

THE CERTIFIED SMART INDUSTRY READINESS INDEX (SIRI) ASSESSOR PROGRAMME FACT SHEET

1. Smart Industry Readiness Index

- 1.1. Manufacturing has entered the digital age, arising from the convergence of the physical and digital worlds. This new paradigm, commonly referred to as Industry 4.0, has the power to transform how products are created, how supply chains are managed, and how value chains are defined. For companies around the world, Industry 4.0 presents an opportunity to gain new competitive advantages through greater productivity, flexibility, and speed.
- 1.2. Created by the Singapore Economic Development Board (“EDB”), in partnership with a network of leading technology companies, consultancy firms, and industry and academic experts, the Smart Industry Readiness Index (“SIRI”) comprises a suite of frameworks and tools to help manufacturers – regardless of their size and industry - start, scale, and sustain their manufacturing transformation journeys. The SIRI covers the three core elements of Industry 4.0: Process, Technology, and Organisation.

2. The Certified SIRI Assessor Programme

- 2.1. The Certified SIRI Assessor Programme was established by the Singapore Government to formally recognize independent and neutral individuals who are able to professionally assess a manufacturing facility using SIRI and its accompanying frameworks and tools. The Official SIRI Assessment includes the evaluation of a manufacturing facility across the 16 dimensions of assessment, the identification of recommended areas of priority, and the provision of a report of the findings.

The Certified SIRI Assessor Programme consists of a training course and certification scheme.

- 2.1.1. **The SIRI Assessor Training Course** will equip industry practitioners with the requisite industry knowledge and skills to become a Certified SIRI Assessor (“CSA”). The curriculum covers content on manufacturing, Industry 4.0, SIRI’s frameworks and tools, business consulting and the methodology for conducting an Official SIRI Assessment over 40 hours of classroom training.
- 2.1.2. **The SIRI Assessor Certification Scheme** aims to safeguard the integrity and consistency of the Official SIRI Assessment conducted by ensuring

the quality and proficiency of the CSA. In addition to having attended the SIRI Assessor Training Course, candidates will have to meet pre-requisites, such as having relevant manufacturing and consulting work experience, to be eligible to sit for the Certified SIRI Assessor Examination, which includes both theory and practical assessments.

3. Certification Pre-requisites

To register for the Certified SIRI Assessor (CSA) Examination, the applicant needs to fulfil the following criteria:

Area	Criteria	Required Documentation
Academic Qualifications	Relevant Degree in Science, Technology, Engineering and Mathematics (“STEM”) subjects, including but not limited to: <ul style="list-style-type: none"> • Aerospace Engineering • Biology • Chemistry • Chemical Engineering • Civil Engineering • Computer Science • Electrical Engineering • Information and Communications Technology • Mathematics • Mechanical Engineering • Physics 	Applicant to submit proof of academic qualifications
Professional Experience	<p>Consulting: At least 3 years of job experience relating to advisory work and activities. It is recommended that the applicant has at least 300 hours of project advisory/consulting experience.</p> <p>AND</p> <p>Domain Expertise: At least 5 years of job experience relating to the manufacturing sector.</p>	Applicant to submit CV/ resume highlighting job scope and responsibilities.
References	2 referees from manufacturing and/or advisory projects over the last 2 years.	Applicant to provide 2 referees for verification.

Coursework Requirements	Complete at least 40 hours of approved coursework at any approved training provider. Please refer to Annex A for details on the approved coursework.	Applicant to submit attendance certificate issued by the approved training provider.
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4. Certified SIRI Assessor Examination

4.1. The CSA Examination comprises two modes of assessment:

4.1.1. A theory examination consisting of Multiple-Choice Questions (MCQ).

4.1.2. A practical examination in the form of a case interview. The applicant will be expected to conduct a mock SIRI Assessment in the presence of the examiner(s).

4.2. Please refer to Annex B for more information on the CSA Examination.

5. Award of Certificate

5.1. Applicants that pass the CSA Examination will be awarded the CSA certificate.

5.2. The CSA designation is valid for 2 years.

5.3. All CSAs will have to confirm their acceptance of the award by formally registering themselves via the SIRI Portal. Upon completing their registration, they will be issued an account to allow them to commence the provision of Official SIRI Assessments.

ANNEX A

THE CERTIFIED SMART INDUSTRY READINESS INDEX (SIRI) ASSESSOR PROGRAMME SYLLABUS 2020

1. Syllabus Aims

While the Smart Industry Readiness Index (“SIRI”) was designed for ease of use, a firm foundation in manufacturing, consulting and Industry 4.0 is necessary in order to discern the nuances within each of the 16 dimensions of assessment. This understanding is critical for an accurate evaluation of facilities. As a significant part of the Official SIRI Assessment involves interviews between the Certified SIRI Assessor (“CSA”) and various stakeholders within the company, it is also important for the CSA to display strong client engagement skills and to be astute in deciphering responses.

Therefore, the CSA Programme Syllabus was developed to ensure that all CSAs have the requisite knowledge and skills, beyond a simplistic understanding of the SIRI framework and tools, to credibly conduct an Official SIRI Assessment.

The syllabus aims to equip individuals with:

- A fundamental knowledge in Industry 4.0;
- A deep understanding of SIRI, its frameworks and tools; and
- Tangible skills in client engagement and assessment facilitation in order to effectively conduct an Official SIRI Assessment.

2. Syllabus Content

Topic	Learning Outcomes	Coursework Hours	Recommended Study Hours
1. Industry 4.0			
<ul style="list-style-type: none"> Evolution of the four Industrial Revolutions 	<p>Candidates should be able to:</p> <ul style="list-style-type: none"> Outline the history and evolution of the four Industrial Revolutions, with an emphasis on the Fourth Industrial Revolution. 	8 hours	15 hours
<ul style="list-style-type: none"> <i>Industry 4.0</i> and the <i>Reference Architecture Model Industry 4.0</i> (RAMI 4.0) 	<ul style="list-style-type: none"> Describe the origins and core principles of <i>Industry 4.0</i>, which includes, but may not be limited to: <ul style="list-style-type: none"> Plattform Industrie 4.0 Reference Architecture Model Industry 4.0 		
<ul style="list-style-type: none"> Key terms, concepts and technologies 	<ul style="list-style-type: none"> Describe and explain in depth the relevant terms, concepts and technologies relating to Industry 4.0, which should include, but not be limited to: <ul style="list-style-type: none"> Internet-of-Things Cyber-Physical System IT-OT Convergence Cloud Computing Big Data Analytics Digital Twin 		

Topic	Learning Outcomes	Coursework Hours	Recommended Study Hours
2. Smart Industry Readiness Index			
<ul style="list-style-type: none"> Introduction to SIRI 	<p>Candidates should be able to:</p> <ul style="list-style-type: none"> Explain what SIRI is, why it was developed, describe the development process, and list the stakeholders involved. 	16 hours	40 hours
<ul style="list-style-type: none"> LEAD Framework 	<ul style="list-style-type: none"> Explain the use of the LEAD Framework to understand a company's Industry 4.0 transformation journey and describe the four steps of the LEAD Framework – <i>Learn, Evaluate, Architect and Deliver</i> 		
<ul style="list-style-type: none"> SIRI Framework 	<ul style="list-style-type: none"> Describe the 3 layers of the SIRI Framework <ul style="list-style-type: none"> 3 building blocks 8 pillars 16 dimensions 		
<ul style="list-style-type: none"> Assessment Matrix 	<ul style="list-style-type: none"> Explain in depth the Assessment Matrix, which includes being able to define the 6 bands under each of the 16 dimensions. 		
<ul style="list-style-type: none"> TIER Framework 	<ul style="list-style-type: none"> Describe the four key principles of prioritisation, collectively known as the TIER framework – <i>Today's state, Impact to bottom line, Essential business objectives and References to the broader community.</i> 		

<ul style="list-style-type: none"> • Prioritisation Matrix 	<ul style="list-style-type: none"> • Explain in depth the Prioritisation Matrix formula and its calculation methodology, which includes being able to explain the: <ul style="list-style-type: none"> ▪ Cost Factor ▪ Key Performance Indicator Factor ▪ Proximity Factor ▪ Industry Best-in-Class Benchmarks ▪ Planning Horizon ▪ Degree of Relevance Tables • List and define each of the 10 Cost Categories and each of the 14 Key Performance Indicators categories. 		
<ul style="list-style-type: none"> • SIRI Manufacturing Transformation Insights 	<ul style="list-style-type: none"> • Describe and explain the key terms and concepts featured in the SIRI Insights Report, which should include, but not be limited to: <ul style="list-style-type: none"> ▪ SIRI Maturity and SIRI Variance ▪ Archetypes of Transformation ▪ 3B Benchmark ▪ Industry Performance Cards 		

Topic	Learning Outcomes	Coursework Hours	Recommended Study Hours
3. Business Consulting			
<ul style="list-style-type: none"> • Consulting process 	<p>Candidates should be able to:</p> <ul style="list-style-type: none"> • Outline and describe the key steps in the consulting process: <ul style="list-style-type: none"> ▪ Diagnosing the problem ▪ Formulating the contract ▪ Analysing the problem ▪ Developing solutions ▪ Proposing recommendations ▪ Assisting with implementation ▪ Review and Follow-up 	Self-study	5 hours
<ul style="list-style-type: none"> • Business Etiquettes 	<ul style="list-style-type: none"> • Demonstrate an understanding of the basic business etiquettes for client engagement and workshop delivery. 		

Topic	Learning Outcomes	Coursework Hours	Recommended Study Hours
4. Professionalism and ethics			
<ul style="list-style-type: none"> Professionalism 	<p>Candidates should be able to:</p> <ul style="list-style-type: none"> Demonstrate an understanding of the need to maintain independence and objectivity in their professional activities, not knowingly make any misrepresentations and not engage in any improper conduct. 	4 hours	10 hours
<ul style="list-style-type: none"> Duties to Clients 	<ul style="list-style-type: none"> Demonstrate an understanding of the importance of maintaining loyalty, prudence and care to their clients, and preserving confidentiality. 		
<ul style="list-style-type: none"> Duties to Employers 	<ul style="list-style-type: none"> Demonstrate an understanding of the importance of maintaining loyalty to their employers and the disclosure of additional compensation arrangements to their employers. 		
<ul style="list-style-type: none"> Assessment, Recommendations and Actions 	<ul style="list-style-type: none"> Demonstrate an understanding of the importance of exercising diligence and thoroughness in their evaluation, disclosing all relevant information to their clients, and maintaining proper records of their work. 		
<ul style="list-style-type: none"> Conflicts of Interest 	<ul style="list-style-type: none"> Demonstrate an understanding of the importance of disclosure of conflicts and referral fees. 		

Topic	Learning Outcomes	Coursework Hours	Recommended Study Hours
5. SIRI Assessment Facilitation			
<ul style="list-style-type: none"> • SIRI Assessment 	<p>Candidates should be able to:</p> <ul style="list-style-type: none"> • Provide an overview of the Official SIRI Assessment, which should include, but not be limited to: <ul style="list-style-type: none"> ▪ Objectives of an Official SIRI Assessment ▪ Stakeholders ▪ Assessment Scope ▪ Assessment Principles ▪ Timeline and key phases ▪ Deliverables 	12 hours	30 hours
<ul style="list-style-type: none"> • Planning and Preparation 	<ul style="list-style-type: none"> • Understand and carry out the key components of the “Planning and Preparation” phase of an Official SIRI Assessment, which should include, but not be limited to: <ul style="list-style-type: none"> ▪ Scheduling the briefing call ▪ Conducting the briefing call ▪ Sending of relevant materials to the clients ▪ Scheduling the Evaluation and Review sessions 		
<ul style="list-style-type: none"> • Evaluation 	<ul style="list-style-type: none"> • Understand and carry out the key components of the “Evaluation” phase of an Official SIRI Assessment, which should include, but not be limited to: <ul style="list-style-type: none"> ▪ Initial discussion on the Assessment Matrix bandings ▪ Factory tour 		

	<ul style="list-style-type: none"> ▪ Refinement and validation of the Assessment Matrix bandings ▪ Discussion on the Prioritisation Matrix inputs 		
<ul style="list-style-type: none"> • Analysis and Review 	<ul style="list-style-type: none"> • Understand and carry out the key components of the “Analysis and Review” phase of an Official SIRI Assessment, which should include, but not be limited to: <ul style="list-style-type: none"> ▪ Review of the information obtained during the “Evaluation” phase ▪ Analysis of the Assessment Matrix and Prioritisation Matrix results ▪ Generation of report ▪ Provision of insights ▪ Debriefing of client 		
Total		40 hours	100 hours

ANNEX B

THE CERTIFIED SMART INDUSTRY READINESS INDEX (SIRI)

ASSESSOR EXAMINATION

1. CERTIFIED SIRI ASSESSOR EXAMINATION (THEORY)

1.1 Competency Areas

The CSA Examination (Theory) seeks to assess a candidate's level of proficiency in the following competency area(s):

S/N	Competency Area(s)	Description
1	Possessing knowledge and understanding of: <ul style="list-style-type: none">• Key terms, concepts and frameworks relating to the Smart Industry Readiness Index (SIRI);• Roles and responsibilities of a Certified SIRI Assessor.	<ul style="list-style-type: none">• Ability to demonstrate knowledge and understanding of all the modules and topics outlined in the Certified SIRI Assessor Programme Syllabus (<i>please refer to Annex A</i>).

1.2 Theory Examination Format

The CSA Examination (Theory) adheres to the following format:

Mode of Examination	The Theory Examination may be conducted: <ul style="list-style-type: none">• In-person with a group of candidates under invigilation; or• Remotely via an online platform with online proctoring. <p>This is a closed-book examination. Candidates are not allowed to refer to any supplementary materials, beyond what is provided in the Theory Examination Paper.</p>
Assessment Format	50 Multiple-Choice Question (MCQs). All questions will have 4 options.
Total Duration	1 hour 30 mins
Grading	Each question is worth 1 point. 1 point will be awarded per correct answer, while 0 point will be awarded for an incorrect answer. The total is 50 points.
Weightage	The Theory Examination grade contributes to 50% of the overall grade for the CSA Examination.
Passing Grade	Candidates need at least 25 out of the 50 points possible for the Theory Examination to pass. Candidates need a total of 70 points across both the Theory and Practical Examinations to pass the overall CSA Examination.

2. CERTIFIED SIRI ASSESSOR EXAMINATION (PRACTICAL)

2.1 Competency Areas

The CSA Examination (Practical) seeks to assess a candidate's level of proficiency in the following competency areas:

S/N	Competency Area	Description
1	Conducting a SIRI Assessment Workshop with a client	<ul style="list-style-type: none"> • Ability to identify the correct bands for all 16 SIRI Dimensions within the Assessment Matrix when evaluating a client's manufacturing facility • Ability to explain the rationale behind the selection of the bands, referencing key terms, concepts and frameworks relating to SIRI where necessary • Ability to guide the client in providing the necessary inputs for the Prioritisation Matrix
2	Debriefing a client on the SIRI Assessment Results	<ul style="list-style-type: none"> • Ability to provide a clear interpretation of the SIRI Assessment Results, which includes the Assessment Matrix Scores and the prioritized SIRI Dimensions • Ability to provide a clear interpretation of the insights from the SIRI Assessment, which includes but is not limited to the comparison of the results against the 3B Maturity Benchmark and the Industry Performance Cards, and provide guidance on the next steps
3	Displaying a good business etiquette and strong communication skills	<ul style="list-style-type: none"> • Ability to conduct oneself professionally in front of client • Ability to communicate clearly and confidently when engaging a client

2.2 Practical Examination Format

The CSA Examination (Practical) adheres to the following format:

Mode of Examination	<p>The Practical Examination may be conducted:</p> <ul style="list-style-type: none">• In-person; or• Remotely via video conferencing. <p>This is an open-book examination.</p>
Assessment Format	<p>The Practical Examination is in the form of a case interview, comprising two stages:</p> <p>Stage 1: Mock SIRI Assessment Workshop</p> <p>Stage 2: Mock SIRI Debrief Session</p>
Total Duration	1 hour 30 mins
Grading	Candidates will be graded against an evaluation framework. The total is 50 points.
Weightage	The Practical Examination grade contributes to 50% of the overall grade for the CSA Examination.
Passing Grade	<p>Candidates need at least 25 out of the 50 points possible for the Practical Examination to pass.</p> <p>Candidates need a total of 70 points across both the Theory and Practical Examinations to pass the overall CSA Examination.</p>

2.3 Structure of Case Interview

Segment	Description	Duration
Overview of Case Interview	The examiner will provide an overview of the case interview format to the candidate.	3 mins
Instructions on Stage 1	The examiner will state the expectations for Stage 1 and provide the candidate with the following materials: <ul style="list-style-type: none"> a. Written Instructions for Stage 1 b. A document containing information relating to a company 	2 mins
Stage 1 Commences		
Review of Case	The candidate will have 25 mins to review the materials and prepare his/her walk-through of the SIRI Assessment Workshop. The candidate is free to ask the examiner any clarifying questions during this period.	25 mins
Mock SIRI Assessment Workshop	The examiner will advise the candidate to commence a walk-through of the SIRI Assessment Workshop as per the case instructions. The candidate is expected to provide explanations to substantiate his/her claims whenever relevant. The candidate is expected to complete the sharing within 20 minutes.	20 mins
Stage 1 Ends		
Instructions on Stage 2	The examiner will state the expectations for Stage 2 and provide the candidate with the following materials: <ul style="list-style-type: none"> a. Written Instructions for Stage 2 b. A document containing relevant sections of the company's Official SIRI Assessment Report 	5 mins
Stage 2 Commences		
Review of Case	The candidate will have 20 mins to review the materials and prepare his/her presentation required for the Debrief Session. The candidate is free to ask the examiner any clarifying questions during this period.	20 mins
Mock Debrief Session	The examiner will advise the candidate to commence a mock SIRI Debrief Session as per the case instructions. The candidate is expected to provide explanations to substantiate his/her claims whenever relevant. The candidate is expected to complete the sharing within 15 minutes.	15 mins
Stage 2 Ends		