



OpenPDK Coalition Status:

September 10, 2010

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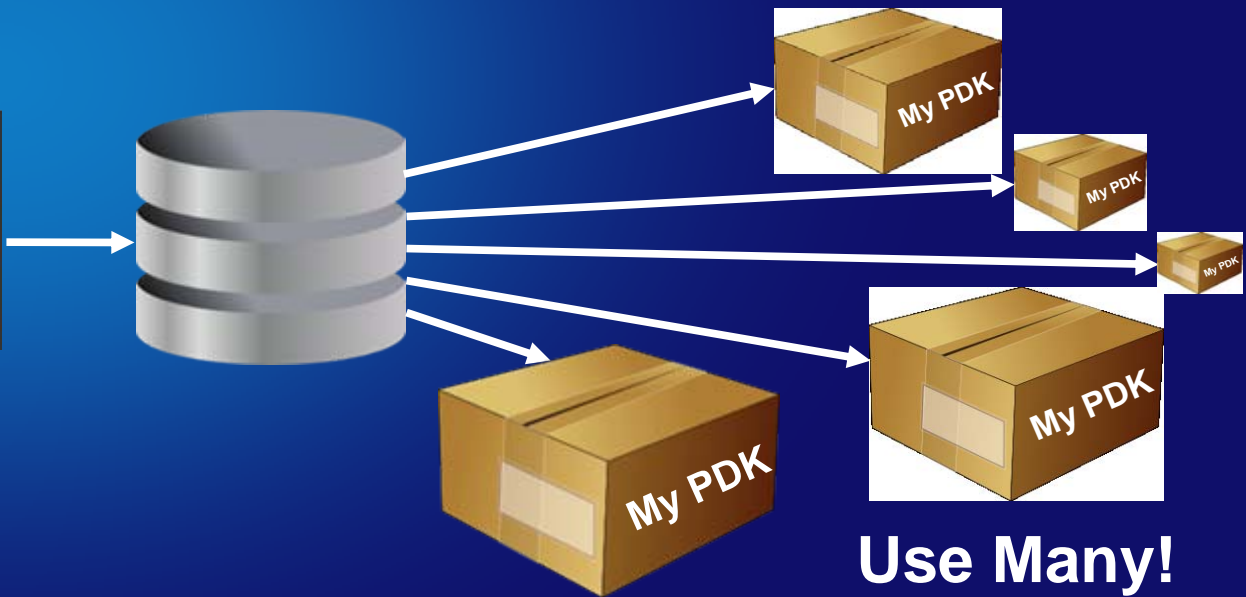
Interoperability – Standards – Collaborative Technology

Innovation Through Collaboration



What Problem Does OpenPDK Solve?

Industry Requirement:
A "single source" for PDK development





What OpenPDK Coalition *is!*

- OpenPDK Coalition is about defining:
 - An open environment to:
 - ◆ Promote interoperability of design tools
 - ◆ Reduce cost of developing / maintaining / re-using PDK's
- Above achieved by specifying and/or promoting:
 - Open interfaces and formats
 - Open languages
 - Open parameters and constraints



What OpenPDK Coalition *is Not!*

- OpenPDK Coalition is **NOT** about selecting:
 - A single scripting language
 - A single Pcell evaluator or evaluation engine
 - A single SPICE engine
 - A single DRC engine
 - A single PDK generation flow
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How Will OpenPDK Solve It?

- Define open standard to allow PDK structure to be as portable across foundries as possible and as agnostic to EDA tools as possible
 - Structure of PDK is both EDA & foundry-neutral
 - Specific instance of PDK is foundry-specific
 - **Coalition Members** jointly set scope, define contents, and priority of OpenPDK deliverables / updates
- Define a flow-centric, architectural approach
- Enable maximum potential for interoperability between existing and new standard formats

What are the Benefits?



- **For End-users**
 - Increased design chain choice
 - Access to best-in-class tools
- **For Foundries**
 - Faster service for customers
 - Lower costs to support EDA companies
- **For EDA companies**
 - No need for retooling to new formats
 - Can focus on value-add differentiation

Current Members

- Anaglobe
- Cadence
- IBM
- Intel
- Global Foundries
- Magma
- Mentor Graphics
- MunEDA



- National Semiconductors
- NXP Semiconductor
- Pulsic
- Silvaco
- Springsoft
- ST Microelectronics
- Synopsys



Expected OpenPDK Scope

- Stakeholder-specified requirements:

- Interoperable OA symbols
- CDF Specification
- Callback Specifications
- Pcells
- SPICE Socket
- OA Technology File enhancements
- OpenDFM verification rules (DRC/LVS/Litho/Targeting/...)
 - ◆ Exploits synergy with DFM Coalition to add specific enhancements on top of OpenDFM from DFMC

First Beneficiary:

All foundries / all nodes

All foundries / all nodes

All foundries / all nodes

All foundries / all nodes

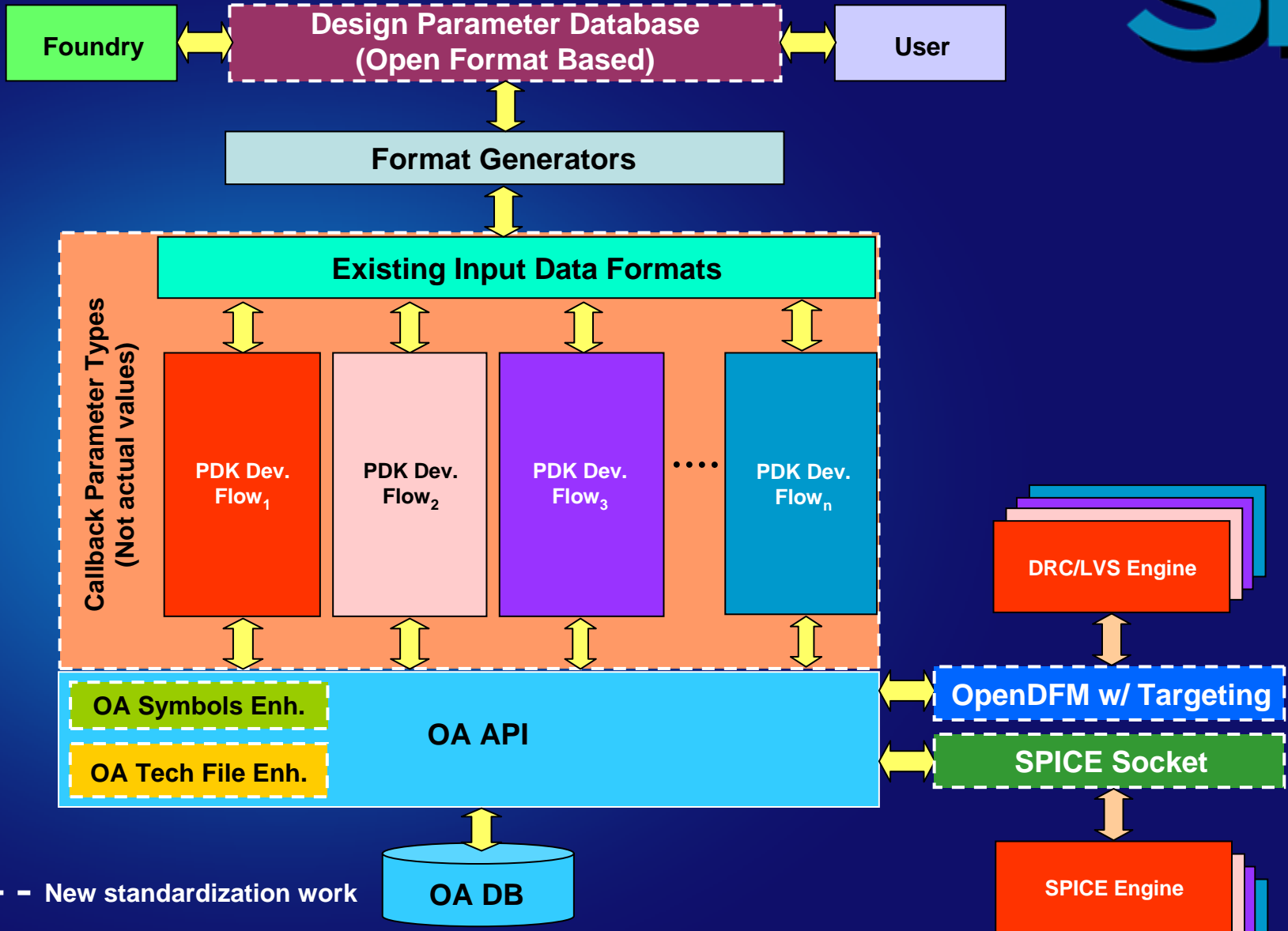
All foundries / all nodes

32nm & 22nm

All foundries / all nodes

(22nm initially for Targeting)

Vision: OpenPDK Development Flows



- - - New standardization work



Status of Immediate Priorities

- Coalition level:
 - Elect / appoint TSG members **DONE**
 - Elect Coalition Chair / Vice-Chair **DONE**
 - On-going management / strategy meetings **On-going**

- TSG level:
 - Approve RFT: **DONE**
 - Elect Chair / Vice-Chair **DONE**
 - Define immediate plans, charter Working Groups (WG)
 - ◆ Targeting spec version 1 under review in DFMC TSG
 - ◆ Next milestone: 60-day EP start **TGT: 10/2010**
 - ◆ Start 2 WG's (eDRM & Callback Mechanisms): **DONE**



eDRM WG

- **Goals:**
 - Develop industry–standard specifications for representing process information for electrical definition of Process Design Kits
- **Status:**
 - WG staffed, weekly meetings ongoing
 - Co-sponsored by IBM (Strang) and Cadence (Lamant)
 - Prioritization discussions underway
 - Status to be presented at Si2/OA Conference on 10/20/2010
- **eDRM scope includes:**
 - Technology layers
 - Tool-specific layers
 - Technology constraints
 - Design rules
 - DFM/DFY rules
 - Electrical parameters, e.g., dielectric coefficients
 - Process parameters
 - Device specifications
 - Design Kit test harness,...



CDF Parameter & Callbacks WG

- **Goals:**
 - Develop CDF parameter & Callback standard specifications
 - Augment Si2 Symbol library with additional symbols, parameters and properties
- **Status:**
 - WG staffed, weekly meetings ongoing
 - WG sponsored by Synopsys (Rao)
 - Status to be presented at Si2/OA Conference on 10/20/2010
- **Scope of proposed standards includes:**
 - Develop specification for Component Description Format (CDF)
 - Define semantics for parameter and attribute keywords
 - Current parameters used commonly in PDKs should be easily captured by new specification
 - Develop specification for CDF callback mechanism
 - Define symbols to add to the current set of Si2 standard symbols
 - Define OpenAccess specifications for CDF as an interoperability goal



In Conclusion...

- **Coalition has formed, very fast moving**
 - Approved 01/10, kick-off meeting 03/10, RFT released 05/10, WG's started 08-09/10
 - 15 members to-date (www.si2.org/?page=1116)
 - 5 of big-5 EDA vendors have joined
 - Very successful workshop held in DAC 2010
- **Coalition goals driven by industry imperative**
 - Tracked this for 4 years to measure market momentum
- **RFT approved by coalition and released by Si2**
 - Member companies have made verbal commitments for potential contributions
- **In conclusion...**
 - Momentum is building, members are already making critical decisions
 - Please contact Bob Carver (bobc@si2.org) for membership details

Thank You!