

## Chip Design - Verification Assessments

A large company had a break-through idea for a lead project for their division, they assembled a top design team, great architects and started putting together the design. While the design ended on-time, the verification ballooned out of control. Some of the components they had planned to reuse ended up coming later than expected, and the team was not prepared for the intense testing and debug effort. The time lag appeared to be around three months, but nobody was really sure. First order bugs were still popping up two weeks after management declared a code-freeze. The tape-out criteria was unclear to several of the engineers who shrugged their shoulders hopefully when asked if they thought the design would work. Without reliable objective data, the project manager decided to define his own set of criteria for tape-out. In a meeting with several of the project team they decided they had to tape-out to avoid missing the market opportunity and to retain their customers' confidence.

A small company had a great idea for a new SoC design. They hired a small team of top designers and created a working prototype on an FPGA. To bring it to production quality the company needed an additional round of funding. After receiving the additional funding things went down-hill. The team was supposed to provide production silicon within six months; instead it provided silicon dead-on-arrival eight months later. The next round of silicon, three months later, was infinitely better but still not production worthy. Some of the basic features in the silicon had bugs, and potential customers informed the company not to bother them until they had "working silicon". The company was now out of money, and five months late... care to invest again?

With today's projects, the prevalent lack of visibility into the verification process along with the cost of failure creates a need for deep evaluation of the verification effort. Ace Verification LTD. provides Verification Assessments for companies eager to know if their silicon plan will achieve the desired results. Following a two day session consisting of both team and individual one on one meetings; we produce a complete report, including an assessment of verification health, probability of meeting schedule, and provide a thorough list of tailored recommendations for how to proceed.

In order to provide an objective view we rate the silicon-program in eight categories based on similar programs which have been executed successfully in the industry.

The areas covered in the assessment are the following:

- View of verification – Does the project put ample emphasis on verification in both planning and all stages of the execution.
- Resources – Is the verification effort adequately staffed, vis-à-vis the experience of the engineers, amount of work, and time-frame.
- Verification Goals – Has the management defined both the short-term and long-term verification goals. Are these goals aligned with the needs of the project and have they been adequately communicated? Are these goals measurable? Are they achievable within the constraints of the project?
- Planning – Has the verification been adequately planned and specified in detail? Is the verification plan sufficient to reach the project goals?
- Progress measurement – Is there an objective measure of progress? Is coverage (functional, assertion, code) being measured appropriately? Can the team highlight problems at a level of granularity which allow them to be addressed quickly?

- Transparency – Is management getting a clear and objective picture of progress? Can they map out the expected convergence and consistently meet the intermediate targets? Are the indicators sufficient to be able to identify and solve problem as they arise?
- Coordination between efforts – Does the team use different types of verification (block, system, FPGA) in the most effective way? Are these efforts complementary and fulfilling the complete needs of the project?
- Short-term/long term view – Is the effort being conducted to allow the next iteration to meet its goal?

While at first glance many project managers tend to shrug these things off and assume these are getting done, these categories are the key areas that most of the industry's projects have difficulty. Projects with high ratings in the fields above will finish on-time and with a high degree of quality, projects with low marks will finish late and unknown quality.

The process:

Prior to an assessment, we have a one-hour (free/ no commitment) consultation with the company requesting the assessment. In the meeting we understand the specifics required from the assessment, and plan specific dates for the upcoming session. This meeting is generally done via conference call.

Following the meeting, a formal purchase of the assessment is made.

The assessment is performed on-site by one or more Ace Verification leaders, in an intensive two day session. During the session the design/verification team and project management should be available. Strict confidentiality is kept to allow the team members to express their concerns in the most open fashion.

The complete report will be made available within five working days from assessment completion. A follow up session will be made to clarify and answer any questions.

In order to maintain objectivity and professionalism during an assessment, Ace Verification will not solicit work, or sell verification components or services to an assessed project for at least 6 months following an assessment.

About Ace Verification's CTO:

Akiva Michelson has specialized in management of functional verification of HDL designs for the past eight years. During that time, he developed breakthrough methods for design and execution of verification projects with high quality, in a timely and predictable schedule. His experience leading verification efforts in Digital Semiconductor (1996-1998) and his role as both technical leader and manager in several formidable projects in Intel Corporation (1998-2004) has allowed him to design, collect and improve numerous verification patterns which have been used by a vast array of designs around the world. In 2004 Akiva joined Ace Verification where he employs advanced methods and his experience to drive excellence across the industry.



Sample Report Highlights:

## Sample executive summary

Category	Highlights
Emphasis	Project manager is firmly behind the verification effort, yet the organization chart is causing conflict of interest between the verification and design effort
Goal Definition	The MAC goal is defined well and the team is firmly behind the goal, however it is not aligned with the unclear goals stated by the Phy team.
Resources	The teams do not have sufficient resources to complete on time. The resources on loan do not have the necessary skill-set to help the progress
Planning	Planning has not been done beyond the end of the quarter
Tracking	Weekly tracking provides on the spot indication of potential slow-downs and problems as they arise, room for improvement on the reporting by the integration team.
Transparency	Despite the tracking, the lack of objective measures is worrying. The project manager hopes the "impression" reports he's hearing are correct. Designers do not have a broad view of the overall effort. The customer is not privy to any information.
Coordination	The FPGA, Block-level and Simulation efforts are coordinated well to maximize the benefits
Long-term view	The team is mostly focused on short term goals, this may cause significant overhead in future iterations. The project architect is keeping watch to avoid things getting too <i>quick and dirty</i> .

10 reasons to use Ace Verification for your verification assessments:

1. Ace Verification's staff has led several silicon projects to superior completion
2. When it comes to identifying the gaps, the experience at Ace Verification hits the nail right on the head
3. High return on investment
4. Self- Rating rarely provides an accurate picture
5. Prior to the session, design groups, without fail, do a lot of unsolicited, yet highly productive, work in organizing their verification effort.
6. Just having the session provides a stimulating opportunity to deepen the understanding of the verification effort as well as yielding action items
7. The report provides an objective picture of where you are and how likely you are to meet your goals
8. The report will provide several invaluable tips on how to improve the process
9. We're the first verification company providing this service
10. Before you put millions into another iteration, at least find out if it's going to work

Ace Verification is the leading company in Verification planning and methodology. We seek to find and proliferate best-known-methods across the industry.

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