

TSC Category	Technology Road Mapping					
TSC	Artificial Intelligence Application					
TSC Description	Apply algorithmic, statistical and engineering knowledge to integrate artificial intelligence into engineering and maintenance processes					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			EGS-TEM-3026-1.1	EGS-TEM-4026-1.1	EGS-TEM-5026-1.1	EGS-TEM-6026-1.1
			Deploy Artificial Intelligence (AI) workflows for enhancing the efficiency of engineering and maintenance processes	Evaluate the effectiveness and sustainability of Artificial Intelligence (AI) workflows for process improvements	Formulate new Artificial Intelligence (AI) workflows in order to streamline engineering and maintenance processes in line with organisational strategy	Explore wider applications of Artificial Intelligence (AI) methods in the organisation by using expertise within the field to transform engineering and maintenance workflows
Knowledge			<ul style="list-style-type: none"> • Background and basics of AI • Fundamental concepts and methods of statistics and programming for data science • Mathematics and computing theories • Machine learning techniques and applications • Principles of data management • Software development methodologies • Types of AI applications • AI implementation procedures 	<ul style="list-style-type: none"> • Range of AI applications • Concepts pertaining to performance effectiveness and analysis • Methods of evaluating effectiveness of AI applications • Algorithm design and implementation • Methods of evaluating process improvements to the engineering and maintenance processes using AI • Applicability of AI in the engineering services industry 	<ul style="list-style-type: none"> • Organisation's strategy and business processes • Methods of developing detailed operating and troubleshooting procedures for AI applications • Methods to influence adoption of new AI applications • Impact of AI on engineering and maintenance processes • AI design and implementation processes • Principles of change management 	<ul style="list-style-type: none"> • Applications of emerging AI technologies in the engineering services industry • Industry best practices and applications of new AI technologies adopted • Impact of AI to engineering and maintenance operations beyond • Benefits and trade-offs of AI • Financial costs of introducing AI to engineering and maintenance processes and trade-offs • Cost benefits analysis methods • Methodology of return-on-investment (ROI) analysis • Methods of conducting research and development in AI • AI legislative requirements

<p>Abilities</p>			<ul style="list-style-type: none"> • Implement AI applications in collaboration with technology service providers • Deploy AI workflows according to plan • Identify and report any issues with the AI applications and data collected 	<ul style="list-style-type: none"> • Analyse algorithms in the AI applications • Establish the correlation between design of algorithms and efficiency • Identify strengths and limitations of the AI applications • Evaluate various AI applications to compare strengths and limitations of the AI applications • Assess feasibility of AI applications to the engineering and maintenance processes • Assess improvements on the engineering and maintenance processes 	<ul style="list-style-type: none"> • Formulate AI workflows for engineering and maintenance processes • Determine potential areas where AI can be applied • Determine range of resources, skills requirements and implementation feasibility for AI applications • Develop technical frameworks for AI applications • Initiate adoption of AI applications in day-to-day operations • Refine parameters of AI applications to improve operational efficiency • Determine troubleshooting or debugging procedures for AI applications • Validate implementation of AI through change management process 	<ul style="list-style-type: none"> • Identify macro trends and applicability of AI in relation to the engineering services for the organisation's adoption • Evaluate the benefits and trade-offs of implementing AI to the business • Assess the cost and return on investment of implementing AI • Develop a business case analysis on the cost-benefits of implementing AI • Develop AI application strategies • Analyse alternative approaches to AI to improve performance of engineering and maintenance processes • Establish potential opportunities to initiate AI implementation in the organisation • Develop a business case for implementing AI to satisfy business and legislative requirements
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