

# Preface

With the alarming number of first pass silicon functional failures, it has become necessary for all levels of engineering companies to understand the verification process. This book is organized to address all verification stakeholders at all levels of the engineering organization. The book is targeted at three somewhat distinct audiences:

- *Executives*. The people with their jobs on the line for increasing shareholder value.
- *Project, design, and verification managers*. The people responsible for making sure each design goes out on time and perfect!
- *Verification and design engineers*. The innovators responsible for making sure that the project actually succeeds.

The book is divided into three parts corresponding to its three audiences. The level of technical depth increases as the book proceeds.

*Part I* gives an overview of the functional verification process. It also includes descriptions of the tools that are used in this flow and the people that enable it all. After outlining functional verification, Part I describes how the proper application of metric-driven techniques can enable more productive, more predictable and higher quality verification projects. Part I is targeted at the executive. It is designed to enable executives to ask appropriate educated questions to accurately measure and control the flow of a project.

*Part I* also holds value for project managers and verification engineers. It provides an overall view of the entire chip design process from a verification perspective. The chapters on a typical verification project and the overview of verification technologies will be of use to entry level verification engineers as well. This part of the book also provides a unique viewpoint on why management is asking for process data and how that data might be used.

*Part II* describes the various process flows used in verification. It delves into how these flows can be automated, and what metrics can be measured to accurately gauge the progress of each process. Part II is targeted at design and verification project managers. The emphasis is on how to use metrics within the context of standardized processes to react effectively to bumps in the project's execution.

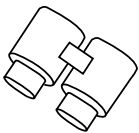
*Part III's* audience is the design and verification engineering team. It focuses on the actual verification processes to be implemented and executed. This section of the book is divided with respect to the various verification technologies. Each chapter on a given technology is further subdivided into sections on how to plan effectively, and how to track metrics to closure.

Entire books have been written on implementing verification using the technologies discussed in Part III. We will not reiterate what those excellent volumes have already stated, nor do we intend to reinvent the wheel (yet, we are engineers after all). Implementation details will be discussed when they will make the metric-driven techniques discussed more effective.

*Part IV* contains various case studies and commentaries from experts in the metric-driven verification field.

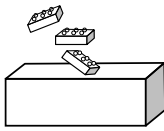
The various parts of the book can also be described as a progression of process abstractions. The layers of abstractions are "Observational Processes," "Container Processes," and "Implementation Processes."

### **Observational Processes**



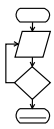
*Part I* looks at the verification process from an observational point of view. The various aspects of a project that should be observed are described to the reader along with informal suggestions about how to strategically manage a verification project based on these observations.

### Container Processes



*Part II* looks at processes that are necessary regardless of the verification technology you are using; processes such as regression management, revision control, and debug. *Part II* describes how to implement these processes using metric-driven methodologies. It also discusses the inter-relations of these processes.

### Implementation Processes



*Part III* describes each of the verification technologies and explores how a metric-driven methodology can be used to enhance the productivity, predictability, and quality offered by each of these technologies.

Finally, *Part IV* leaves the world of abstraction altogether and presents several concrete case studies that illustrate metric-driven processes in action. In addition to these case studies are several commentaries offered by industry experts in metric-driven methodologies.

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Metric Driven Design Verification

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Success

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