

# Matrix of Implementation Examples

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Product Systems Engineering Background > Matrix of Implementation Examples

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**Lead Authors:** Heidi Davidz, Alice Squires, Tom Hilburn, **Contributing Authors:** Alex Lee, John Brackett, Richard Turner

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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 is included here for clarity. For additional information, see the example of interest and the corresponding SEBoK topic.



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## Organization and Mapping of Examples to the SEBoK

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The following short titles shown in Table 1 are used for

the implementation examples:

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

**Case Studies**

<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>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	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	x	
Life Cycle Models	x			x	x				x	x	x	x	x	x	x	
Business or Mission Analysis	x	x			x		x		x	x			x	x	x	
Stakeholder Needs Definition	x	x		x	x		x		x	x			x	x	x	

System Requirements		x	x		x	x		x	x	x
System Architecture Design Definition	x	x		x	x		x	x		
System Analysis		x	x					x	x	x
System Implementation			x				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
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
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)**

SEBoK Topic (Part 3)	Bag Handling	VA Sub	Route Mod	Water Mgmt	FAA AAS	Light Rail
Business or Mission Analysis				x	x	x
Stakeholder Needs Definition			x	x		x
System Requirements			x		x	x
System Architecture Design Definition	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						X
Decision Management	X		X	X		
Configuration Management	X		X			X
Information Management					X	
Quality Management						X

## References

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### Works Cited

None.

### Primary References

None.

### Additional References

None.

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