

Lean IT Foundation

Syllabus

December 2015 - Version 1.06

1 Introduction

Lean IT Foundation helps IT organizations to ensure that they provide their customers with the best possible services. Through understanding customer value, the processes that deliver this value, the way to manage performance, the way to organize and the required attitude and behavior, IT organizations are helped to develop a continuous improvement mind-set. Lean IT is complementary to all other best practice methods.

This syllabus covers the Foundation level certification of the Lean IT Association. Further Lean IT qualifications are Lean IT Kaizen Lead, Lean IT Coach and Lean IT Leadership. The Lean IT Foundation is the entry level certification. This certification is mandatory for the other certifications.

The primary purpose of the syllabus is to provide a basis for accreditation of people involved with Lean IT Foundation. It documents the learning outcomes of the Lean IT Foundation and describes the requirements a candidate is expected to meet to demonstrate that these learning outcomes have been achieved.

The target audience for this document is:

- Lean IT Association Exam Board
- Accredited Training Organizations
- Persons seeking Lean IT Foundation certification

This syllabus is the basis for the design of the exams and provides accredited training organizations with a more detailed breakdown of what the exams will assess. Details on the exam structure and content are documented in the Lean IT Foundation Exam Design.

LITA Lean IT Foundation Exam Details	
Number of questions	40
Type of questions	Multiple Choice, Scenario based Multiple Choice
Pass mark	65% (26 of 40)
Pass mark Accredited Trainer	75% (30 of 40)
Exam duration in minutes	60
Open book	No

2 Foundation Qualification

2.1 Purpose of the Foundation Qualification

The purpose of the Foundation qualification is to confirm that a candidate has sufficient knowledge and understanding of Lean IT to support a Lean initiative within an IT organization.

2.2 Target Audience

Any manager or specialist working in an IT organization can benefit from the insights provided by the qualification.

2.3 High Level Performance Definition of a Successful Foundation Candidate

Upon completion of the training and examination related to this qualification, a successful candidate will be familiar with the principles of the Lean philosophy and in particular with the application of this philosophy within an IT-environment. Specifically the candidate should understand:

- The principles underlying the Lean philosophy
- The importance of understanding and delivering customer value
- The way Lean looks at processes and the waste within them
- How to measure performance and the key determinants of performance
- What the organizational requirements are when implementing Lean, including the use of visual management tools
- Which behavior and attitude is necessary for Lean to be successful within an IT organization
- The DMAIC problem-solving model
- How these Lean principles can be applied within an IT organization

2.4 Passing the Examination

The requirements for the Lean IT Foundation certificate are:

- Evidence of participation in an accredited Lean IT Foundation training
- Successful completion of the Lean IT Foundation exam

The pass rate of the exam is 65%. This means that 26 right answers are required to successfully complete the exam.

3 Learning Outcomes

A classification widely used when designing assessments for certification and education is the Bloom’s Taxonomy of Educational Objectives. This classifies learning objectives into six ascending learning levels, each defining a higher degree of competencies and skills. (Bloom et al, 1956, Taxonomy of Educational Objectives).

This structured approach helps to ensure:

- A clear delineation in learning level content between different qualification levels
- Learning outcomes are documented consistently across different areas of the guidance
- Exam questions and papers are consistent and are created to a similar level of difficulty.

The Foundation qualification examines learning outcomes at levels 1 (knowledge) and 2 (comprehension).

Lean IT Foundation Learning Outcome				
	1. Knowledge	2. Comprehension	3. Application	4. Analysis
Generic Definition from Learning Outcomes	Know key facts, terms and concepts from the manual/ guidance	Understand key concepts from the manual/ guidance	Be able to apply key concepts relating to the syllabus area for a given scenario	Be able analyze and distinguish between appropriate and inappropriate use of the method/ guidance for a given scenario situation
Qualification Learning Outcomes	Know facts, including terms, concepts, principles, tools and techniques from the Lean IT Foundation curriculum	Understand the concepts, principles, and dimensions of Lean IT and can explain how these are applied.		

4 Syllabus Areas

The syllabus is presented by syllabus areas. This is the unit of learning which may relate to a chapter from the manual/guidance or several concepts commonly grouped together in a training course module.

The following syllabus areas are identified.

Syllabus Area Code	Syllabus Area Title	Weight %
IN	Introduction of Lean	25%
CU	Customer	10%
PR	Process	10%
PE	Performance	10%
OR	Lean Organization	10%
BA	Behavior & Attitude	20%
PS	Problem Solving / Kaizen	15%

5 Syllabus

Note: References can be found in chapter 6 of this document.

In the following tables, the key aspects of the Lean IT Syllabus are described.

Syllabus Area Code IN		Syllabus Area : Introduction (IN)	Primary References
Level	Topic		
Know the historical development of Lean, the key principles underlying Lean and the dimensions for structuring Lean IT Specifically to recall:			
01	01	The historical development of Lean and the importance of the Toyota Production System.	2.1
01	02	The key principles underlying Lean: customer value, value stream, flow, pull, perfection	3
01	03	The concepts of waste (muda), variability (mura) and overburden (muri)	3.1
01	04	Classification of activities: Value-Add, Necessary Non-Value-Add, Non-Value-Add, particularly as related to specific IT activities like solving incidents, developing applications, testing	3.3
01	05	Plan-Do-Check-Act cycle as the generic method for quality improvement	2.1
01	06	Definition of Lean IT (Lean IT Association definition)	1
01	07	Dimensions of Lean IT: Customer, Process, Performance, Organization and Behavior & Attitude	5.1
01	08	Key 'players': Shingo Prize (show high level model and explain), Lean IT Association, author community	2.8
Understand the following aspects dealt with in the Introduction Specifically to identify:			

02	01	Lean principles: how these are related to one another	3
02	02	Waste: ability to identify types of waste within an IT organization or process (TIMWOOD with Talent)	3.1
02	03	The cost of poor quality and reasons for using Lean Principles to improve performance	2.5
02	04	Types of activities: ability to define what IT activities fall into which category	3.3
02	05	PDCA: ability to describe how the PDCA cycle works on the most basic level	2.1
02	06	Relationship to other models and methods used within IT: understand where Lean IT differs from and complements other methods. The connection of Lean IT with IT service management is specifically investigated.	2.2, 2.7

Syllabus Area Code CU		Syllabus Area : Customer (CU)	Primary References
Level	Topic		
Know the key components of the Customer dimension Specifically to recall:			
01	01	The Voice of the Customer (VoC) and the types of customers	6.2
01	02	Types of customer value	6.1
01	03	The concept of Critical to Quality (CTQ)	6.3
01	04	Ways to analyze the Voice of the Customer	6.4
01	05	Sources of continuous improvement opportunities: Voice of the Customer, Voice of Business, Voice of the Process, Voice of the Regulator	6.5
Understand the following aspects related to the Customer Specifically to identify:			

02	01	Types of customer value and the factors that influence customer value	6.1
02	02	The link between the Voice of the Customer and Critical to Quality	6.3
02	03	How to construct a Critical to Quality tree	6.3

Syllabus Area Code PR		Syllabus Area : Process (PR)	Primary References
Level	Topic		
Know the key aspects of the Process dimension Specifically to recall:			
01	01	Definition of process and the basic processes in an organization	7, 7.2
01	02	Key components of a process: goal, result, input, throughput, output, customer,	7.1
01	03	The concepts of Push and Pull, including justifiable inventory to ensure reduction of variation	7.3
01	04	The definitions of the SIPOC model	7.4
01	05	The key aspects of a Value Stream Map (VSM), including the identification of waste in the VSM and adding metrics to the VSM	7.5, 7.6, 7.9, 7.12
01	06	The most important metrics in a process: Cycle time, Takt time, Lead time, Waiting time, Changeover time, Work in Progress, Parallel Lines, Throughput, Capacity	7.7, 7.8, 7.10, 7.11
01	07	Value improvement in processes: possible sources of improvements including specifically heijunka and 5S	7.13, 7.14, 7.15
01	08	The concepts of value demand and failure demand and the related value and failure streams	7
Understand the following aspects of the Process dimension Specifically to identify:			

02	01	Relationship of process (Value stream) with the other Lean principles	7.1, 7.2
02	02	The difference between Push and Pull systems	7.3
02	03	The steps for creating a Value Stream Map, using SIPOC and Value Stream Map	7.4 to 7.15
02	04	Waste in a Value Stream Map, ability to identify the symbols for the TIMWOOD waste	7.12
02	05	Explain the SIPOC and VSM using IT examples e.g. SIPOC: Software development, VSM: High level Change process (other examples are permitted)	7
02	06	The difference between value and failure demand within IT	7

Syllabus Area Code PE		Syllabus Area : Performance (PE)	Primary References
Level	Topic		
Know the key aspects of the Performance dimension Specifically to recall:			
01	01	Definition of performance, as compared to a result	8.1
01	02	Definition and requirements for a key performance indicator (KPI)	8.2, 8.3
01	03	The concept of Process Cycle Efficiency (PCE) as a method for understanding time usage. Importance of time in an IT organization	8.4
01	04	The goal of understanding the availability of skills and knowledge.	8.5
01	05	The combination of Performance indicators, Time and Skills & Knowledge to steer performance	8.4
Understand the following aspects of the Performance dimension Specifically to identify:			

02	01	Relationship of performance with the PDCA cycle	8.1
02	02	The key aspects of a KPI	8.2
02	03	Why time is the most important production factor within IT	8.4
02	04	The relationship of PCE with VSM	8.4
02	05	The role of skills and knowledge in ensuring performance	8.5

Syllabus Area Code OR		Syllabus Area : Organization (OR)	Primary References
Level	Topic		
Know the key aspects of the Organization dimension Specifically to recall:			
01	01	Organizational requirements for Lean IT structuring for customer orientation, empowerment of frontline to act in delivery of value to customers and speed of communication through the organization	9, 9.1
01	02	The principle for organizing: customer orientation and speed of communication	9.1, 9.2
01	03	Goal of management to empower employees	9.1
01	04	Concept and components of the performance dialogue	9.3
01	05	Concept and goals of visual management including use of boards (day, week and Kaizen/ improvement).	9.4, 9.5
01	06	Explain the concept of Kanban and its role in visual management	9.6, 9.7
Understand the following aspects of the Organization dimension Specifically to identify:			
02	01	Why organizations need to be customer-oriented	9, 9.1

02	02	What the goal is of a performance dialogue	9.3
02	03	The use of each of the visual management boards – day board, week board and Kaizen/ improvement board	9.5

Syllabus Area Code BA		Syllabus Area : Behavior & Attitude (BA)	Primary References
Level	Topic		
Know the key aspects of the Behavior & Attitude dimension Specifically to recall:			
01	01	Characteristics of the Lean mindset, Empowerment of the individual to stop the production line (Jidoka/Andon),	10.1, 10.4
01	02	Types of Lean behavior, Quality at the source (First Time Right)	10.1, 10.2, 10.3
01	03	The role of managers within a Lean environment – role in welcoming problems	10.3
01	04	Lean Leadership – Go See, Ask Why, Show Respect. Go to the Gemba as concept for Go See.	10.3
01	05	Valley of despair in relation to people's expectations over time (Kubler-Ross)	10.2
Understand the following aspects of the Behavior & Attitude dimension Specifically to identify:			
02	01	The difference between behavior and attitude	10.1
02	02	The difference between traditional management and Lean management	10.3
02	03	The behavior and attitude required for successful use of Lean	10.1, 10.2
02	04	Behavior and Attitude in relation to expectations surrounding a change in way of working	10.2

Syllabus Area Code PS		Syllabus Area: Problem Solving / Kaizen (PS)	Primary References
Level	Topic		
Know the key aspects of Problem Solving / Kaizen Specifically to recall:			
01	01	Definition of Kaizen and Kaikaku as the two forms of improvement within Lean (continuous and step)	11
01	02	Overview of steps in the DMAIC method	5.2
01	03	Define phase: Definition of a problem	11.7
01	04	Measure phase: Definition of a Pareto chart and its use	11.8, 11.12
01	05	Analyze: Definition of an Ishikawa (Fishbone) diagram and its use	11.9, 11.12
01	06	Analyze phase: 5 Why method for root cause analysis	11.9, 11.12
01	07	Improve phase: inputs for future state: VoC (Voice of the Customer), VoB (Voice of the Business), VoP (Voice of the Process), VoR (Voice of the Regulator)	11.10, 6.5
01	08	Control phase: explain Poka Yoke as a way to stop mistakes from happening, use examples e.g. checklists	11.11
01	09	A3 method	11.6
Understand the following aspects of Problem Solving / Kaizen Specifically to identify:			
02	01	Which tools from the other dimensions are used in which phase of the DMAIC cycle	11.7, 11.8, 11.9, 11.10, 11.11, 11.12
02	02	Prioritization of improvement candidates through feasibility and impact in determining both which problems to solve with a Kaizen and which solutions to implement at the Improve step of the Kaizen	11.9, 11.10

6 Lean IT Foundation References

Below is the reference that support the Lean IT Foundation Training. This publication is available free of charge.

Reference

Lean IT Foundation Publication and Glossary

Authors: Niels Loader, Jeroen Janssen

Available through the Lean IT Association website

Optional reading for participants or trainers who would like to build more understanding, The following references are recommended:

For detailed understanding of Lean Six Sigma tools:

Lean Six Sigma Pocket Toolbook (chapters 1-4, 9)

Authors: Michael L. George et al

ISBN: 0-07-144119-0

Publisher: McGraw Hill

For insights into how Lean can be applied within the IT environment:

Lean IT, Enabling and sustaining Your Lean Transformation

Authors: Steven C. Bell and Michael A. Orzen

ISBN: 978-1-4398-1756-8

Publisher: Productivity Press

For a deeper understanding of Flow

This is Lean

Authors: Niklas Modig & Pär Åhlstrom

ISBN: 978-9198039306

Publisher: Rheologica Publishing

For background on the origins of Lean, we recommend:

The Toyota Way

Author: Jeffrey K. Liker

ISBN: 0-07-139231-9

Publisher: McGraw Hill

For more detail on the behavioral aspects of Lean, we recommend:

Creating a Lean Culture

Author: David Mann

ISBN: 978-1-4398-1141-2

Publisher: CRC Press

For more information regarding the application of Lean to Services organizations:

The Lean Toolbox for Service Systems

Author: John Bicheno

ISBN: 978-0-9541244-4-1

Publisher: PICSIE Books

Note

We recommend that an instructor studies the reference to create a more fundamental and deeper understanding. It is also suggested that instructors acquaint themselves with the optional references to create an attractive foundation level training.

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