

### CCSP CHARACTERIZATION DATA AND THE EXPONENTIAL GROWTH OF SILICON IP DATA VOLUMES

The amount of data that is needed to support the timing/power/signal-integrity validation of System-on-Chip designs has been increasing with every new technology node. This causes significant headaches for CAD groups putting together state-of-the-art design flows that use the latest, best-in-class, performance verification tools to support tape-outs in new technology nodes. In particular qualification of the characterization data of silicon IP (libraries and hard macros) – where the design-data explosion is most pronounced – requires dedicated tools, compute resources and expertise. Where a few home-brewed scripts could do the job a few technology nodes ago, characterization data qualification now requires dedicated tools, such as Fractal Crossfire.

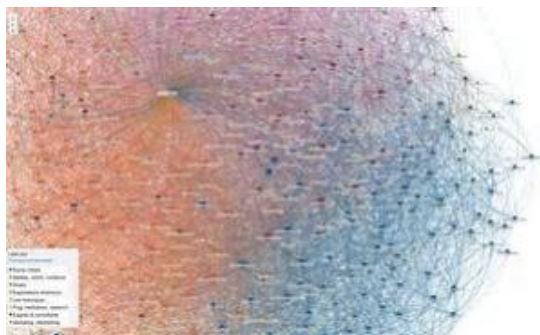
[click link to read whitepaper](#)

### FRACTAL BLOG SEMIWIKI

#### Visual Quality

By Bernhard Murphy

A few years ago, I started looking at data visualization methods as a way to make sense of large quantities of complex data. This is a technique that has become very popular in big data analytics where it is effectively impossible to see patterns in data in any other way. There are vast numbers of [different types of diagram](#) – treemap, network and Sankey are just a few examples – each designed to highlight certain aspects of the data – concentration, connectivity, relative size and other characteristics. Given the right type of diagram, key attributes of mountains of data can become immediately obvious.



I didn't get beyond an experimental stage in my work, so I was very happy to see that Rene Donkers, CEO at Fractal, had finished the job in delivering a production capability for data visualization around library analytics, which he calls *error fingerprint visualization*.

Library (Liberty) files can get pretty large, covering OCV timing models and power models among many other characteristics. Which raises an obvious question – how do you check that this stuff is correct?

[Click link to read full article](#)

### CROSSFIRE UPDATES

- Recent Crossfire improvements:
  - New Rules and Features:
  - Check that the center of pin shapes is on track
  - Verify certain macros do not change placement across DEF files
  - heck flat DEF hierarchy with Verilog
  - SnapBoundery check
  - Duplicate tables in an Arc
  - Check top-level module parameterization
  - Check for VIA OBS presence in LEF for same pin in different layers
  - Cross check antenna properties between LEF files

### ABOUT CROSSFIRE

Crossfire reports mismatches or modeling errors for Libraries and IP that can seriously delay an IC design project.

Library and IP integrity checking has become a mandatory step for a "state of the art" deep submicron design due to the following challenges:

- The sheer number of different views
- The complexity of the views (ECSM, CCS)
- The loss of valuable design time
- Time to market

Crossfire helps CAD teams and IC designers achieving a high quality of design data in a short time.



Crossfire assures that the information represented across the various views is consistent and does not contain anomalies.

### CROSSFIRE USABILITY FEATURES

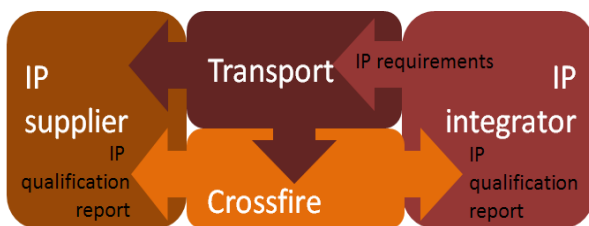
Graphical setup creation & run environment as well as batch runs

Powerful hierarchical configuration language supporting macro functions

- Graphical debugging (message > double click > open relevant views)
- Graphical output filtering (zoom in on cells/formats/error-types)
- Waiving mechanism
- HTML and CSV reports
- Automatic setup generation
- Setup API
- Generic setups
- Parallel Parsing feature

### FRACTAL TRANSPORT

Transport™ serves as an input format to Crossfire, describing what checks Crossfire needs to execute on which IP databases, as specified by the IP integrator.



Fractal Crossfire and Transport

Read the [Fractal White Paper](#) online!

### CROSSFIRE INTEGRATION FEATURES

API for creating database independent checks, available in: Perl, Tcl and Python

Existing customer validation scripts can be integrated

Visualization messages/results from customer scripts (double click opens message)

### CROSSFIRE INTERVIEW

Visualization and browsing of database contents  
Opens e.g. LEF, GDS, CDB, OA and Milkyway views in a single window

### CROSSFIRE DIAGNOSE

Diagnose is the Crossfire GUI designed for users that to only analyze Crossfire results. The setup and test definition sections of Crossfire are completely shielded from the user. The user can see, report, filter wish, waive and analyze the generated Crossfire messages.

### ABOUT FRACTAL TECHNOLOGIES

Fractal Technologies is a privately held company with offices in Los Gatos, California and Eindhoven, the Netherlands. The company was founded by a small group of highly recognized EDA professionals.

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