There are a multitude of standards across a number of standards development organizations (SDOs) that are related to systems engineering and systems domains. This topic examines the types of standards and provides a summary of the relevant standards for systems engineering (SE).

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## Standards Taxonomies and Types of Standards

There are many types of standards that focus on different aspects of SE. Thus, it can be helpful to have a taxonomy that classifies the types of standards and the objective of each type. Table 1 provides the types of the current standards and a description of the types. Refer to the Modeling Standards for a list of relevant system modeling standards.

<table>
<thead>
<tr>
<th>Standard Type</th>
<th>Description of Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concepts and Terminology</td>
<td>• Defines the terminology and describes the concepts of a specific domain.</td>
</tr>
<tr>
<td>Process</td>
<td>• Elaborates a specific process, giving normative requirements for the essential elements of the process. It may give guidance to the requirements.</td>
</tr>
</tbody>
</table>
Requirements
• Describes the requirements for something.
• Most often used for actions, activities, or practices and not objects (see specifications).
• A specific procedure. Instructions or requirements on how to do something.
Procedure (Practice, Activity)
• Sometimes a description of best practices.
• Sometimes guidance and sometimes normative.
Guidance
• Usually an interpretation and guidance of a published standard.
Management System
• Requirements for management.
Specification
• Specifies the form, attributes, or properties of a subject artifact.
• Usually an object and usually normative.
Reference Model
• A reference model or collection of specifications of which a reference model is composed.
Process Reference Model (PRM)
• A collection of processes necessary and sufficient to achieve a nominated business outcome.
Process Assessment Model (PAM)
• Requirements and guidance for assessing attributes of nominated processes or attributes of a nominated collection of processes.
Guide to Body of Knowledge (BOK)
• Collection and description of the current body of knowledge in a domain, or a guide to the body of knowledge.

Systems Engineering Related Standards

Summary of Systems Engineering Related Standards

Table 2 contains a summary of SE related standards. This table does not include all SE related standards, as there are many are focused on a specific domain, sector, or user group (e.g., it does not include standards from a specific government agenda). The table does include standards that are considered to be widely applicable to systems engineering and systems life cycle management system life cycle processes, such as ISO/IEC/IEEE 15288 (2015). Where available, there is a link to the official abstract for the standard.

<table>
<thead>
<tr>
<th>Document ID</th>
<th>Document Title</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>prEN9277</td>
<td>Programme management - Guide for the management of Systems Engineering</td>
<td>CEN</td>
</tr>
</tbody>
</table>
Breadth and Level of Detail of Key Systems Engineering Related Standards

Figure 1 shows the level of detail and the coverage of the life cycle for some key standards or groups.
Practical Considerations

Key pitfalls and good practices related to systems engineering standards are described in the next two sections.

Pitfalls

Some of the key pitfalls encountered in the selection and use of SE standards are provided in Table 3.

Table 3. Pitfalls in Using Systems Engineering Standards. (SEBoK Original)

<table>
<thead>
<tr>
<th>Pitfall Name</th>
<th>Pitfall Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnkey Process Provision</td>
<td>• Expecting the standard to fully provide your SE processes without any elaboration or tailoring.</td>
</tr>
<tr>
<td></td>
<td>• Expecting that the standard can be used without any functional or domain knowledge since the standard is the product of collective industry knowledge.</td>
</tr>
<tr>
<td>No Need for Knowledge</td>
<td>• Lack of integrating the standards requirements with the organization or project processes.</td>
</tr>
<tr>
<td>No Process Integration</td>
<td></td>
</tr>
</tbody>
</table>

Good Practices

Some good practices as gathered from the references are provided in Table 4.

Table 4. Good Practices in Using Systems Engineering Standards. (SEBoK Original)

<table>
<thead>
<tr>
<th>Good Practice Name</th>
<th>Good Practice Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tailor for Business Needs</td>
<td>• Tailor the standard within conformance requirements to best meet business needs.</td>
</tr>
<tr>
<td>Integration into Project</td>
<td>• Requirements of the standard should be integrated into the project via processes or product/service requirements.</td>
</tr>
</tbody>
</table>
References

Works Cited


Primary References


Additional References


