

The Birth of a Standard:

Unified Power Format (UPF) –
For Low Power Design Intent

David Peterman

Manager, EDA

Wireless Terminals Business Unit

Texas Instruments

History – Prior to DAC 2006

- **Power was a secondary concern** in the design of SOCs and took a back seat to area and performance
- **Demand has surged for battery operated devices** because of increased consumer focus on battery life
- Data center server companies were facing challenges to balance power, space and performance → **Must control dynamic and standby power**
- As power became a top priority design consideration, the **intent of the designer was hard to capture** due to:
 - Lack of standards
 - Error prone process that requires entering information in different forms to each EDA design tool
- Increasing numbers of EDA vendors were realizing the need to address power, but **early solutions focused on vendor specific formats** and tool chains

Users to the EDA Industry

- The scope of the solution started to emerge - **a comprehensive low power design flow** from design intent in the system house, through various IP suppliers, EDA tools, and silicon partners to the final SOC tape
- The industry needs a **common definition of terms**, a **single data file** and **interoperable tools** across a wide variety of EDA vendors
- Rather than wait for multiple proprietary standards to battle it out in the marketplace, at DAC 2006 the user community issued its call to action

DAC 2006...Call to Action

Making
Wireless

The Overall Objective

- **Quickly** author and utilize an **Open** standard for low power design sourced by a broad **Inclusive** team from across the SOC design chain

DAC 2006

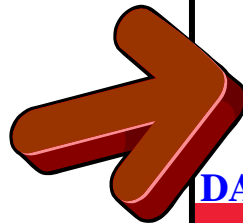
Technology for Innovators™

TEXAS INSTRUMENTS



**TOUGH
CHALLENGE**

**AGGRESSIVE
TIMELINE**



Making
Wireless

Proposed Schedule

- **Today**
 - Reach agreement
- **Next Month**
 - Decide which on standards organization to drive the process
 - Issue press release and call for wider participation
 - Form technical committee
 - Start receiving technology donations
- **3Q06**
 - Business team formalizes agreement with standards org – process aligned
 - Technical committee starts work, reviews technology donations, ...
- **4Q06**
 - Circulates drafts, iterate, moves toward v1.0 specification
- **EOY06 – Formal vote and approval of v1.0**
- **1Q07** – Beta testing of products that adopt v1.0 – Production release follows normal company cycle

DAC 2006

Technology for Innovators™

TEXAS INSTRUMENTS

Technology for Innovators™

TEXAS INSTRUMENTS

Aggressive Response - Accellera

- **QUICK**: TSC formed in September 2006 with immediate calls for donations
- **OPEN**: Donated material made openly available, as were intermediate work products
- **INCLUSIVE**: Broad international industry participation in the development process

Results

- Accellera Announces New Unified Power Format Standard to Advance Low-Power Integrated Circuit Design- February 2007
 - Accellera, the electronics industry organization focused on electronic design automation standards, announced that its members and Board of Directors approved the Unified Power Format (UPF) 1.0 as an Accellera standard. The approval by Accellera followed approval by Accellera's Technical Sub-Committee (TSC) last month.

Congratulation to:

- The EDA leaders who listened to end users avoiding proprietary formats and complicated legal agreements and proactively collaborated together
- The seven companies that jump started the effort with their donations
- Stephen Bailey and the UPF technical subcommittee who made it happen

Call to ACTION

- **End Users must**: demand UPF 1.0 support
- **EDA Vendors must**: convert existing tools to use UPF ASAP
- **Together we must**: deploy these tools as solutions to end users and prove the objective of low power optimization