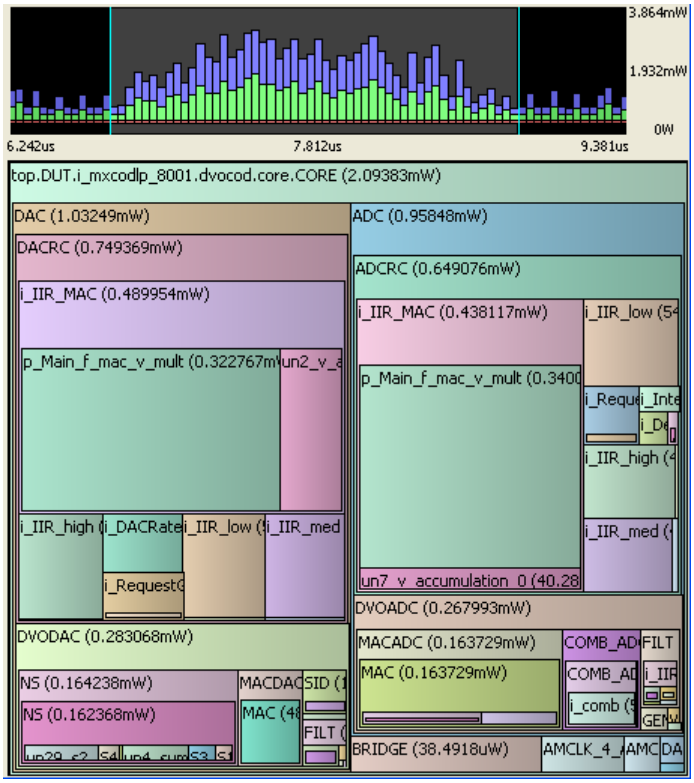
SCROOGE 2.0
Mixed-Signal
Power Consumption

MEDAL Presentation Sheet

Power Consumption of logic parts of a SoC is one face of the coin, the other face of which is Noise Resilience of analog parts. Reducing the peaks of a dynamic mixed-signal power consumption simulation grants the consistent benefit of smoothing-out the disturbances threatening high-resolution analog parts, including sensitive read-margins of logic parts.
Power analysis is best performed in the time domain, while noise resilience is best analyzed over the spectral domain.
SCROOGE 2.0 unifies hierarchical mixed-signal power consumption and provides the missing simulation capability!

KEY ENHANCEMENTS

- ✓ Unified hierarchical mixed-signal power consumption simulation
- ✓ Analog power consumption reporting
- ✓ Signal driven power simulation with testbench enable/disable
- ✓ Clock based leakage and dynamic cycle power consumption simulation
- ✓ Hierarchical browsing of power map, both online and as post-processing
- ✓ Extraction of cycle power signature: min, max, average and std deviation
- ✓ Streamlined graphic user interface
- ✓ Enhanced power consumption report with color scales
- ✓ Extended support of SPEF back-annotation
- ✓ Increased capacity and reduced SDF annotation memory requirements



DESCRIPTION OF THE ENHANCEMENTS

Optimizing the power consumption of a SoC requires being able to hierarchically simulate mixed-signal power at various accuracy levels, from time-accurate, through cycle-accurate, up to mode-accurate (from a Virtual Component point-of-view) and state-accurate (from a testbench point-of-view), thereby providing the means to efficiently assess and implement power saving techniques.

Clock-based power analysis enables cycle-accurate simulation by averaging the consumption over the clock period, providing analog, logic (leakage, internal and switching) and total power, and generating power consumption reports. Selection of a range of clock periods provides an intuitive hierarchical map view of the corresponding consumption.

Signal-enabled power analysis enables mode or state-based simulation by controlling the activation of power calculations during the transient analysis. A reset, simple enable, or complex expression associated to a controlling signal enables focusing the power display and reporting on a specific mode or state.

SCROOGE is available identically under Linux, Solaris and Windows.

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SCROOGE 2.0
Power Consumption Measuring & Reporting

MEDAL

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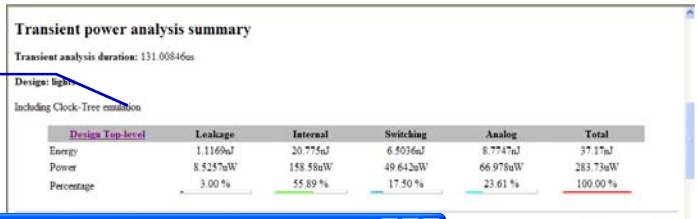
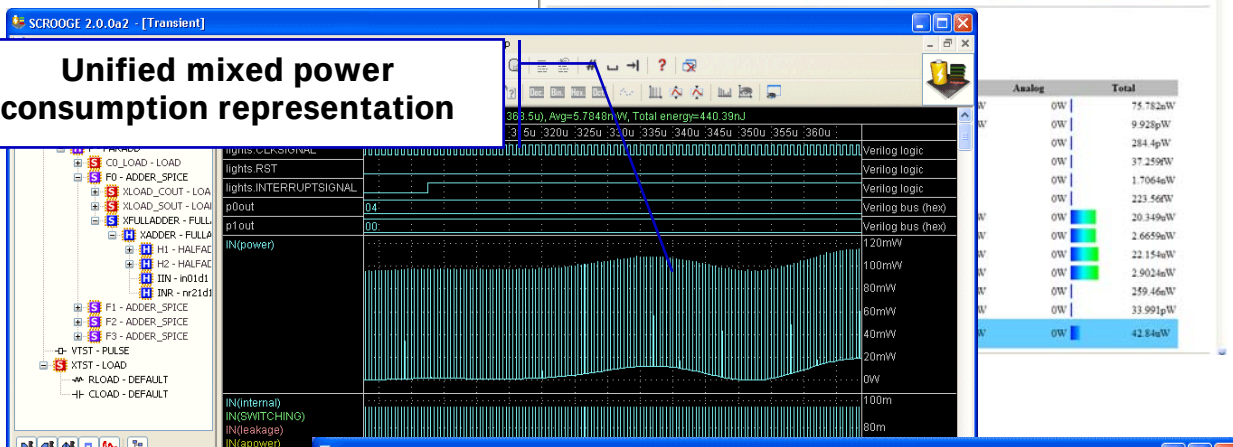
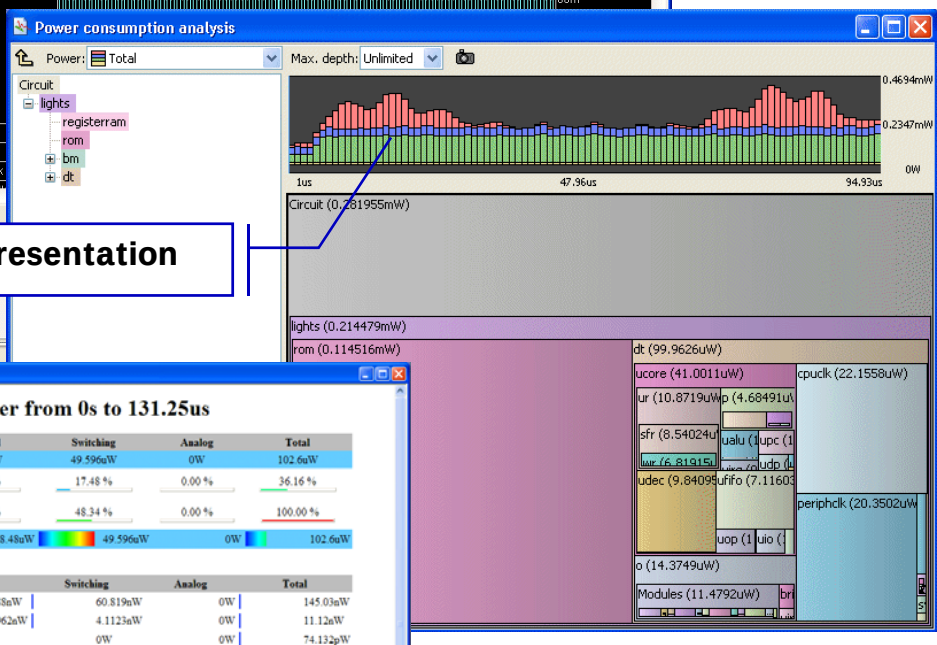
Power consumption summary

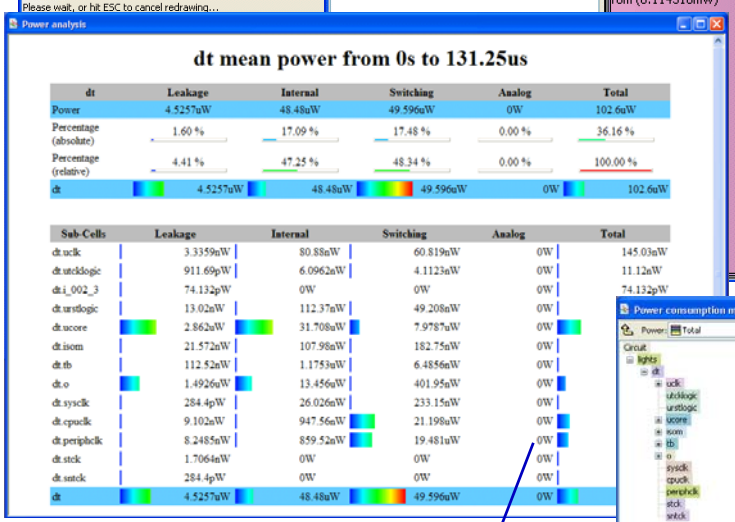


Unified mixed power consumption representation



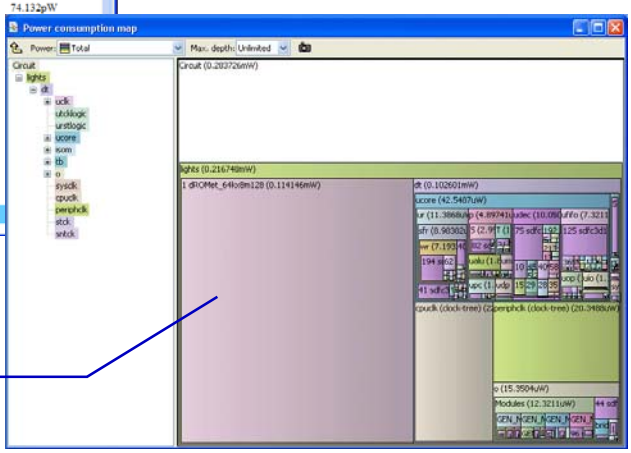
Cycle power representation





Interactive power summary

Power map representation



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Jun-08

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