

# Synopsys: Driving the PIC Revolution

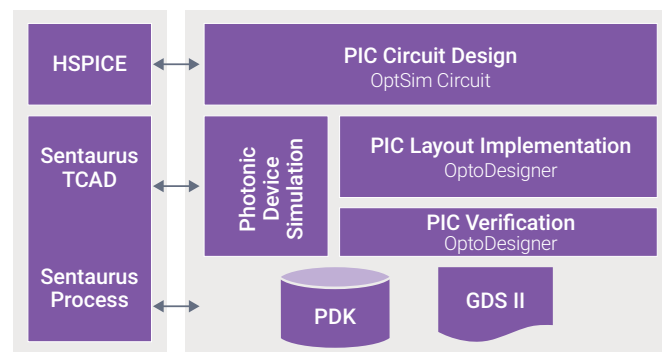
## Seamless PIC design flow from concept to manufacturable design

Synopsys' OptoDesigner tools are driving the photonic integrated circuit (PIC) revolution with design automation solutions for a wide range of applications, ranging from data communications to sensors and biomedical devices. Additionally, the OptoDesigner tools provide photonic-aware physical layout capabilities, enabled by support for foundry-specific process design kits (PDK). Synopsys acquired Phoenix Software in February 2018 and continues to innovate the OptoDesigner product family.

## Synopsys' PIC Design Suite with OptSim Circuit and OptoDesigner Tools

Synopsys' OptSim™ Circuit and OptoDesigner tools comprise the PIC Design Suite to support a complete PIC design flow. The interface-driven simulation path to generating masks for single- and multi-stage PICs provides a modular and synergistic migration to error-free fabrication.

- Design and optimize PIC functionality in OptSim Circuit
- Synthesize PIC layouts for fabrication in OptoDesigner, supported by foundry-specific PDKs
- Co-design of photonics and electronics with Synopsys HSPICE® and Sentaurus™ TCAD tools



### Benefits

- **Integrated design flow:** A single flow from design to manufacture
- **Time savings:** Design cycles reduced from months to days
- **Invested in your success:** World-class provider with a single support channel

### Lowering Access Barriers to PIC Technology

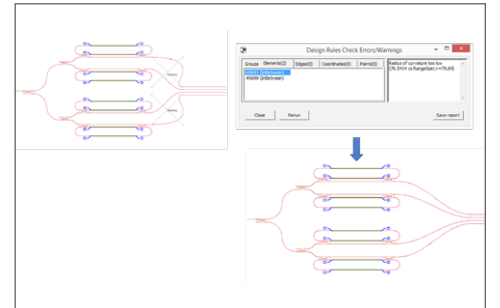
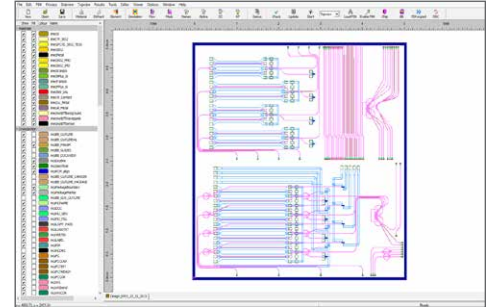
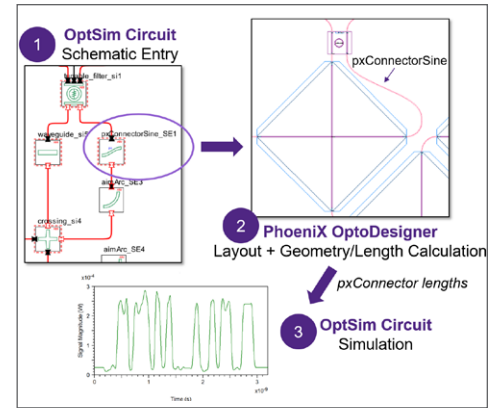
- We support the majority of accessible PIC foundries with 30+ PDKs developed
- We support all technologies:

- Silicon photonics
- InP/III-V
- TriPleX
- SiO2/SiN technologies, including polymers, silica and more

## OptoDesigner Photonic Layout Implementation

Key capabilities include:

- OptoDesigner parametric and photonic-aware layout
  - Technology-agnostic components and waveguides for synthesizing layout to foundry-specific PDK processes
  - Scripted layout with analytic curve engine for programmatic creation and optimization of photonic designs
- OptoDesigner advanced connectors and autorouting
  - Phase-aware waveguide generation using computed optical lengths from foundry-specified data
  - Automatic phase-insensitive waveguide and metal routing for assembling complex circuits
- OptoDesigner Simulation Modules
  - Simulation engines used to optimize layout for phase, polarity, dispersion, loss, etc.
  - Also used to analyze impact of temperature and lattice stress on performance of given layout structures
- Photonic design verification
  - Design rule checking enables verification of design and manufacturing rules for photonic curvilinear layouts



Synopsys' 30 years of leadership in EDA, combined with Phoenix OptoDesigner's and the RSoft products' 25 years of leadership in photonic design automation (PDA), positions Synopsys to provide a best-in-class photonic integrated circuit (PIC) design flow. We facilitate first-time-right PIC manufacturing.

Contact us today at [photonics@synopsys.com](mailto:photonics@synopsys.com) to request a demo or free evaluation, or visit [synopsys.com/optical-solutions](https://www.synopsys.com/optical-solutions).