System Level Solutions for low power design
DOCEA in a few words

- Privately held **EDA company** founded in 2006 and based in the Grenoble area (France), with offices in the Bay Area, CA.

- **Expertise in Power and Thermal management**

- Team of **experienced people** coming from both the electronic industry and EDA companies

- **Partnerships** with several research centers (Leti, Verimag, G2ELab) and private companies

- Member of « Pôle de compétitivité mondial » **MINALOGIC**

- References among **Top-5 IC** companies
Situation

Mhz race
Nanotechnologies
Size reduction of
transistors
More and more
features
integration
3D integration

Power consumption
of electronic systems
drastically increases

Temperature
Life Time
Reliability
Environment

80% of electronics systems
design is based on early
decisions and predictions
choices

Making the right decision earlier is the key factor to
reducing power consumption drastically (40 - 70%)
Power consumption seen from an architect point of view

How can I explore solution space? How long do I need to close specifications? How reliable is the prediction?
Aceplorer capabilities

A holistic approach for managing power & thermal issues early in the design flow

- **Modeling**
  - Fast & Secure

- **Estimation**
  - Decision making support

- **Exploration**
  - Large solution space

- **Risk Analysis**
  - Early detection

- **Design flow support**
  - ... for standard power formats (UPF)

- **Power data mgt**
  - Capitalization, Reuse Report generation

- **Seamless integration**
  - ... in any environment

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Aceplorer in the flow

Separate power modeling from performance description:

- Non intrusive solution to your design flow: fast deployment!
- Faster simulation allowing true architectural exploration and optimization
- Easier to maintain and debug
Aceplorer: inputs and outputs

System (Platform or SoC or IP) description

Low power architecture capture
Power domains, voltage/clock network, power reduction techniques

Use case capture

XML based Models

Aceplorer

Power/Energy/Current analysis
Temperature map

IR-drop analysis
Thermal runaway risk analysis

Design space exploration
Power planning

Documented specifications for implementation teams

Early reliability checks

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Power/Temperature Analysis

- Scenarios description
- Dynamic power distribution
- Ibat graph

- State charts
- Top consumers
- Variable monitoring
Low Power Framework

Low-power methodology integrated in the design flow

ESL Power models
XML library

Power characterization
(.lib, PTPX report, spreadsheet, .csv)

Implementation

Hardware Design team

Software development team

ACEplorer

System Architect
Low Power Architecture exploration

Performance Analysis Tools

Virtual Platform

Software
Architecture Level is where you have the strongest impact on power consumption!

- **Secure and Optimize** power/thermal specification for highly complex system at the earliest stage of design, where you can have the higher impact!

- **Improve productivity** by a scale factor and go beyond the spreadsheet approach

- **Provide a consistent approach** from IP to board modelling along with integration capability

- **Manage power data** all along the design flow from system level to silicon measurements
Thanks for your interest!

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