

DANSE Software Quality Assurance

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DANSE Software Quality Challenges

- New, large, distributed development team
- Wide range of software engineering experience
- Expectations comparable to industrial product line
 - Reliable, intuitive operation for novice users
 - Straightforward extensibility for power users
 - Long term maintenance by SNS

Software Process Objectives

- Produce **reliable software** for community use
- Implement functionality tailored to **user needs and expectations**
- **Maximize** resource commitment to scientific innovation and productivity
- **Minimize** resources required for rework and maintenance

SQA Tasks

- Software Quality Engineering
- SNS Interface Requirements
- SNS Integration Plan
- Software Testing Plan

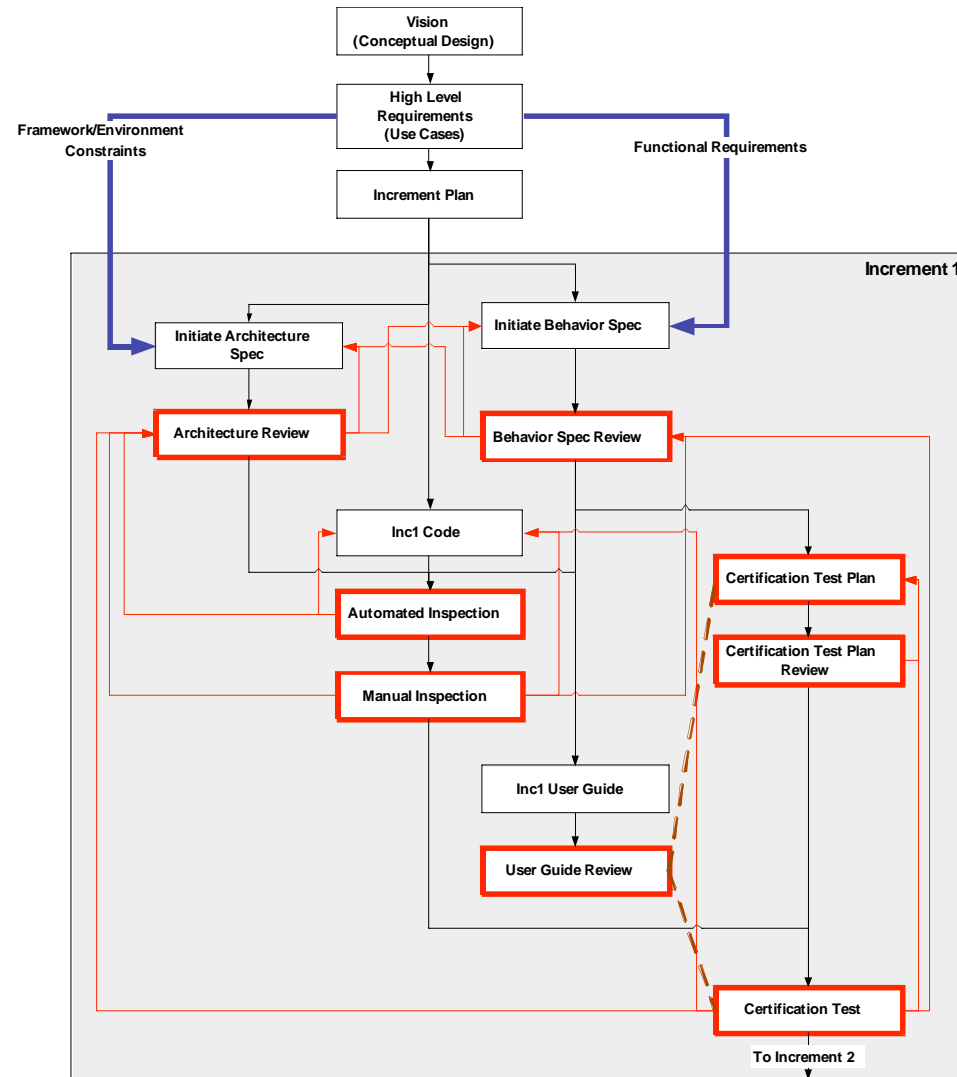
Software Quality Engineering

- Software Engineering Process Definition
 - DANSE Software Quality Assurance Guidelines
 - DANSE SQA Quick Reference
- Software Engineering Workshops
 - Tailored to subgroups
 - Applying preferred methods to current tasks

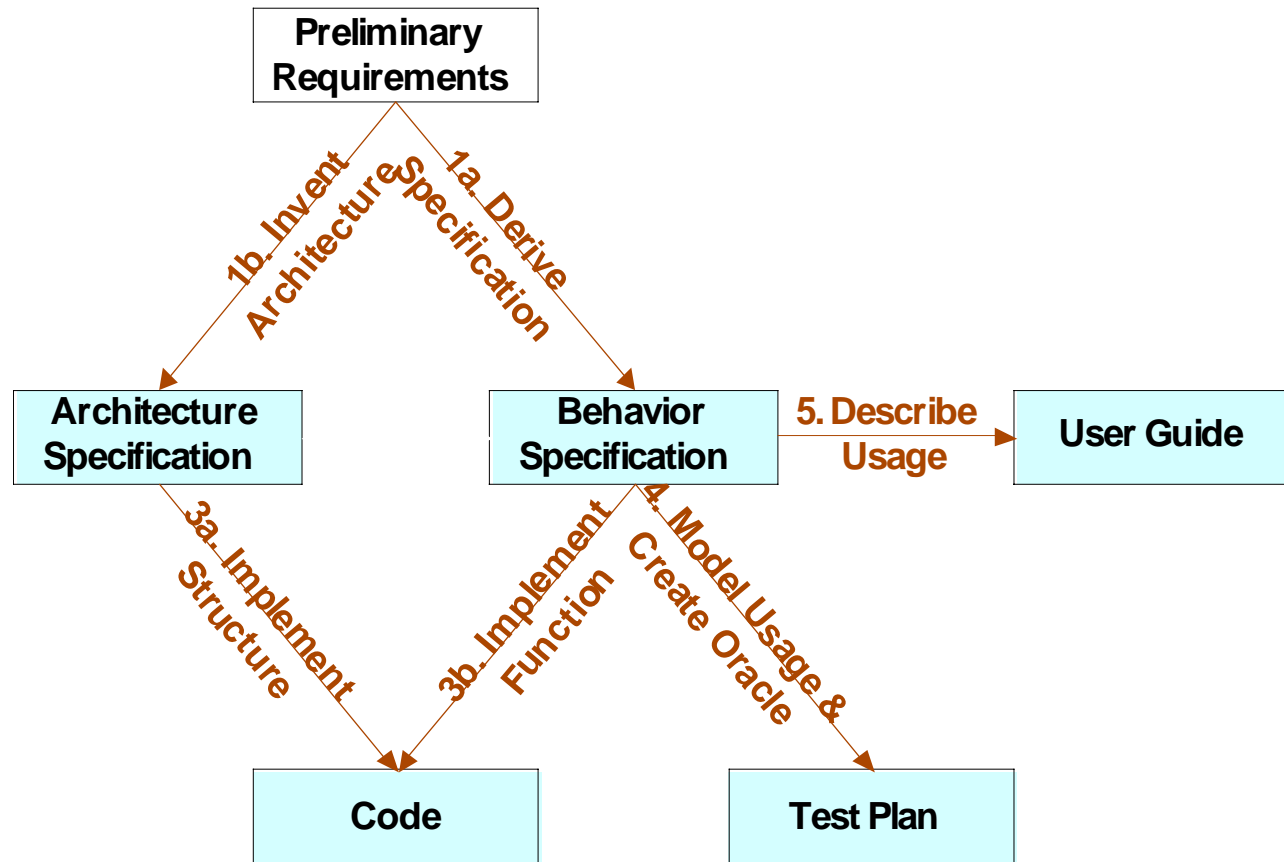
Process Summary

- Rigorous code specification derived from informal requirements
 - Architecture
 - Behavior
- Certification
 - Independent Work Product Review
 - Quantitative Testing
- Configuration management
 - Centralized build/release control
 - Comprehensive change tracking

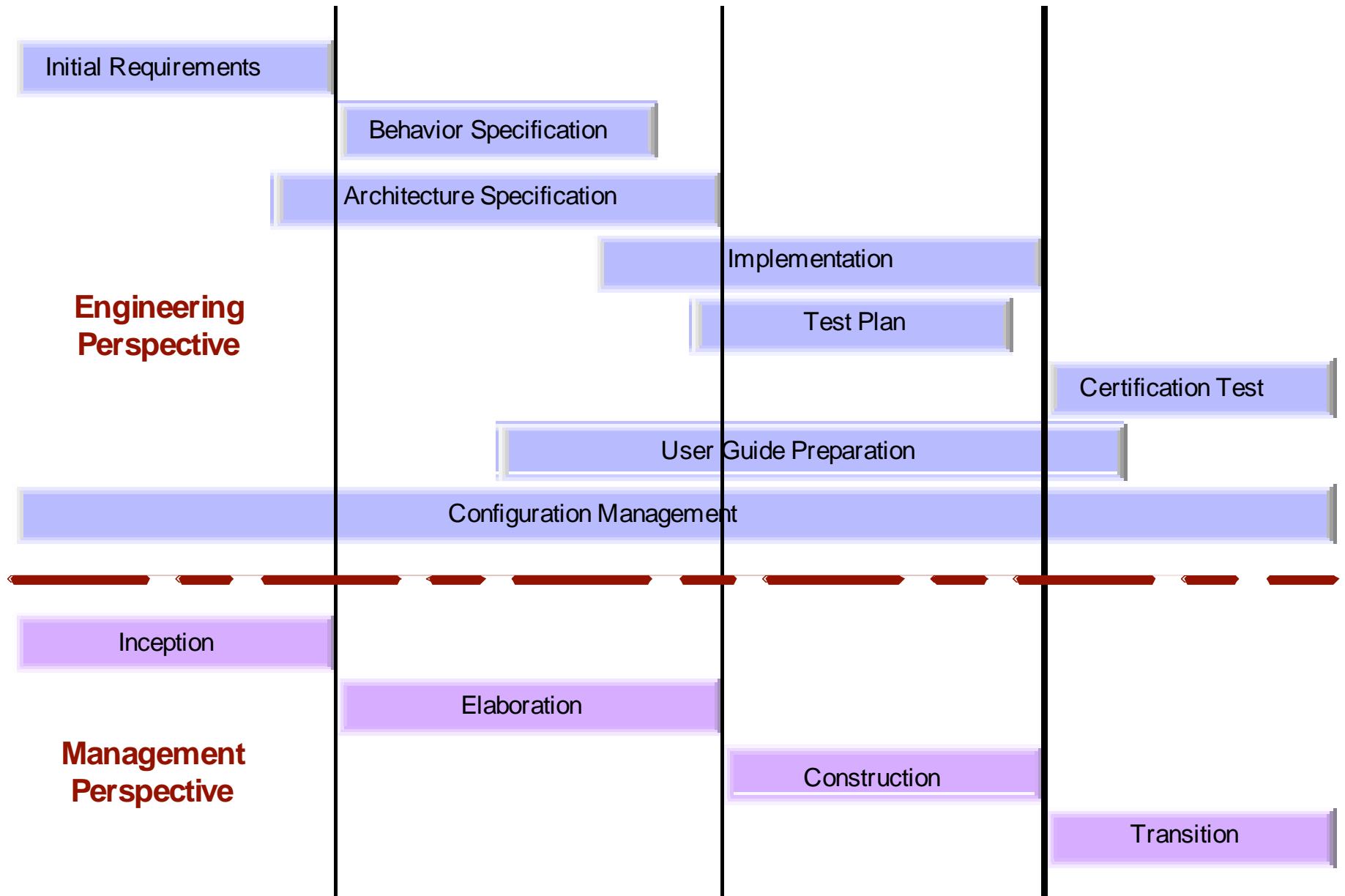
DANSE Development Process



Primary Work Products



Essential Process Elements



Tool Support for Configuration and Change Management

- Subversion
 - Source code and document version control
 - Tag, branch, and merge support
 - Handles binary files gracefully
- Trac
 - Bug, issue, and milestone tracking
 - Built-in Wiki
 - Integrates with Subversion
 - Automatic audit trail

Software Engineering Workshops

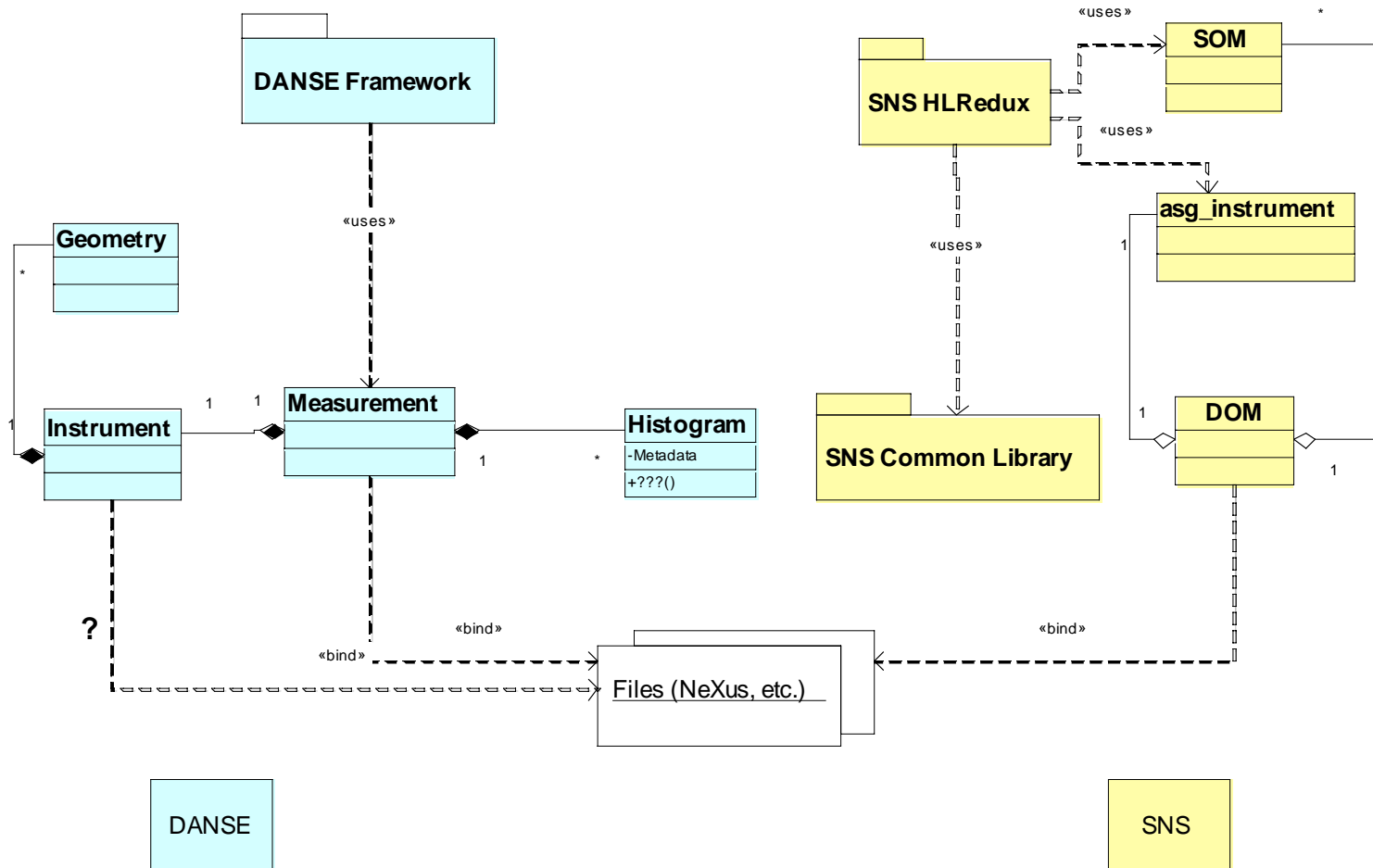
- Objectives
 - Demonstrate Software Engineering Best Practices
 - Establish Uniformity of Practice Across Project
- 4 Workshops at Subgroup Sites
 - Hands-on Application of DANSE Process
 - Application to Current DANSE Tasks
- Key Benefits
 - Establish an Engineering Approach to S/W Development
 - Accelerated Staff Learning Curve and Acceptance
 - Provided Early Focus and Momentum for Some Tasks

SNS Interface/Integration Focus

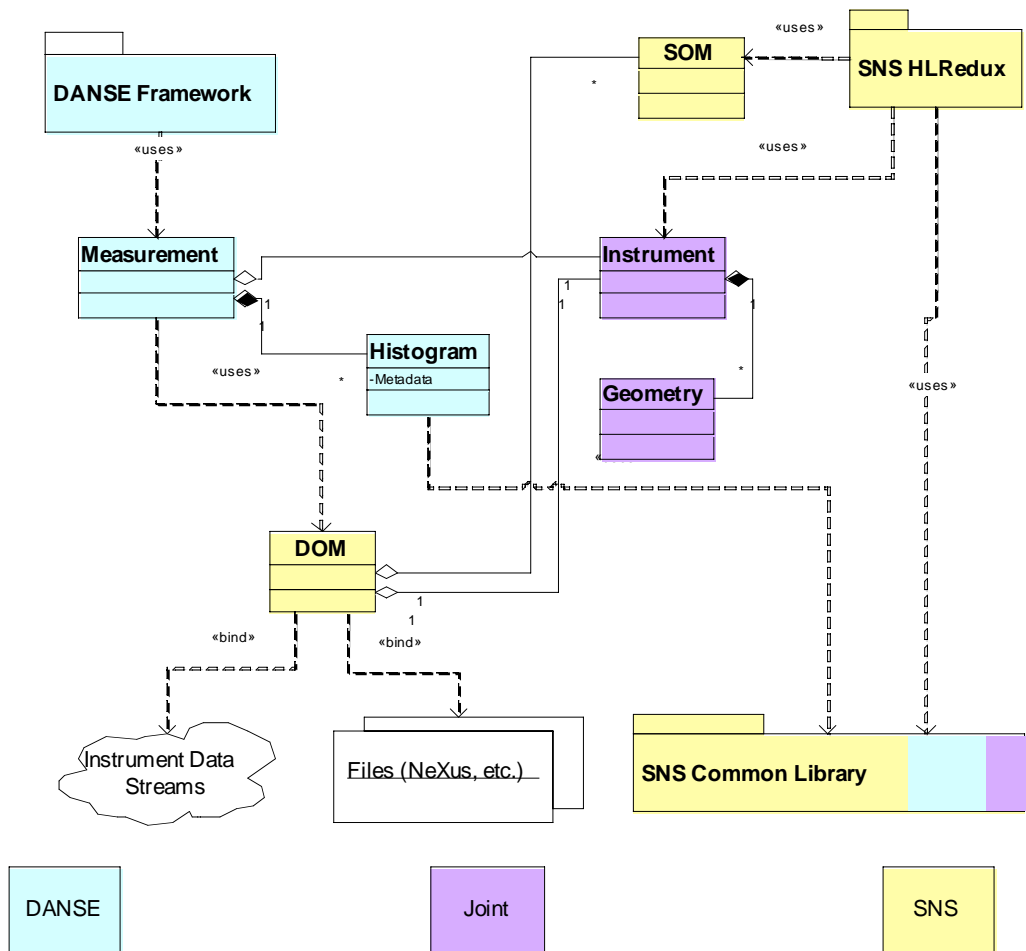
- **Data Reduction**
- Archived Data Access
- DANSE Application Integration

DANSE & SNS Data Reduction

Current View



DANSE & SNS Data Reduction Proposed Integration Strategy



Year 2 Objectives

Software Development Process

- Workshop follow-up
- Improve behavior specifications
- Improve peer review effectiveness
- Establish application testing practices
- Formalize release management

Year 2 Objectives

DANSE/SNS Interface/Integration

- Finalize Data Reduction Interface
- Define/document Data Archive Access
- Initial Application Integration Planning

Overall SQA Perspective

- “Product” Innovation → Innovative Process
- Process Evolving to Fit DANSE Domain
- Compliance Improving with Understanding
- Key Quality Control Points
 - SNS Interface
 - Release Management
- Final Process an Important By-Product