



Advanced CASE Technology & Language Systems

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Advanced *Rhapsody* course 2-4 Days

1. Description

The topics covered in this advanced Rhapsody course allows existing Rhapsody users to extend their knowledge and skills required to run large scale projects effectively. During this training the participants will learn on the framework upon which Rhapsody is build and how to adapt it, how to work in a multi user environment that also reuses legacy code, how to optimize the generated code and how to test the application using animation, GUI's ATG and test conductor and other subjects.

During this intensive course and workshop the participants will actively use Rhapsody and the various add on tools in order to practice the learned subjects.

2. Goals

The goals of this training are to strengthen the knowledge of Rhapsody and its add on tools in order to render system development even more productive and professional. The students will learn among other:

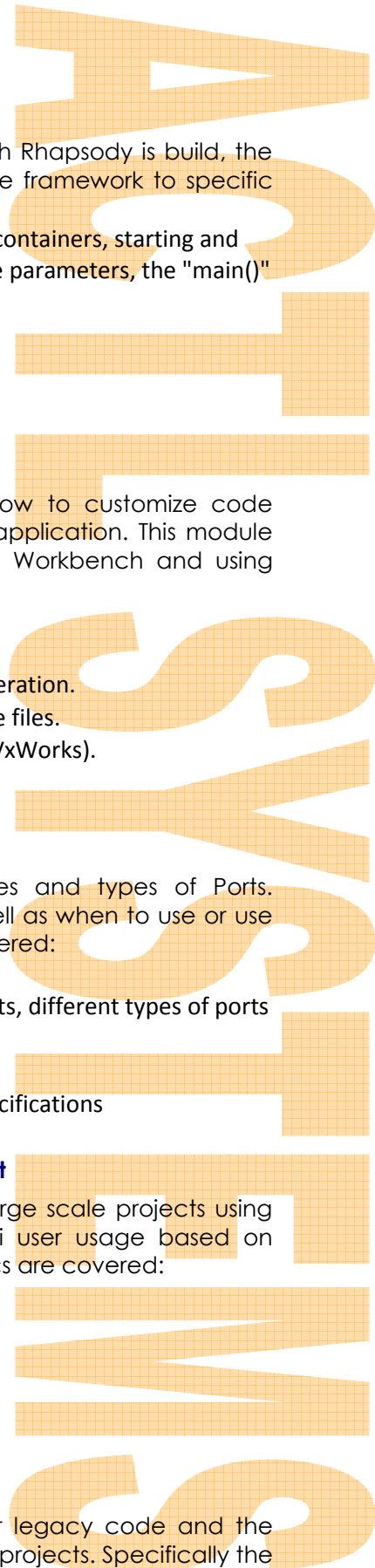
- The key concepts of the Rhapsody framework and how to use it selectively.
- How to optimize code generation in order to reduce the footprint of the application.
- How to use Rhapsody in a collaborative environment that also re-uses legacy code and links to external documents (configuration management, reverse engineering and gateway).
- How to effectively use the various testing capabilities of Rhapsody including Animation, Tracing, Webify, Source code level debugging, Automatic Test Generation and Test Conductor.

3. Participants and Prerequisites

The course is intended for experienced Rhapsody users that wish to learn the bits and bytes of Rhapsody. Novice users without experience in Rhapsody and UML can not participate in this tool training!



Modules



1. The Rhapsody Framework

In this module the participants learn the foundation upon which Rhapsody is build, the various key classes and framework parts and how to adapt the framework to specific needs. Specifically the following topics are covered:

- Internals, behavior, memory management, memory models, STL\containers, starting and ending an application, processes and threads, using command line parameters, the "main()" function.
- Understanding the OXF
- How to use the Interrupt Driven Framework.
- How to use the Triggered Operations instead of the Events.

2. Code generation and optimization

In this module the participants learn the various ways on how to customize code generation in order to reduce the footprint of the generated application. This module also covers subjects such as integration with VS, Eclipse and Workbench and using external code. Specifically the following topics are covered:

- How to use Static Architecture and general code optimization
- How to use the Standard Template Library
- How to use Standard Operations and Stereotype Based Code Generation.
- Building, Code generation, setting the location of the created code files.
- Integration of Rhapsody with VS, Eclipse + CTD and Work Bench (VxWorks).
- Builders – the problems and solutions of it being static.

3. Effective usage of Ports

In this module the participants will learn the various usages and types of Ports. Participants will understand the implications of using ports as well as when to use or use the alternatives to ports. Specifically the following topics are covered:

- Recap
- When to use ports, implications of ports, alternatives to using ports, different types of ports
- Dynamic connection of ports.
- Port multiplicity
- Data Flow - overview, event parameters, flow ports, flow port specifications

4. Multi user support, large projects and configuration management

In this module the participants learn how to use rhapsody in large scale projects using various model repartition techniques (components) and multi user usage based on configuration management tools. Specifically the following topics are covered:

- Components (of UML)
- Collaborative development – how to work well as a team.
- Configuration Management
- Recommended project structure
- How to do Component Base Development

5. Reverse Engineering

In this module the participants learn how to reverse engineer legacy code and the various strategies on how to integrate legacy code in Rhapsody projects. Specifically the



following topics are covered:

- Reverse Engineering
- Round Trip – code\model centric
- Using external code (legacy)

6. The Rhapsody Gateway

In this module the participants learn how to link existing requirements documents to into Rhapsody, especially on how to link requirements to the elements that realize them in order to support traceability.

7. Advanced Animation features

In this module the participants learn how use the various animation capabilities of Rhapsody in order to debug the model. The participants will learn how to use the Webify feature and how o link graphical user interface that are either HTML based or application based into Rhapsody animation. Specifically the following topics are covered:

- Building a GUI and integrating it with your Rhapsody model -> Webify
- State machines – understanding them and how to debug them.

8. Tracing

In this module the participants learn how to use and configure the tracing capabilities of Rhapsody in order to ease debugging.

9. Source code level debugging

In this module the participants learn how to debug and animate at the same time an application using an IDE in order to perform source code level debugging along with model based debugging using animation or trace.

10. Application Testing

In this module the participants learn what Rhapsody has to offer in the domain of uit and system testing and how to automatically generate test cases and measure test coverage using the Automatic Test Generation (ATG) add-on of Rhapsody. The generated test cases can then be exported into the Test Conductor tool that supports automatic test case execution that eases regression testing. Specifically the following topics are covered:

- Unit Test – what does Rhapsody have to offer on this issue
- Introduction to Test Conductor & ATG (a full day)

11. Additional topics

In addition to the topics mentioned above the following topics can be added.

- Properties (including *.prp files)
- Rhapsody API
 - Creating and using wizards.
 - Using VBA to add new functionality to Rhapsody and even populate the model
- Profiles
- Producing documentation (including requirements in the code)
- Introduction to Configuration Management and diff-merge
- Design Patters (built-in and others)
 - Development templates and Design Patterns - how to create and use them.

**The duration of the course (between 2 to 4 days) depends on the topics.
Please contact us to scope the course and define its actual duration.**