

A collection of military medals and a pair of glasses on a wooden surface. The medals include a red ribbon with a circular emblem, a blue ribbon with a circular emblem, and two silver Maltese crosses with central emblems. A pair of gold-rimmed glasses is positioned diagonally across the center. In the bottom left corner, a circular compass is visible. The background is a light-colored, textured surface.

JG-PP Lead-Free Electronics Soldering Project

Dallas, Texas
14-15 November 2001

Welcome, Introduction, Logistics




Introductions

- ◆ Who
- ◆ Affiliation
- ◆ Background
- ◆ Interest in this project



Logistics

- ◆ Scheduled length of meeting
- ◆ Facilities issues
- ◆ Lunch

A collection of objects is arranged on a light-colored surface. On the left, a portion of a chessboard with a blue and brown checkered pattern is visible, featuring several chess pieces. Below the chessboard are two medals: one with a red ribbon and a white star, and another with a blue ribbon and a white star. A silver compass is located in the bottom left corner. A pair of gold-rimmed glasses with thin temples is positioned in the center. The text is overlaid on the right side of the image.

Objectives and Recommended Approach for 14 Nov 2001 Meeting

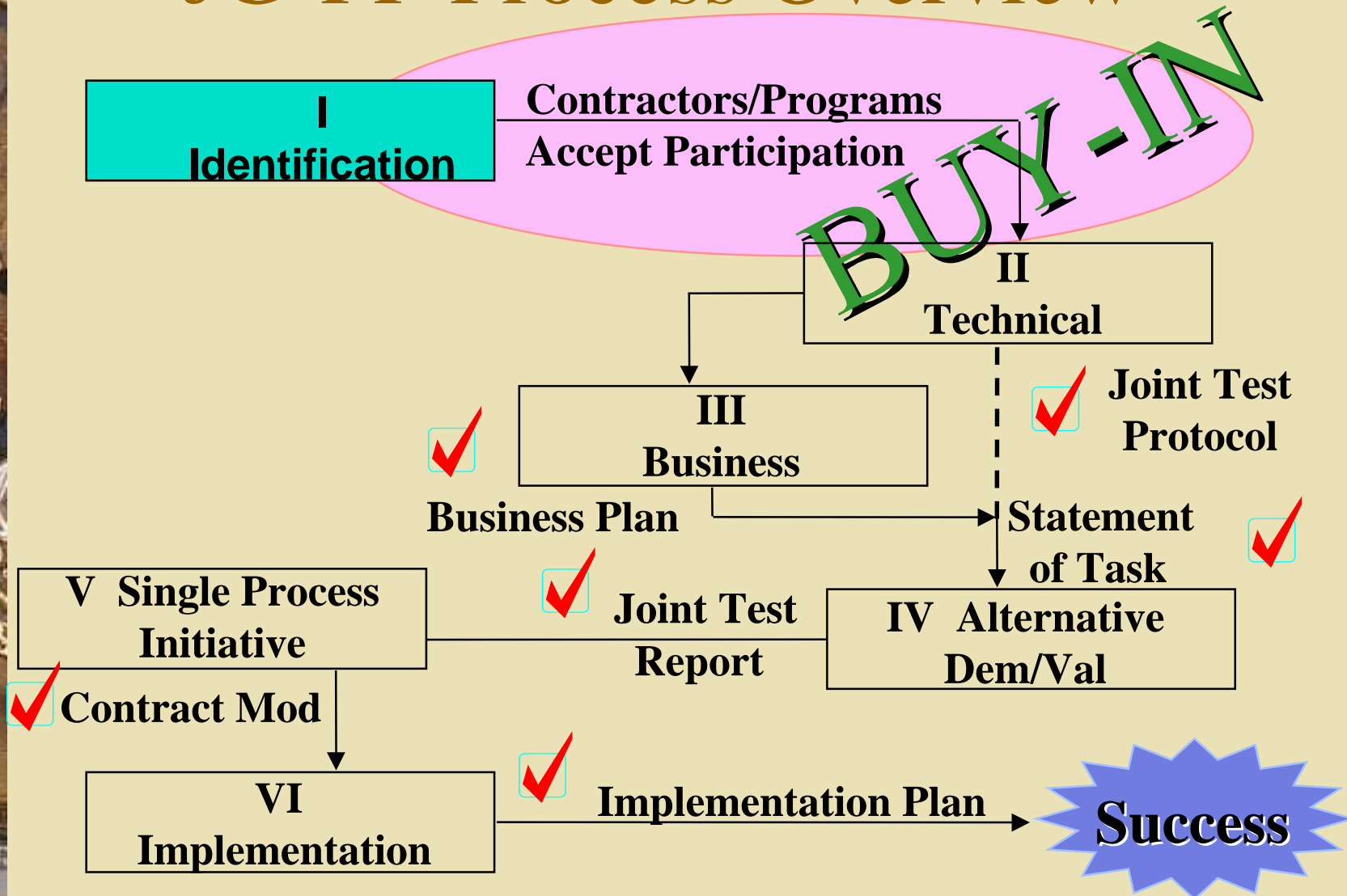
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Outline of Day 1 (14 Nov)

- ◆ Where are we in identifying critical performance requirements and formulating a Joint Test Protocol (JTP)?
- ◆ Where are we going?
- ◆ What do we want to accomplish today?

JG-PP Process Overview





JG-PP Products

Joint Test Protocol (JTP)

- Defines tests required to qualify/validate alternatives

Potential Alternatives Report (PAR)

- Documents alternative selection process

Joint Test Report (JTR)

- Documents test results

Cost Benefit Analysis (CBA)

- Quantifies economic effects
- Supports business case
- Used as a decision tool
- Limited distribution

Qualified Alternatives




Scope of JG-PP Lead-Free Electronics Soldering Project

Dem/val	Board-Level	Component-Level
Manufacturing	X (current JTP)	X
Rework	X	X



Scope of JG-PP Lead-Free Electronics Soldering Project

- ◆ Performance Environment: flight hardware
- ◆ Soldering methods: manual, wave, reflow



Scope of JG-PP Lead-Free Electronics Soldering Project

New Build/New Design (Pb-Free):

- ◆ {220 +/- 10 C liquidus}-temperature lead-free solders (Bi, Cu?)
- ◆ with {supplier furnished} fluxes
- ◆ applied by {wave, reflow, manual & heat shrink} methods
- ◆ under {manufacturing} conditions
- ◆ to {SMT, TH, Mixed & Interconnects} components
- ◆ with {plastic, ceramic, size} packaging
- ◆ with {lead-free} surface finishes
- ◆ and {150C minimum laminate/Tg} board types
- ◆ with {multi-layer} construction

Rework/Repair the same ???



Objectives of 14 Nov Meeting

- ◆ Begin addressing the nuts and bolts problems today
- ◆ Address questions about scope of JTP
- ◆ Further develop JTP
- ◆ This should be a “tactical” meeting more than a strategic meeting




Meeting Approach

- ◆ Methodically go through JTP
 - Fully incorporate rework and component-level requirements
 - Determine level of evaluation/tests/results **TRULY REQUIRED** to satisfy participants/customers and sell change
 - General types of tests
 - Screening tests
 - Performance/qualification tests
 - Tests to fill in data gaps
 - Other (e.g., leachability)



Meeting Approach

- ◆ Methodically go through JTP
 - Tests Required (continued)
 - Specific test methods/approach
 - Spectra
 - Shock profiles
 - Thermal profiles
 - Acceptance criteria
 - Incorporate and keep track of Army/AF/Navy/NASA requirements

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Objectives and Recommended Approach for 15 Nov 2001 Meeting

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Outline of Day 2 (15 Nov)

- ◆ Where are we in identifying:
 - Potential alternatives
 - Test board design
 - Cost-benefits?
- ◆ Where are we going?
- ◆ What do we want to accomplish today?



Objectives of 15 Nov Meeting

- ◆ Further refine solder alternatives screening criteria
 - Review of drivers for change
 - Latest results of alternative alloy testing
- ◆ Develop scope of PAR
- ◆ Refine test board design
- ◆ Gather necessary information for CBA



Meeting Approach

- ◆ Potential Alternatives Report (PAR)
 - Review objective and scope of “typical” PAR
 - Review matrix of potential alternatives and their key attributes (potential downselection criteria)
 - Refine downselection criteria
 - Remove any clearly unsuitable alternative
 - Obtain feedback on extent/scope of PAR



Meeting Approach

- ◆ Test Board Design
 - Review draft test board and rationale for suggested design
 - Discuss whether more than one test board is required
 - Discuss and develop written rationale for components included and excluded from test board(s)



Meeting Approach

- ◆ Cost Benefit Analysis (CBA)
 - Objective and scope of CBA
 - Review draft CBA survey form
 - Discuss collection of CBA data
 - Recommended sites
 - Depot and contractor POCs



Potential Alternatives Report

- ◆ Function: Serves as a basis for the screening, prioritization, and selection of alternatives
- ◆ Typical contents
 - Recommendations on alternatives
 - Prior test data and its origins
 - Initial ESOH screening data
 - Nominal baseline of existing process