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Running Late? Skipping that Documentation will Cost your Time to Market.

The enforcement of completing
key documentation will be
described as a means for keeping
your time to market on plan.

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Introduction

Requiring a proper set of project documentation being in place for your project reduces your time to market. This may already be your first order assumption, although at times you wish to bend the rules for the sake of schedule. I will build a case here that will strengthen the need to stay firm with your documentation requirements in order to keep your project and time to market goals on track.

Something for you to consider is not that the documentation is read by the team, that keeps your schedules on track, just the fact that it was formally created in the first place is the larger gain. The development of documentation forces the closure on the full teams thoughts as to how they will work together. That's where the win is for your schedules and time to market.

“Documentation is not only the design specification. It's anything that improves how the team executes to their joint goals.”

Documentation Myths

Our Tapeout is Going to be Late if we need to Complete the Documentation.

This one is a classic example if your managing your project with a focus on tapeout dates instead of release to production. It's easy to get caught up in this when the pressure is on, however, there is usually a price you end up paying in your release to production date. Cutting corners to make a near term milestone will usually end up costing you more time in a later milestone.

Documentation is typically seen as the output of a project as opposed to being part of the project development itself, which is why it is viewed as "extra" work that can be cut out, or greatly reduced. If we do not complete all of the documentation we can pull in our schedule, right? **Wrong!** If the team is forced to skip a documentation step for the sake of a tapeout date, you have just opened the door for a surprise downstream. The decision to do so obviously needs to be an additional part of your risk assessment and should not be taken lightly.

Nobody Ever Reads this Stuff Anyway

The majority of the gain from documentation is due to the focused effort in creating it. The thought process that an individual or a team goes through is what you are fostering, and without requiring a written paper trail it's not going to happen. If you want the team focused on the who, what, where, when and how then they need the time pull it together in a document in order to kill the surprises downstream.

"If it's not written down it has not been
thought through."

Documentation as a Process Guide

The Documentation is not Current

If you don't have current documentation in place then you do not have a current process in place. Staying current takes work but the price you pay in not doing so is that the team is no longer in sync and they are setup for a downstream surprise. Make it current and make it right!

Documentation Benefits for your Development Process

If you view documentation as a necessary step to facilitate solidifying how the team will work together, communicate with each other and deliver their items to the project, it becomes an essential ingredient to schedule success. Viewing the creation of documentation as a step in the development of your design process creates a much different view of its value to the project.

If documentation is not required to be in place as a gate to follow on steps of your product development, how can the team possibly be following a consistent, agreed upon process? If you do not require process documentation for your product development effort then you do not have a development process! And if you do not have a process in place there **will** be surprises and you will end up repeating steps that were not part of the plan.

Documentation Drives the Development of your Design Process

The creation of key documentation for your project actually drives development of the design process that will guide your team to

successful completion. If you are unable to create the document describing your process, then the team has not mapped out all the details of the process.

Your process related document will not work if an individual creates it and then the team is instructed to follow it. It will be rejected as more of that useless documentation and the team will head off in multiple paths, with no idea of the surprise that awaits them when these paths need to converge. To develop a successful design process and document it the team must collaborate and reach consensus on how they will be working together. This must be done for every new product launch.

Types of Documents as Process Containers

“Process Container” type documents are those that are used to capture the details of your design process. If done well they should cover the what, how, who, when and why of your project execution. These will be the key documents in driving how the team works together. This needs to be jointly defined and agreed upon by everyone on the project, which includes the non-design members. For examples of process container documents please review the “*Documenting your Process*” section in the document titled “*IC Design Process: It’s not just your design flow*”. This document is available under papers on our www.jorvigconsulting.com website.

Documentation as a Communication Tool

Communication is Key!

The major reason any project is delayed or does not meet expectations is due to the failure to communicate. In my opinion there is no other reason why a project fails. In a solid project plan there is not any room for perception or interpretation. The team must be solidly aligned on what their expectations and deliverables are. The level of alignment necessary can only be gained through solid, ongoing communication. Therefore, “**Communication is Key**” to a projects success.

Documentation benefits for Project Communication

In addition to documentation that guides your design process as we discussed earlier there is also a set of documents required to ensure complete alignment of the full project team. By full project team I mean design, test, product, marketing, product line and the customer. It is essential that everyone has the same expectations. Leave nothing to perception or you will here phrases that start with “I thought...”, “Didn’t we...”, “Why doesn’t...”, “How come...”, “What happened...”. This occurs just as you think your on the verge of moving towards the steps for production release. Not a good time for these types of phrases. If you run into this, it’s time to assess how you handled communication with the full team.

Key Documentation for Communicating

In many cases the product spec is assumed to be the document that communicates all of the expectations. This usually suffices for the electrical details but usually does not cover the physical aspects of the die well. Here’s a list of items that you should consider documenting:

- Pad pitch
- Max die/block size limitations or aspect ratios
- Specific changes from a previous design, assuming your working on a derivative.
- Process layers to be used. Just because it's in your design kit you should not assume it's available.
- Change management. How do project changes come in and how do you formalize their acceptance or rejection?
- Stimulus generation and coverage.
- ESD Strategy.
- 1st Silicon evaluation plan. Must include:
 - Full Temp
 - ESD/Latchup for fast track results
 - In system results
- Pad out plan.

Summary

In summary this paper has taken you through the benefits of developing and enforcing completion of key documentation for your project. The correct documentation and the requirement of it being completed will keep your project to plan through ensuring solid communication. If you fail to communicate you will have surprises and your project will slip. Documentation breeds communication.

“Communication is Key!”
