

F/A-22 Raptor Lean Team



Plenary, March 24, 2004

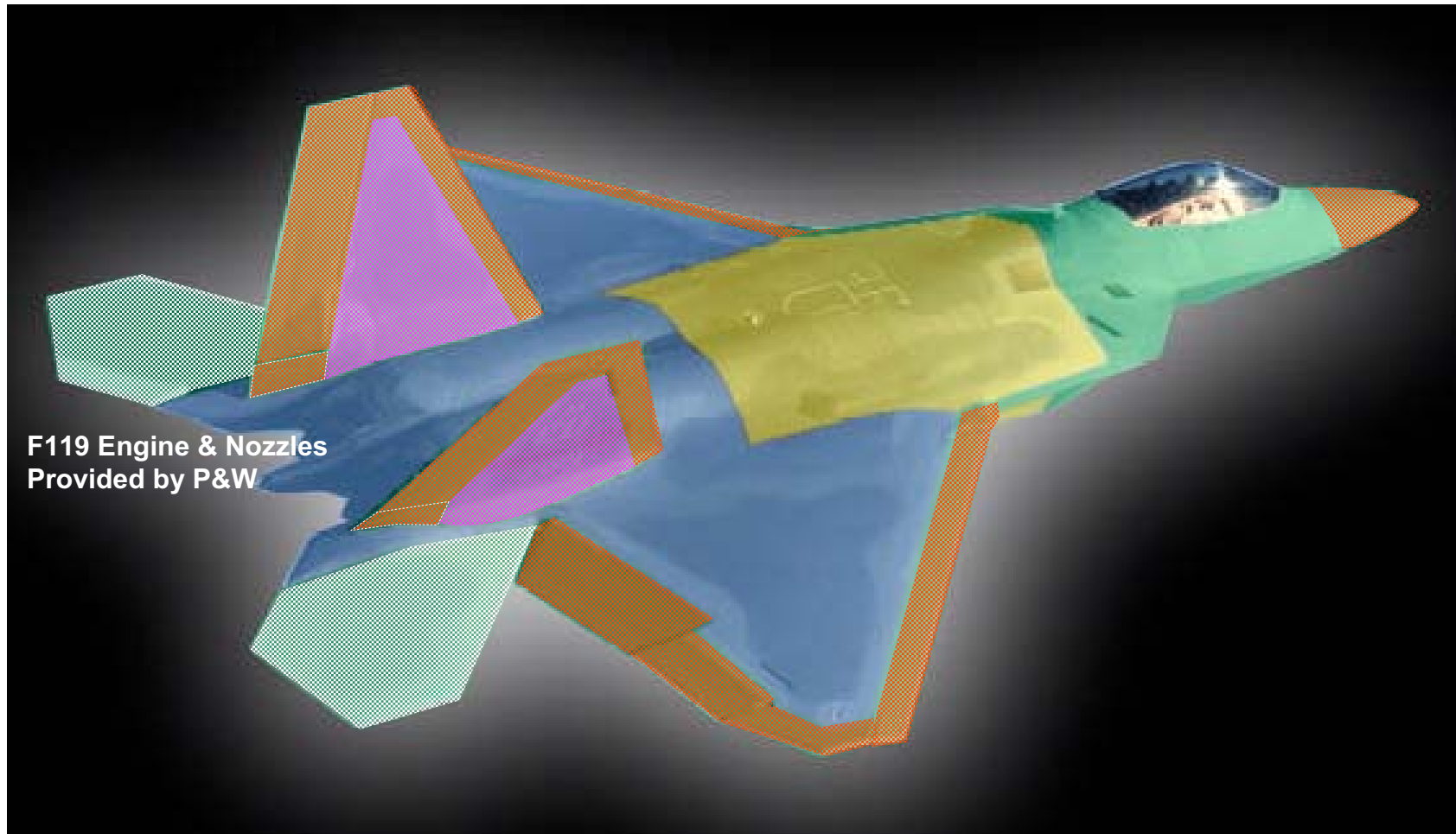


Agenda

- **F/A-22 Program Overview**
- **RLT Charter and Logistics**
- **F/A-22 LESAT Use**
- **F/A-22 Enterprise VSM**
- **RLT Actions and Plans**
- **Conclusions**



F/A-22 Team Work Distribution





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RLT Charter

- **Creation Of F/A-22 Raptor Lean Team (RLT)**
 - Established In 1998 At F/A-22 Senior Leader Offsite
 - Small, Senior Level Team, With Representatives From Each Partner (LM Aero, Boeing, P&W And SPO)
 - Help Facilitate Implementation Of “Lean” Across Program Enterprise.
- **Tasks Of The F/A-22 Raptor Lean Team (RLT)**
 - Promote The Use Of Lean In All Processes Related To The F/A-22
 - Map Process and Product Value Stream Flows
 - Identify, Prioritize, And Facilitate Improvements To F/A-22 Processes
 - Resource To All Partners In The Lean Journey
 - Educate The F/A-22 Team In Lean Principles And Practices
 - Document Improvement Metrics And Savings Where Practical

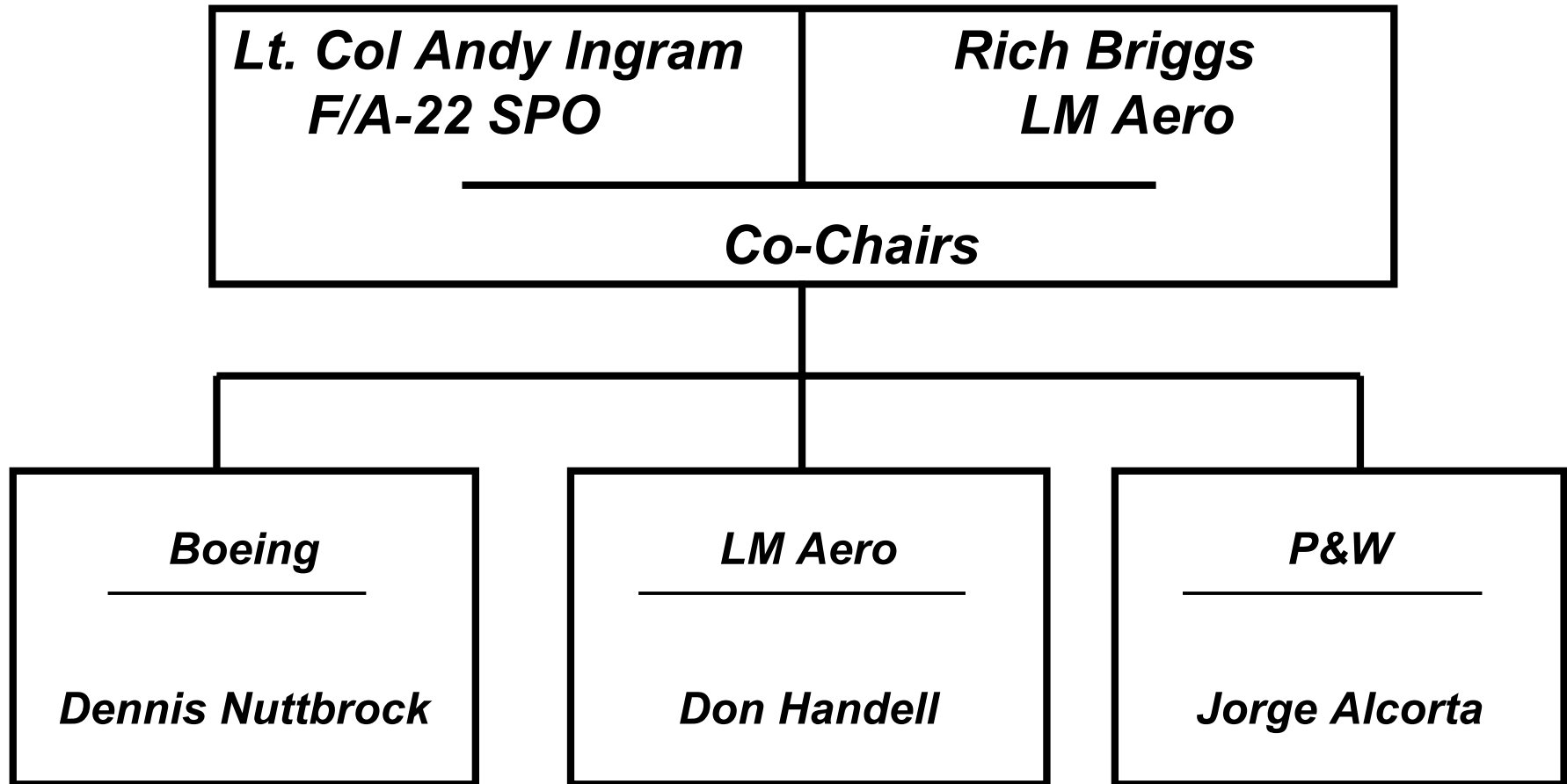


F/A-22 RLT Logistics

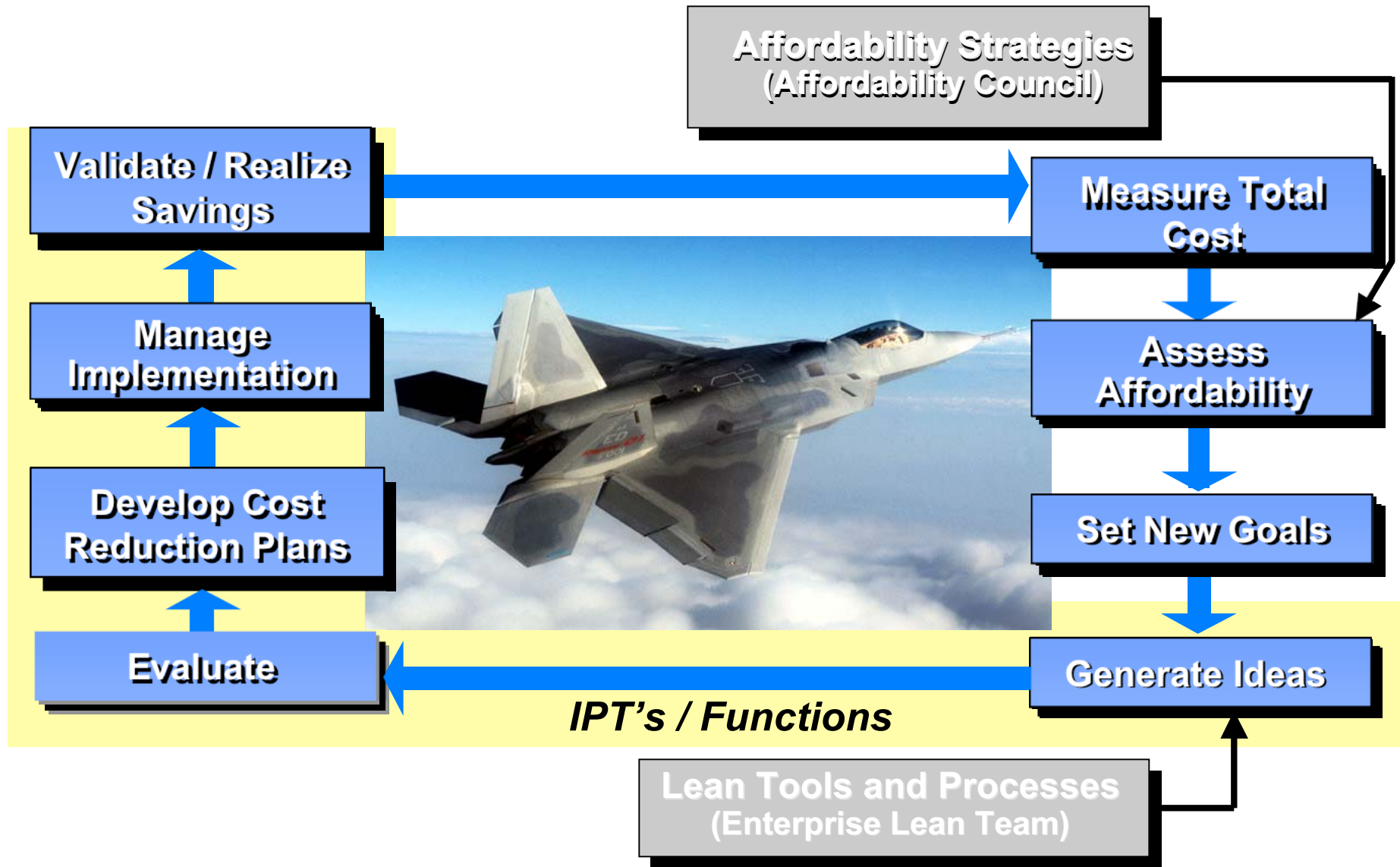
- **Membership (Part Time):**
 - F/A-22 SPO – Greg Staley (Co-Chair)
 - Lockheed Martin – Don Handell (Co-Chair), Randle Wright
 - Boeing – Rhonda Smith
 - Pratt and Whitney – Ida Gall
- **Weekly Telecon**
- **Monthly Lean Activity Report**
- **Monthly Event Executive Out Briefs**
- **Quarterly Face to Face Meetings (Rotating at Member Sites)**
- **Report to the F/A-22 Affordability Council (AFFCON)**



AFFCON Membership



Affordability Process





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Why RLT Sponsored LESAT

- **In 2002:**
 - **Program-wide Assessment**
 - **Identified Need For Enterprise Level Value Stream Map (VSM)**
 - » **20 Events Identified As A Result Of VSM**
 - **Raptor Affordability**
- **In 2003:**
 - **Program-wide Assessment**
 - **Gain Further Insight/Opportunities Toward Increased Affordability**
 - **Validate Dedication And Commitment To Lean**
 - **Barometer On How We Are Progressing on Maintaining Focus and Emphasis With Our Continuous Improvement Efforts**
 - **Validates Direction We Are Heading**
 - **Provides Guidance On Course Corrections As Change Occurs**
 - **Ensures We Support The Vision And Goals Of The Program**
 - **Increase Education In Lean**



LESAT 2003 Current State Overall Median Scores

Air Vehicle
Engine

2.1

(2002 Score: 1.7)

3.1

(2002 Score: 3.2)

Level 1

Some awareness of this practice; sporadic improvement activities may be underway in a few areas.

Level 2

General awareness; informal approach deployed in a few areas with varying degrees of effectiveness and sustainment.

Level 3

A systematic approach/methodology deployed in varying stages across most areas; facilitated with metrics; good sustainment.

Level 4

On-going refinement and continuous improvement across the enterprise; improvement gains are sustained.

Level 5

Exceptional, well-defined, innovative approach is fully deployed across the extended enterprise (across internal and external value streams); recognized as best practice.



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F/A-22 Enterprise VSM Event Summary



U.S. AIR FORCE

Event Description : Conduct a value stream analysis on the enterprise value stream for the F/A22 weapon system focusing on the interface processes between the F/A22 Team Members.

Event Dates: February 3-7, 2003
Dayton, OH

- Preliminary Objectives :**
- Develop a detailed lean improvement plan
 - Clear, achievable targets in cost and span reductions
 - Data driven decisions on improvement areas
 - Milestone-driven schedule of lean events to achieve targets

Co-Leaders : Don Handell (LM F/A22)
Greg Staley (F/A22 SPO)

Boundaries/Value Proposition: This activity will document the breadth of the F/A22 value stream running from issuing RFP to processes that support the fielded system. The focus will be the key interfaces between the AF SPO team (SPO, DCMA) and the contractor team (LM, Boeing, & P&W). Interfaces above the AF SPO team (ie, those with AF staff or DoD) as well as interfaces below the contractor team (ie, suppliers) will not be documented and analyzed during this event.

Team Members:

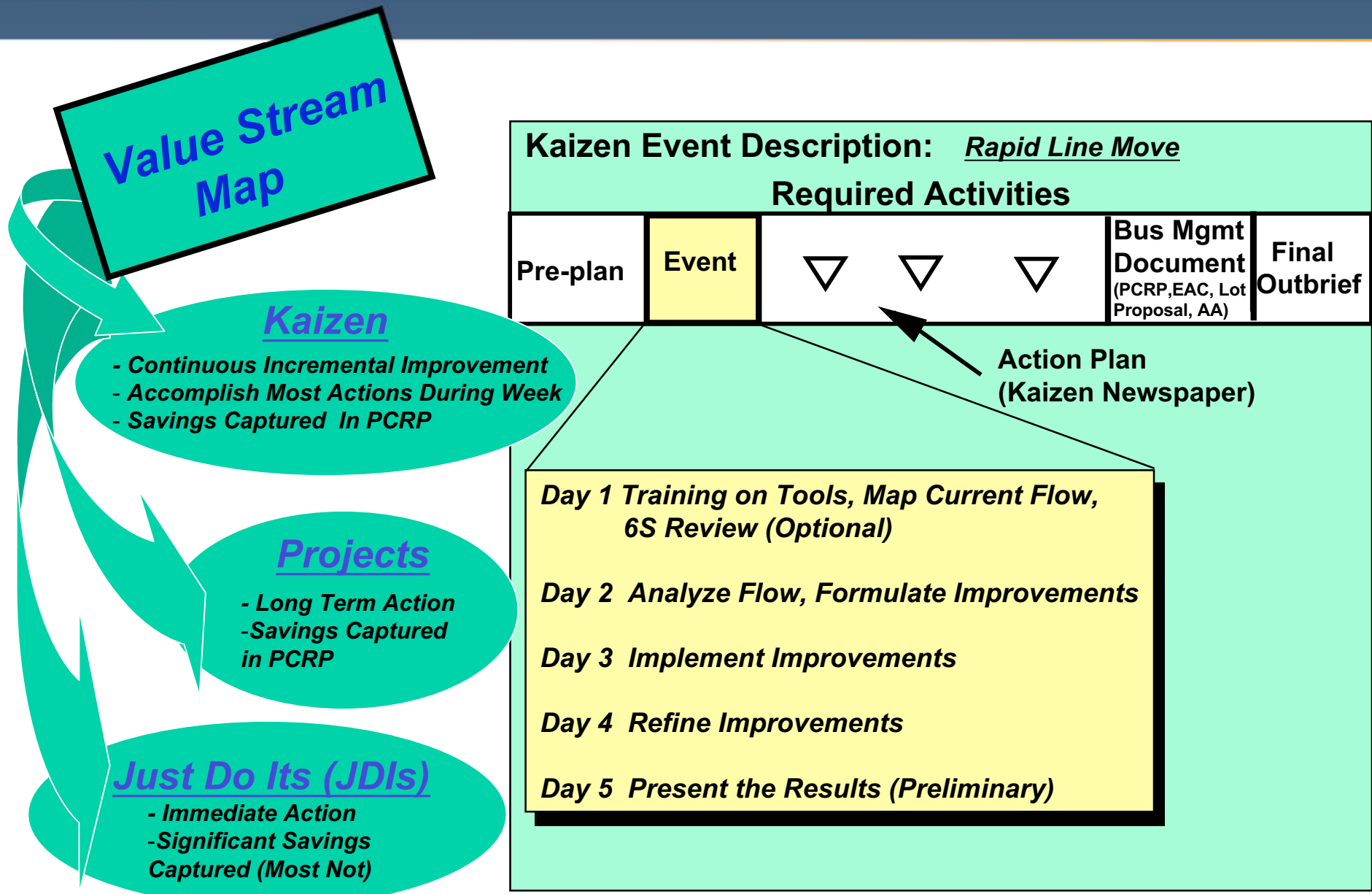
Briggs (LM)	Sackett (F/A -22 SPO)
Baker (LM)	Thurling (F/A-22 SPO)
Alliston (LM)	Anderson (F/A-22 SPO)
Autry (LM)	YFS (SPO)
Pieczonka (LM)	YFF (SPO)
Gall (P&W)	Bryan (LAI)
Young (LM)	Sudderth (DCMA)
Nuttbrock (Boeing)	McDaniel (DCMA)
Smith (Boeing)	Phillips (DCMA)
Wheat (LM)	YFK (SPO)
Tier II IPTs On Call	YFX (SPO)

Process Owner: Ralph Heath (LM) &
Col Thomas Owen

Process Information: Value stream mapping has been used as a tool on the F/A-22 Program, primarily in the build team area. Past VSM activity will be used as input for this event where appropriate.

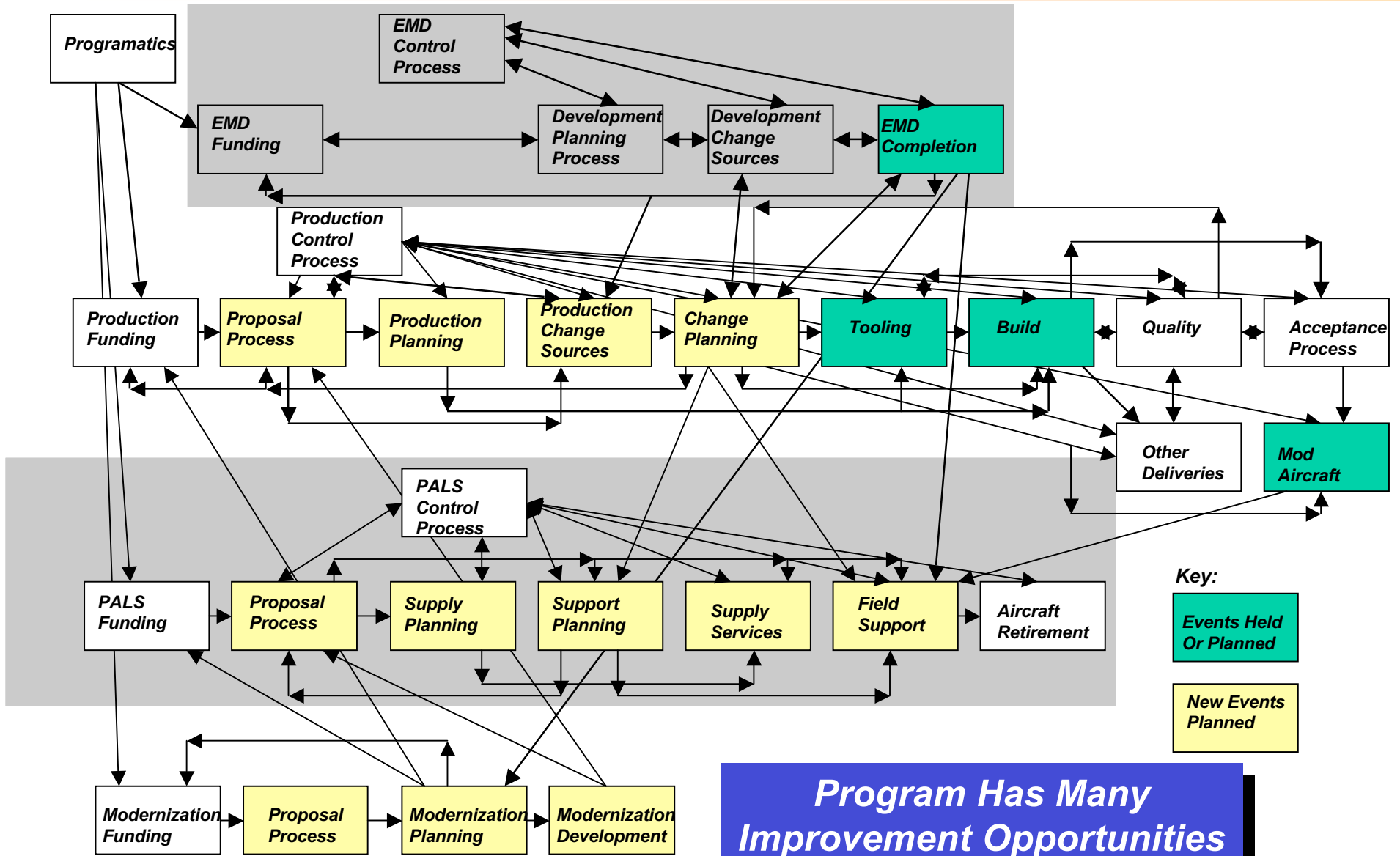
Coach: Tracy Houpt (LAI SME)

Current Situation and Problems: A strategic lean implementation plan across the entire F/A -22 weapon system has not been developed. The plan is needed to help prioritize, schedule, and capture savings from future lean events to support F/A -22 Program Goals. This event will define a portion of the overall strategic lean implementation plan.





F/A-22 Enterprise Value Stream Map Current State



As of February 2003



Top 20 Lean Projects From Enterprise VSM Event

Title	Owner
Readily Available Chase Aircraft	Ktr/SPO/ACC
Develop Parts Shortage Database for Recurrency	Ktr
Multiple Part ID	Ktr/SPO
Data input to IMIS	Ktr
Reduce Cycle Time to Load New Requirements to MBOM	Ktr
Reduce Proposal Process Cycle Time	Ktr/Subs/SPO
Pre-Design Kaizen of Modernization Process	Ktr/SPO/ACC
Develop Process to Reduce Source Inspection	Ktr/Subs
Increase Emphasis on Corrective Action on High SR&R	Ktr
Readily Available Pilots for Marietta	SPO/DCMA
Reduce Finishes Rework After Flightline Activities	Ktr
Program Budget and Requirements Alignment	Ktr/SPO/ACC
CCB/CRB/AVA Training/Reduce Returns	Ktr
Baseline Master Schedule to Manage Program	Ktr/SPO
Redundancy of Contractor and SPO AVA and CCB Boards	Ktr/SPO
Load MRP with Firm Schedule at LL Authorization	Ktr
Optimize Value Stream Map for PALS	Ktr/SPO/ACC
Distribution of Budget to EVMS	Ktr
Optimize Value Stream for Training System	Ktr/SPO
Redundancy of Acceptance Flights	Ktr/SPO/DCMA/ACC

Top 20 Projects Will Improve Program Execution



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Lean Implementation is Ongoing

- **Key Value Stream Maps (VSMs) Are Complete (Periodic Updates)**
 - Build
 - Marietta
 - Palmdale
 - Fort Worth
 - Boeing
 - P&W (Now Their Corporate Culture)
 - Combined Test Force (CTF)
 - Suppliers – A Few Joint VSM's With Key Suppliers
 - Enterprise
- **Strong Customer Support**
 - SAF/AQ Lean Now Prototype
 - Partnership with F/A-22 SPO
- **75+ Kaizen/AIW/ACE Events Across The F/A-22 Team In The Past Year**

VSMs Set Strategy for Selecting Events



Accomplishments/Actions

- **RLT Is Foundation For F/A-22 Transformation**
- **Response To Enterprise Events**
 - Enterprise VSM
 - Lean NOW
 - DIOT&E Action Request By SPO Director
- **Lean Enabler Through Sharing And Collaboration**
- **Across Team Sharing**
 - Technical Interchange Meetings (TIMs)
 - Build Team Best Practices Lean Exchange
 - Monthly F/A-22 Executive Lean Out Brief – All Events In Program
 - Monthly Lean Activity Report
 - Share Lean Training Across Companies, Suppliers And Government Green Belt/Black Belt, ACE, AIW
 - Monthly Supplier Lean Implementation Sharing
- **Kaizen On LEAN EVENTS**
 - Emphasis On Preparation And Closure
- **Reduce Program Cost by Waste Elimination and Process Improvement**

Leadership Support Is Key



2004 RLT Plans

- **Improve Communications with Senior Leadership on Lean**
 - Continue Monthly Executive Out Briefs
 - Continue Monthly RLT Activity Report
 - Prepare Year End Summary
- **Improve Impact of Lean Activities on Program**
 - Status February 2003 Enterprise VSM
 - *Update by April 2004*
 - Expand Monthly Lean Supplier Implementation Phone Call
 - Do 2004 LESAT
 - Quarterly RLT Face to Face Meetings
 - Revisit RLT Charter
 - Develop Mentoring Plan
 - Support at Least One Cross Cultural Training Event
 - Improve Savings Documentation Discipline

RLT is Responsive and Pro-Active



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Conclusions

- **Lean Is Working on the F/A-22 Program At All Sites and Suppliers**
 - Still Many Opportunities
 - More Work To Be Done
- **Real Benefits Observed**
- **F/A-22 RLT Collaboration is Instrumental**
 - Partners
 - Suppliers
 - Government
- **More Strategic Improvements Are Needed to Make 2004 Program Commitments**
 - Improved Quality
 - Reduced Span
 - Reduced Cost

F/A-22 Program Is Committed to the Implementation of Lean

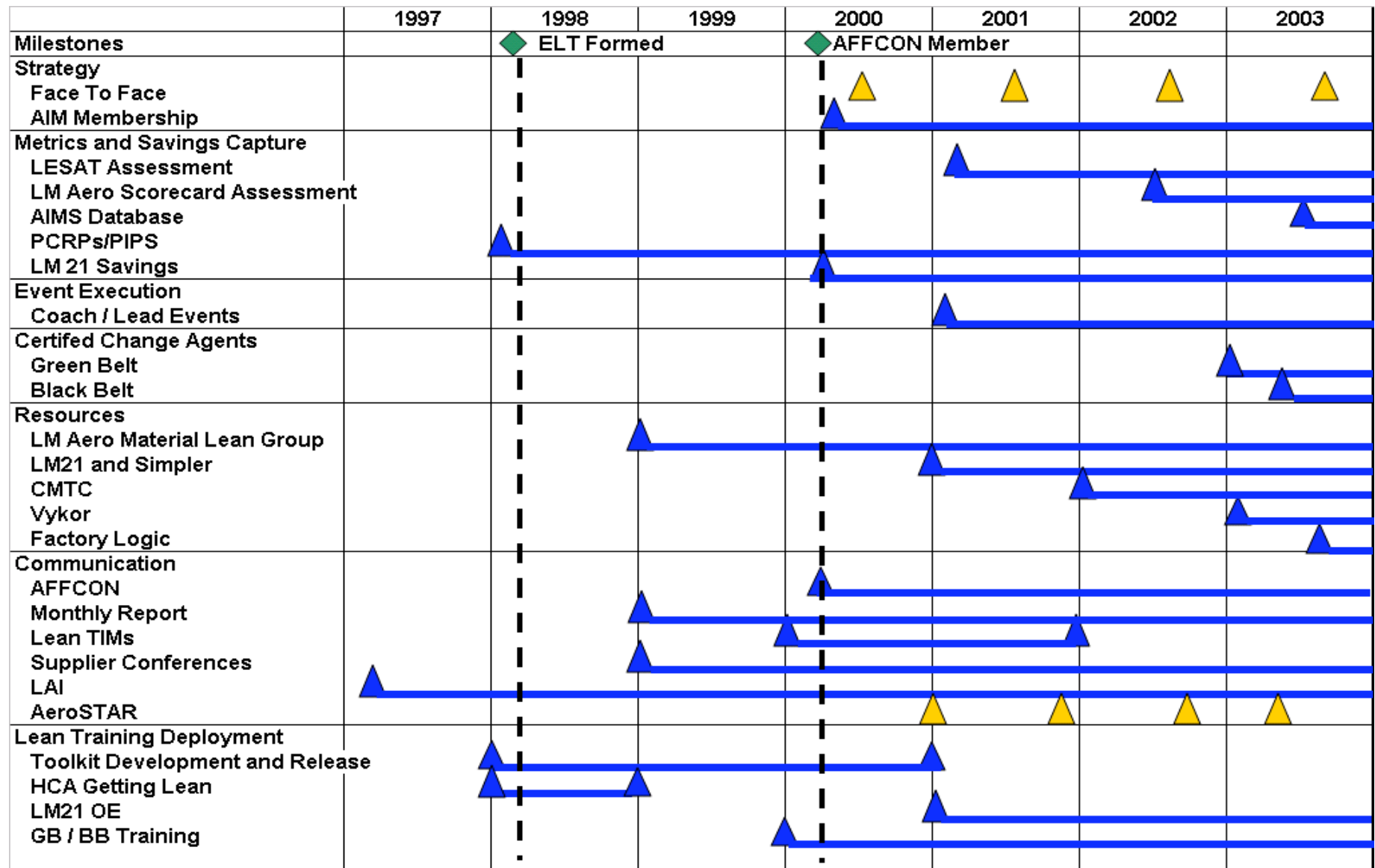


RLT Back-Up Slides

- **BACK-Ups**



F/A-22 RLT Evolution





Lean Is A Method To Pursue Continuous Cost Reduction

- **Basic Tenet Of Lean Is To Reduce Waste**
- **Reducing Waste Results In**
 - **Quality Improvements**
 - **Reduced Span**
 - **Cost Reduction**
- **Value Stream Mapping And Kaizen Events Are The Primary Forums For Lean Implementation**
 - **Based On The Premise Of Involving The People In The Identification Of Waste**
- **Lean Is The Corporate Tool Provided For Cost Reduction Efforts**
- **Lean Is A Team-wide Tool**
 - **SPO, P&W, Boeing, Palmdale, Fort Worth, Marietta, CTF**
- **Annual Assessments Are Made Using LAI LESAT Tool**

Lean Has Been a Method of Choice Since 1997