Preparation Guide

Edition 202111

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Content

1. Overview

EXIN Lean IT Foundation (LEANITF.EN)

Scope

After successfully completing the EXIN Lean IT Foundation exam, a 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

Summary

EXIN 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 mindset. Lean IT is complementary to all other best practice methods. The purpose of EXIN Lean IT Foundation is to confirm that a candidate has sufficient knowledge and understanding of Lean IT to support a Lean initiative within an IT organization.

Context

The EXIN Lean IT Foundation certification is part of the EXIN Lean IT qualification program.

Target Group

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

Requirements for Certification

- Successful completion of the EXIN Lean IT Foundation exam.

Examination Details

Examination type:	Multiple-choice Questions
Number of questions:	40
Pass mark:	65% (26/40 questions)
Open book:	No
Notes:	No
Electronic equipment/aides permitted:	No
Exam duration:	60 minutes

The Rules and Regulations for EXIN's examinations apply to this exam.

Bloom Level

The EXIN Lean IT Foundation certification tests candidates at Bloom Level 1 and 2 according to Bloom's Revised Taxonomy:

- Bloom Level 1: Remembering – relies on recall of information. Candidates will need to absorb, remember, recognize and recall.
- Bloom Level 2: Understanding – a step beyond remembering. Understanding shows that candidates comprehend what is presented and can evaluate how the learning material may be applied in their own environment. This type of questions aims to demonstrate that the candidate is able to organize, compare, interpret and choose the correct description of facts and ideas.

Training

Contact Hours

The recommended number of contact hours for this training course is 14. This includes group assignments, exam preparation and short breaks. This number of hours does not include lunch breaks, homework and the exam.

Indication Study Effort

56 hours (2 ECTS), depending on existing knowledge.

Training Organization

You can find a list of our Accredited Training Organizations at www.exin.com.

2. Exam Requirements

The exam requirements are specified in the exam specifications. The following table lists the topics of the module (exam requirements) and the subtopics (exam specifications).

Exam Requirements	Exam Specifications	Weight
1. Introduction of Lean		**27.5%**
	1.1 Know the Historical Development of Lean, the Key Principles Underlying Lean and the Dimensions for Structuring Lean IT	17.5%
	1.2 Understand the Following Aspects Dealt with in the Introduction	10%
2. Customer		**12.5%**
	2.1 Know the Key Components of the Customer Dimension	10%
	2.2 Understand the Following Aspects Related to the Customer	2.5%
3. Process		**7.5%**
	3.1 Know the Key Aspects of the Process Dimension	5%
	3.2 Understand the Following Aspects of the Process Dimension	2.5%
4. Performance		**10%**
	4.1 Know the Key Aspects of the Performance Dimension	5%
	4.2 Understand the Following Aspects of the Performance Dimension	5%
5. Lean Organization		**10%**
	5.1 Know the Key Aspects of the Organization Dimension	5%
	5.2 Understand the Following Aspects of the Organization Dimension	5%
6. Behavior & Attitude		**17.5%**
	6.1 Know the Key Aspects of the Behavior & Attitude Dimension	12.5%
	6.2 Understand the Following Aspects of the Behavior & Attitude Dimension	5%
7. Problem Solving/Kaizen		**15%**
	7.1 Know the Key Aspects of Problem Solving/Kaizen	10%
	7.2 Understand the Following Aspects of Problem Solving/Kaizen	5%
	Total	**100%**

Exam Specifications

1 Introduction of Lean

1.1 Know the Historical Development of Lean, the Key Principles Underlying Lean and the Dimensions for Structuring Lean IT

- 1.1.1 The historical development of Lean and the importance of the Toyota Production System
- 1.1.2 The key principles underlying Lean: customer value, value stream, flow, pull, perfection
- 1.1.3 The concepts of waste (muda), variability (mura) and overburden (muri)
- 1.1.4 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
- 1.1.5 Plan-Do-Check-Act cycle as the generic method for quality improvement
- 1.1.6 Definition of Lean IT (EXIN definition)
- 1.1.7 Dimensions of Lean IT: Customer, Process, Performance, Organization and Behavior & Attitude
- 1.1.8 Key 'players': Shingo Prize (show high-level model and explain), author community

1.2 Understand the Following Aspects Dealt with in the Introduction

- 1.2.1 Lean principles: how these are related to one another
- 1.2.2 Waste: ability to identify types of waste within an IT organization or process (TIMWOOD with Talent)
- 1.2.3 The cost of poor quality and reasons for using Lean Principles to improve performance
- 1.2.4 Types of activities: ability to define what IT activities fall into which category
- 1.2.5 PDCA: ability to describe how the PDCA cycle works on the most basic level
- 1.2.6 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 Customer

2.1 Know the Key Components of the Customer Dimension

- 2.1.1 The Voice of the Customer (VoC) and the types of customers
- 2.1.2 Types of customer value
- 2.1.3 The concept of Critical to Quality (CTQ)
- 2.1.4 Ways to analyze the Voice of the Customer
- 2.1.5 Sources of continuous improvement opportunities: Voice of the Customer, Voice of the Business, Voice of the Process, Voice of the Regulator

2.2. Understand the Following Aspects Related to the Customer

- 2.2.1 Types of customer value and the factors that influence customer value
- 2.2.2 The link between the Voice of the Customer and Critical to Quality
- 2.2.3 How to construct a Critical to Quality tree

3 Process

3.1 Know the Key Aspects of the Process Dimension

- 3.1.1 Definition of process and the basic processes in an organization
- 3.1.2 Key components of a process: goal, result, input, throughput, output, customer
- 3.1.3 The concepts of Push and Pull, including justifiable inventory to ensure reduction of variation
- 3.1.4 The definitions of the SIPOC model
- 3.1.5 The key aspects of a Value Stream Map (VSM), including the identification of waste in the VSM and adding metrics to the VSM
- 3.1.6 The most important metrics in a process: Cycle time,Takt time, Lead time, Waiting time, Changeover time, Work in Progress, Parallel Lines, Throughput, Capacity
- 3.1.7 Value improvement in processes: possible sources of improvements including specifically heijunka and 5S
- 3.1.8 The concepts of value demand and failure demand and the related value and failure streams

3.2 Understand the Following Aspects of the Process Dimension

- 3.2.1 Relationship of process (Value stream) with the other Lean principles
- 3.2.2 The difference between Push and Pull systems
- 3.2.3 The steps for creating a Value Stream Map, using SIPOC and Value Stream Map
- 3.2.4 Waste in a Value Stream Map, ability to identify the symbols for the TIMWOOD waste
- 3.2.5 Explain the SIPOC and VSM using IT examples e.g. SIPOC: Software development, VSM: High level Change process (other examples are permitted)
- 3.2.6 The difference between value and failure demand within IT

4 Performance

4.1 Know the Key Aspects of the Performance Dimension

- 4.1.1 Definition of performance, as compared to a result
- 4.1.2 Definition and requirements for a key performance indicator (KPI)
- 4.1.3 The concept of Process Cycle Efficiency (PCE) as a method for understanding time usage. Importance of time in an IT organization
- 4.1.4 The goal of understanding the availability of skills and knowledge.
- 4.1.5 The combination of Performance indicators, Time and Skills & Knowledge to steer performance

4.2 Understand the Following Aspects of the Performance Dimension

- 4.2.1 Relationship of performance with the PDCA cycle
- 4.2.2 The key aspects of a KPI
- 4.2.3 Why time is the most important production factor within IT
- 4.2.4 The relationship of PCE with VSM
- 4.2.5 The role of skills and knowledge in ensuring performance

5 Lean Organization

5.1 Know the Key Aspects of the Organization Dimension

- 5.1.1 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
- 5.1.2 The principle for organizing: customer orientation and speed of communication
- 5.1.3 Goal of management to empower employees
- 5.1.4 Concept and components of the performance dialogue
- 5.1.5 Concept and goals of visual management including use of boards (day, week and Kaizen/improvement).
- 5.1.6 Explain the concept of Kanban and its role in visual management

- 5.2 Understand the Following Aspects of the Organization Dimension
  - 5.2.1 Why organizations need to be customer-oriented
  - 5.2.2 What the goal is of a performance dialogue
  - 5.2.3 The use of each of the visual management boards – day board, week board and Kaizen/improvement board

6 Behavior & Attitude

- 6.1 Know the Key Aspects of the Behavior & Attitude Dimension
  - 6.1.1 Characteristics of the Lean mindset, Empowerment of the individual to stop the production line (Jidoka/Andon)
  - 6.1.2 Types of Lean behavior, Quality at the source (First Time Right)
  - 6.1.3 The role of managers within a Lean environment – role in welcoming problems
  - 6.1.4 Lean Leadership – Go See, Ask Why, Show Respect. Go to the Gemba as concept for Go See
  - 6.1.5 Valley of despair in relation to people's expectations over time (Kubler-Ross)
- 6.2 Understand the Following Aspects of the Behavior & Attitude Dimension
  - 6.2.1 The difference between behavior and attitude
  - 6.2.2 The difference between traditional management and Lean management
  - 6.2.3 The behavior and attitude required for successful use of Lean
  - 6.2.4 Behavior & Attitude in relation to expectations surrounding a change in way of working

7 Problem Solving/Kaizen

- 7.1 Know the Key Aspects of Problem Solving/Kaizen
  - 7.1.1 Definition of Kaizen and Kaikaku as the two forms of improvement within Lean (continuous and step)
  - 7.1.2 Overview of steps in the DMAIC method
  - 7.1.3 Define phase: Definition of a problem
  - 7.1.4 Measure phase: Definition of a Pareto chart and its use
  - 7.1.5 Analyze: Definition of an Ishikawa (Fishbone) diagram and its use
  - 7.1.6 Analyze phase: 5 Why method for root cause analysis
  - 7.1.7 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)
  - 7.1.8 Control phase: explain Poka Yoke as a way to stop mistakes from happening, use examples e.g. checklists
  - 7.1.9 A3 method
- 7.2 Understand the Following Aspects of Problem Solving/Kaizen
  - 7.2.1 Which tools from the other dimensions are used in which phase of the DMAIC cycle
  - 7.2.2 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

3. List of Basic Concepts

This chapter contains the terms and abbreviations with which candidates should be familiar.

Please note that knowledge of these terms alone does not suffice for the exam; the candidate must understand the concepts and be able to provide examples.

Agility
Andon
batch and queue
behavior and attitude
Cause and Effect Diagram
Change Over Time
Common cause variation
Continuous Improvement
Cost of Poor Quality
Critical to Quality
Customer
Customer Value
Cycle Time
Day board
Defect
DMAIC
Failure Demand
Failure Stream
First in First Out (FIFO)
Fishbone diagram
Five “Whys”
Flow
Gemba
Gemba Walk
Improvement Board
Inflexibility
Input
Inventory
Ishikawa diagram
IT Outcome
Jidoka
Just-in-time
Kaikaku
Kaizen
Kaizen board
Kanban
Kanban Board
KPI
Last in First Out (LIFO)
Lead Time
Machine Time
Metric
Motion
Muda
Mura
Muri
Necessary non-value-added
Non-value-added
Organization
Output
Overburden
Over Processing
Over Production
Parallel Lines
Pareto diagram
Perfection
Performance
Performance Dialogue
Poka Yoke
Problem Board
Process
Process Cycle Efficiency
Process Throughput
Process Throughput Analysis
Pull
Push
Re-work
Root cause analysis
Skills and Knowledge matrix
Standard time
Takt Time
Transportation
Trend
Unit of Work
Value Stream
Value Stream Mapping (VSM)
Value-add
Variability
Visual Management
Voice of the Business (VOB)
Voice of the Customer (VOC)
Voice of the Process (VOP)
Voice of the Regulator (VOR)
Waiting Time
Waste
Week board
Work in Progress (WIP)

4. Literature

Exam Literature

The knowledge required for the exam is covered in the following literature:

A. EXIN Handbook Lean IT Foundation
Niels Loader & Jeroen Janssen
EXIN (2021)
ISBN: 978-9076531106
Freely available from www.exin.com. Click on 'Certifications' to find the exam. The download can be found under 'Required reading'.

Additional Literature

B. Lean Six Sigma Pocket Toolbook
Michael L. George et al
McGraw Hill (2004)
ISBN: 978-0071441193 (hardcopy)
ISBN: 978-0071505734 (eBook)

C. Lean IT, Enabling and sustaining Your Lean Transformation
Steven C. Bell and Michael A. Orzen
Productivity Press (2010)
ISBN: 978-1439817568

D. This is Lean
Niklas Modig & Pär Åhlstrom
Rheologica Publishing (2012)
ISBN: 978-9198039306

E. The Toyota Way
Jeffrey K. Liker
McGraw Hill (2004)
ISBN: 978-0071392310 (hardcopy)
ISBN: 978-0071435635 (eBook)

F. Creating a Lean Culture
David Mann
CRC Press (2014)
ISBN: 978-1482243239

G. The Lean Toolbox for Service Systems
John Bicheno
PICSIE Books (2008)
ISBN: 978-0954124441

Comment

Additional literature is for reference and depth of knowledge only.

Literature Matrix

Exam Requirements	Exam Specifications	Reference
1. Introduction of Lean		
	1.1 Know the Historical Development of Lean, the Key Principles Underlying Lean and the Dimensions for Structuring Lean IT	Chapters 1, 2.1, 2.8, 3.1, 3.3, 4, 5.1
	1.2 Understand the Following Aspects Dealt with in the Introduction	Chapters 2.1-2.7, 3, 4
2. Customer		
	2.1 Know the Key Components of the Customer Dimension	Chapters 6
	2.2 Understand the Following Aspects Related to the Customer	Chapters 6.1, 6.3
3. Process		
	3.1 Know the Key Aspects of the Process Dimension	Chapters 7
	3.2 Understand the Following Aspects of the Process Dimension	Chapters 7
4. Performance		
	4.1 Know the Key Aspects of the Performance Dimension	Chapters 8
	4.2 Understand the Following Aspects of the Performance Dimension	Chapters 8
5. Lean Organization		
	5.1 Know the Key Aspects of the Organization Dimension	Chapters 9
	5.2 Understand the Following Aspects of the Organization Dimension	Chapters 9.1, 9.3, 9.5
6. Behavior & Attitude		
	6.1 Know the Key Aspects of the Behavior & Attitude Dimension	Chapters 10
	6.2 Understand the Following Aspects of the Behavior & Attitude Dimension	Chapters 10.1-10.3
7. Problem Solving/Kaizen		
	7.1 Know the Key Aspects of Problem Solving/Kaizen	Chapters 5.2, 6.5, 11.6-11.13
	7.2 Understand the Following Aspects of Problem Solving/Kaizen	Chapters 11.7-11.13

Contact EXIN

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