

Requirements Engineering Workshop: *Model-Based Requirements Engineering with Use Cases™*

Although Use Cases are among the most popular object modeling techniques for specifying requirements, they are also among the most abused. This interactive modeling workshop shows how to reap the benefits, while avoiding the pitfalls, of visualizing requirements using Use Cases and UML/SysML.

The object modeling techniques for specifying Use Cases originated from work in the 1980's to specify the functional requirements of telecommunication systems. Since that time many methodologists have contributed to refine and broaden this powerful requirements definition technique, making it one of the most popular object modeling techniques currently used. Unfortunately, the refinement and broadening of Use Case modeling techniques have frequently diluted their engineering rigor and effectiveness, since a wide range of text-based and visual modeling techniques are now covered under the rubric "Use Cases." As a result, *Use Case Abuse*, a syndrome of anti-patterns for requirements definition and analysis has become rampant and threatens the success of many projects. If not detected and treated early, this deadly development process syndrome typically results in chronic schedule slippage or project failure.

This interactive modeling workshop explains the principles and best practices for defining Use Case and visual requirements, and shows you how to apply them in a rigorous and efficient manner. It explores both basic and advanced Use Case modeling techniques, and offers a project practicum on the third day for those who want to undertake medium-scale project work in a creative and supervised workshop environment. The workshop shows how UML Use Cases can be defined by text descriptions as well other visual modeling techniques, such as Activity diagrams and Sequence diagrams.

THE PIVOTPOINT TRAINING ADVANTAGE

- **Authored and taught by experts.** All workshops are authored by PivotPoint's founder, Cris Kobryn, an internationally recognized expert in visual modeling languages and model-driven development technologies. (Cris chaired the international standardization teams for UML 1.1, UML 2.0 and SysML 1.0.) In addition, all PivotPoint instructors have 10+ years experience working with Model-Driven Development technologies.
- **Small, intense and interactive.** We limit workshop sizes, usually to a maximum of 12 students. This ensures that students get the individual attention that they need to learn quickly. Also, our workshops are intense and highly interactive with frequent work sessions, so you will learn from other students as well as your instructor.
- **Proven principles and best practices.** Our workshops emphasize proven modeling principles and best practices that will work with all modeling tools that comply with the relevant standards. If you have already chosen a modeling tool, we can integrate optional tool training in your workshop. If you have not yet selected a modeling tool, we can help you select one that best meets your project and team needs.
- **Emphasis on pragmatic problem solving.** Our workshops emphasize the use of modeling technologies to solve tough, practical problems such as those you encounter on your day job. The bigger and more difficult the problem you choose for practice sessions, the more interesting the workshop will be for the students and the instructor.
- **Flexible choice of venue.** Our workshops are available onsite at Client training facilities, which allow us to customize workshops to meet Client project or team needs, or at PivotPoint training facilities.

WHAT WILL YOU LEARN?

The following are the key learning objectives of the workshop:

- What is a Use Case model, and why do we specify requirements with Use Cases?
- How Use Cases can specify the requirements for large, complex systems
- How Use Cases can specify User Interface requirements and system Test Cases
- Practical guidelines for specifying correct, clear, concise and consistent Use Cases
- How to use other UML2/SysML visual modeling techniques to define functional and non-functional requirements
- How to select Use Case tools and Use Case-driven methods
- How to customize Use Cases for your problem domain
- How to learn more about Use Case modeling and visual requirements

WHO SHOULD PARTICIPATE?

Business analysts, software engineers, systems engineers, project managers, and others who want to learn how to improve how they specify and satisfy visual requirements will benefit from this workshop.

PREREQUISITES

Business analysis, systems engineering, or software engineering experience in building large, complex systems.

WORKSHOP AUTHOR & PRIMARY INSTRUCTOR



Cris Kobryn is the CEO and Founder of PivotPoint Technology Corporation, a company that specializes in Model-Driven Engineering Solutions™ for tough business and engineering problems. He is an internationally recognized expert in visual modeling and model-driven development, and has successfully applied these technologies to diverse industries ranging from aerospace-defense and telecom to financial services and manufacturing. Cris has global experience leading high-performance software development teams, and has architected custom applications and commercial products. He formerly held senior technical positions at Telelogic, EDS, MCI Systemhouse, Inference Corporation, and SAIC.

Cris chaired large international teams of vendors and users to specify the Unified Modeling Language (UML) 1.1 and 2.0 standards for software engineering, and the Systems Modeling Language (SysML) for systems engineering. In recognition of Cris's contributions to the UML the Object Management Group (OMG) presented him with its Distinguished Service Award, and in acknowledgement of his contributions to the SysML the International Council on Systems Engineering (INCOSE) presented him with its Outstanding Service Award. Cris is a contributing editor for the *Software and Systems Modeling* journal, and a member of IEEE, INCOSE, ACM, and AAAI.

WORKSHOP SYLLABUS

The workshop syllabus, in a menu form that can be customized to meet your needs, is described at the end of this handout. NOTE: This workshop description and syllabus are subject to revision. Check www.PTCorp.com/training.htm for updates.

WORKSHOP SIZE

The number of workshop students is restricted to maximize interactions with the instructor, especially during modeling lab sessions. Most workshops are restricted to 12 or fewer students. Exceptions must be approved by the instructor.

COST, AVAILABILITY, AND FURTHER INFORMATION

This workshop is available at client sites, PivotPoint instructional facilities, or by web conferencing. Costs depend upon your choice of venue, duration, and the number of students. For further information regarding the contents, availability, and cost of the workshop please email us at workshops@PTCorp.com or call +1-760-728-9747.

WORKSHOP MENU

All workshops include both structured presentations and interactive work sessions to reinforce learning. In addition, workshops can be customized for different project and team requirements.

- **2 day workshop** includes: *Basic Use Cases* and *Intermediate Use Cases*.
- **3 day workshop** includes: *Basic Use Cases*, *Intermediate Use Cases*, and *Project Practicum*.

<p style="text-align: center;">MBRE – BASIC USE CASES [Module# RE101]</p> <p>Introduction</p> <ul style="list-style-type: none"> • Model-Driven Requirements Engineering • Basic concepts • Use Case modeling principles and best practices • Use Case anatomy <p>Modeling Techniques</p> <ul style="list-style-type: none"> • Describing Use Cases with precise natural language • Describing Use Cases with Sequence diagrams (UML2/SysML) • Describing Use Cases with Activity diagrams (UML2/SysML) • Describing Use Cases with Requirement diagrams (SysML only) • Specifying performance requirements with Constraints 	<p>Goals</p> <ul style="list-style-type: none"> • Understand the advantages of a Model-Driven Requirements Engineering approach • Learn the basic concepts and principles for modeling functional requirements with Use Cases • Understand how to specify performance requirements with Constraints • Compare and contrast visual model and text-based descriptions of Use Cases • Understand how to specify a correct, complete, concise, and consistent Use Case model
<p style="text-align: center;">MBRE – INTERMEDIATE USE CASES [Module# RE102]</p> <p>Topics</p> <ul style="list-style-type: none"> • Specifying UI requirements with Use Cases • Specifying Test Cases with Use Cases • Managing large Use Case models • Specifying non-functional requirements • Use Case anti-patterns to avoid • Verifying and validating Use Case models • Customizing Use Cases for your problem domain <p>Modeling Techniques</p> <ul style="list-style-type: none"> • Specifying functional requirements and test cases <ul style="list-style-type: none"> ○ Sequence diagrams (advanced) ○ Activity diagrams (advanced) • Specifying requirements with Requirement diagrams (SysML only) • Advanced text techniques (selected) • Specifying performance requirements as Parametric diagrams (SysML only) 	<p>Goals</p> <ul style="list-style-type: none"> • Learn how to manage large and complex Use Case models • Understand how to specify UI and Test Case requirements with Use Cases • Learn how to verify and validate Use Cases models • Understand how to customize Use Case models for your problem domain
<p style="text-align: center;">MBRE – PROJECT PRACTICUM [Workshop# RE121]</p> <p>The project practicum provides an opportunity to apply Model-Based Requirements Engineering modeling principles and best practices to solve project modeling problems in a creative and supervised workshop environment. The practicum can be used to facilitate:</p> <ul style="list-style-type: none"> • Use Case/Requirements model peer reviews • Use Case/Requirements model revisions and extreme makeovers <p>Students can identify project modeling problems in advance, or Instructor will work with students to identify them.</p>	<p style="text-align: center;">Goals</p> <ul style="list-style-type: none"> • Identify the Use Case/Requirements modeling principles and best practices that are most important to your team and your project • Apply advanced Use Case/Requirements modeling techniques to project problems that you choose