



# 2010

Research, Technology,  
and System Solutions  
Program

Software Product Line  
Curriculum



Software Engineering Institute  
Carnegie Mellon

## OVERVIEW

Organizations of all types and sizes are discovering that a product line strategy, when skillfully implemented, can improve productivity, quality, and time to market and give them a competitive edge. Making the move to product lines, however, is a business and technical decision that requires considerable changes in the way organizations practice software engineering, technical management, and organizational management.

The Carnegie Mellon® Software Engineering Institute (SEI) Software Product Line Curriculum provides the training necessary to help organizations make these changes and successfully implement a product line approach. The collection of five courses is based on extensive SEI and community experience in developing, acquiring, and fielding software product lines and is supported by a practitioner book in the SEI Addison-Wesley Series. These courses equip software professionals with state-of-the-art practices so they can efficiently use software product lines to achieve strategic reuse and other business goals. Software professionals can take individual courses based on specific needs or interests or complete one or more of the following three specially designed certificate programs:

- Software Product Line Professional
- Product Line Technical Probe<sup>SM</sup> (PLTP<sup>SM</sup>) Team Member
- PLTP Leader

The PLTP is a method for examining an organization's readiness to adopt or ability to succeed with a software product line approach. The matrix below shows the requirements for each certificate program.

| Requirements                             | CERTIFICATE PROGRAMS               |                  |             |
|------------------------------------------|------------------------------------|------------------|-------------|
|                                          | Software Product Line Professional | PLTP Team Member | PLTP Leader |
| Software Product Lines course            | ●                                  | ●                | ●           |
| Adopting Software Product Lines course   | ●                                  | ●                | ●           |
| Developing Software Product Lines course | ●                                  | ●                | ●           |
| PLTP Team Training course                |                                    | ●                | ●           |
| PLTP Leader Training course              |                                    |                  | ●           |
| PLTP Observation                         |                                    |                  | ●           |

<sup>SM</sup> Product Line Technical Probe and PLTP are service marks of Carnegie Mellon University.

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## SOFTWARE PRODUCT LINES

### Purpose

The goal of this two-day course is for participants to understand the fundamental concepts and practices involved in software product lines.

### This course is for

software engineers and technical managers who are

- interested in effective reuse strategies
- adopting or using a software product line approach

### Learning objectives

This course provides an overview of the essential technical and management practices needed to succeed with software product lines, as well as guidelines and patterns for applying product line techniques.

Participants learn about product line practice patterns, a roadmap for software product line adoption, and a product line diagnostic method; determine which product line practice patterns best apply to their organizations; and form a path to software product line adoption.

### Prerequisites for this course

- experience in designing and developing software-reliant systems
- familiarity with modern software engineering concepts and management practices

### Registration

For registration details, go to [www.sei.cmu.edu/training/p36.cfm](http://www.sei.cmu.edu/training/p36.cfm).

### Please note:

The Software Product Lines course is based on the book *Software Product Lines: Practices and Patterns*. For more information about this book, go to

[www.sei.cmu.edu/library/abstracts/books/0201703327.cfm](http://www.sei.cmu.edu/library/abstracts/books/0201703327.cfm).

This course is also included in the SEI Software Architecture Curriculum.

## ADOPTING SOFTWARE PRODUCT LINES

### Purpose

The goal of this two-day course is for participants to know what is involved in product line adoption and how to plan for it.

### This course is for

- software engineers or technical managers interested in moving to a software product line approach
- anyone responsible for creating and/or managing a software product line adoption effort

### Learning objectives

This course describes a practical, phased, pattern-based approach to planning and orchestrating software product line adoption. It provides in-depth coverage of software product line adoption issues. The course also describes strategies for exploiting other ongoing improvement initiatives, such as SEI Capability Maturity Model® Integration (CMMI®) and Six Sigma, during product line adoption.

Participants learn how to plan a product line adoption path appropriate for their organization, using proven patterns and guidelines.

### Prerequisites for this course

- experience in designing and developing software-reliant systems
- familiarity with modern software engineering concepts
- completion of the Software Product Lines course

### Registration

For registration details, go to [www.sei.cmu.edu/training/p45.cfm](http://www.sei.cmu.edu/training/p45.cfm).

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## DEVELOPING SOFTWARE PRODUCT LINES

### Purpose

The goal of this two-day course is for participants to investigate many of the essential engineering and management practices in a setting that is realistic but forgiving; their mistakes will be valuable learning experiences rather than expensive organizational setbacks.

### This course is for

software engineers and technical managers who are interested in applying software product line engineering in their organizations

### Learning objectives

This course provides hands-on experience in understanding and applying the practice areas needed for software product line mastery.

Using a comprehensive software product line example that includes a complete set of assets and artifacts, participants will work together to carry out many of the management and engineering activities necessary for successful product line practice.

### Prerequisites for this course

- experience in designing, developing, and/or managing software-reliant systems
- familiarity with modern software engineering concepts
- completion of the Software Product Lines course
- understanding of basic software architecture concepts. If desired, participants can gain this understanding by completing the Software Architecture: Principles and Practices course. (For information on this course, go to [www.sei.cmu.edu/training/p35.cfm](http://www.sei.cmu.edu/training/p35.cfm).)

### Registration

For registration details, go to [www.sei.cmu.edu/training/p46.cfm](http://www.sei.cmu.edu/training/p46.cfm).

## PRODUCT LINE TECHNICAL PROBE (PLTP) TEAM TRAINING

### Purpose

This two-day course prepares participants to be team members on a PLTP.

### This course is for

- software engineers and technical managers who will be involved in software product line adoption within an organization
- anyone who wants to use the PLTP to gauge the strengths of and challenges for an organization relative to the adoption of software product lines

### Learning objectives

Through hands-on exercises, participants learn the PLTP process and practice the skills necessary to be a contributing PLTP team member.

### Prerequisites for this course

- experience in designing and developing software-reliant systems
- experience or familiarity with modern software management practices
- experience with developing and/or managing software product lines
- understanding of basic software architecture concepts. If desired, participants can gain this understanding by completing the Software Architecture: Principles and Practices course. (For information on this course, go to [www.sei.cmu.edu/training/p35.cfm](http://www.sei.cmu.edu/training/p35.cfm).)
- completion of the Software Product Lines course
- completion of the Adopting Software Product Lines course
- completion of the Developing Software Product Lines course

### Registration

For registration details, go to [www.sei.cmu.edu/training/p47.cfm](http://www.sei.cmu.edu/training/p47.cfm).

## PLTP LEADER TRAINING

### **Purpose**

This two-day course prepares participants to lead a PLTP.

### **This course is for**

- SEI-trained PLTP team members who want to become PLTP leaders
- SEI-trained PLTP team members who want to conduct SEI-authorized PLTP exercises

### **Learning objectives**

The course involves several exercises so that participants learn the PLTP process from the leader's point of view and practice the social and technical skills necessary to lead a PLTP.

Participants gain an in-depth understanding of product line technical and management practices and a thorough understanding of the PLTP process, and learn the necessary organizational and facilitation skills.

### **Prerequisites for this course**

- completion of the PLTP Team Training course
- signed license agreement for the PLTP question bank

### **Registration**

This is a customer-site-only course. For information, go to [www.sei.cmu.edu/training/p48.cfm](http://www.sei.cmu.edu/training/p48.cfm).



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