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## **Training on OpenVera - basic + advanced + methodology (RVM)**

**Duration: 4** days

- OpenVera Basics – 2 days
- Advanced Vera + RVM - 2 days

### **Comprehensive Functional Verification Using OpenVera & RVM**

## **Table of Contents**

### **Introduction**

- Introduction to OpenVera
- Course Objective
- What's and what's not covered

### **OpenVera Basics**

- Data types
- Program Block
- Procedural constructs
- Task and functions
- Arrays

### **OpenVera Interface & Virtual Port**

- Interfacing with DUT
- Sample and Hold spec
- Modeling asynchronous interface
- Void Drives



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- Virtual Ports
- Port Bind

### OpenVera IPC

- Threads
- Semaphores
- Mailbox
- Synchronization of threads

### Class and OOP

- Class
- Inheritance
- Polymorphism

### Random Generation and constraints

- Random vs Direct testing
- Need for random testing
  - Constraints in OV
  - Class constraint
  - Randomize success / fail
  - Inheritance
  - Randomize.with()
  - Distribution
  - Function calls in constraints
  - Array constraints

### Functional Coverage

- Motivation
- Introduction
- Types of coverage



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- Functional coverage process
- Coverage group
- Concept of binning
- Cross
- Sampling event

## **OpenVera Advanced Topics**

### Predefined procedures

- Class methods (advanced)
- String methods
- File IO
- System interface routines (get\_env etc.)
- Random generators, seed control
- Error handling
- Coverage API

## **RVM - Get Up To Speed (GUTS)**

### Introduction to RVM

- Motivation
- Brief background history & next generation evolutions of RVM
- Key features of RVM

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### Transaction Based Verification (TBV)

- Definition
- Components of a TBV environment

### Modeling Transactions & channel

- What makes a transaction
- Rand qualifier, data type usage guidelines
- Methods of a rvm\_data object
- What's a channel?
- Using rvm\_channel

### Modeling Transactors

- What's a transactor
- Types of transactor
- Predefined methods of rvm\_xactor
- Using channels with rvm\_xactor

### Effective Stimulus generation using Atomic generator

- Considerations for designing a robust generator
- Using rvm\_atomic\_gen macro

### RVM log - Unified messaging

- Motivation
- rvm\_log base class
- Macros for messaging
- Verbosity control, format control



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### RVM Env - putting it all together

- Using rvm\_env base class
- The 9-step test flow
- Writing tests using rvm\_env

## **Advanced RVM**

### Scenario Generator

- Background on Scenarios, motivation
- Using rvm\_scenario\_gen macro
- Controlling Scenario generator

### Callbacks

- Motivation
- 4-step callback approach