

# Matrix of Implementation Examples

From SEBoK  
Matrix of Implementation Examples

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The following matrix maps the Systems Engineering Implementation Examples to topics in the Systems Engineering Body of Knowledge (SEBoK). It provides both a list of systems engineering implementation examples for topics of interest, and a list of relevant topics for each implementation example. Since the number of topics in the SEBoK is extensive, only a subset are included here for clarity. For additional information, see the example of interest and the corresponding SEBoK topic.

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## Contents

- 1 Organization and Mapping of Examples to the SEBoK
- 2 References
  - 2.1 Works Cited
  - 2.2 Primary References
  - 2.3 Additional References

## Organization and Mapping of Examples to the SEBoK

The following short titles shown in Table 1 are used for the implementation examples:

**Table 1. Short Titles for the SEBoK Examples.** (SEBoK Original)

	<b>Case Studies</b>
<b>BT</b>	Business Transformation
<b>ATC</b>	NextGen Air Traffic Control
<b>NASA</b>	NASA's Mission to Saturn
<b>HST</b>	Hubble Space Telescope
<b>GPS</b>	Global Positioning System
<b>GPS II</b>	Global Positioning System II
<b>Radiation</b>	Medical Radiation
<b>FBI VCF</b>	FBI Virtual Case File System
<b>MSTI</b>	Miniature Seeker Technology Integration
<b>Infusion Pump</b>	Next Generation Medical Infusion Pump
<b>DfM</b>	Design for Maintainability
<b>CAS</b>	Complex Adaptive Operating System

<b>PM</b>	Project Management
<b>TS</b>	Taxi Service
<b>TS</b>	Taxi Service
<b>SWFTS</b>	SWFTS MBSE
<b>Bag Handling</b>	Denver Airport Baggage Handling System
<b>VA Sub</b>	Virginia Class Submarine
<b>Route Mod</b>	UK West Coast Route Modernisation Project
<b>Water Mgmt</b>	Singapore Water Management
<b>FAA AAS</b>	FAA Advanced Automation System
<b>Light Rail</b>	Standard Korean Light Transit System
<b>TMT</b>	Thirty-Meter Telescope

Table 2 shows how the topics (each row) align with the first set of implementation examples (each column):

**Table 2. Implementation Examples based on published case studies.** (SEBoK Original)

SEBoK Topic	BT	ATC	NASA	HST	GPS	GPS II	Radiation	FBI VCF	MSTI	Infusion Pump	DfM	CAS	PM	TS	SWFTS	NHS
Systems Thinking					X	X		X	X	X	X	X	X	X		
Models and Simulation		X	X			X							X	X	X	
Product Systems Engineering				X	X		X	X								X
Service Systems Engineering			X			X								X		X
Enterprise Systems Engineering	X	X	X			X							X	X		X
Systems of Systems (SoS)	X	X				X								X		X
Life Cycle Models	X			X	X				X	X	X	X				X
Business or Mission Analysis	X	X				X		X		X			X	X		
Stakeholder Needs and Requirements	X	X		X		X		X		X			X	X	X	
System Requirements				X	X			X		X			X	X	X	
System Architecture	X	X			X	X			X	X						
System Analysis			X		X							X	X	X		
System Implementation					X						X			X		
System Integration	X		X	X	X	X			X		X		X	X		
System Verification			X		X		X		X	X						

System Validation	X			X	X	X		X	X					
System Deployment				X	X					X				
Operation of the System				X	X				X	X		X		X
System Maintenance														X
Logistics Planning	X	X		X				X		X		X		
Assessment and Control						X	X	X				X	X	
Risk Management			X	X	X	X	X		X		X	X		
Measurement								X						
Decision Management	X							X			X	X	X	
Configuration Management				X	X			X		X	X			
Information Management			X								X	X	X	
Quality Management														X
Enabling Systems Engineering			X		X	X		X	X	X	X	X		X
Related Disciplines				X	X	X		X		X				

Table 3 shows how the topics (each row) align with the second set of implementation examples (each column):

**Table 3. Implementation Examples Developed for SEBoK.** (SEBoK Original)

<b>SEBoK Topic (Part 3)</b>	<b>Bag Handling</b>	<b>VA Sub</b>	<b>Route Mod</b>	<b>Water Mgmt</b>	<b>FAA AAS</b>	<b>Light Rail</b>
Business or Mission Analysis			X	X		X
Stakeholder Needs and Requirements			X	X		X
System Requirements			X		X	X
System Architecture	X	X		X	X	X
System Analysis	X			X	X	X
System Implementation						X
System Integration	X			X		X
System Verification	X				X	X
System Validation	X				X	X
System Deployment						X
Operation of the System				X		X
System Maintenance						X
Logistics	X					
Planning	X		X	X	X	X
Assessment and Control					X	X
Risk Management	X		X	X	X	X

Measurement					<b>X</b>
Decision Management	<b>X</b>		<b>X</b>	<b>X</b>	
Configuration Management	<b>X</b>		<b>X</b>		<b>X</b>
Information Management			<b>X</b>		
Quality Management				<b>X</b>	

## References

### Works Cited

None.

### Primary References

None.

### Additional References

None.

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< Previous Article | Parent Article | Next Article >

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