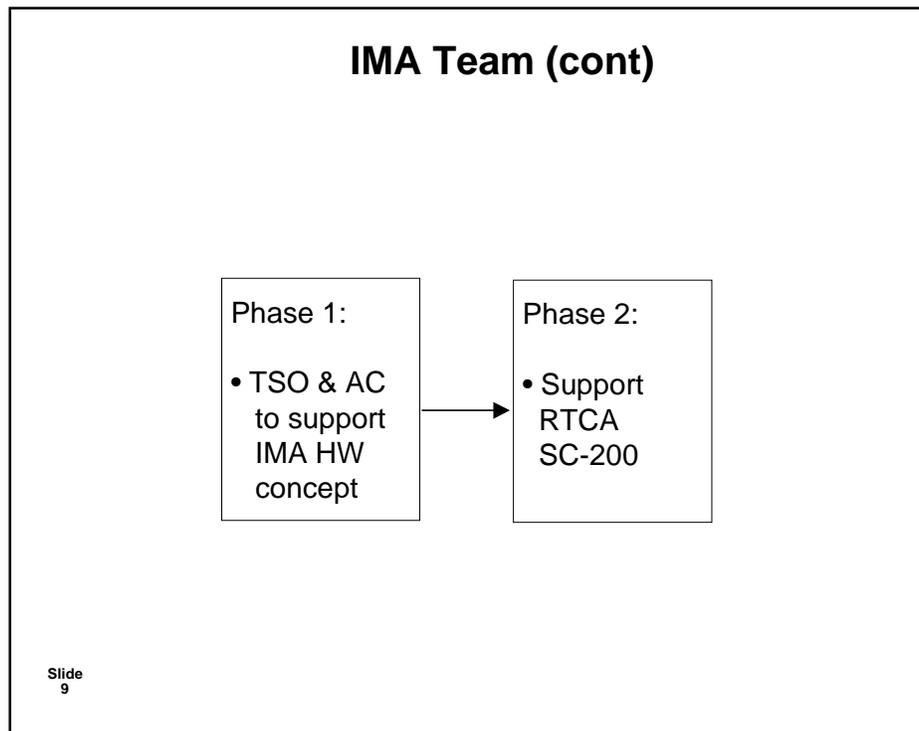
- **Create a Technical Standard Order (TSO) for the IMA Hardware Element**
- **Create an Advisory Circular (AC) for integration, installation, certification, & continued airworthiness of IMA Systems that use IMA Hardware Elements**
- **Determine future IMA policy/guidance needs**



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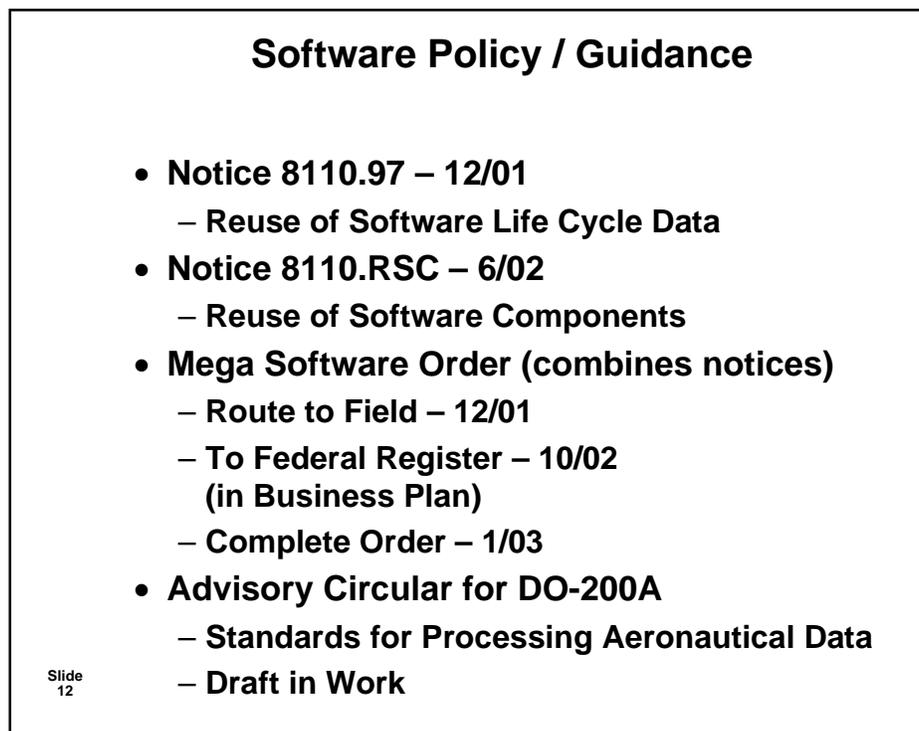
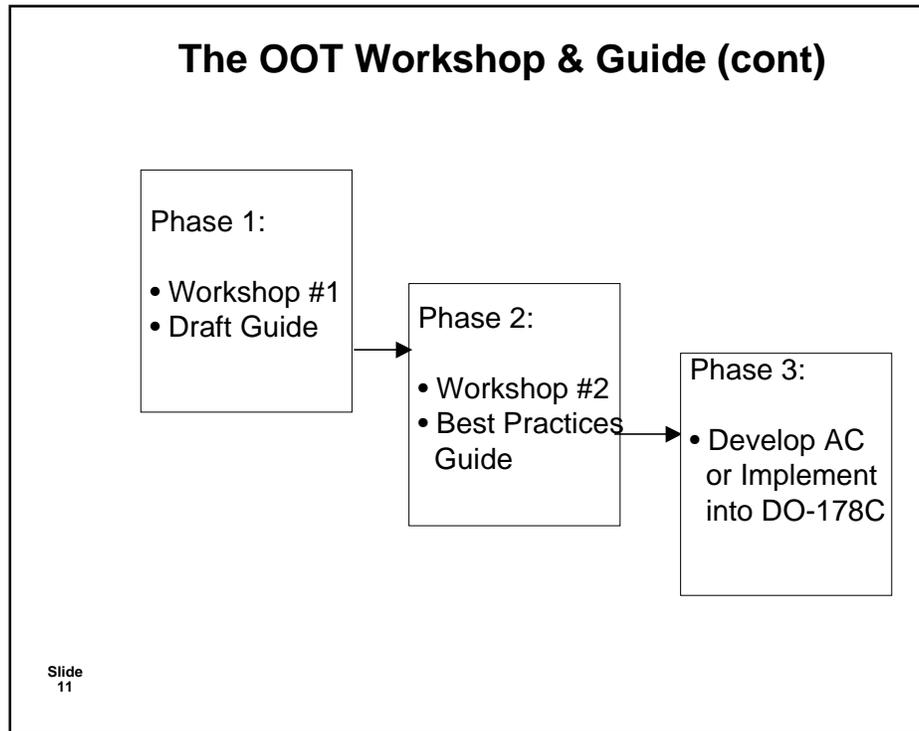
Airborne Software Activities



- The OOT Workshop & Guide**
- **Workshop #1 held April 9-11, 2002**
 - **Workshop Purpose:**
 - **Identify safety and certification issues related to using OOT**
 - **Begin coordination and communication between industry, government, and academia on the OOT topic**
 - **Work together to establish positions on key issues**
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Software Training



- **Software Job Functions Course (DO-178B) – on-going**
- **Software for Managers IVT (11/01)**
- **Annual Software Conference (5/02)**
- **Real-time Software Design (for FAA only) (8/02)**
- **Software Reuse IVT (9/02)**
- **Update Software Job Aid (9/02)**
- **IMA IVT (2/03)**
- **OO Basics IVT (10/03)**

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Certification Authorities Software Team (CAST)



- **International Team of Software / Certification Specialists**
- **Meet 2X per Year**
- **Support Industry Software Committees**
- **Harmonize Among Certification Authorities on Software Issues**
- **Develop Position Papers**

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CAST (cont)

- **Example of Papers in Work:**
 - Avionics Database Approval/Validation
 - Merging High- and Low-Level Requirements
 - Continuity of Integral Processes
 - Databus Evaluation Criteria
 - COTS Operating Systems
 - Autocode Generators

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Software & Digital Systems Safety (SDSS) Research Purpose

- **Address safety, performance, and technology issues in the areas of:**
 - Software
 - Complex electronic hardware
 - Digital systems
- **SDSS research supports the policy and guidance initiatives of the FAA**

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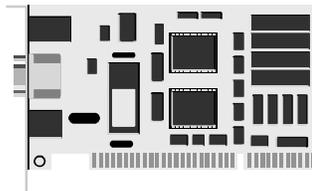
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Complex Electronic Hardware



- Advisory Circular
- Designee Qualifications
- Research Program
- Training / Case Study



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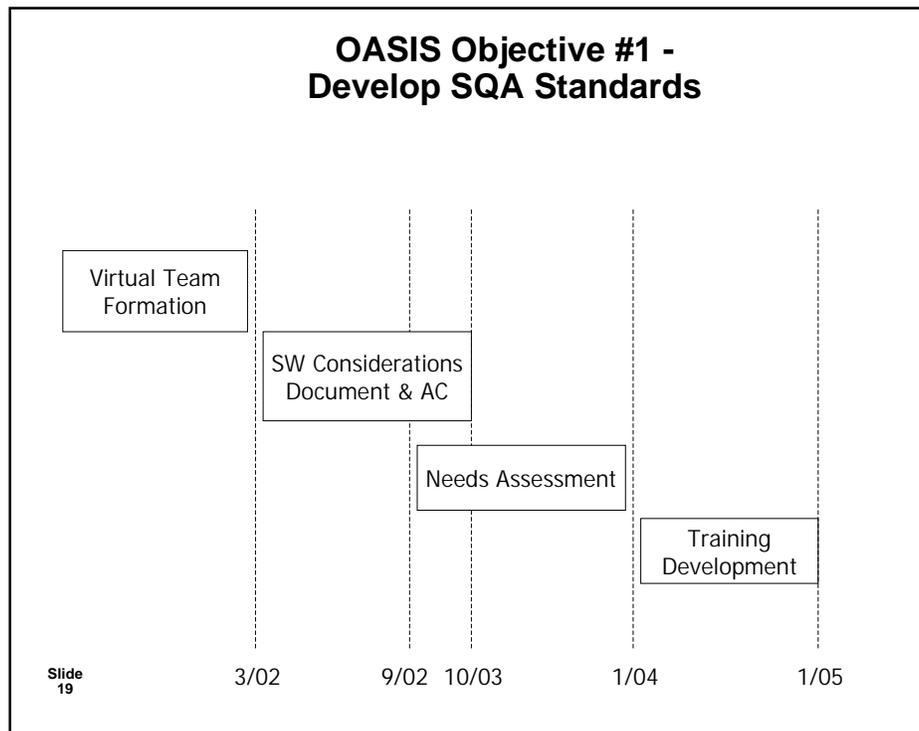
Overarching Aviation Safety Inspector Software (OASIS)

- **OASIS Virtual Team Charter:**
 - Develop foundation for Aviation Safety Inspector (ASI) vision for software used in manufacturing environment to produce airborne products
- **5 Objectives:**
 1. Develop Software Quality Assurance (SQA) Standard
 2. Document current ASI roles/responsibilities and KSA's in the software area
 3. Review and comment on AAQG Project 21 Software Used in Manufacturing document
 4. Review and comment on Digital Data Storage documents
 5. Develop future ASI roles/responsibilities and KSA's in the software area including training

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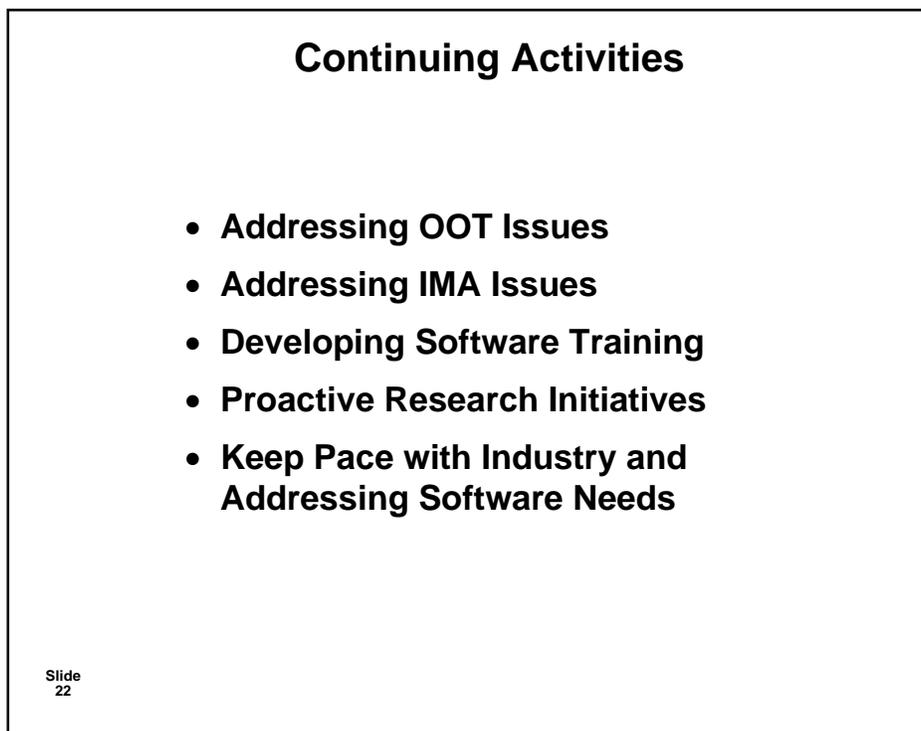
Other 2002 & 2003 SW Activities

- **Create a CNS/ATM Vision**
- **Create a Vision to Work with Military on DO-178B-related issues**
- **Start work with Flight Standards regarding software needs**
- **Support RTCA Committees:**
 - **SC-190: DO-178B Clarification**
 - **Completed - DO-248B and DO-278**
 - **Committee is DONE**
 - **RTCA SC-200: Integrated Modular Avionics Platform**

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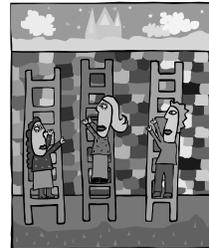


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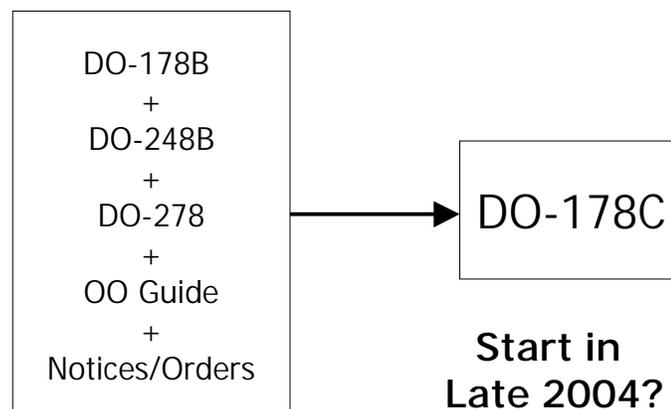
New Initiatives Planned

- Develop Vision for Software Tools
- Develop Vision to Address Flight Standards Software Needs
- Develop Vision to Address International Software Training Needs
- Implement CNS/ATM Vision
- Implement Military Software Vision



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DO-178C



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FAA Software Web-Site



Software Home Page:

<http://av-info.faa.gov/software>



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Summary

- We have accomplished a lot
- We have a lot in work
- We have a lot planned
- We're striving to safely address and enable new advances in software technology

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