



Air Force Research Laboratory



100 YEARS OF U.S. AIR FORCE
SCIENCE & TECHNOLOGY

Integrity ★ Service ★ Excellence

Integrator Review

21 September, 2017

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Air Force Research Laboratory**



Outline



- **2017 In-review**
- **The 3 Pillars of ERSI**
- **Pursuing Policy Change**
- **Long Term Organization**
- **Research Dependency Structure**
- **Structural Community Awareness**



2017 In-review: The Good



- **Technical Progress**

- Sub-committee activity has been productive

- **Growing Community**

- 56% increase in active members in one year!

- **ASIP Awareness**

- Increased ERSI visibility in more program offices
- Key personnel involved in SB creation



2017 In-review: The Not-So Good



•Inter-committee Communication

- Sub-committee activities not well advertised within the working group
 - Nearly missed opportunities

•Task Coordination

- Many hands make light work*



The 3 Pillars of ERSI



- **Validated DADTA Methods**

- Physics based approach
- 0.05” rogue flaw & explicit residual stress field
- Demonstrate improvement over current approach

- **Quality Assurance (QA)**

- Determine acceptance criteria
 - Linked to assumed residual stress minimums

- **Non-destructive Inspection (NDI)**

- Effect of residual stresses on each NDI technique



Pursuing Policy Change: The What



- **Structures Bulletin**

- Generalized guide to approach a class of problems
- Concise examples for clarification
- No requirement of exact software/techniques

- **Best-practices Guide**

- In-depth technical detail behind why certain approaches are used
- Substantiating document for a bulletin to reference
- Enables practitioners
 - List of requirements and technical specifics for completing them



Pursuing Policy Change: The How



- **Structures Bulletin**

- Drafted by anyone in the defense community
- Finalized by USAF
- Living document as requirements evolve

- **Best-practices Guide**

- Technical community contributes and shapes
- In-depth technical detail



Long Term Organization: Best Practices Guide



•ASTM E0804

- How
 - Structural Applications Sub-Committee
 - Participate as a task group
- Why
 - Neutral community
 - Forum of equals
 - Agnostic to funding
 - Long-term stability
 - Internationally welcoming
- Who
 - Anyone
 - Only ASTM members can vote
 - Broadest base of technical expertise possible

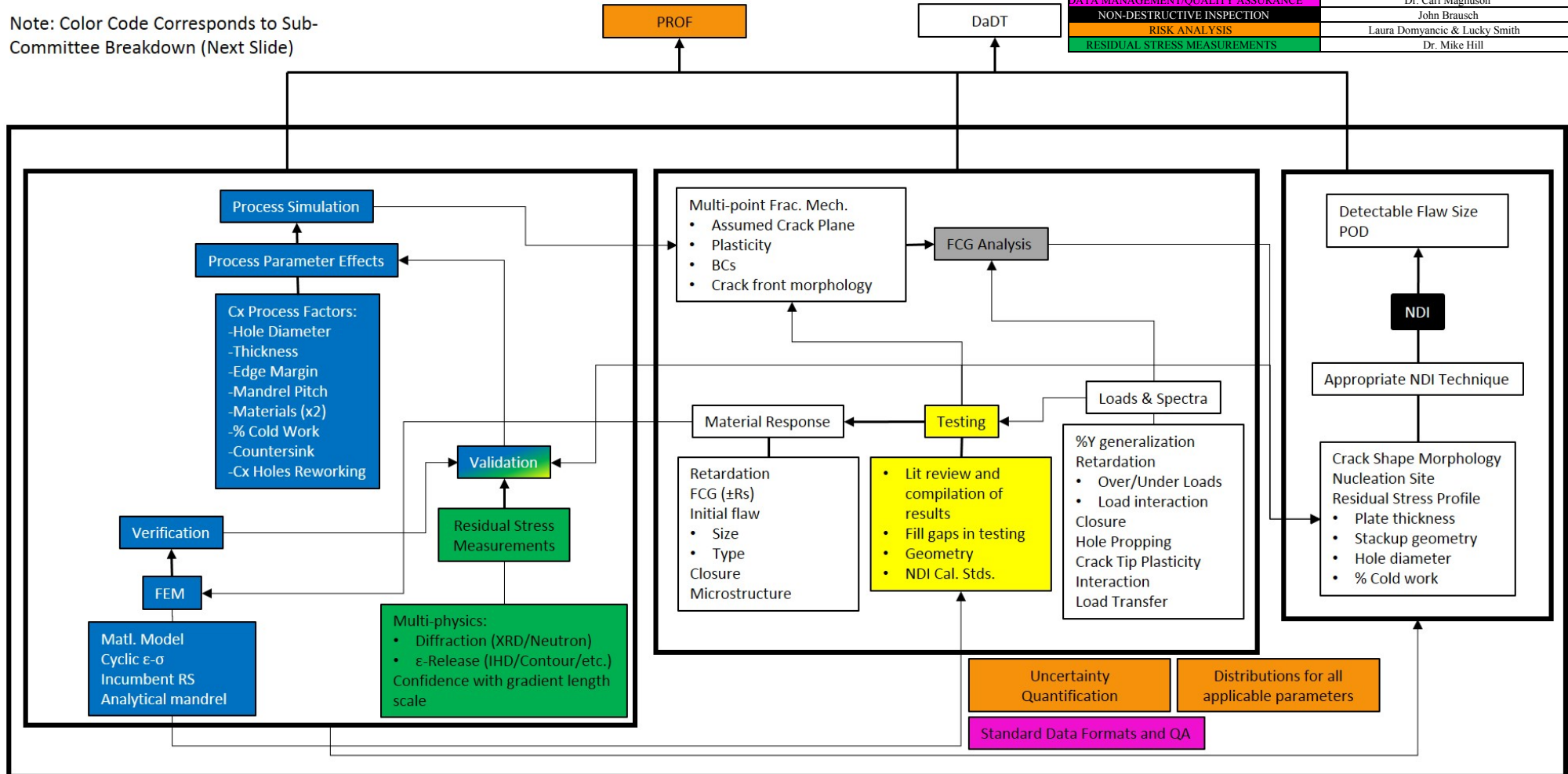


Technical Dependencies: Now



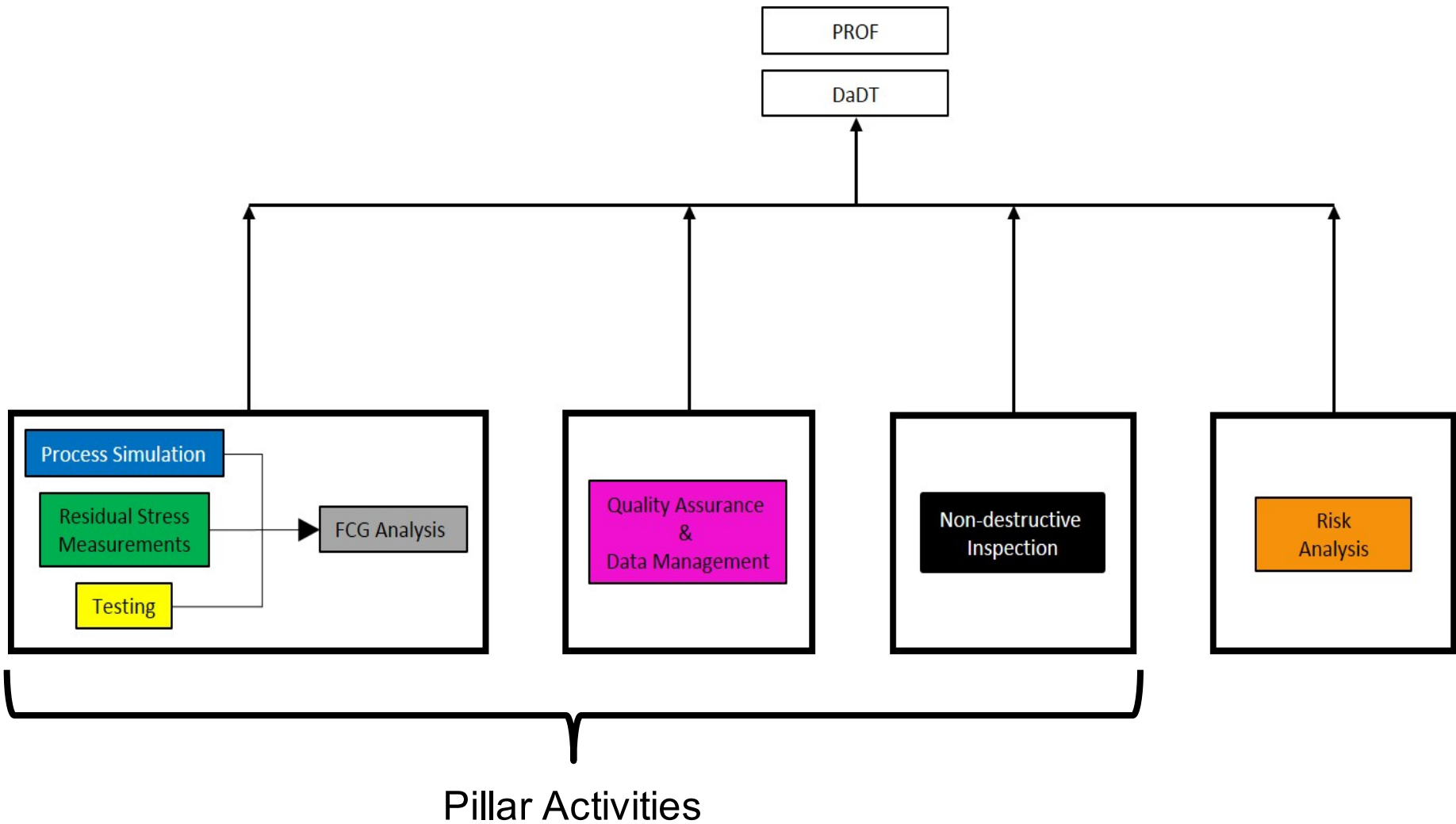
Note: Color Code Corresponds to Sub-Committee Breakdown (Next Slide)

Subcommittee	Chair
INTEGRATOR	Dr. Mark Thomsen, Dr. TJ Spradlin, Dr. Dale Ball
VALIDATION TESTING	Dr. Tom Mills
RESIDUAL STRESS PROCESS SIMULATION	Keith Hitchman
FCG ANALYSIS METHODS	Robert Pilarczyk
DATA MANAGEMENT/QUALITY ASSURANCE	Dr. Carl Magnuson
NON-DESTRUCTIVE INSPECTION	John Brausch
RISK ANALYSIS	Laura Domyancic & Lucky Smith
RESIDUAL STRESS MEASUREMENTS	Dr. Mike Hill



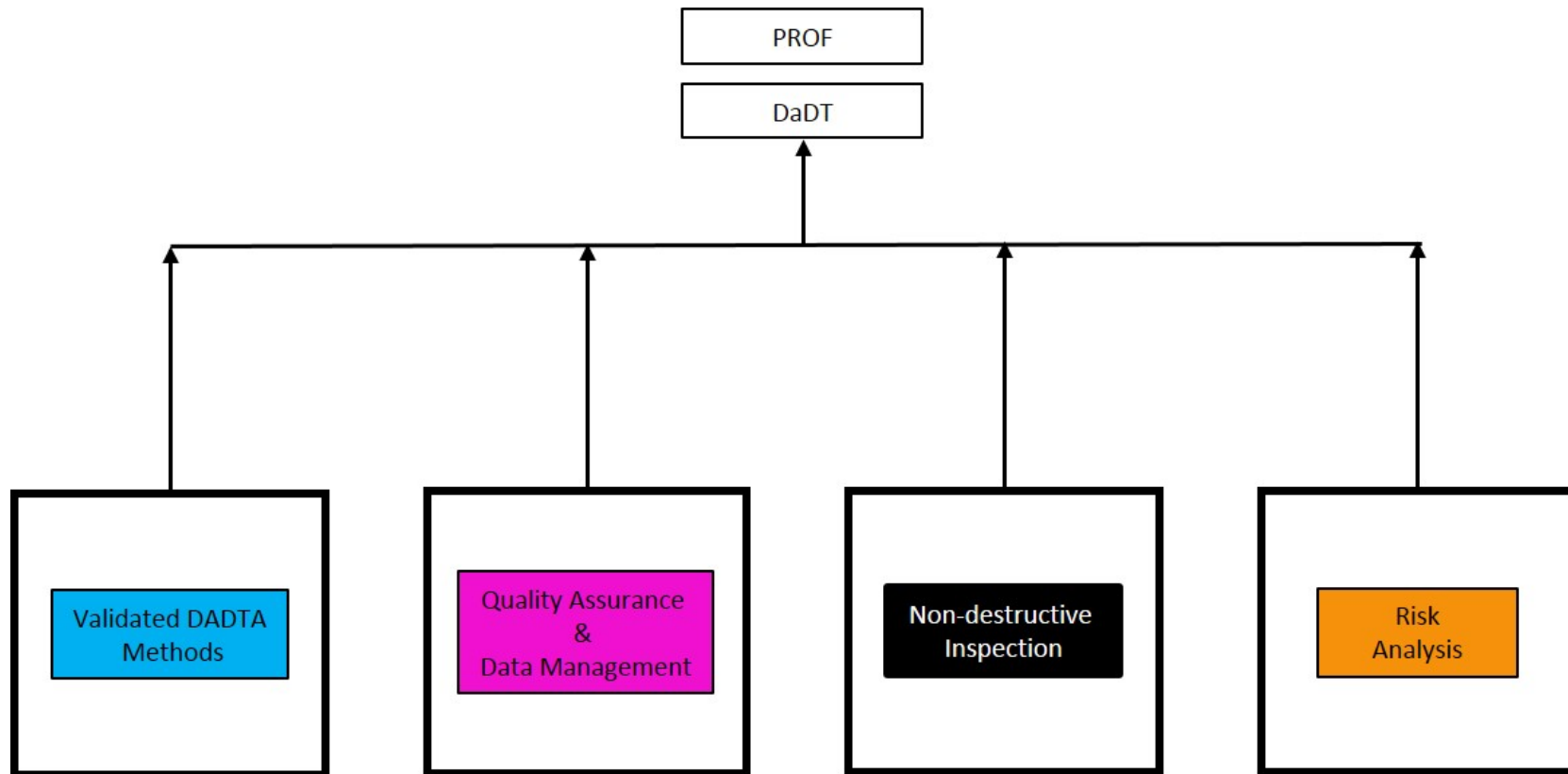


Technical Dependencies: Proposed





Technical Dependencies: Proposed



- Pros
 - Increases communication within areas of high dependency
 - Increases visibility of activities
 - Aligns portfolio with targeted research outcome
- Cons
 - One group larger than rest*
 - Loss of resolution by specific technical area



Structural Community Awareness: ASIP



•ASIP 2017

- Why
 - Communication to a broader audience
- What
 - 5 Panelist Topics
 - ASIP Requirements
 - Validated DADTA
 - NDI
 - Quality Assurance
 - ASIP Manager Perspective
- When
 - 29 November, 2017 (Afternoon)



Questions

