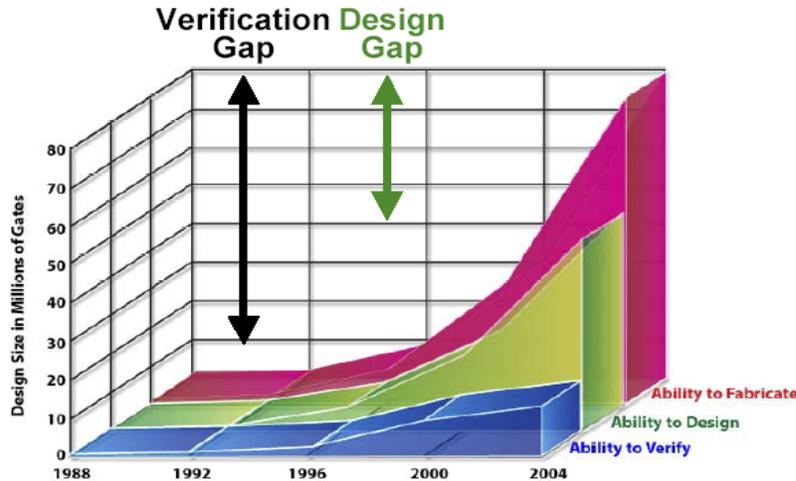


Mentor Consulting: Verification Planning and Management Consulting Module

D A T A S H E E T



Source: Collett International 2004 FV Survey

The gap between our ability to design and our ability to verify is growing fast. Mentor Consulting helps its clients to minimize the design/verification gap through the Verification Planning and Management Consulting Module and other services that increase verification performance.

Consulting Module Features

- What makes a good verification plan?
- How do you develop a good verification strategy?
- What portions of a design must be verified, should be verified, and could be omitted safely from the verification plan?
- How do you know when you are done?
- What tools and infrastructure are needed to implement the plan?
- How do you manage the overall verification plan?
- How do you know how well you have done?

Reducing the Design/Verification Gap

Are the questions above familiar? Effective verification planning and techniques for managing verification, when coupled with best-in-class verification tools, have been proven to increase verification performance. The Verification Planning and Management (VP&M) Consulting Module is an opportunity for you to gain access to industry-proven techniques and tools to improve the quality, efficiency and determinism of your verification project.

The VP & M Consulting Module will teach you how to apply rigor and structure to the verification planning process. Modules are included to address each of the above areas of concern. Through this process you will maximize the probability of successful verification by learning how to capture and manage requirements, and then leverage them to architect and implement a robust verification environment (e.g., correctness and coverage models). You will also learn how to collect and interpret coverage data and various other metrics to successfully guide the verification to completion.

Is verification a competitive differentiator for your company?

It is commonly understood that the first product to market in a given segment receives a disproportionate share of revenue; this is particularly true in consumer markets. Conversely, products can lose up to 34% of their revenue potential if they are just 3 months late to market. Given that verification is often in the critical path to market, the quality of your verification plan will have a direct impact on your product's success. Having the ability to transform the typically open-ended verification process into a predictable and repeatable endeavor has become a competitive differentiator. The VP & M Consulting Module provides management and engineering with proven techniques to build deterministic schedules and cost models. Furthermore, the consulting module will provide you with the techniques needed to cleanly execute your verification plan, and will show you how to monitor your verification performance at every stage of the project.

As the following graphic shows, only about a third of today's designs are a first pass success, while some require four or more spins. In fact, that the industry average is 2.2 spins. Why do some have first pass success while others struggle to get it right after four spins? This question is especially intriguing given that most designs have similar levels of complexity and engineers have access to the same

verification tools and methodologies. The answer lies in a design team's ability to construct a plan that coordinates tools, methodologies, and engineering resources to verify the design requirements in an efficient, high quality manner.



Source: Collett International Research

The difference between achieving first-pass success and suffering through multiple spins is highly dependent upon the quality of the verification plan. In the VP & M consulting module you will learn how to apply the right level of rigor to maximize the probability of first-pass success. Starting with the design requirements (e.g. specification), the VP & M consulting module will walk you step-by-step through the process of designing an appropriate correctness and coverage model as well as stimulus generation.

Do the people around you really understand what it takes to verify your design properly?

There is a divergence between silicon capacity and our ability to design and verify that silicon. Leading-edge fab technology can print over 80M gates on a die, but modern logic design paradigms limit even the largest SOCs to approximately 50M gates. But even more striking is that today's tools, methodologies and business constraints provide most design teams with the ability to verify only 15-20M of those gates!

With hundreds of bugs to find in today's highly complex designs, with multiple verification requirements to manage and review, with thousands of lines of test-bench code to write (and debug), solid planning and management becomes critical to your success. To effectively manage these tasks, you must have a plan with clearly stated, unambiguous deliverables, agreed-upon roles and responsibilities for the entire team, and a team-wide assignment of priorities for tasks, manpower, and other resources.

With ever-increasing levels of complexity, it becomes more difficult and time-consuming for verification teams to ensure the design is actually doing what was intended by the specification. You need to extract from your design requirements documents how the features of your design can be stimulated and exercised, both within and beyond

normally expected boundaries. The consulting module will show you how to extract from these design documents the test plans your verification team will need to utilize in order to ensure the design being tested does what is expected, and, equally important, doesn't do things it should not do. Once you have buy-in from the team, you can then implement the plan and manage the team to that plan, giving you the confidence you need as you make the decision to send the design to fab.

Do you want to avoid getting blamed for missed schedules?

Moore's Law states that the number of transistors in an integrated circuit doubles every 2 years. The corresponding assumption that chip complexity would likewise double every 2 years has largely held true. As a result, the industry has now reached a point where ad hoc verification methodologies simply don't get the job done. The only way to successfully execute with deterministic verification schedules and costs on today's complex designs is to invest in a proven planning process.

The VP & M consulting module will not only help you manage to your verification plan, but allow you to deterministically evaluate the risk associated with unforeseen changes to the plan. It will help you conclude, by the use of automated tools, when the design has been verified to the fullest extent possible. You will learn how to capture and analyze the results from different verification resources, using automated tools which can analyze the results of your test runs, thereby eliminating the need to manually pore over each output file. By using these tools, you can measure the risk involved when you must change your verification plans due to last minute design changes, unexpected bugs with far-reaching effects, or perhaps newly identified areas which need verification that were omitted from the original verification plan. Changes will occur – take control of them, rather than having them take control of your schedule.

About Mentor Consulting

Mentor Consulting provides customers with excellence and expertise in electronic design automation infrastructure and methodology. It is the only service partner in the industry that invests in the transfer of knowledge to its customers to ensure a smooth deployment and integration of new tools and methods. Mentor Consulting solutions for silicon yield enhancement, verification, cabling, and data management are engaged worldwide by forward-looking electronics companies to optimize design productivity and advance adoption of the latest industry design best practices. For more information, contact mentor_consulting@mentor.com or visit www.mentor.com/consulting.

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