• 680 Systems Engineers & Program Managers
  o 467 Program Managers
  o 356 Chief Systems Engineers

Organizations that are better integrated use standards. They are also more effective.

Formal integration reduces unproductive tension between PM and SE.

Demonstrate a more complete integration of both disciplines.

**Selected Prior Work**

• Key Lever is improving the integration of SE and PM by
  o Using standards from both domains: Training and Alignment
  o Formalizing the definition of integration
  o Developing integrated engineering program assessments
  o Effectively sharing responsibility for risk management, quality, lifecycle, and external suppliers.

---

What are the most important skills to succeed as PM or SE?

<table>
<thead>
<tr>
<th>Skill</th>
<th>PM (%)</th>
<th>SE (%)</th>
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</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>58</td>
<td>39</td>
</tr>
<tr>
<td>Communication</td>
<td>61</td>
<td>42</td>
</tr>
<tr>
<td>Stakeholder Management</td>
<td>40</td>
<td>18</td>
</tr>
<tr>
<td>Systems Thinking</td>
<td>22</td>
<td>86</td>
</tr>
<tr>
<td>Requirements Management</td>
<td>11</td>
<td>46</td>
</tr>
</tbody>
</table>

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Part I: In search of integrated solutions

Part II: Building capabilities to effectively execute engineering programs

Part III: Developing integration competencies in your organization

Part IV: A call to action
IMPORTANT ASSUMPTIONS

1. Integration must start with Project Management and Systems Engineering Standards

2. The relationships between Project and Program Management shall be as defined by PMI

3. The Project Manager and Systems Engineer must work together as a TEAM and share ALL responsibilities

4. Leadership and Communication should be a Priority when training and aligning

5. The Model of the Learning Organization shall govern the Standards
Important Assumption:
The PMBOK can be used to manage Any and All projects, to include Engineered Systems Projects
## Project & Product Management Process Groups

<table>
<thead>
<tr>
<th>Knowledge Areas</th>
<th>Initiating</th>
<th>Planning</th>
<th>Executing</th>
<th>Monitoring and Controlling</th>
<th>Closing</th>
<th>Utilizing and Supporting</th>
<th>Disposing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4. Project Integration Management</strong></td>
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<td>4.1 Develop Project Charter</td>
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<td>4.2 Develop Project Management Plan.*</td>
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<td>4.3 Direct and Manage Project Work.</td>
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<td>4.4 Manage Project Knowledge</td>
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<td>4.5 Monitor and Control Project Work.</td>
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<td>4.6 Perform Integrated Change Control.</td>
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<td>4.7 Close Project or Phase</td>
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<td><strong>5. Project Scope Management</strong></td>
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<td>5.1 Plan Scope Management.</td>
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<td>5.2 Collect Requirements</td>
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<td>5.3 Define Scope.</td>
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<td>5.4 Create WBS</td>
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The Remainder of the Mapping Remains the same.
PROGRESSIVELY ELABORATED
1.1 Project Management
  1.1.1 Project Charter
  1.1.2 Project Management Plan
  1.1.2.1 Scope management plan
  1.1.2.2 Systems Engineering management plan
  1.1.2.3 Requirements management plan
  1.1.2.4 Schedule Management plan
  1.1.2.5 Cost management plan
  1.1.2.6 Quality management plan
  1.1.2.7 Resource management plan
  1.1.2.8 Communications management plan
  1.1.2.9 Risk management plan
  1.1.2.10 Procurement management plan
  1.1.2.11 Stakeholder engagement plan
  1.1.2.12 Scope baseline
  1.1.2.13 Schedule baseline
  1.1.2.14 Cost baseline

1.1.2.2 Systems Engineering Management Plan***
  1.1.2.2.1 System Engineering Process
    1.1.2.2.1.1 System operational requirements
    1.1.2.2.1.2 Maintenance concepts
    1.1.2.2.1.3 Technical Performance Measures (TPMs)
    1.1.2.2.1.4 Functional analysis (System Level)
    1.1.2.2.1.5 Allocation of Requirements
    1.1.2.2.1.6 Systems Synthesis, Analysis, and System definition
    1.1.2.2.1.7 System test and evaluation
    1.1.2.2.1.8 Construction/Production requirements
    1.1.2.2.1.9 System utilization and sustaining support
    1.1.2.2.1.10 System retirement and material recycling/disposal
  1.1.2.2.2 Engineering Specialty Integration
    1.1.2.2.2.1 Functional engineering
    1.1.2.2.2.2 Software engineering
    1.1.2.2.2.3 Reliability engineering
    1.1.2.2.2.4 Maintainability engineering
    1.1.2.2.2.5 Human factors engineering
    1.1.2.2.2.6 Safety engineering
    1.1.2.2.2.7 Security engineering
    1.1.2.2.2.8 Manufacturing and production engineering
    1.1.2.2.2.9 Logistics and supportability engineering
    1.1.2.2.2.10 Disposability engineering
    1.1.2.2.2.11 Quality engineering
    1.1.2.2.2.12 Environmental engineering
    1.1.2.2.2.13 Value/Cost engineering
    1.1.2.2.2.14 Other disciplines as needed
  1.1.2.2.3 References (Specifications, Standards, Plans, Procedures, etc.)

1.2 System

1.2.1 Context Diagram
1.2.2 Block Diagrams
1.2.3 Validated Requirements
1.x Component X
1.2.x+1 Subsystem 1
1.2.x+x Subsystem x

1.2.4 Component 1
1.2.x Component X

1.2.Y Test & Evaluation
1.2.Y+1 Integrated System
1.2.Y+2 Validated/Operational System
MORE TO COME
IN 2019
STAY TUNED
THANK YOU