NATO Future Weapons R&D

SCI-P130ET

Integration and Interoperability Issues for
Dismounted Soldier System Weapon Systems

NATO Structure

1. NATO – Big Organization, Many Structures

2. NATO Army Armaments Group – NAAG
   - Topical Group 1 (Soon to be called Land Group 1)
     - Weapons and Sensors Group

3. Research and Technology Agency
   - Panel on Systems, Concepts and Integration
     - SCI –P130 Exploratory Team on Future Weapons

NATO
Soldier System Approach

- Topical Group 1 Soldier Systems Interoperability
- Soldier System
  - Weapons Sub-System
  - C4I Sub-System
  - Headborne Sub-System
- Soldier as a System / Soldier Modernization Programs:
  - Future Infantryman (Germany)
  - Land Warrior (US Army)
  - Future Integrated Soldier Technology (UK)
  - ISSP (Canada)
  - Advanced Integrated Fighting System (Slovak Republic)
  - MARKUS (Sweden)
  - NORMANS (Norway)

What is the Problem?

- Weapons:
  - Weapons manufacturers produce weapons – which met the requirements of the 20th century military. The Soldier System requires a new, innovated, integrated solution.
- Interfaces:
  - Traditional interfaces may not meet the needs of future Soldier Systems.
- Power:
  - No power management concept exists.

NATO R&D Team

- SCI-P130ET Technical Activity Proposal (TAP)
  - Focus: The Weapons Sub-System of the Soldier System.
  - Objective:
    - Conduct a scientific study on interoperability for future technical interfaces, human factors, and power management of weapon systems for national dismounted soldier systems as they are developed and fielded.
    - Identify areas for NATO standardization.
  - Product:
    - Technical Report.
    - Possible symposiums & workshops.

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- 1st Meeting:
  - 24-25 Jan 2005
  - Paris, France
  - Defined & agreed on the TAP – Technical Activity Proposal
- 2nd Meeting:
  - 11-13 May 2005
  - MCB Quantico, VA
  - 1 live fire day
  - 2 days drafting Program of Work
- Program Of Work: Begins 1 Jan 06
  - NO NEW GROUP MEMBERS AFTER 1 JAN 06

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- Topics:
  - Technical Interfaces:
    - Mounting Architecture
    - Design Considerations
    - Weapons & Ammunition interface
  - Human Factors:
    - Design considerations, trade offs, & limitations
    - Firing techniques
    - Weapon interfaces
  - Power
    - Providing, generating, & harvesting power.
    - Common connectors, cabling, & routing.

Technical Interfaces

- Mounting architecture for:
  - Optics
  - Data interfaces
  - Target ID
  - Target Location
  - C4I?

Technical Interfaces

- Design Considerations:
  - Physical – size & weight
  - Sighting & Fire control systems
  - Man Machine Interface
  - Data Interfaces

Technical Interfaces

- Weapon & Ammunition Interface:
  - Physical
  - Data – lethal, non-lethal, programmable

Human Factors

- Define the Human Systems Integration Principles
- Weapon / User interface
- Non-traditional designs
- Trade-offs:
  - Weight & size
  - Balance
  - Recoil
- Information distribution
  - From weapon system
  - To weapon system
- Effects based design :
  - Weapon system error budget should be reduced
  - 'Traditional' approach may not be the optimal

Power

- #1 requirement for the future Soldiers & Soldier Systems
- How do we:
  - Provide
  - Generate
  - Harvest
  - Distribute
- Centralized vs. Decentralized sources
- Storage

The Challenge

- What is the Team (NATO Military Customers) looking for?
  - An integrated Weapons Sub-System that is greater than the sum of it's parts.
  - input, information, ideas…
- What does industry get in return?
  - Future requirements will DEMAND an integrated Weapons Sub System.
  - A focus for industrial R&D.

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Participating Countries:

- Canada
- Germany
- Italy
- Netherlands
- Norway
- Slovak Republic
- Sweden
- United Kingdom
- United States

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