

DESIGN GUIDE

WEB BASED DESIGN GUIDE FEATURE REQUIREMENTS

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1 OVERVIEW

The purpose of this document is to describe the features of an online design process workflow management system for the IC design community. The systems intent is to enhance the real time communication of the design process and design requirements. The desired result is improved design collaboration and the integration of design requirements and deliverables with entire product development organization. Most organizations have a web-based tool such as this in place to guide the overall business process and a few have driven its capabilities down into the design process details.

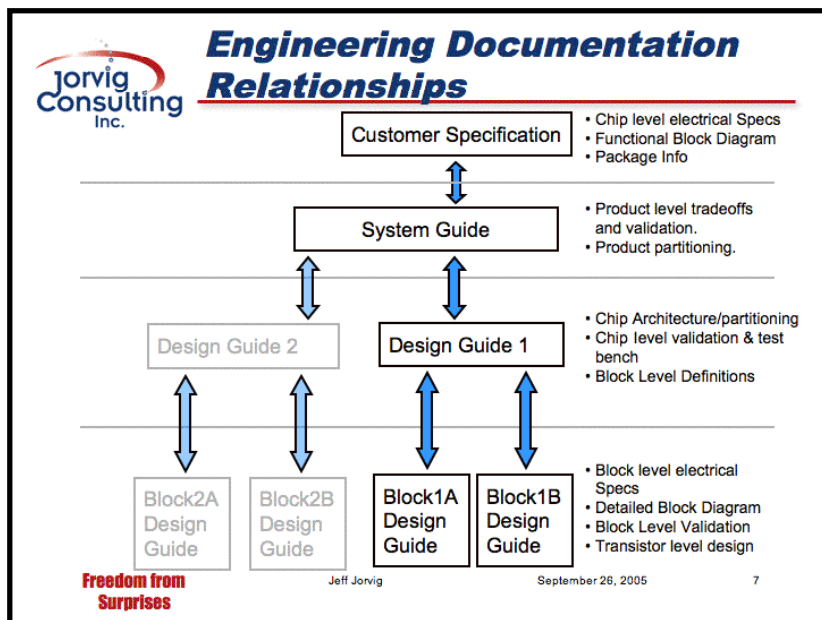
In the first phase of activity it is necessary to understand the features required for a system such as this to establish the basic framework, or platform upon which to build the system. There are many platform choices available in online workflow packages and this document will be used to guide the decision as to which platform(s) would best meet the IC design community's needs.

1.1 SYNOPSIS

This document acts as a feature proposal for a web based design guide. It will cover the same baseline role as our design guide document concept (see section 1.2) with the added capabilities as identified below:

- Web based document allowing access, entry and reports from anywhere within the network.
- Database capabilities for electronic manipulation of design guide information.
- Essentially, the system becomes an online version of our design guide concept.
- Better suited than the existing document guide template for multiple site and/or large design teams due to the online accessibility.

1.2 DESIGN GUIDE CONCEPT



The design guide is best described as the merging of the design specification, the design checklist, the design flow and the design process. Design guides are created in a template form to pilot your design process through the various phases from initial concept to production release. Any information or directives that define how the design team is to operate as the design work progresses should be part of the design guide. The deliverables out of the design activities are also captured in the guide, creating an ideal single documentation package for the completed design work. The finalized guide is also suitable for marketing the design, when future

reuse is also an objective. Each design would start with one of these guide templates and fill it out

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sequential sections as the design progresses. At the finish of the design work the completed design guide is used for the design review, since all of the key information and design strategies are contained within it.

A separate guide template is developed for each level of hierarchy such as the system, the chip and the block/module level activities of a project. The diagram above represents a typical hierarchy of design guides that would exist in a multi-chip system. Ideally, the goal is to refrain from having the same information in more than one guide, creating a true hierarchy of documentation. Information is referenced through the hierarchy instead of being duplicated.

Key Benefits of the Design Guide:

- Guides the design process tasks that have been predetermined as best practices.
- Design centric documents that include design deliverables as well as inputs/outputs to/from design.
- Hierarchical Information transfer from higher to lower levels of abstraction.
- Addresses architecture tradeoffs and partitioning and transfer of requirements to the lower level design activities.
- Aligns design with the business product development process.
- Repository for key deliverables back to the project.
- Allows the crisp requirement transfer that is essential for projects that span multiple locations.
- Addresses information requirements beyond schematics, simulations and layout that are to be managed by design.
- Thorough enough to drive the design reviews for each level of abstraction.
- Enable reuse by covering all the necessary documentation requirements for a 3rd party. It will minimize the “fear” of reuse.

1.2.1 OTHER DESIGN GUIDE RESOURCES

Other resources to assist in clarification of the design guide concept may be found below.

http://jorvigconsulting.com/promotions/design_guides.pdf

http://jorvigconsulting.com/promotions/Analog_Guide.html

2 BASELINE FEATURES

This section covers the baseline feature capabilities for a web based design guide system. Proper requirements closure is essential to ensure the proper supporting workflow framework package is selected for web form development.

2.1 WEB HOSTING

Since the forms will be web type documents there will need to integrate with a web server service to host the pages, data entry and database. The following hosting platforms were chosen primarily to allow the largest availability of workflow development applications.

- Web Server –
 - Microsoft IIS 5 or 6
 - Apache in Linux or Solaris environment
- asp.net framework 1.1 or 2.0
- Prefer that the deployment requires no licensing. Only the development platform would be licensed. I.e the completed form release package can be ported to any host, free of licensing fees.

2.2 FORMS DATABASE

- Must store all the web guide form entry data. Primarily data table specification type information.
- Web pages can reference previously entered form data.
- Hardcopy capabilities for formatting and printing any one of the guides in a projects hierarchy.
- PDF capabilities to match the hardcopy formatting.
- Database product TBD. No strong opinion on type other than it will only need to be accessible by the guide forms themselves. The list of products and types is large. The selection will be driven by the capabilities of a given framework package and it's availability on the chosen web server platform.

2.3 DESIGN SIMULATION AND CHARACTERIZATION SUPPORT

There will not be any direct provision for automatically pulling the simulation inputs/outputs into the forms. There will be provisions within the forms for retaining key simulation inputs such as temp, voltage, offset etc. There will also be provisions to support key simulation and characterization results through table entries within the forms.

By virtue of the specifications and key simulation outputs being within the forms there will be capabilities to support validation matrices to highlight any differences between requirements, simulation and silicon characterization.

2.4 INTEGRATION INTO THE NEXT LEVEL BUSINESS PROCESS

There will not be any direct provisions for directly supporting database sharing from the design process (guides) to the business process. Most organizations today already have a web-based system in place for their business process. Most are web based and could easily reference the form pages directly, as necessary to provide the required documentation back to the business process.

3 GUIDE WEB ENTRY FORMS

The Web forms are synonymous with the major sections of each of the hierarchical design guides. There will be one form for each major section of a given guide type.

3.1 GUIDE FORM CONTENT

3.1.1 GUIDE TYPES

- System – One per project
- Chip – Maximum of three per system
- Analog Block – Unlimited number per chip
- Digital Block – Unlimited number per chip

3.1.2 SYSTEM GUIDE FORMS

- Opportunity Assessment
- System partitioning
- ??

3.1.3 CHIP GUIDE FORMS

- Opportunity Assessment
- Chip level partitioning
- ??

3.1.4 ANALOG BLOCK GUIDE FORMS

- Opportunity Assessment
- Architecture
- Transistor Level Design
- Chip Level Integration

3.1.5 DIGITAL BLOCK GUIDE FORMS

- Opportunity Assessment
- Architecture
- RTL Development
- Timing Analysis
- Chip Level Integration

3.2 GENERAL WEB FORM REQUIREMENTS

3.2.1 EXTERNAL REFERENCES AND IMPORTS TO FORMS

- Supports input of figures and diagrams as jpg or gif format.
- Can reference external documents as necessary but prefer the majority of “guide” type content is entered and maintained within the forms themselves.

3.2.2 FORM ENTRY CAPABILITIES

- The forms must support data tables to contain many of the key specifications for the design. All data table inputs will be part of the database and available for further reference, analysis and manipulation. The tables must be user configurable for column and rows. The user may? also need to assign variable names for each table entry to support later referencing of DB.
- There will not be any support for drawing.

3.2.3 PER PROJECT CONFIGURABILITY

- The baseline design process will be hard wired in the flow. The system can support multiple design processes, once they are setup.
- Configuration parameters would include identification of the system, chip(s), IP blocks and design process. These would all be tied together in one project.