



Verification In A Global Design Community

Paul Tobin
Senior Verification Manager
AMD, Boxborough, MA

Verification Challenges Across Sites

Chip Design Industry Is Now Global!

- Work is done electronically, not over the cube wall or at the coffee station
- This is increasingly true even within corporations

“Integrate or be integrated”

- Integration levels are increasing relative to “new design”
Improve your skill at specifying integration requirements
- True at Corporate level
- True at Design level



What's Inefficient About The Model?

Time Zone Differences Stink

- It's always lunchtime for somebody
- Or worse, bedtime

E-mail Overload Stinks

- Too many words, not enough pictures, no body language

Videoconferencing Stinks

- More time setting up equipment than talking

Documentation suffers, TWiki Stinks

- "I'll just create a TWiki page" → data not organized

Methods diverge as $f(\#sites, \#projects)$

- Testbench language, coverage, assertion, formal techniques, planning techniques, randomization, source control, model build, regression, coding standards, status reporting, headcount management, ...



What's Efficient?

Documentation is forced to improve (starts with you!)

- Focus on content quality, use common outlines

Questions have to be asked earlier (starts with you!)

- Don't wait, don't assume
- Write down questions, AND ANSWERS

More people are available, creative ideas abound

- 80% of what you need is available *somewhere!*
- But will it take longer to find than simply do again? Resist the urge to reinvent



Benefiting From The Trend

Strike the Balance

- Consolidation yes, centralization no
- Coordination yes, dictatorship no
- Invention everywhere yes, NIH no

Get Executive Support, forge the right alliance

- Collaboration with peer groups takes some effort, but the return can be significant
- Describe successes, challenges, and mistakes
- Spread the cost of experimentation



AMD's Verification COE

Center Of Expertise Coordinates Processor Verification

Multisite Organization

- Staff from Boston, Austin, Bangalore, Dresden, Sunnyvale, Fort Collins
- Responsible for standardizing methodologies
- Delivers all runtime infrastructure
- Delivers some, not all, top level verification components
- Evaluates new tools and methods

Partners with Project Teams

- Deployment of new techniques
- Support for global tools and infrastructure
- Coordinate major methodology changes
- Jointly measure our success in terms of resource efficiency, improved schedules, and increasingly higher quality



Striking The Balance

Continuous Methodology Improvement

- Projects can, and must, innovate with new ideas
- Verification COE innovates as well, and helps with communication across teams
- Team at large agrees to regularly review new techniques, adopting those that are better, abandoning those that aren't

Refreshing The Team

- Engineers can rotate through the COE and Projects
- COE work gets carried back to Projects
- New ideas get infused into the COE
- Requires commitment from the verification managers



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