Create and Deliver Superior Products
Through Innovative Minds

Precision Strike Winter Roundtable
“Long Range Strike Weapons”
Frank Cappuccio, February 1, 2007
1. What LRS Capabilities Does the Customer Community Want?

2. What Are the Desired Attributes of LRS Weapons?

3. How is Industry Responding?

It All Depends On … the CAPABILITIES Required & Who’s Buying
“Here is *Industry* Bear, coming downstairs now, bump, bump, bump, on the back of his head, behind Christopher Robin.

It is, as far as they know, the only way to come downstairs, but sometimes we feel that there really is another way…

If only we could stop bumping for a moment and think of it!”

Original Source: Augustine’s Laws
Frank: “Is this your Requirements Source?”
Strategic Vision: Provide the “War-fighter” an Exponentially Increased Capability to Address a Wide Range of Threats, Via Either Preemptive and or Reactive Force, With High Confidence of the Source of the Threat

Network Enabled Approach Addresses Not Only Interoperability, but More Importantly, Reliable & Timely Fusing and Dissemination of Information Across “Platforms” for Effective Battle Space Awareness

Information Awareness Critical for Precision Engagement
Framework for the Future

Real-Time Fusion of Intelligence

Battle Space Awareness Critical for Precision Engagement
Future Operational Environment

- **Anti Access Due to Basing Restrictions Must Be Accomplished**
  - Impacts Navy and USAF CONOPS
  - Forces Strikes From Long Distances in Early Days of Campaigns

- **Proliferation of Next Gen Threat Defensive Systems Must Be Countered**
  - “Double-digit” SAMs, e.g., S-400, HQ-9, and Follow-ons / Mods
  - Advanced Fighters With Advanced IRSTs, Radars, Missiles
  - Digital IADS / Networked Radars

- **Various Levels of Scenarios / Threats Must Be Addressed**
  - Near Peer, Highly Capable, High Threat, e.g., China
  - Difficult / High Threat, e.g., North Korea
  - Quick Reaction, e.g., Neutralize WMD Threats, GWOT
  - Lower Intensity, e.g., Afghanistan, Bosnia, GWOT, etc

- **High Value, Time Critical Target (TCT) Set Must Be Prioritized**
  - Majority Are Fixed, Preplanned
  - TBM / SAM Pop Up Targets Included
  - Target Rich in Large Scenarios
  - “Lone Ranger”
Future Strategic Strike System Options

**Difficulty & Time**

- **LRS (Long Range Strike)**
  - Mach 3 – 7
  - 3 – 10,000 nm
  - 10 – 40k lb Payload

- **PGS (Prompt Global Strike)**
  - ACC / STRATCOM
  - Mach 0.8 – 2+
  - <3,000 nm
  - 10 – 40k lb Payload

- **ISC (Interim Strike Capability)**
  - Mach 7 – 25
  - 5 – 10k nm
  - 20 – 40k lb Payload

**Key Requirements/Customers**

- **LRS**
  - Mach 0.8 – 2+
  - <3,000 nm
  - 10 – 40k lb Payload

- **PGS**
  - Mach 7 – 25
  - 5 – 10k nm
  - 20 – 40k lb Payload

- **ACC**
  - Mach 0.5 – 2.0
  - 1,500 – 3000 nm
  - 5k lb Payload

- **STRATCOM**
  - Mach 3 – 7
  - 3 – 10,000 nm
  - 10 – 40k lb Payload

Lockheed Martin Aeronautics Company
Industry Actively Investigating Multiple Categories of Future Strike Systems, Enablers, and Capabilities
- Examining, Speed, Altitude, Payload, Survivability, Responsiveness
- Developing Future C4I Connectivity Solutions
- Working with USAF / USN to Identify Requirements
- Looking for Cost Effective Solutions

Industry Options For Strategic Strike

- Advanced Hard Target Penetrating Weapons
- Super / Hyper Weapons
- Mach 2-4 QSP & LRSA
- Supersonic UCAVs
- Traditional
- Missleer
- Small Expendable Launch Vehicle
- Subsonic UCAVs
- Common Aero Vehicle (CAV) Weapons
- Subsonic Transonic
- Military Space Plane
- Hypersonic & Space Access
Attributes for Precision Engagement

1. Reach
   - Range, Anti-Access, Multiple Platform Compatibility

2. Responsiveness / Speed
   - Combination of Reach, Speed, and the Right Payload for the Target, Multi-Vector Approach

3. Lethality
   - Precision Required, Soft, Hard, HDBT, Collateral Damage

4. Survivability
   - Altitude, Speed, Special Technology

5. Cost
   - Sufficient Production Numbers, Affordable Manufacturing Methods

It All Depends on … the CAPABILITIES Required
Precision Engagement Attributes Trades

Reach  |  Responsiveness  |  Lethality  |  Survivability  |  $ Cost (Non-Recurring)

Global  | Very High  | Very High  | Very High  | Falcon
Regional  | High  | High  | High  | New Supersonic Bomber
Theater  | Medium  | Medium  | Medium  | New Subsonic Bomber
Tactical  | Low-Medium  | Low-Medium  | Low-Medium  | CTM
Local  | Low  | Low  | Low  | RATTLRS

Requirements Drive the Solution
Speed - The Attraction and Risk Remain

**Speed is Life - Survivability**

Lethal Sam Shots vs Speed & Altitude
Best RF Signature / 70° Sweep

**Speed Cuts Timeline to Engage Time Critical Targets**

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**Can Provide Global Range**

**Technology Focus Changes With Speed**

Operations
Propulsion
Aero
Special Technologies
Hydrogen Fuel
Hydrocarbon Fuel

Lockheed Martin Aeronautics Company
Let me get this right … You want to:

• Geolocate terrorists or WMD to “1 foot”
• Reach out 2000 nm in “seconds”
• Deliver a lethal payload with “no collateral damage”
• Penetrate 200 ft of “super concrete … steel preferred”
• ... and hold an “icy refreshing beverage”
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