Systems Engineers and Program Managers: A Perspective on Similar Career Paths

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SE: Definition

Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems. It focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem:

<table>
<thead>
<tr>
<th>Operations</th>
<th>Cost &amp; Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>Training &amp; Support</td>
</tr>
<tr>
<td>Test</td>
<td>Disposal</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
</tr>
</tbody>
</table>

*Definition of the International Council on Systems Engineering (INCOSE)*

https://www.incose.org/systems-engineering
S.I.M.I.L.A.R Process

- State the challenges and problems facing a business
- Investigate solutions or alternative methods
- Model the alternatives and the ways to enforce them
- Integrate relevant systems, subsystems, and people to facilitate success
- Launch the system
- Assess performance
- Re-evaluate outputs to improve the system

Key Attributes of System Engineers

- Technology savvy
- Leader
- Integrator
- Communicator
- Product life cycle management
- Resource manager
- Experience?
What is a Program?

A collection of related projects that when integrated, collectively provide a product or service of greater benefit to the customer than the sum of the individual projects.
Program Management

The execution of a group of related projects in a coordinated manner to obtain benefits not available from managing them individually. Program management is the application of knowledge, skills, tools and techniques to meet program requirements.

https://www.pmi.org/learning/featured-topics/program
Key Attributes of a PM

• Strategy developer
• Inspirational leader
• Team builder
• Resource manager
• System Integrator
• Communicator
• Customer focused
Similar Attributes?

- Technology savvy
- Leader
- Team Builder
- Resource manager
- System Integrator
- Communicator
- Product life cycle management
- Experience/Scar Tissue?

- Strategy developer
- Inspirational leader
- Team builder
- Resource manager
- Program Integrator
- Communicator
- Customer focused
- Experience/Scar Tissue?
## Where Our PMs Come From

<table>
<thead>
<tr>
<th>Position</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems Engineering</td>
<td>23.31%</td>
</tr>
<tr>
<td>Prj Mgt &amp; Plng Ops</td>
<td>13.53%</td>
</tr>
<tr>
<td>Electrical/Hardware</td>
<td>9.02%</td>
</tr>
<tr>
<td>Engineering</td>
<td>7.52%</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>6.77%</td>
</tr>
<tr>
<td>Subcontracts</td>
<td>6.77%</td>
</tr>
<tr>
<td>Business Development</td>
<td>6.02%</td>
</tr>
<tr>
<td>Planning</td>
<td>4.51%</td>
</tr>
<tr>
<td>Operations</td>
<td>3.76%</td>
</tr>
<tr>
<td>Quality</td>
<td>3.01%</td>
</tr>
<tr>
<td>Industrial Engineering</td>
<td>2.26%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2.26%</td>
</tr>
<tr>
<td>Research Engineering</td>
<td>2.26%</td>
</tr>
<tr>
<td>Software Engineering</td>
<td>2.26%</td>
</tr>
<tr>
<td>Strat Planning</td>
<td>2.26%</td>
</tr>
<tr>
<td>Business Ops</td>
<td>1.50%</td>
</tr>
<tr>
<td>Capture Management</td>
<td>1.50%</td>
</tr>
<tr>
<td>Finance</td>
<td>1.50%</td>
</tr>
</tbody>
</table>

This data describes the previous positions held by the newest (137) MFC Program Managers since 2016.
Related Skills to Program Success

**Program Manager**
- Budget and Control
- Contract Management
- Financial Management
- Procurement
- Risk and Opportunity Management
- Schedule Management
- Stakeholder Management
- Team Management
- Transition Management
- Capture Management
- Operations Excellence
- Technical Management
- Life Cycle Management

**System Engineer**
- Requirements Management
- System Specifications
- Budget and Control
- Design
- Procurement
- Risk and Opportunity Management
- Schedule Management
- System Integration
- System Testing
- Team Management
- Transition Management
- Technical Management
- Life Cycle Management
### How Did You Learn These Skills?

- **Budget and Control**
- **Contract Management**
- **Financial Management**
- **Procurement**
- **Risk and Opportunity Management**
- **Schedule Management**
- **Stakeholder Management**
- **Team Management**
- **Transition Management**
- **Capture Management**
- **Operations Excellence**
- **Technical Management**
- **Program Diversity**

### On the job?

- **Requirements Management**
- **System Specifications**
- **Budget and Control**
- **Design**
- **Procurement**
- **Risk and Opportunity Management**
- **Schedule Management**
- **System Integration**
- **System Testing**
- **Team Management**
- **Transition Management**
- **Technical Management**

### Formal Schooling?

- **Budget and Control**
- **Contract Management**
- **Financial Management**
- **Procurement**
- **Risk and Opportunity Management**
- **Schedule Management**
- **Stakeholder Management**
- **Team Management**
- **Transition Management**
- **Capture Management**
- **Operations Excellence**
- **Technical Management**
- **Program Diversity**
In Summary...

• Initial formal education is important in both disciplines to learn the tools to be successful.
• Although there are differences between the career paths of Systems Engineers and Program Managers, clearly there are similarities.
• Advanced formal education is available in both disciplines but a significant amount of knowledge is learned “on the job”.

Both Are Critical To Successful Program Execution!