SAFe® 4 Agilist

Exam Study Guide V4.5

Scaled Agile Professional Certification Program

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Table of Contents

Welcome to Role-Based Learning

Scaled Agile, Inc.'s role-based offerings focus on the skills, knowledge, and experience required to successfully perform the job. As part of your Scaled Agile Framework® (SAFe®) learning journey, we encourage you to attend training, read recommended books and articles, take advantage of videos and enablement, gain real-world experience in the role, and then take the exam.

About This Study Guide

This study guide is designed to provide relevant and content-specific exam information, such as the certification role description, prerequisite skills and knowledge, exam objectives, and a comprehensive reading list. Reviewing this study guide does not guarantee success on the exam, but it will provide guidance on your journey to become SAFe certified.

The sections in this study guide map to the course. There is additional information in this study guide around the certification role that has been defined by our subject matter experts (SMEs).

Thank You, Subject Matter Experts

This exam and related study materials are made possible by a very dedicated group of global SAFe subject matter experts. Scaled Agile thanks these individuals for their hard work, focus, and willingness to dedicate many hours to the success of this project.

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Preparing for the Exam

Congratulations on taking the first step toward becoming part of a growing community of SAFe certified professionals!

Preparation	Required/Recommended	Access
☐ Course Attendance	Required	Classroom Training: Leading SAFe
☐ Exam Study Guide	Recommended	Learning Plan in the SAFe Community Platform
☐ Sample Test	Recommended	On Scaled Agile Website: Leading SAFe Course Page
☐ Practice Test	Recommended	Learning Plan in the SAFe Community Platform
☐ Exam	Required	Learning Plan in the SAFe Community Platform

Exam Details

Information, such as the number of questions, time on exam, and exam format, can be found under "Exam Details" on the Exam and Certification Summary web page.

Course Attendance

The first step toward becoming a SAFe certified professional is to attend the Leading SAFe training class. Course attendance is required (all days), and completion provides access to the exam, which is part of the SAFe Learning Plan. A complete list of courses, including dates and locations, is on the Scaled Agile website.

Note: Attending the class does not guarantee passing the exam. Please take the time to review the materials covered in this study guide.

Certification Role—SAFe 4 Agilist

A SAFe 4 Agilist (SA) is a Scaled Agile Framework enterprise leadership professional who is part of a Lean-Agile transformation.

Key Areas of Competency

- Explain SAFe Agile Principles
- Apply SAFe to scale Lean and Agile development in the Enterprise
- Apply Lean-Agile Mindset and principles
- Plan and successfully execute Program Increments (PIs)
- Execute and release value through Agile Release Trains (ARTs)
- Build an Agile portfolio with Lean-Agile budgeting

Prerequisite Skills and Knowledge

- Five-plus years' experience in software development, testing, business analysis, product or project management
- Experience in Scrum

Target Candidate (Qualifying Standard: Five Levels of Competency)
This job role is defined as part of the Job Task Analysis (JTA) and is based on a standardized five levels of competency. Candidates who pass this exam have met this qualifying standard and can demonstrate knowledge or perform skills at the level designated below:

1 - [Beginner] Minimal knowledge or experience
2 - [Novice] Some knowledge or experience with assistance << SAFe 4 Agilist
3 - [Proficient] Capable of performing tasks with some assistance
4 - [Advanced] Fully competent in performing tasks with little assistance
5 - [Expert] Content developer or contributor with no assistance

Exam Objectives Overview

The first step in developing a role-based curriculum is to conduct a JTA workshop, where a group of SMEs work together to define the tasks, skills, and knowledge related to a specific job role. The JTA creates the foundation for the exam objectives and competency standard, which serves as the basis for the exam. The output of the JTA includes key areas of competency, prerequisite skills and knowledge, the candidate qualifying standard, and a comprehensive list of objectives and tasks related to the job role.

Scaled Agile SMEs use these objectives to develop exam questions. It is recommended you review these objectives and ask yourself: Do I know how to complete the tasks in the objective? Am I familiar with the terms and concepts? Do I know the outcome of NOT performing the tasks correctly (anti-patterns)?

The objectives specific to this exam begin below and map to the course materials either at a high level or in some cases with more detail. Most objectives are covered on the exam, so be sure to review the materials.

Exam Content Percentage

The table outlines the approximate percentage of questions from each section that will appear on the exam.

Exam Sections	Percent of Items on Exam
SECTION 1: Introducing the Scaled Agile Framework	9%
SECTION 2: Embracing a Lean-Agile Mindset	9%
SECTION 3: Understanding SAFe Principles	13%
SECTION 4: Experiencing PI Planning	18%
SECTION 5: Exploring, Executing, and Releasing Value	22%
SECTION 6: Leading the Lean-Agile Enterprise	7%
SECTION 7: Governing a Lean Portfolio	15%
SECTION 8: Building Large Solutions	7%

Exam Objectives

SECTION 1: Introducing the Scaled Agile Framework	
1.1	Recognize the problem to be solved
1.1.1	Identify the problems in the organization

1.1.2	Identify the problems to be solved
1.1.3	List the reasons for adopting Agile
1.1.4	Discuss how management can change the system (“the management challenge”)
1.2	Know the basic constructs of SAFe
1.2.1	Describe the mission of SAFe
1.2.2	Review the SAFe Big Picture
1.2.3	Discuss how SAFe works within organizations
1.2.4	Discuss how SAFe provides the basis for success
1.2.5	Discuss how an Agile Team and an Agile Team of Teams fit within SAFe
1.2.6	Describe how Portfolio SAFe aligns strategy and execution
1.2.7	Describe how Large Solution SAFe coordinates ARTs with a Solution Train
1.2.8	Explain when some enterprises require Full SAFe
1.3	Apply the Implementation Roadmap
1.3.1	Describe the stages of the implementation roadmap
1.3.2	Describe how to use the implementation roadmap
1.3.3	Describe the SAFe role-based learning paths and how SAFe roles fit within
1.3.4	Describe ways to achieve business results
1.3.5	Identify the eight big mistakes when implementing change
1.3.6	Describe the basics of SAFe

SECTION 2: Embracing a Lean-Agile Mindset	
2.1	Embrace the Lean mindset
2.1.1	Describe the SAFe House of Lean and its elements
2.1.2	Explain how value integrates with the House of Lean
2.1.3	Define the four pillars of the House of Lean
2.1.4	Explain how leadership impacts with the House of Lean
2.1.5	Describe one way to assess and coach a Lean mindset
2.2	Support the Agile Manifesto
2.2.1	Describe the values of the Agile Manifesto
2.2.2	Review the SAFe principles behind the manifesto

SECTION 3: Understanding SAFe Principles	
3.1	#1 - Take an economic view
3.1.1	Describe Agile economics
3.1.2	Describe the differences between waterfall and incremental delivery
3.1.3	Explain how the release gains value as times goes on
3.1.4	Explain why fast feedback is critical
3.1.5	Explain that early value delivery drives first to market, fast feedback, and higher profitability
3.1.6	Describe how variability is managed with cadence and synchronization
3.1.7	Define the Definition of Done (DoD) as it relates to achieving economic value

3.1.8	Base decisions on economics and understand the trade-off parameters
3.2	#2 - Apply systems thinking
3.2.1	Describe the concept of systems that build things (ex., W. Edwards Deming on systems thinking)
3.2.2	Identify elements of systems thinking (solution, enterprise, full Value Stream)
3.2.3	Explain why it is important to optimize for the system and not the team
3.2.4	Identify ways to optimize the full value stream
3.2.5	Explain how delays impact the value stream
3.3	#3 - Assume variability; preserve options
3.3.1	Define Set-Based Design
3.3.2	Describe flexible specifications, design sets, and economic trade-offs
3.3.3	Describe the differences between a set-based approach and a point-based approach
3.4	#4 - Build incrementally with fast, integrated learning cycles
3.4.1	Explain the benefits of fast learning cycles
3.4.2	Describe the plan-do-check-adjust (PDCA) model
3.4.3	Explain how integration points control product development
3.5	#5 - Base milestones on objective evaluation of working systems
3.5.1	Describe the problem with phase-gate Milestones
3.5.2	Describe the three types of Metrics (progress, product, process) during PI demos
3.5.3	Explain how objective milestones facilitate learning and support an optimum solution
3.6	#6 - Visualize and limit WIP, reduce batch sizes, and manage queue lengths

3.6.1	Explain why long queues are bad
3.6.2	Describe ways to reduce queue lengths (ex., Little's Law, processing times, wait times)
3.6.3	Explain what a Big Visible Information Radiator (BVIR) is and how it can be used
3.6.4	Identify Work in Process (WIP) constraints
3.6.5	Demonstrate the impact of small and large batch sizes
3.7	#7 - Apply cadence, synchronize with cross-domain planning
3.7.1	Describe the characteristics of cadence
3.7.2	Describe the characteristics of synchronization
3.7.3	Explain how to control variability with planning cadence
3.7.4	Explain how to synchronize with cross-domain planning
3.8	#8 - Unlock the intrinsic motivation of knowledge workers
3.8.1	Define intrinsic motivation
3.8.2	Describe ways to intrinsically motivate knowledge workers
3.9	#9 - Decentralize decision-making
3.9.1	Compare centralized versus decentralized decision-making
3.9.2	Provide a framework for determining which decisions should be centralized or decentralized based on the principles of product development flow

SECTION 4: Experiencing PI Planning	
4.1	Prepare to experience PI Planning
4.1.1	Describe the elements of an ART

4.1.2	Describe how value streams cut across organizational silos
4.1.3	Describe how to build cross-functional Agile teams that can define, build, and test a Feature or component
4.1.4	Differentiate between the roles of the Scrum Master, Product Owner (PO), and Development Team and how they power a train
4.1.5	Describe how program roles govern the train
4.1.6	Describe the PI planning process
4.1.7	Explain how to estimate Stories with relative story points
4.1.8	Compare various ways of performing fast, relative estimating (‘estimating poker,’ etc.)
4.2	Create and review draft PI plans
4.2.1	Identify program roles
4.2.2	Align to a common mission
4.2.3	Describe the agenda for day one and day two of PI planning
4.2.4	Provide business context using strengths, weaknesses, opportunities, and threats (SWOT)
4.2.5	Identify, prioritize, and describe features
4.2.6	Describe the roles of Product Owners, Scrum Masters, Agile Team, and Release Train Engineer (RTE) during PI planning
4.2.7	Describe the relationship between features and stories (user and enabler)
4.2.8	Align mission with PI Objectives
4.2.9	Explain what stretch objectives are and how they are used
4.2.10	Calculate initial velocity
4.2.11	Define capacity-based planning and how normalized estimation is used
4.2.12	Explain the purpose of the management review and problem-solving at the end of day one

4.3	Finalize plans and establish business value
4.3.1	Determine the reasons for making planning adjustments and the types of possible changes
4.3.2	Describe the activities during the second team breakout
4.3.3	Set business value for team objectives
4.3.4	Describe elements of a program board and how they relate to one another
4.4	Review final plans and commit to a set of PI Objectives
4.4.1	Review the final plan
4.4.2	Build the final plan
4.4.3	Use ROAM to address program risks
4.4.4	Perform a confidence vote at the Team and Program Levels
4.4.5	Run a planning meeting retrospective
4.4.6	Integrate team PI objectives into program PI objectives

SECTION 5: Exploring, Executing, and Releasing Value	
5.1	Continuously deliver value with ARTs
5.1.1	Explain how teams execute Iterations with Scrum
5.1.2	Explain how program events drive the train
5.1.3	Explore how the ART sync is used to coordinate progress and explain the relationship between the Scrum of Scrums and the PO sync
5.1.4	Describe how the Continuous Delivery Pipeline works
5.1.5	Use the Program Kanban to manage continuous delivery

5.2	Continuously explore Customer needs
5.2.1	Examine the Continuous Exploration component of the continuous delivery pipeline and describe how collaboration, research, and synthesis interact with one another
5.2.2	Examine the continuous exploration collaboration and research aspects
5.2.3	Use the portfolio Vision to set a longer term context for near term decisions
5.2.4	Use the Roadmap to guide the delivery of features over time
5.2.5	Describe what features are and how/why they are used
5.2.6	Elaborate features with Lean User Experience (UX)
5.2.7	Prioritize features for optimal return on investment (ROI)
5.2.8	Use Weighted Shortest Job First (WSJF) to prioritize jobs
5.2.9	Identify components of Cost of Delay
5.2.10	Calculate WSJF with relative estimating
5.2.11	Describe the Architectural Runway and how it is used
5.3	Continuously integrate
5.3.1	Continuously integrate stories and features
5.3.2	Perform continuous system integration
5.3.3	Explain the different types of iterations (inter-iteration, intra-iteration, and cross-functional iteration)
5.3.4	Build quality in
5.3.5	Describe the elements of testing and the different ways to test, including automation
5.3.6	Explain why cadence without synchronization is not enough
5.3.7	Synchronize to assure delivery

5.3.8	Demo the full system increment every two weeks
5.4	Continuously deploy with DevOps
5.4.1	Describe the six recommended practices for Continuous Deployment
5.4.2	Identify some of the myths and facts that are associated with DevOps
5.4.3	Define DevOps, including the disconnects between Dev and Ops
5.4.4	Explain where DevOps is in the value stream
5.4.5	Define CALMR and how it applies to DevOps
5.5	Release on Demand
5.5.1	Decouple deployment from release
5.5.2	Decouple release elements from the total solution
5.5.3	Identify the additional activities around releasing (system validation, documentation, etc.)
5.5.4	Identify the additional stages around releasing (team, system, solution)
5.6	Relentlessly improve results
5.6.1	Describe the Innovation and Planning (IP) Iteration and related elements
5.6.2	Use the IP iteration calendar
5.6.3	Explain what happens without the IP iteration
5.6.4	Identify the three parts to Inspect and Adapt (I&A)
5.6.5	Describe what happens at the end of the PI and run the PI System Demo
5.6.6	Compare planned versus actual PI objectives
5.6.7	Use the PI predictability measure

5.6.8	Conduct the problem-solving workshop

SECTION 6: Leading the Lean-Agile Enterprise	
6.1	Lead the change
6.1.1	Identify ways to lead successful change management
6.1.2	Anchor new habits in the culture
6.1.3	Be familiar with change leaders such as Deming and Drucker
6.1.4	Identify three systemic impediments to adopting Lean-Agile practices
6.2	Know the way and emphasize lifelong learning
6.2.1	Be familiar with the Lean-Agile Leader's reading list
6.2.2	Identify ways to emphasize lifelong learning in the organization
6.2.3	Identify attributes of high-performing teams
6.2.4	Use the power of *ba*
6.3	Unlock the intrinsic motivation of knowledge workers
6.3.1	Identify ways to manage knowledge workers
6.3.2	Describe the three personal leadership styles (as expert, as conductor, as developer)
6.3.3	Identify traits of the servant leader
6.3.4	Create an environment of mutual influence
6.3.5	Identify the factors that motivate teams

SECTION 7: Governing a Lean Portfolio	
7.1	Fund value streams
7.1.1	Align strategy/execution with Lean Portfolio Management
7.1.2	Identify problems with cost center budgeting
7.1.3	Explain the benefits of using Lean-Agile budgeting
7.1.4	Discuss how Strategic Themes influence funding
7.2	Empower local decision-making
7.2.1	Empower ART content authority
7.2.2	Create strategic themes
7.2.3	Use strategic themes to influence what gets built
7.3	Provide objective evidence of fitness for purpose
7.3.1	Describe how system demos are used for progress
7.3.2	Explain how action and investment decisions are made
7.4	Manage Epic-level initiatives responsibly
7.4.1	Describe the different types of epics
7.4.2	Compare epics and Enablers
7.4.3	Use the Lean startup cycle to foster innovation
7.4.4	Create epic hypothesis statements
7.4.5	Approve epic-level initiatives
7.4.6	Govern epic flow with the Portfolio Kanban system

7.5	Forecast predictably
7.5.1	Estimate epics
7.5.2	Discuss various ways to forecast predictability
7.6	Budget value streams dynamically
7.6.1	Exercise fiscal governance with dynamic budgeting
7.6.2	Review value streams and their impact across PIs to meet changing business needs
7.6.3	Discuss why ART budgets must remain Agile

SECTION 8: Building Large Solutions	
8.1	Coordinate and integrate multiple ARTs and suppliers
8.1.1	Explain how solution trains align ARTs to a common mission
8.1.2	Describe the role suppliers play in large solution development
8.1.3	Describe the direct and indirect impact customers have on developing a solution
8.1.4	Prepare with Pre- and Post-PI Planning meetings
8.1.5	Create the pre-planning structure
8.1.6	Conduct the solution train management review and problem-solving meeting
8.1.7	Create the post-planning structure
8.1.8	Conduct the solution train I&A workshop
8.1.9	Discuss how solution train events are different from ART events
8.2	Define large solutions

8.2.1	Compare a solution to a Solution Context and describe the differences
8.2.2	Capture knowledge in Solution Intent
8.2.3	Explain how to move from variable to fixed solution intent
8.2.4	Continuously evolve compliance documents

Reading and Reference List for Exam

As part of the exam development process, each exam question is assigned a reference, where the answer can be found. The references are converted into a comprehensive reading list, included below. Be sure to read the linked content and resources contained in the reading list, because there is at least one exam question written to each item.

Please remember that the goal of this reading list is not only to provide answers to the exam questions, but also to provide a broader context for learning.

Scaled Agile Website Resources

At least one exam question is written from each of these resources (in alphabetical order):

- www.scaledagileframework.com/
- www.scaledagileframework.com/apply-cadence-synchronize-with-cross-domain-planning/
- www.scaledagileframework.com/assume-variability-preserve-options/
- www.scaledagileframework.com/build-incrementally-with-fast-integrated-learning-cycles/
- www.scaledagileframework.com/business-owners/
- www.scaledagileframework.com/continuous-integration/
- www.scaledagileframework.com/decentralize-decision-making/
- www.scaledagileframework.com/DevOps/
- www.scaledagileframework.com/features-and-capabilities/
- www.scaledagileframework.com/glossary/
- www.scaledagileframework.com/implementation-roadmap/
- www.scaledagileframework.com/lean-agile-leaders/
- www.scaledagileframework.com/lean-agile-mindset/
- http://www.scaledagileframework.com/pi-planning/
- www.scaledagileframework.com/Portfolio-Level/
- www.scaledagileframework.com/safe-core-values/
- www.scaledagileframework.com/safe-lean-agile-principles/
- www.scaledagileframework.com/scrumxp/
- www.scaledagileframework.com/solution-demo/
- www.scaledagileframework.com/strategic-themes/
- www.scaledagileframework.com/unlock-the-intrinsic-motivation-of-knowledge-workers/
- www.scaledagileframework.com/value-streams/
- www.scaledagileframework.com/visualize-and-limit-wip-reduce-batch-sizes-and-manage-queue-lengths/

Other Website Resources

- https://hbr.org/1986/01/the-new-new-product-development-game

Scaled Agile Download Resources

The exam will cover main ideas and concepts found in these resources on the www.scaledagileframework.com website:

- SAFe Big Picture
- SAFe 4 Glossary
- SAFe Implementation Roadmap
- Case Studies

Required Books

- *Leading SAFe 4 Student Workbook* (available only from taking the course)

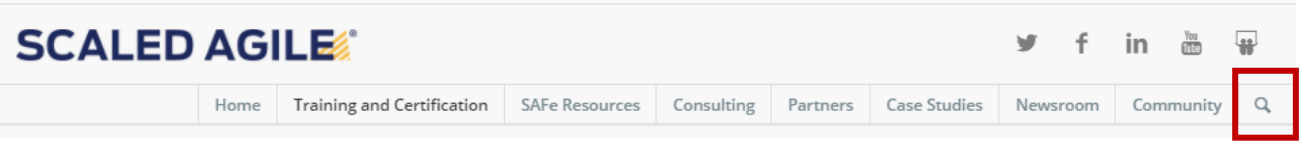
Know the Way: Lean-Agile Leader's Reading List

A recommended reading list is included as part of the course. This content is not necessarily covered on the exam and for your reference only.

- *SAFe 4.0 Distilled* by Richard Knaster and Dean Leffingwell
- *The Principles of Product Development Flow* by Donald G. Reinertsen
- *The Lean Machine* by Dantar P. Oosterwald
- *Lean Product and Process Development,* second edition, by Allen Ward and Durward K. Sobeck II
- *Agile Software Requirements* by Dean Leffingwell
- *The Goal: A Process of Ongoing Improvement* by Eliyahu M. Goldratt
- *Switch: How to Change Things When Change Is Hard* by Chip Heath and Dan Heath
- *The Five Dysfunctions of a Team* by Patrick Lencioni
- *Out of the* Crisis by W. Edwards Deming
- *Managing for Excellence* by David L. Bradford and Allan R. Cohen
- *Drive: The Surprising Truth About What Motivates Us* by Daniel H. Pink

Search the Scaled Agile Framework Site

Need help finding a SAFe article? Looking for more details about the SAFe Big Picture or one of the SAFe roles? Use the web search option on www.scaledagileframework.com to search the entire site based on your key search terms.



Sample Test

The sample test provides examples of the format and type of questions to expect on the exam (these are sample and not the actual exam questions). Performance on the sample test is NOT an indicator of performance on the exam, and it should NOT be considered an assessment tool. The sample test (.pdf) can be found under "Exam Study Materials" on the Exam and Certification Summary web page.

Practice Test

The practice test is designed to be predictive of success on the actual exam. It contains the same number of questions as the exam and the same level of difficulty, covers the same content areas (using different questions), and has the same timebox for completion. It is available on the Scaled Agile Community Platform as part of your Learning Plan.

The practice test is available at no additional charge, and you can take it as many times as you like; however, it provides the same bank of questions randomized in a different order. Use the practice test score report to focus on areas where you may need improvement. Once you pass the practice test it is considered "completed" and cannot be retaken.

Note that the practice test falls under the candidate agreement policy, and you are not authorized to copy, share, or reproduce it in any way.

Learning Journey: Checklist

- ☐ Attend the course.
- ☐ Study based on the course and exam study materials provided.
- ☐ Incorporate your learnings into your real-world experiences.
- ☐ Take the practice test on the SAFe Community Platform.

  If you pass the practice test, then you are ready to take the exam.

  If you do NOT pass the practice test, review how you did by section on the score report. Focus on the areas where you need improvement. You can take the practice test as many times as you like; however, it provides the same bank of questions randomized in a different order. Once you pass the practice test it is considered "completed" and cannot be retaken.
- ☐ Take the actual exam through the SAFe Community Platform.
- ☐ Pass the exam and become a member of the SAFe certified global community.
- ☐ Share your SAFe certified digital badge and have your skills recognized worldwide.
- ☐ Continue your learning journey through active participation in your Community of Practice on the SAFe Community Platform.

Acronyms and Abbreviations

ART	Agile Release Train	**PO/PM**	Product Owner/Product Manager
BO	Business Owner	**PO**	Product Owner
BV	Business Value	**LPM**	Lean Portfolio Management
BVIR	Big Visual Information Radiator	**ROAM**	Resolved, Owned, Accepted, Mitigated
CFD	Cumulative Flow Diagram	**RR**	Risk Reduction
CapEx	Capital Expenses	**RTE**	Release Train Engineer
CI	Continuous Integration	**S4T**	SAFe® for Teams
CoD	Cost of Delay	**SAFe®**	Scaled Agile Framework
CoP	Community of Practice	**SA**	SAFe® Agilest
DoD	Definition of Done	**SM**	Scrum Master
DSU	Daily Stand-up	**SoS**	Scrum of Scrums
EA	Enterprise Architect	**SP**	SAFe® Practitioner
EO	Epic Owner	**SPC**	SAFe® Program Consultant
FW	Firmware	**SW**	Software
HW	Hardware	**UX**	User Experience
I&A	Inspect and Adapt	**VS**	Value Stream
IP	Innovation and Planning (iteration)	**STE**	Solution Train Engineer
MBSE	Model-Based Systems Engineering	**WIP**	Work in Process
NFR	Non-functional Requirements	**WSJF**	Weighted Shortest Job First
OE	Opportunity Enablement	**XP**	Extreme Programming
OpEx	Operating Expenses		
PDCA	Plan, Do, Check, Adjust		
PI	Program Increment		
PM	Product Manager		

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