

22nd EDA Interoperability Forum

November 5, 2008

Harmony and Interoperability for Custom Design
The Latest on the IPL Alliance and Interoperable PDKs

Peace, Love
& Interoperability

Agenda



- IPL Alliance Update
 - Ed Lechner, Director of Marketing, Synopsys
- IPL Flow Demonstration
 - Ciranova, Mentor, Pyxis, SpringSoft and Synopsys
 - LIVE analog design flow demonstration showing a single interoperable PDK supporting multiple vendor tools and flows

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IPL Alliance Update

Ed Lechner

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IPL Alliance Overview



- Charter
 - Create and promote standards for Interoperable Process Design Kits (PDKs) and flows
- Goal
 - Enable a single PDK to support any OpenAccess tool
- Benefits
 - Reduce PDK development and support costs
 - Create choices in building your analog flow
 - Increase design reuse and portability

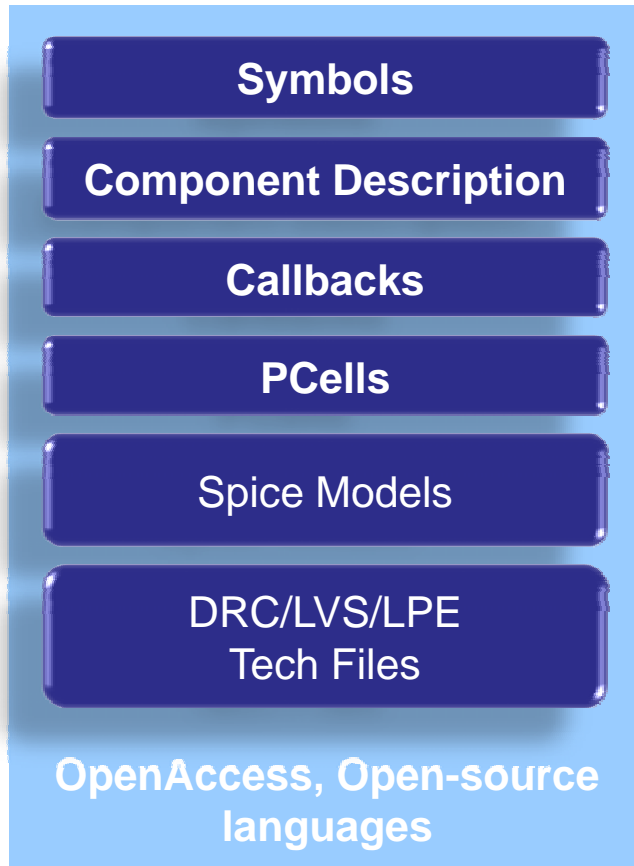
IPL's Approach To Achieving PDK Interoperability

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- Involve EDA vendors, foundries and users
- Use existing standards where feasible
- Validate standards with prototype interoperable PDK's and flows
- Target modern process technology nodes

Current IPL Standards Focus

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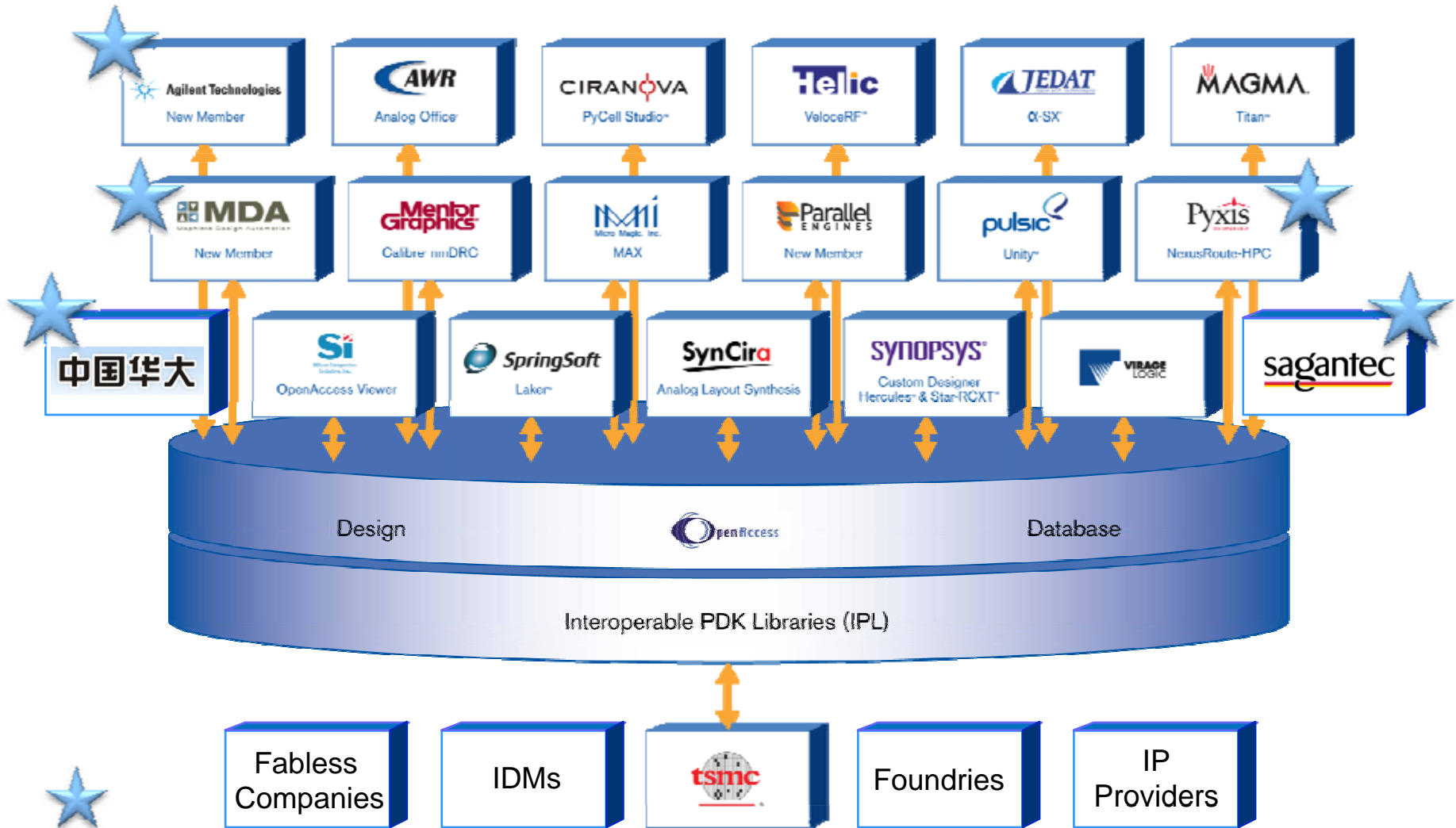


- ← Interoperable OA Symbols
- ← Interoperable CDF
- ← Interoperable TCL Callbacks
- ← Interoperable PyCells

One PDK for all EDA vendors

IPL Ecosystem

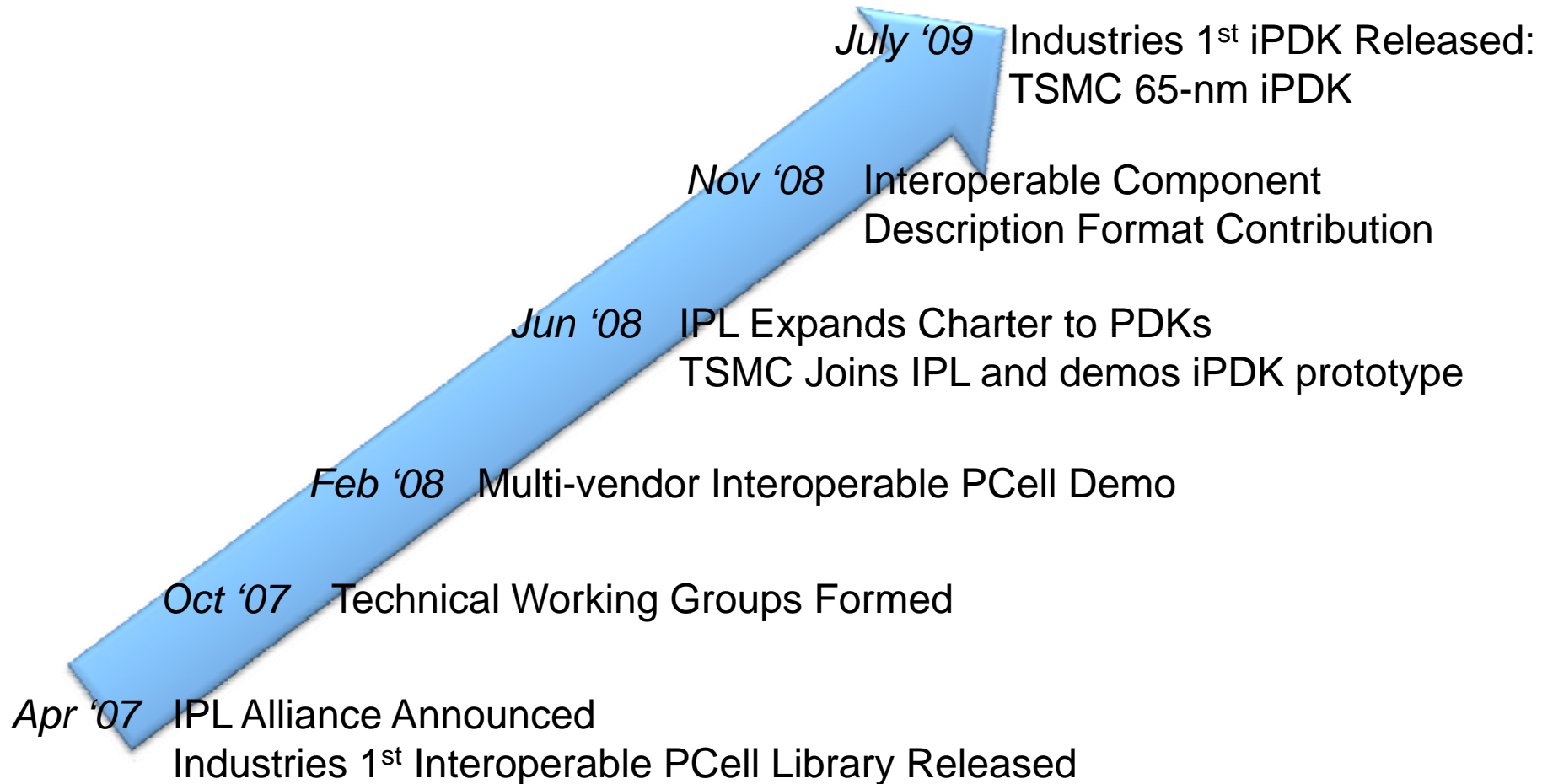
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New Members

IPL Alliance Momentum

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Success!

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July '09 Industries 1st iPDK Released:
TSMC 65-nm iPDK

Nov '08 Interoperable Component
Description Format Contribution

TSMC Launches First Advanced Technology Interoperable Process Design Kit

Industry-Wide Collaborative Development Effort Delivers First Unified iPDK for 65nm Process

Issued by: TSMC

Issued on: 2009/07/21

©Hsinchu, Taiwan, R.O.C. – July 21, 2009 - Taiwan Semiconductor Manufacturing Company, Ltd. (TWSE: 2330, NYSE: TSM) today announced the release of the semiconductor industry's first interoperable process design kit (iPDK) for advanced technology. The kit is fully validated on TSMC's 65 nanometer (nm) process and represents the newest design initiative to come from the company's Open Innovation Platform™, focusing on enhancing innovation in custom, analog, mixed-signal and RF designs.

Apr '07 IPL Alliance Announced

Industries 1st Interoperable PCell Library Released

Success!

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Synopsys and TSMC Jointly Develop Interoperable Process Design Kit (iPDK) and Interoperable Ecosystem

released:

CIRANOVA PYCELL TECHNOLOGY INCLUDED IN TSMC iPDK FOR ANALOG/MIXED-SIGNAL IC DESIGN

Magma's Titan Mixed-Signal Platform Supports TSMC's First Interoperable Process Design Kit (iPDK)

Mentor Graphics Provides Support for TSMC iPDKs

TSMC and Cadence Expand Collaboration to Deliver Advanced, Feature-Rich Process Design Kits

C interoperable process technology the results in shortened

SPRINGSOFT SUPPORTS TSMC INTEROPERABLE PROCESS DESIGN KIT WITH LAKER CUSTOM LAYOUT SYSTEM

Hsinchu, Taiwan, July 27, 2009 — [SpringSoft, Inc.](#) (TAIEX: 2473), a global supplier of specialized IC design software, today announced that the [Laker™ Custom Layout Automation System](#) fully supports the industry's first interoperable process design kit (iPDK) recently introduced by Taiwan Semiconductor Manufacturing Company, Ltd. (TSE: 2330, NYSE: TSM) for its advanced 65-nanometer (nm) RF process technology. The Laker system running in the OpenAccess™ environment supported by the TSMC iPDK is currently installed at multiple beta sites and expected to be available for general release in early 2010.

IPL Alliance DAC Workshop Event

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Neel Gopalan
Corp. AE, Synopsys

Cadence OA PDK

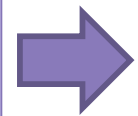
- OA Schematic Symbols
- Component Description Format (CDF)
- SKILL Callbacks

- SKILL PCells

- Spice Models

- Tech Files
- DRC/LVS/LPE

OpenAccess (SKILL)



TSMC iPDK

- OA Schematic Symbols
- Interoperable Component Description Format (iCDF)
- SKILL Callbacks
- Tcl Callbacks

- PyCells

- Spice Models

- Tech Files
- DRC/LVS/LPE

Open Access, Open-standard languages (Python and Tcl)

One iPDK for all EDA vendors

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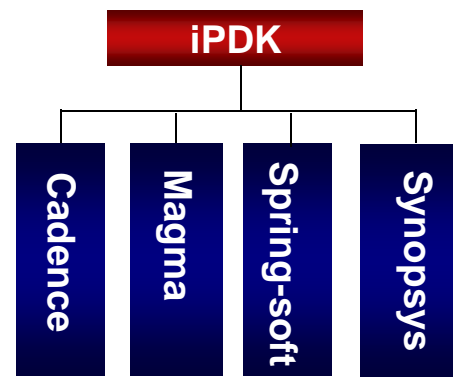
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Steven Chen
Manager, TSMC

Interoperability validation

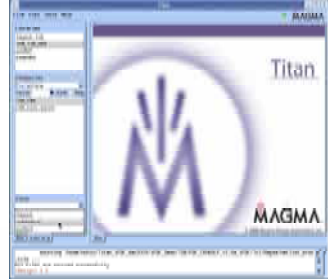
- Cadence IC6.1 (Virtuoso)
- Magma (Titan)
- Springsoft (Laker_L3 OA version)
- Synopsys (Custom Designer)



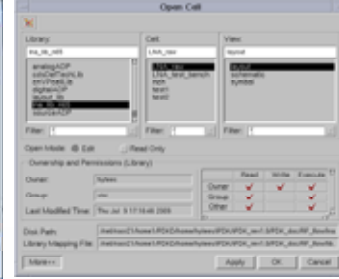
Cadence IC6.1 (Virtuoso)



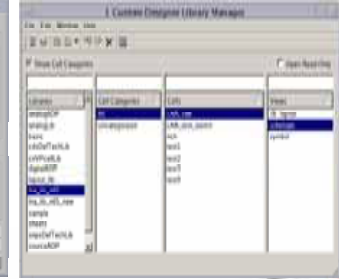
Magma (Titan)



Springsoft (Laker_L3 OA)



Synopsys (Custom Des)



13

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Open Innovation Platform™

IPL Alliance DAC Workshop Event

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Summary / Conclusion



- iPDK provides Wipro, our clients and our EDA partners the flexibility and customization necessary to interoperate from a database and flow perspective.



Ron Burns
GM, Wipro

Most important, it allows us to focus time and attention on the critical task ahead: Compelling Product Design

IPL Alliance DAC Workshop Event

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IPL LUNCH WORKSHOP VIDEO

Watch the DAC 2009 IPL Lunch Workshop video with presentations from alliance members and customer. TSMC presents the industry's first interoperable process design kit (iPDK) for 65nm process. Wipro presents their experience using the iPDK from the customer point of view.

[View Video](#)



Watch During Lunch
<http://www.IPLNow.com>

IPL 2009 Accomplishments



- TSMC released the industry 1st foundry iPDK on its 65nm process
 - 40nm and 28nm in development
- Captured the hearts and minds of the industry
 - What's there to not like about IPL?
- Contributions and Collaboration
 - Interopérable Component Description Format (iCDF)
 - Interopérable call back APIs
 - Validation
- Industry Education
 - DAC 2009: IPL Lunch Workshop, IPL DAC pavilion panel, IPL at Interoperable Breakfast, IPL Alliance member demo
 - IPL Alliance featured at EDA Interoperability Developer's Forum, Si2 OA Conference, SNUG SJ, MUSIC SJ, TSMC Symposium SJ

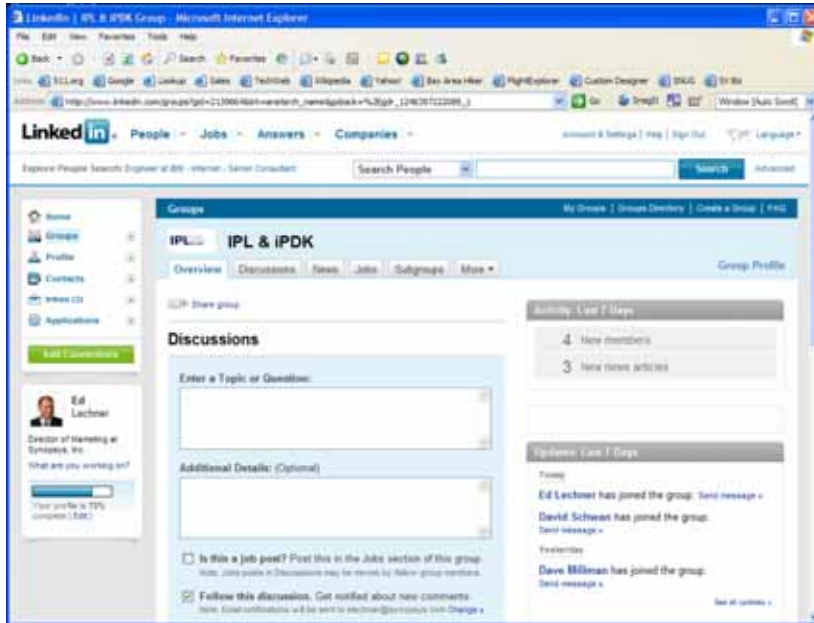
Next Steps

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- Evolve IPL Alliance into a standard body
- Publish standards for interoperable PDK
- Develop reference iPDK and documentation
- Work on standards for analog constraints
- Educate the industry
- Grow IPL Alliance membership

Get Involved

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<h3>IPL Library</h3> <p>The IPL Proof of Concept library is available here for download. The Proof of Concept library package contains source code files and a readme document. The source code files are provided under a non-restrictive open source license.</p> <p>Download IPL Library ></p>	<h3>Become a Corporate Member</h3> <p>All interested foundries, EDA vendors and semiconductor companies are invited to join the IPL initiative. The five founding members of IPL initiative are AWR, Ciranova, Silicon Canvas, Silicon Navigator and Synopsys. The newly added members are JEDAT, Magma, and Virage Logic. Mentor Graphics is a supporting member.</p> <p>Join IPLNow ></p>
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<p>provided under a non-restrictive open source license</p> <p>Download IPL Library ></p>	<p>Magma, and Virage Logic, Mentor Graphics is a supporting member.</p> <p>Join IPLNow ></p>
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Summary



- Interoperable PDK's are available now
- IPL Members continue to collaborate in achieving interoperability
- The benefits are real
 - Designers get access to advanced technology nodes faster on a broader set of tools
 - PDK Developers support more EDA tools with fewer resources
 - EDA vendors can focus resources on value-added applications rather than proprietary formats

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Q&A

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IPL Flow Demonstration

Richard Morse, Technical Marketing Manager, SpringSoft
Neel Gopalan, Application Engineer, Synopsys
Roger Kang, Technical Marketing Engineer, SpringSoft

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