Applying the Tenets of Military Planning and Execution to Project and Systems Engineering Management

Tony Lindeman, PMP
Senior Systems Engineer
SAIC
philip.a.lindeman@saic.com

Systems, Software, and Solutions Operation
“In preparing for battle, I have always found that plans are worthless, but planning is indispensable.”

General Dwight D. Eisenhower
34th President of the United States
• Provide aspiring Systems Engineers with insight into how basic tenets of military planning and execution can be used to plan and monitor the successful execution of a project.
**Terminology to Represent Generic Systems Engineering Processes**

<table>
<thead>
<tr>
<th>Technical Management Processes</th>
<th>Technical Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Decision Analysis</td>
<td>- Requirements Development</td>
</tr>
<tr>
<td>- Technical Planning</td>
<td>- Logical Analysis</td>
</tr>
<tr>
<td>- Technical Assessment</td>
<td>- Design Solution</td>
</tr>
<tr>
<td>- Requirements Management</td>
<td>- Implementation</td>
</tr>
<tr>
<td>- Risk Management</td>
<td>- Integration</td>
</tr>
<tr>
<td>- Configuration Management</td>
<td>- Verification</td>
</tr>
<tr>
<td>- Technical Data Management</td>
<td>- Validation</td>
</tr>
<tr>
<td>- Interface Management</td>
<td>- Transition</td>
</tr>
</tbody>
</table>
Commander’s Intent

• Communicate the overall objective in general terms and leave the detailed planning to lower echelons

• Centralized planning; decentralized execution
Mission Planning

- Commander’s Intent
- Tactical objective(s)
- Prioritization
- Success criteria
- Logistics
- Contingency plans based on risk assessment
- Communication
• Big picture, puzzle solvers
• Decomposition, flowdown, allocation, and traceability
• Hierarchal mindset
  – Organization
  – Specifications
  – WBS
  – Risk
  – Communication
• Rigor and discipline do not stifle creativity
• Mathematically inclined – “work has volume”
• Iterative process
  – Inputs ➔ Decisions ➔ Outputs ➔ Assessment
  – Ensuring effort is value added
• Current Operations and Future Operations
• Reallocate resources as battlefield is shaped and evolves
• Maintain momentum of keeping overall effort moving forward
Reluctance to expend significant effort
  - Playing field is constantly changing
  - Obsolete as soon as it’s put into place

Types of planning
  - Rough Order of Magnitude (ROM) planning
  - Initial baseline planning
  - Re-baseline planning
  - Contingency planning

Baseline plan vs. roadmap
  - Detailed plans vs. convergence of effort
  - Precision vs. general direction
  - Know when to focus on the specifics vs. generalities
Breaking down what appears to be an insurmountable challenge into manageable and achievable activities

Iterative process between detailed scheduling of tasks and achieving intermediate objectives

Identifying
- Program milestones
- Key Decision Points (KDPs)
- Technical reviews and milestones

Measuring progress in terms of pre-defined success criteria and demonstrating intermediate capability

Obtain excruciating scrutiny and eventual buy-in
Execution

• **Mission planning and briefing**
  – Objective(s)
  – Success criteria
  – Contingency plans for risks and emergencies

• **Pilot mentality**
  – Power required can exceed power available
  – Running out of fuel can ruin your day!
  – Maintaining altitude and airspeed with constant power setting
    • Scan and crosscheck instruments
    • Small and minimal control inputs vs. jerky and erratic

• **Threat Missiles inbound – how do decisions get made!**
  – Having sufficient data and information
  – Timeliness

• **Holding forces in reserve**
  – Deploy to exploit or counter a threat
  – Establish criteria for deploying when and how much

• **Expending too much on real-time monitoring**
• “Systems” thinking
• Planning – scrutiny & buy-in
• Command Center – Segment Current & Future Operations
• IMS vs. Roadmap focus
• Making timely and effective decisions
• Monitor and measure execution in order to efficiently and effectively apply minor course corrections
• Manage reserves to exploit opportunities and repel threats