Joint Fuze Technology Program (JFTP)
55th Annual NDIA Fuze Conference

25 May 2011

Joint Fuze Technology Panel
Charles Kelly (OUSD AT&L PSA LW&M)
Lawrence Fan (Navy)
Timothy Tobik (Air Force)
Philip Gorman (Army)

Lawrence Fan (Presenter)
Indian Head Division, Naval Surface Warfare Center
(301) 744-6157
lawrence.fan@navy.mil

JFTP Overview

- JFTP is a 6.2/6.3 national program established (FY10 start) to develop and mature technologies for improving future fuzing performance, survivability, and reliability
- JFTP governance and processes are modeled after the Joint Munitions Program (JMP) and the Joint Insensitive Munitions Technology Program (JIMTP)
  - Managers from Services and DTRA
- JFTP leverages and coordinates with projects in JMP, JIMTP and Service S&T
- Projects are selected based on evaluation of proposals from Gov't, Industry and Academia

Joint Fuze Technology Program Management Structure

OUSD(AT&L)/ PSA/LW&M

Technical Advisory Committee

JOINT FUZE TECH PANEL OVERSIGHT COMMITTEE

PROGRAM MANAGERS
Charles Kelly, Lawrence Fan, Phil Gorman, Tim Tobik

FUZE AREA TECHNOLOGY GROUPS

FATGI – Hard Target / Survivable Fuzing	FATGII – Tailorable Effects & Initiation	FATGIII – High Reliability Fuzing	FATGIV – Enabling Fuze Technologies
Chair Danny Hayles (DTRA)	Chair Gene Henderson (Army)	Chair John Hendershot (Navy)	Chair Chris Janow (Army)
Co-Chairs John Kandell (Navy) Bill Konick (Army) Howard White (AF)	Co-Chairs Daniel Lanterman (Navy) George Jolly (AF)	Co-Chairs Steve Smith (AF) Tom Crowley (Army)	Co-Chairs Matt Bridge (AF) Bruce Hornberger (Navy)
SME Participants	SME Participants	SME Participants	SME Participants

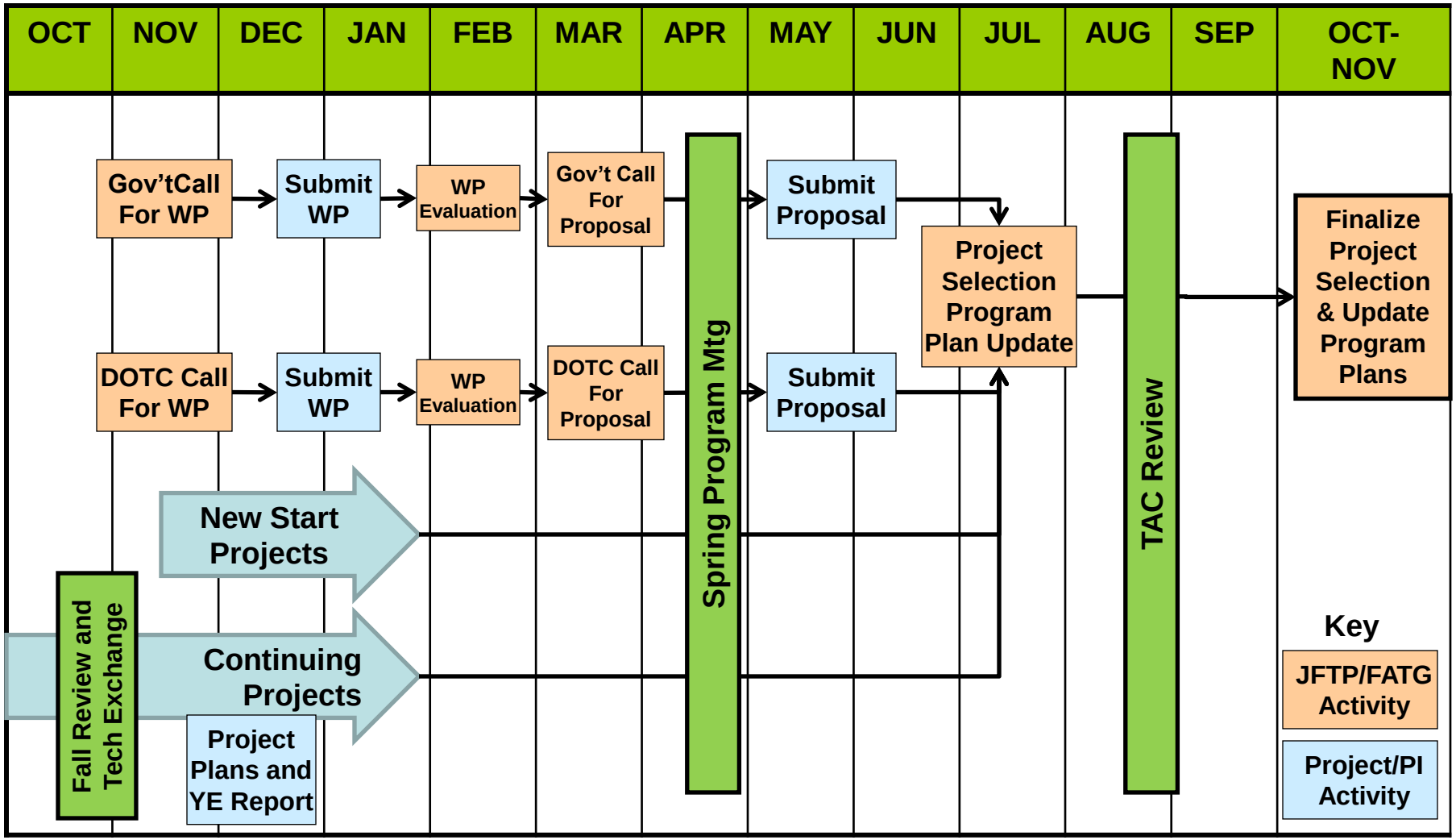
Fuze Area Technology Groups

FATG I – Hard Target / Survivable Fuzing	FATG II – Tailorable Effects	FATG III – High Reliability Fuzing	FATG IV – Enabling Fuze Technologies
1.1 Improved M&S 1.2 Fuze Environment 1.3 Next Generation Fuzing Hardware	2.1 Initiation & Multi-point 2.2 ESAD Based Multi-point Initiators 2.3 MEMS Based Multi-point Initiators 2.4 Smart Fuzing: Algorithms, timing and control 2.5 Adv Fuze Initiation	3.1 Fuzing Architecture 3.2 Fuzing Components 3.3 UXO reduction features	4.1 Common / Modular Fuze Architecture 4.2 Components Technologies 4.3 Proximity Sensors 4.4 Weapons Effects & Damage Assessment 4.5 Fuzing Power Sources

Funding

	FY 10	FY 11	FY 12 PBR	FY 13	FY 14	FY 15	FY16
JFTP 6.2	3.849	7.833 (requested) 5.400 (actual total)	7.167	5.656	6.604	7.312	7.520
JFTP 6.3	0	3.577 (requested) 1.077 (actual total)	4.889	6.098	6.835	8.350	8.606

JFTP Proposal and Review Annual Cycle



FY12 JFTP Summary

- Funding levels from FY12 submitted budget:
  - 6.2 - $7.167M total
  - 6.3 - $4.889M total
- Selection ongoing for FY12 new starts
  - Proposers receive final go/no-go when FY12 budget is released ~ Nov 12
- Industry involvement:
  - Conveyed FATG goals and higher priority goals via DOTC Fuze call for proposals
  - Additional details at DOTC General Membership meeting – July 11
- Program Plans (GOTChA charts) to link weapon requirements and needs to fuzing technologies to JFTP projects and gaps

Next Call for WP/Proposals

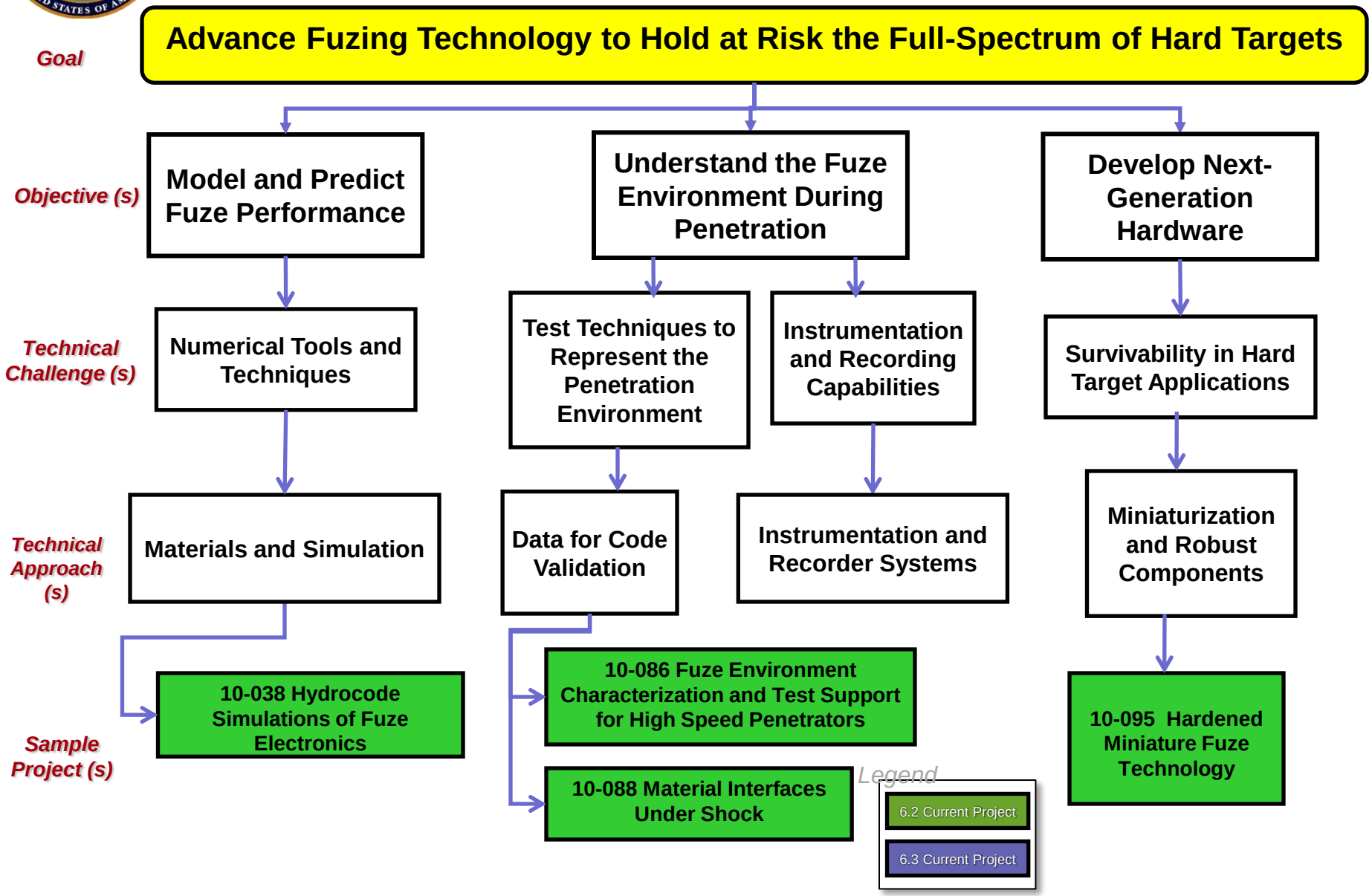
Call for White Papers

- FY13 cycle starts in Dec 11/Jan 12
- Call is distributed to DoD, DOE and TAC members and to NWEC/DOTC
- FATG goals and needs conveyed
    - Focus on specific gaps not currently addressed
- 6.2 and 6.3 projects solicited (3 pages)

White Paper Content

- What FATG goals are being addressed
- Description of technology
- Statement of technology maturity
- Transitions (for 6.3 identify offices expected to provide endorsements and leveraging/cost sharing)
- Deliverables (what/when) and their relevance
- Yearly ROM costs and schedule

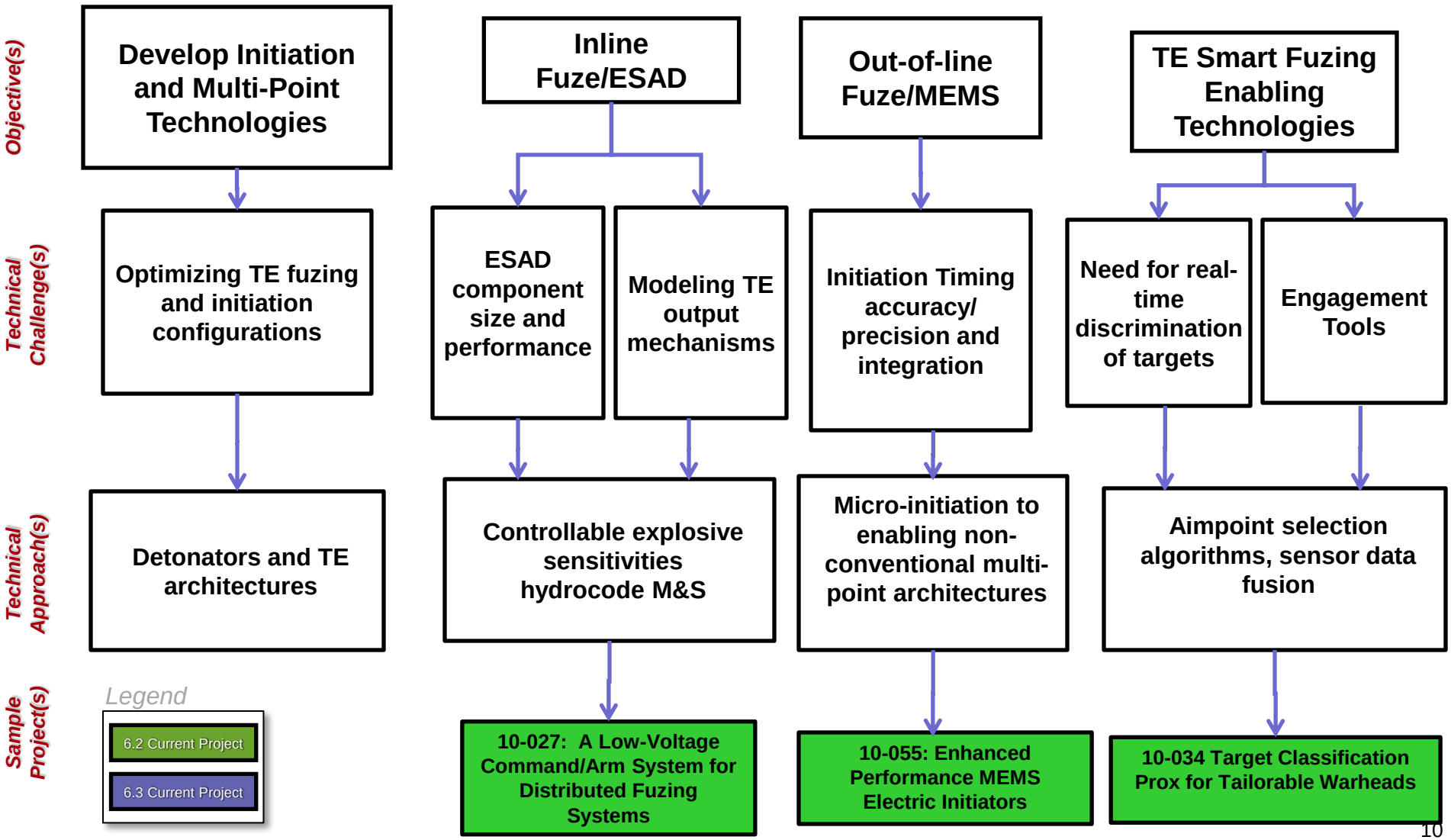
FATG I Hard Target Fuzing GOTChA



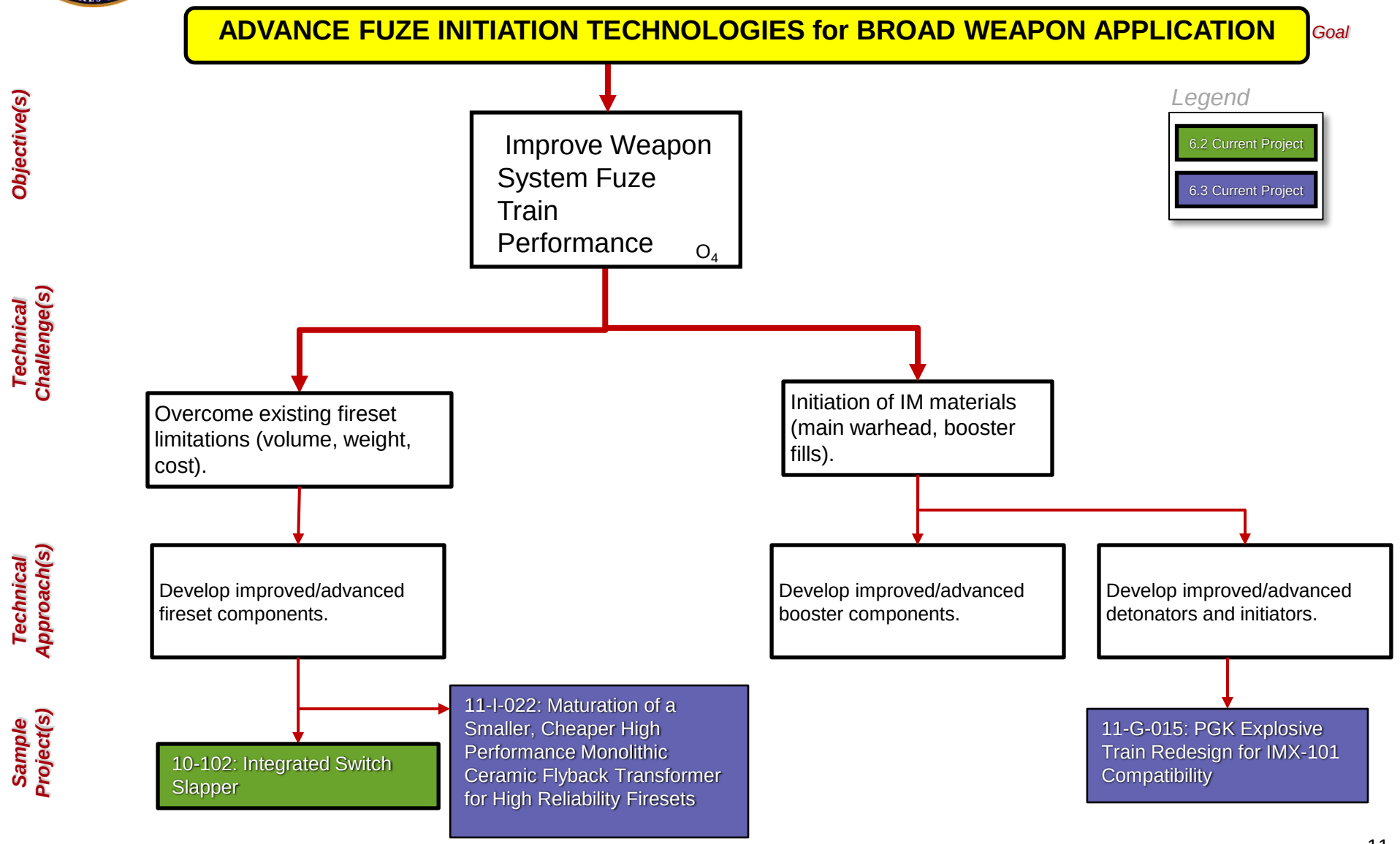
FATG II Tailorable Effect Fuzing GOTChA

Goal

TAILORABLE EFFECTS (TE) WEAPON SYSTEMS TECHNOLOGIES THAT ENABLE SELECTABLE YIELD OPTIONS APPLICABLE to MUNITIONS SYSTEMS



FATG II Tailorable Effect Fuzing GOTChA



FATG III High Reliability GOTChA

Legend
- 6.2 Current Project
- 6.3 Current Project

Goal

Very High Reliability Fuzing for Cluster and All Weapons

Objective (s)

- Generate High Reliability Fuze Architectures
- Develop High Reliability Fuze Components
- Integrate and Demonstrate High Rel Fuzing

Technical Challenge (s)

- Safety and Reliability
- Reliability Analytical Tools
- Performance, Miniaturization
- Integration and Manufacturing
- Packaging and Integration
- Legacy and Future Cluster Munitions

Technical Approach (s)

- Modular architectures Redundancy
- Empirical and physics based techniques
- Sensor, firing system, & safety components for Fuze architecture
- Micro Electronics and MEMS for fuze application
- High density micro electronics & packaging
- Integrate high rel fuze architecture and technologies

Sample Project (s)

- 10-001 State-of-the-Art of Reliability Methodologies for Munitions Fuzes
- 10-119 New Methodology for Explosive Transfer Reliability
- 10-65 Wafer Level Packaging for High Aspect Ratio MEMS
- 10-081 Low cost, High Reliability Fuzes for Cluster Munitions

FATG IV Enabling Fuze Tech GOTChA

Goal

FATG IV Fuze Sensors and Power Sources

Objective (s)

Develop Miniaturized, Robust and Affordable Fuzing Sensors

Improved Fuzing Power Source Performance for a diverse range of applications
Increased Output (Power & Energy Density Improvements for higher power needs)

Technical Challenge (s)

Performance and technology development of proximity sensors, environmental safety sensors and retard / impact sensors

Rise time improvements and Energy density
Decrease time to set fuze

Technical Approach (s)

Investigate RF, IR and optical sensors
Develop advanced antennae, transceiver, and signal processing algorithms

Apply advancements in power and materials technologies in compact form factors
Develop Thermal Battery Materials
Develop Electrolytes

Sample Project (s)

10-042 Next Generation Proximity Sensors

10-010: 6.3 MEMS Retard & Impact Sensor

10-070: Nanofoil-Heated Thin-Film/ Conformal Thermal Battery Construction

10-078: High Energy Density Super Capacitors

Legend

6.2 Current Project

6.3 Current Project

JFTP Calendar

10 Dec 10	Call for FY12 White papers (Gov't and DOTC)
18 March 11	Gov't and DOTC WP Feedback sent and Call for proposals
26-28 Apr 11	Spring JFTP Meeting (Booz Allen Hamilton – Arlington, VA)
15 Jun 11	FY12 JFTP NWEC and Gov't proposals due
13-14 July 11	DOTC General Membership Meeting
23-26 Aug 11	TAC review of JFTP program
Oct/Nov 11 (est)	FY12 JFTP Budget Determined
Nov 11 (est)	FY12 JFTP Project Selection Decision
Dec 11	Call for FY13 White Papers

55th Annual Fuze Conference JFTP Project Briefs

- Session IIIB: High Reliability Fuzing Architecture for Cluster Munitions, David Gudjohnsen, US Army, ARDEC
- Session IVB: The Fuze Environment of Boosted Penetrators Dr. Jason Foley, US Air Force, AFRL Munitions Directorate
- Session IVB: Hardened Miniature Fuze Technology Progress Jefferson Oliver, US Air Force, AFRL Munitions Directorate
- Session IVB: Improving Fuze Environment Prediction During Hard Target Penetration Using A Coupled-Code Erosion Technique, Reid McKeown, US Navy, NSWC Indian Head Division
- Session VA: Wafer Level Packaging for High Aspect Ratio MEMS Kevin Cochran, US Navy, NSWC Indian Head Division
- Session VA: A Low Voltage Command-Arm System for Distributed Fuzing Mark Etheridge, US Army, AMRDEC
- Session VB: MEMS Retard and Impact Sensors, Walter Maurer, Naval Air Warfare Center Weapons Division

Questions?