Panel Members

Panel Co-chairs:

• RADM Lenn Vincent, USN (Ret.) Defense Acquisition University, Industry Chair
• Joe Grosson, Managing Director, Enterprise Logistics Technology Office, Lockheed Martin

Speakers:

• Dr. Anil Varma, GE Global Research Center
• Dr. Robert M. Cranwell, Sandia National Laboratories
• MGEN Dennis Jackson, USA (Ret.) Oak Ridge National Laboratory
Boyd’s OODA “Loop”

Note how orientation shapes observation, shapes decision, shapes action, and in turn is shaped by the feedback and other phenomena coming into our sensing or observing window.

Also note how the entire “loop” (not just orientation) is an ongoing many-sided implicit cross-referencing process of projection, empathy, correlation, and rejection.


Boyd’s OODA “Loop” Simplified

- **Observe:**
  - Scan the environment and gather data from it
- **Orientation:**
  - Synthesize the data into information & knowledge
- **Decide:**
  - Evaluate options and select course of action
- **Act:**
  - Execute and re-cycle through the loop

**Result:**

*Act quickly and continuously to out think and out maneuver the adversary*
How can we apply this to logistics?

• Technology is continuously increasing the flow of data, organizing it into information and knowledge and therefore allowing actionable decisions to be made faster and faster.

• We must continuously move around the OODA loop in an endless cycle, constantly reorienting faster than our adversaries.

Providing the right capability at the right time with optimal sustainment of the warfighter.
Faster and better than the adversary all the time.
Observe
- C&C
- Intelligence
- Surveillance
- Readiness Assessment
- Port & Connector Service Status
- Integrated Planning

Orient
- Situational Awareness
- I & D Level Depots
- Pre-positioned Stock
- Visualization Environment
- TAV & ITV
- Distribution & Transportation Infrastructure

Decide
- C2 Logistics Com. & Control w/autonomous reaction
- Deploy sustainment infrastructure
- Preposition
- Initiate flow of Capability
- Energize the global supply chain & Reverse Logistics
- Ensure TAV & control of connectors

Act
- Execute & Manage the Supply Chain of materiel, support & personnel with autonomous action
- infrastructure with TAV/ITV & rapid command decisions
- Trigger based stimuli for SCM
- Distance access to maintenance & sustainment knowledge

Visibility, Communication, Dynamic Adjustment
Knowledge Processing & Decision Management
Task Execution
Focused Logistics Command & Control ~ Functional Flow

Joint Warfighter In-theater

Operational Commander
Knowledge Input
• Mission Profile
• Supply Requirements
• Anticipated movement
• Demand history
• Supplies on-hand
• Retro-grade status
• Support personnel reqmts
• Real-time usage data

Intermediate Staging
• In-theater
• Off-shore (Near)
• Off-shore (Far)

Tactical C4ISR

Visibility, Communication, Dynamic Adjustment

Enablers
• Embedded weapons sys. sensors
• Position location
• Transponders
• Logistics Sensor Grid
• Communication
• Data base
• In-situ asset visibility
• Asset tagging
• INFOSEC

Supply Execution

Simulation, Modeling, Neural Programming, Demand Forecasting

Supply Chain Management
Command Center
• Electronic Requisition Processing and Ordering
• Connectivity with depots, warehouses
  OEMs, Vendors, DLA, …
• Demand status & prediction
• Asset Visibility
• Prioritizing
• SCM Over-rides
• Optimization of shipping routes

Performance Based Logistics
PSIs, DLA, Depots, Arsenals, ICPs
• Repair, Return or Replacement
• Maintenance (O,I,D)
• Upgrade or modernize
• Failure Monitoring & Assessment

3PLs & 4PLs

SCM

C2LOG Command Center
• Validate Requirements
• Determine Access route to asset
• Inventory status
• Arrange Transportation
• Track Inventory
  • In-transit visibility
  • Intermediate storage
  • Depot inventory
• Financial Tracking & Mgmt

• Routing of Asset to Warfighter
• Routing of Retrograde

• In-situ Maintenance & Repair
• Contractor Support in Theater

• Supply Effectiveness Measurement & Improvement

Knowledge Processing & Decision Management

Dynamic Adjustment

Decision Management

Warfighter Support

Output

Sensor, Communication, Knowledge Processing & Decision Management

Task Execution

Respond

Sense
Logistics Technology Enablers

• Diagnostics, Prognostics and health management
  • Embedded sensors & algorithms
  • Performance & Failure Prediction
  • Anomaly Detection

• Modeling, simulation, forecasting, trending
  • Adaptive Logistic Models, Interoperability, Integration of Heterogeneous Processes

• Decision Support
  • Data/Information fusion, Classification, Ontology, Strategic Decision Support, Mission Planning, Intelligent Agents, Optimization

• Common operating picture visualization environments; situational awareness
  • Geospatial, Audio/Visual Integration, Common Intelligence Picture, Knowledge Representation, Supervisory Decision Making

• Information Assurance & Communications
  • Wearable Devices, Smart Cards, Biometrics, WI-FI, PKI, VOIP, Speech Recognition, bandwidth usage reduction
Logistics Technology Enablers

• **Automated Identification Technology beyond RFID**
  - Electrical signature analysis, system processes, data base management, and integration for TAV & ITV

• **Logistics Enterprise Architectures**
  - Enterprise Services, Web Services, Public Sector Vertical Applications, Open Source Technologies, Information Extraction, Business Process Monitoring & Automation, ERP; Data Portals and portal services

• **Knowledge systems & coalition force knowledge sharing**
  - Adaptive Logistic Models, Information Extraction, Semantic Web, XBRL, XML/SOAP Engines

• **Automated Decision Tools**
  - Data/Information fusion, Collaboration, Classification, Ontology, Strategic Decision Support, Mission Planning, Intelligent Agents, Optimization, Forecasting

• **Other: design for maintenance free operation, embedded AIT, Warehouse Automation, in-theater support, e.g. MULE**
The Equivalence Principle demands the balanced application of logistics technology to persevere and prevail.

"Logistics… the bridge between the national economy and the combat forces." (from Eccles, *Logistics in the National Defense*).