SYSTEMS MODELING AND SIMULATION

Education and Certificate Program

Leveraging Systems Modeling and Simulation to Improve Engineering Maturity and Enable Sustainable Innovation

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SMS_ThinkTank™ LLC is the global resource and leader in systems modeling and simulation, bringing the worlds of systems engineering and computer aided engineering together.

Systems Modeling and Simulation Education and Certificate Program

The education modules described herein leverage a common systems engineering and product data model that encompasses benefits, requirements, platform, program, project, system definition, product structure, lifecycle, and configuration-management capabilities. These are key enablers to achieve higher systems modeling maturity levels and, in turn, help a company reach and maintain a highly competitive position within the industries it serves. Innovation leaders realize that accurate and accessible data is the foundation for insight and inspiration. They also realize that it is critical to recognize that the surrounding ecosystem with its culture and behaviors must be brought into play. This is foundational to defining and achieving sustainable innovation.

SMS_ThinkTank's Systems Modeling & Simulation Education and Certificate Program, leverages SMS_ThinkTank's assessment-based educational framework and satisfies the Systems Modeling and Simulation education requirements from small to large enterprises. The public version of the program provides primary holistic systems modeling and simulation education to industrial companies, as well as solution providers and their employees who are responsible for marketing, developing, selling, and delivering virtual simulation and data management solutions, and associated implementation services as well as business and engineering professionals tasked with establishing model-based approaches in support of the larger digital transformation initiatives of their organization. The private version of the program provides organizations with an exclusively presented series of educational modules that may be tailored to their specific industry and/or topical needs. In addition, the private version allows discussion, assignments and exercises take place in a confidential environment.

The SMS Education and Certificate Program is delivered through a series of education modules. The delivery of the program's content is tailored, within the given time restrictions, to address any industry-specific issues of interest to the participants.

Students are expected to take part in team exercises and complete assignments that require additional time that are specific to each of the delivered modules.

The education and certificate program includes a combination of lectures, industry case studies, group exercises, assignments, and examinations.

SMS Education and Certificate Offering

The SMS Education and Certificate Program offering is comprised of various courses that have been configured for executives, managers, and practitioners. Successful completion of all modules for the various courses is required to achieve the *Certificate* completion for each specific track:

- Systems Modeling and Simulation *Basics*
- Systems Modeling and Simulation *Core*
- Systems Modeling and Simulation *Enhanced*

Track Descriptions

Track #1: *Systems Modeling & Simulation Foundation for Executives*

- *Systems Modeling and Simulation Basics for Executives*
  - An Introduction to SMS
  - The Value of SMS
  - Challenges to deploy SMS—A Business Perspective
- *Systems Modeling and Simulation Core for Executives*
  - MBSE – A high-level View for Newcomers
- *Systems Modeling and Simulation Enhanced for Executives*
  - Digital Twin – Its Role within a Business Environment

Track #2: *Systems Modeling & Simulation Foundation for Managers*

- *Systems Modeling and Simulation Basics for Managers*
  - An Introduction to SMS
  - The Value of SMS
  - Challenges to deploy SMS—A Business Perspective
  - Essentials to deploy SMS—An Operational Perspective
- *Systems Modeling and Simulation Core for Managers*
  - How to explain MBSE without using the Traditional "V-Model"
  - Model-based Definitions and their Role within Engineering
  - MBSE – Challenges for Management
  - MBSE – Deployment Challenges
- *Systems Modeling and Simulation Enhanced for Managers*
  - The Systems Engineering "V"
  - MBSE – The Role of existing and emerging Standards
  - Digital Twin – Its Role within a Business Environment
  - Digital Twin – Its Maturity Levels

Track #3: *Systems Modeling & Simulation Foundation for Practitioners*

- *Systems Modeling and Simulation Basics for Practitioners*
  - An Introduction to SMS
  - The Value of SMS
  - Challenges to deploy SMS—A Business Perspective
  - Essentials to deploy SMS—An Operations Perspective
  - The Architecture of SMS
- *Systems Modeling and Simulation Core for Practitioners*
  - Model-based Definitions and their Role within Engineering
  - The Systems Engineering "V"
  - The Role of Requirements
  - Writing good Requirements
  - The Role of Taxonomy
- *Systems Modeling and Simulation Enhanced for Practitioners*
  - MBSE – The Role of existing and emerging Standards
  - MBSE – Deployment Challenges
  - Challenges Implementing Digital Twin Capabilities & Methodologies
  - Digital Twin – Its Maturity Levels

A description of each of these modules can be found in Appendix A.

Target Audience

The target audience for the SMS Education and Certificate Program includes, but is not limited to:

- Program Champions and Sponsors
- Business Managers
- SMS Practitioners
- Business Subject Matter Experts
- Project Leaders
- SMS Project Team Members
- IT Professionals
- IT Managers

Target Industries

The SMS Education and Certificate Program has been designed to be industry independent. However, industry-specific content (e.g., process discussions, examples, and cases studies) can be easily added if the program is being delivered to a specific company or industry group.

Course Delivery

A team of internationally experienced, senior level SMS_ThinkTank consultants will deliver all course material in English. They are customized based on the delivery format and targeted audience. The formats available are:

- On-site workshops: The lecturers are onsite at the hosting organization for this education following a workshop style format. *Note – Based on the current Covid-19 situation this format might not be available.*
- Virtual-live workshops: The lecturers are presenting and interacting with the students through live sessions using a workshop style format.
- Synchronous / asynchronous course delivery: The students can go through the course material at their own pace over an allocated period of time. The material is provided online through recorded lectures and text. In addition, synchronous (live) sessions with the students are scheduled to allow for interactive discussion of the course materials.

For virtual-live and asynchronous/synchronous sessions, the material will be provided electronically. For on-site sessions, all presentation materials can be provided to each participant based upon request in a printed notebook, as well as in a fully searchable set of PDF files provided electronically. The courses are also offered through our partners (see www.smsthinktank.com).

Pricing

Please contact SMS_ThinkTank at info@smsthinktank.com for details.

Notes

- A maximum of 25 students can attend a Public Certificate Program session.

- Any travel expenses incurred by participants are the responsibility of the attendee and are not handled by SMS_ThinkTank.
- Private certificate courses are available for companies that would like the courses to be customized for their employees.

About SMS_ThinkTank

SMS_ThinkTank, an independent firm, is a global resource and leader in systems modeling and simulation, bringing the worlds of systems engineering and computer aided engineering together. SMS_ThinkTank was founded to provide systems modeling and simulation business solutions to help OEMs, suppliers, academia, and government organizations navigate through the difficult tasks associated with the adoption of systems engineering methods and best practices in their own business environment. SMS_ThinkTank's goal is to enable these organizations, across all industries, to achieve sustainable innovation and become leaders in their fields.

SMS_ThinkTank helps companies improve their engineering maturity to successfully address market challenges that are characterized by faster than ever changing and evolving technologies. This becomes evident by the drastically increased complexity of consumer products and their systems and the environments in which they operate. This evolution is supported by the digitalization of science and engineering as well as the need for upfront predictive capabilities to deliver on improved product quality, robustness guarantees and certification. To support those efforts, SMS_ThinkTank developed industry based proprietary maturity and engagement. This also includes recommendations for organizational and operational optimization.

SMS_ThinkTank works with both end-user organizations and solution providers. The work with solution providers is driven by the end-user organization's requirements. SMS_ThinkTank works with established businesses as well as with startup companies.

In addition to consulting, SMS_ThinkTank conducts research, publishes articles and commentaries on related topics as well as provides education through certificate programs, seminars, and conferences worldwide. SMS_ThinkTank also plays a leading role in non-for-profit organization, such as NAFEMS, INCOSE and the Community of Experts (COE). SMS_ThinkTank serves clients globally.

To learn more about SMS_ThinkTank and its services, visit our website at www.smsthinktank.com, follow us on Twitter (https://twitter.com/sms_thinktank) or LinkedIn (https://www.linkedin.com/company/sms-thinktank) or contact us at info@smsthinktank.com.

Appendix A: SMS Education and Certificate Program Module Descriptions

	Track	SMS Foundation for Executives				SMS Foundation for Managers				SMS Foundation for Practitioners		
	Course	SMS Basics	SMS Core	SMS Enhanced		SMS Basics	SMS Core	SMS Enhanced		SMS Basics	SMS Core	SMS Enhanced
	Modules											
1	SMS - An Introduction	X				X				X		
2	The Value of SMS	X				X				X		
3	Challenges to Deploy SMS - *A Business Perspective*	X				X				X		
4	Essentials to Deploy SMS - *An Operational Perspective*					X				X		
5	The Architecture of SMS									X		
6	MBSE - *A High-Level View for Newcomers*		X									
7	How to explain MBSE without using the Traditional "V Model"						X					
8	Model-Based Definitions and their Role within Engineering						X				X	
9	The Systems Engineering "V"							X			X	
10	The Role of Requirements										X	
11	Writing good Requirements										X	
12	The Role of Taxonomy										X	
13	MBSE - *The Role of existing and emerging Standards*							X				X
14	MBSE - *Challenges for Management*						X					
15	MBSE - *Deployment Challenges*						X					X
16	Digital Twin - *Its Role within a Business Environment*			X				X				
17	Challenges Implementing Digital Twin Capabilities and Methodologies											X
18	The Digital Twin - *Its Maturity Levels*							X				X
	Total number of modules per course	**3**	**1**	**1**		**4**	**4**	**4**		**5**	**5**	**4**

Table 1: Education and Certificate Matrix

The duration for the modules is a guideline for how much time it would take the student to complete each module. The actual time depends upon the delivery format.

Module 1: An Introduction to SMS

Duration: 1.5 hour

Prerequisites: None

Objective: The objectives of this module are to introduce the participants to the current market trends and business challenges associated with simulation. In addition, digital transformation and its needs are described to support making the case to adopt systems modeling and simulation and realize its benefits.

Module Outline:

- Setting the Stage—Engineering Landscape
  a. The "Hype" of Emerging Technologies
  b. Business Challenges
  c. Market Trends
- Digital Transformation
  a. The Case for System Modeling and Simulation
  b. The Systems Engineering Approach
  c. The Value of Systems Engineering
  d. Achieving Sustainable Innovation
  e. Critical Success Factors

Module 2: The Value of SMS

Duration: 1.5 hour

Prerequisites:

- Module 1: An Introduction to SMS

Objective: The objectives of this module are to define the current vision and landscape of systems engineering, and to describe the value and benefits that can be realized by adopting appropriate best practices. Additionally, the case for organizational change, which is a necessity, including the role of management in introducing these disciplines within the enterprise, is addressed.

Module Outline:

- Setting the Stage—A brief Recap of the Introduction to SMS
  a. Market Challenges and Trends
  b. Vision
  c. The Current Landscape
  d. Systems Engineering Approach
- Value and Benefits of Systems Engineering and Systems Modeling and Simulation
  a. System Engineering Studies
  b. The Value of Data
  c. "Innovation at the Speed of Thought"
  d. Business Model Transformation
  e. The Impact of Systems Engineering
  f. Cultural Transformation

Module 3: Challenges to deploy SMS—A Business Perspective

Duration: 1.5 hour

Prerequisites:

- Module 1: An Introduction to SMS
- Module 2: The Value of SMS

Objective: The objectives of this module are to provide the participants with the challenges associated with deploying systems modeling and simulation. Additionally, the essential items to consider in addressing these challenges will be identified. At the conclusion of this session an open discussion to field specific questions related to each attendee's enterprise will take place.

Module Outline:

- Setting the Stage
  a. Business Pressure and Challenges Companies are Facing
  b. The Value of Systems Engineering
- Overcoming the Challenges
  a. Reflections from End User Organizations of Various Industries
  b. Cultural Challenges
  c. Introduction to Essentials in Addressing Adoption Challenges

Module 4: Essentials to deploy SMS—An Operations Perspective

Duration: 3.5 hours

Prerequisites:

- Module 1: An Introduction to SMS
- Module 2: The Value of SMS
- Module 3: Challenges to deploy SMS—A Business Perspective

Objective: The objectives of this module are to define what is needed to establish the simulation roadmap and subsequently improve the organization's SMS maturity. Additionally, the session will identify the hurdles that need to be overcome when deploying state-of-the-art virtual capabilities. Furthermore, this session establishes the "As-Is," "To-Be," and "gaps" that need to be filled to effect change. The task of establishing the governance structure to ensure a healthy adoption of best practices is presented in detail.

Module Outline:

- Setting the Stage – A brief Recap
  a. The Value of Data
  b. Engineering Landscape
- General: Defining the Strategic Approach
  a. Elements
  b. Organization
  c. Execution—Process to Achieve the Goal
  d. Introduction to Essentials in Addressing Adoption Challenges
- Essentials to Successfully Deploy System Modeling and Simulation
  a. The Case for System Modeling and Simulation (SMS)
  b. The Role of Assessments
  c. The Case for Cultural Transformation
  d. Governance
- Wrapping up
  a. The Role of Roadmaps
  b. Surveys as Part of Assessments and Accountability
  c. The Central Role of Education / Training
  d. The Importance of an Outside Perspective (Consulting)

Module 5: The Architecture of SMS

Duration: 1.5 hours

Prerequisites:

- Module 1: An Introduction to SMS
- Module 2: The Value of SMS
- Module 3: Challenges to Deploy SMS—A Business Perspective
- Module 4: Essentials to Deploy SMS—An Operations Perspective

Objective: The objective of this module is to define the architectural elements required to establish a healthy SMS ecosystem.

Module Outline:

- Setting the Stage – A brief Recap
  a. Market Challenges and Industry Trends
  b. The Case for SMS
  c. The Role and Value of Data
- The Architecture of SMS
  a. The SMS Environment
  b. The Role of the Digital Thread
  c. The Role of Standards

Module 6: MBSE—A High-Level Review for Newcomers

Duration: 1.5 hours

Prerequisites: None

Objective: The objectives of this module are to introduce the participants to model-based systems engineering (MBSE), which is a subset of systems modeling and simulation. The discussions will center on how and why MBSE is being hyped by many software vendors. The building blocks to ensure the correct MBSE implementation rely upon a solid foundation, mainly requirements, which is often overlooked. The various entities that together form the MBSE strategy will be discussed, as well as how this digital thread relies upon the transfer of good quality data from one discipline to another.

Module Outline:

- Setting the Stage—A Brief Introduction to Systems Modeling and Simulation:
  a. Market Challenges and Trends
  b. The Current Landscape
  c. The "Hype" of Emerging Technologies
  d. The Complexity Issue
- Model-Based Systems Engineering—Basics
  a. MBSE Defined
  b. Why the Hype?
  c. MBSE Drivers
  d. The Infamous "V" Model
- Model-Based Systems Engineering—Innovation Environment
  a. Innovation and Value
  b. The Role of the Digital Thread
  c. Traditional "As-Is" MBSE Practice
  d. Potential "To-Be" MBSE Practice
- Model-Based Systems Engineering—Challenges
  a. The "Hype" of MBSE
  b. Barriers to Industry Implementation

c. Challenge: Tool Integration, Data Interoperability
d. Who's Driving Who?

Module 7: Explaining MBSE without using the Traditional "V-Model"

Duration: 1.5 hours

Prerequisites: None

Objective: The objectives of this module are to educate operational managers regarding model-based systems engineering (MBSE), which is a subset of systems modeling and simulation. This session addresses MBSE without utilizing the conventional engineering "V" model which is often confusing. The module is defining the main elements of MBSE, its motivation and provides the students with a first glimpse at the challenges associated with MBSE.

Module Outline:

- Setting the Stage—A Brief Introduction to Systems Modeling and Simulation:
  a. Market Challenges and Trends
  b. Vision
  c. The Current Landscape
- Model-Based Systems Engineering—Explained Without the Engineering "V"
  a. The Role of the Digital Thread
  b. MBSE Motivation
  c. MBSE Terminology and Definitions
  d. Traditional "As-Is" MBSE Practice
  e. Potential "To-Be" MBSE Practice
- Model-Based Systems Engineering—Challenges
  a. The Hype of MBSE—Where are you with MBSE?
  b. Barriers to Industry Implementation
  c. Cultural Transformation
  d. Challenge: Tool Integration, Data Interoperability
  e. Who is Driving Who?
- Final Stretch
  a. Enabling the Digital Thread Vision for MBSE

Module 8: Model-Based Definitions and their Role within Engineering

Duration: 1.5 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to help the participants establish a solid foundation for the meanings of the commonly used model-based terms and definitions.

Module Outline:

- Setting the Stage

a. Introduction of Complexity
b. Communication and Buzz Words
c. Simple Driving Forces

- The Approach to Common Model-Based Definitions
  a. Glossary
  b. Approach
  c. Where Does One Find the NAFEMS Terms & Definitions
  d. Taxonomies
- Model-Based Definitions
  a. Model-Based X Definitions Overview
  b. Model-Based Enterprise
  c. Model-Based Engineering
  d. Model-Based Systems Engineering
  e. Model-Based Design
  f. Model-Based Definition
  g. Model-Based Safety Analysis
- The Value of Model-Based Approaches

Module 9: The Systems Engineering "V"

Duration: 2 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to provide a detailed view of the key elements in developing a comprehensive SMS implementation utilizing the systems engineering "V." The module identifies the inputs and outputs for each block that constitutes the stages required for the complete holistic view of the overall system and its verification and validation.

Module Outline:

- Setting the Stage—A brief Recap of the Engineering Landscape
- The Systems Engineering Approach
  a. SMS is an Iterative Process Throughout the Product Lifecycle
  b. 3 Key Foundational Elements to a Solid Systems Engineering Approach
- The Systems Engineering "V"
  a. The Systems Engineering "V" Model and the Lifecycle
  b. Embedded Systems Development—Example
  c. Deep Dive into the Systems Engineering "V"
  d. Going beyond the "V"
- Key Messages

Module 10: The Role of Requirements

Duration: 1.5 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to introduce the most important component in any systems engineering approach, namely system requirements. The various types of requirements, their attributes, structure and traceability are covered. Additionally, the basic common traps in writing good requirements are presented.

Module Outline:

- Setting the Stage—How can the Current Landscape be Linked to Requirements?
- Requirements—Fundamentals
  a. Benefits of Systems Engineering—a Different Viewpoint
  b. System Requirements
  c. Concept of Operations
  d. Types of Requirements
  e. Attributes
  f. Clarifications
  g. Structure
  h. Requirement Traps
  i. Breaking Down Requirements
- Examples

Module 11: Writing Good Requirements

Duration: 2 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to further detail the need for good requirements and assist the participants in how to write good requirements and derive more detailed requirements with associated use cases. The various types of requirements are reviewed regarding their attributes, structure and traceability.

Module Outline:

- Setting the Stage—Requirements Basics
  a. Overview
  b. Concept of Operations
  c. Types of Requirements
  d. Clarification
- Writing Good Requirements
  a. Attributes of Good Requirements
  b. Requirements Structure
  c. Requirement Traps
- Breaking Down Requirements

a. Traceability
b. The Engineering "V", the Lifecycle, and Requirements
c. Good Requirements Flowchart

- Examples, Discussion and Exercise

Module 12: The Role of Taxonomy

Duration: 2 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to introduce the participants to the role of taxonomies in a simulation, model-based, and systems environment. The module will investigate the general definition and classification of taxonomy, as well as specifics required to understand how taxonomy helps address business and implementation challenges.

Module Outline:

- Setting the Stage—The importance of Taxonomy
- Taxonomy—Fundamentals
  a. Taxonomy Definitions
  b. Character Taxonomy View
  c. Taxonomy Development Steps
  d. Systems-of-Systems Types of Taxonomy
  e. Product Taxonomy
  f. Engineering Taxonomy
  g. Breaking Down Requirements
  h. Risk Taxonomies
  i. Taxonomy Dependencies
  j. Error Taxonomy
- Taxonomy—Execution
  a. Development Methodology
  b. Enterprise Technology Governance
  c. Holistic Thinking with Taxonomies
  d. Taxonomy Execution
  e. The Approach to Common Definitions
- Benefits of Developing Strong Taxonomies

Module 13: MBSE—The Roles of Existing & Emerging Standards

Duration: 2 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to help the participants establish the baseline for communication across all groups within the enterprise and their suppliers. To have a successful systems engineering implementation, the appropriate inputs and outputs must allow for the unobstructed flow of data. This module will help to identify existing and emerging standards to ensure the proper flow of data.

Module Outline:

- Setting the Stage
  a. Market Challenges, Engineering Trends, and Current Landscape
  b. MBSE Drivers
  c. Systems Complexity and its Challenges
  d. The Importance of Standards
- The Role of the Digital Thread
- The Role of Emerging and Existing Standards
  a. Why we Need MBx Interoperability Standards
  b. Many Groups Involved with Many Standards
  c. The Hype of Standards
  d. Systems Engineering Existing and Emerging Standards (examples detailed)
- Final Stretch
  a. Not-for-Profit Organizations Supporting Both Existing and Emerging Standards
  b. Business Opportunity—Key Factors for Success
  c. Barriers to Industry Implementation
  d. Summary

Module 14: MBSE—Challenges for Management

Duration: 1.5 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to introduce the role of MBSE in an organization and related challenges for management. This includes the roles of governance, leadership, and mentorship. Additionally, interactive discussions among the participants will help solidify their understanding of this topic.

Module Outline:

- Setting the Stage
  a. MBSE Defined
  b. Market Challenges and Engineering Trends
- The Role of Model-Based Systems Engineering
  a. The Complexity Issue
  b. Technology
  c. Business
- The Role of Management—The Case for Cultural Transformation

a. The Hype of MBSE—Is Management up to the Challenge?
b. Governance
c. Leadership
d. Mentorship

Module 15: MBSE—Deployment Challenges

Duration: 1.5 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to introduce all participants to the deployment of MBSE adoption. This includes the roles of education, approach, perception, reality, and how to measure success. Additionally, interactive discussions among the participants will help solidify their understanding of this topic and develop ideas to help their companies move forward.

Module Outline:

- Setting the Stage
  a. The Market and its Challenges
  b. MBSE—Model Based Systems Engineering
- What are the Deployment Challenges?
  a. The Hype of MBSE
  b. Knowledge / Education
  c. What is the Proper Approach?
  d. Perception & Reality
  e. Do We Know how to Measure Success?

Module 16: Digital Twin—Its Role within a Business Environment

Duration: 2 hours

Prerequisites:

- Based on the track

Objective: The objectives of this module are to properly define and position the digital twin. Additionally, the evolution and various aspects in terms of applications will be addressed. Importantly, the positioning of the digital twin within an organization's infrastructure and maturity will be discussed holistically.

Module Outline:

- Setting the Stage
  a. The "Hype" of the Digital Twin
  b. Digital Twin as Part of Engineering Trends
- Digital Twin
  a. Definition and Architecture
  b. The Digital Twin and the Engineering "V"

c. How Does a Digital Twin Evolve?
d. What are Various Aspects of the Digital Twin in Terms of Applications?
e. What is the Role of the Digital Twin?
f. Examples

Module 17: Challenges Implementing Digital Twin Capabilities and Methodologies

Duration: 2 hours

Prerequisites:

- Based on the track

Objective: The objective of this module is to highlight the challenges in implementing digital twin capabilities and methodologies. This is a deeper dive into topics required for successful implementation, which include the roles of standards, IIoT, AI, predictive analytics, and more.

Module Outline:

- Setting the Stage—Brief Recap from Previous Module
  a. The "Hype" of the Digital Twin
  b. Digital Twin as Part of Engineering Trends
  c. Digital Twin Basics
- Digital Twin—Implementation Challenges and Methodologies
  a. IIoT / Industry 4.0 / IoT
  b. The Hype of the Digital Twin
  c. Business Maturity and the Digital Twin
  d. Evolution of Systems
  e. Cognitive Behavior and Maturity
  f. The Role of Standards
  g. Achieving Sustainable Innovation
  h. How to Get the IoT Transformation Off the Ground
  i. Approach
  j. Examples

Module 18: Digital Twin—Its Maturity Levels

Duration: 2 hours

Prerequisites:

- Module 16: Digital Twin—Its Role within a Business Environment

Objective: The objective of this module is to provide a roadmap to create and improve digital twin capabilities based upon the level of engineering "maturity" that exist within the organization. This session will explain the dependencies between the various maturity elements that define digital twin capability. Additionally, recommendations to improve this maturity will be provided using a customized industry based CMMI approach.

Module Outline:

- What is Engineering “Maturity”?
- The CMMI Approach
    a. General Definition of CMMI
    b. How is it linked to Engineering Maturity?
- Categories and Key Elements Defining Digital Twin Maturity
    a. Definitions
    b. How are they linked to the Engineering Lifecyle?
- Developing a Roadmap to Create and Improve Digital Twin capabilities
    a. Approach
    b. Challenges
    c. Execution