Improv SYSTEMS, INC.

DESIGNER-DEFINED DSP™

PIONEERING A NEW GENERATION OF IP

SPIRIT

Enabled VLIW Processor Platform

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SPIRIT

Feb 2006 DesignCon

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Why SPIRIT?

- Improv tools were designed around proprietary data base
  - IP is in Verilog with ancillary data for configuration, test, etc. internal
  - Used for handoff to EDA tools
- SPIRIT provides an opportunity to use a standard interface and data format
  - Goal is to provide easier integration into EDA tool networks and take advantage of automation as SPIRIT based tools emerge
  - Handoff will be in standard SPIRIT format
- Plan for migration is incremental, low risk and low cost
  - xml already in use for data and generators.
  - Internal tools are generator based

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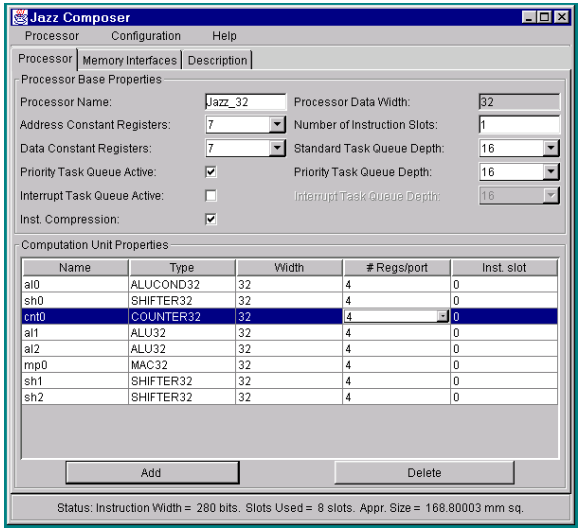
Jazz PSA™ Composer

- Innovative tool for creating custom processors and platforms using a simple methodology
- Hierarchical Configuration – platforms, processors, designer-defined computation units
  - Platforms and processors can be completely configured using the graphical 'drag-and-drop' environment
  - Decoupling of software and hardware descriptions of custom units
    - Java/C++ methods for use in application software
    - Verilog (w/preprocessor) for hardware description



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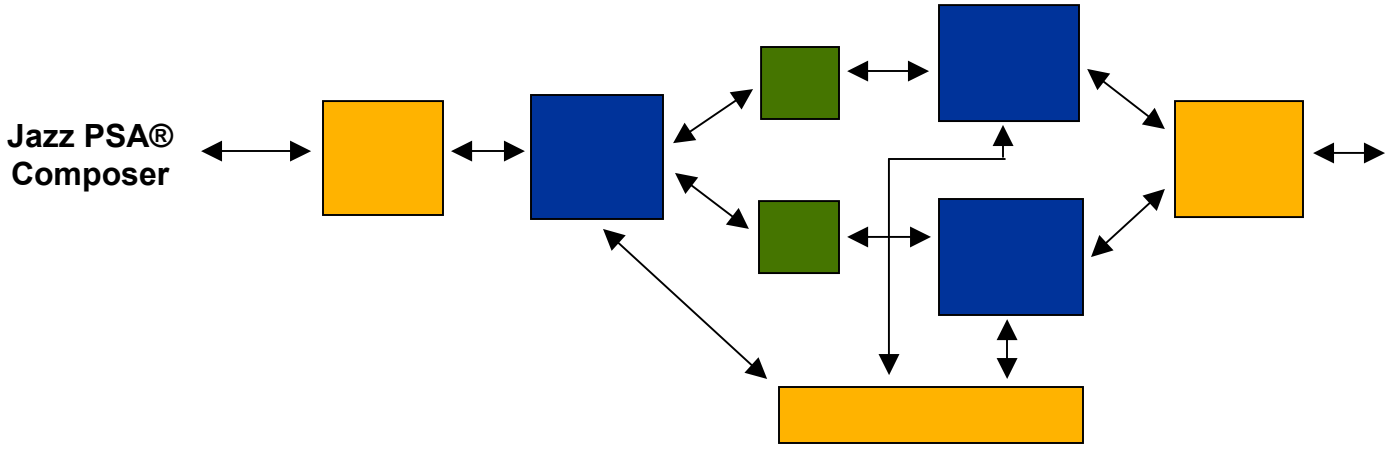
Jazz PSA™ Configuration

Jazz DSP™ Processors

Embedded Memories

Integration Blocks

The designer creates a PSA Platform by utilizing the Jazz PSA Composer™ Tool to map these three basic elements into an interconnection structure



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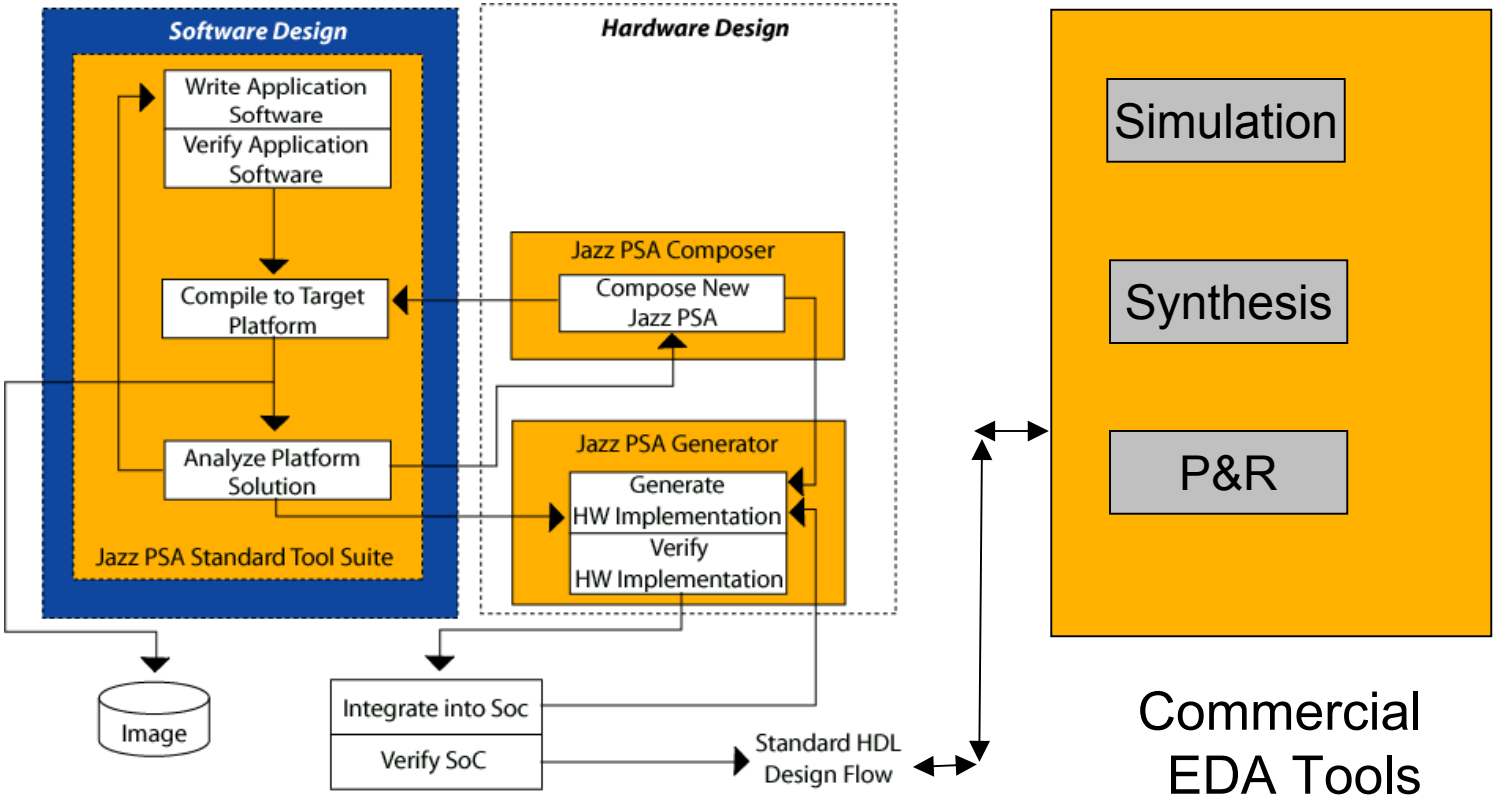
EDA Integration



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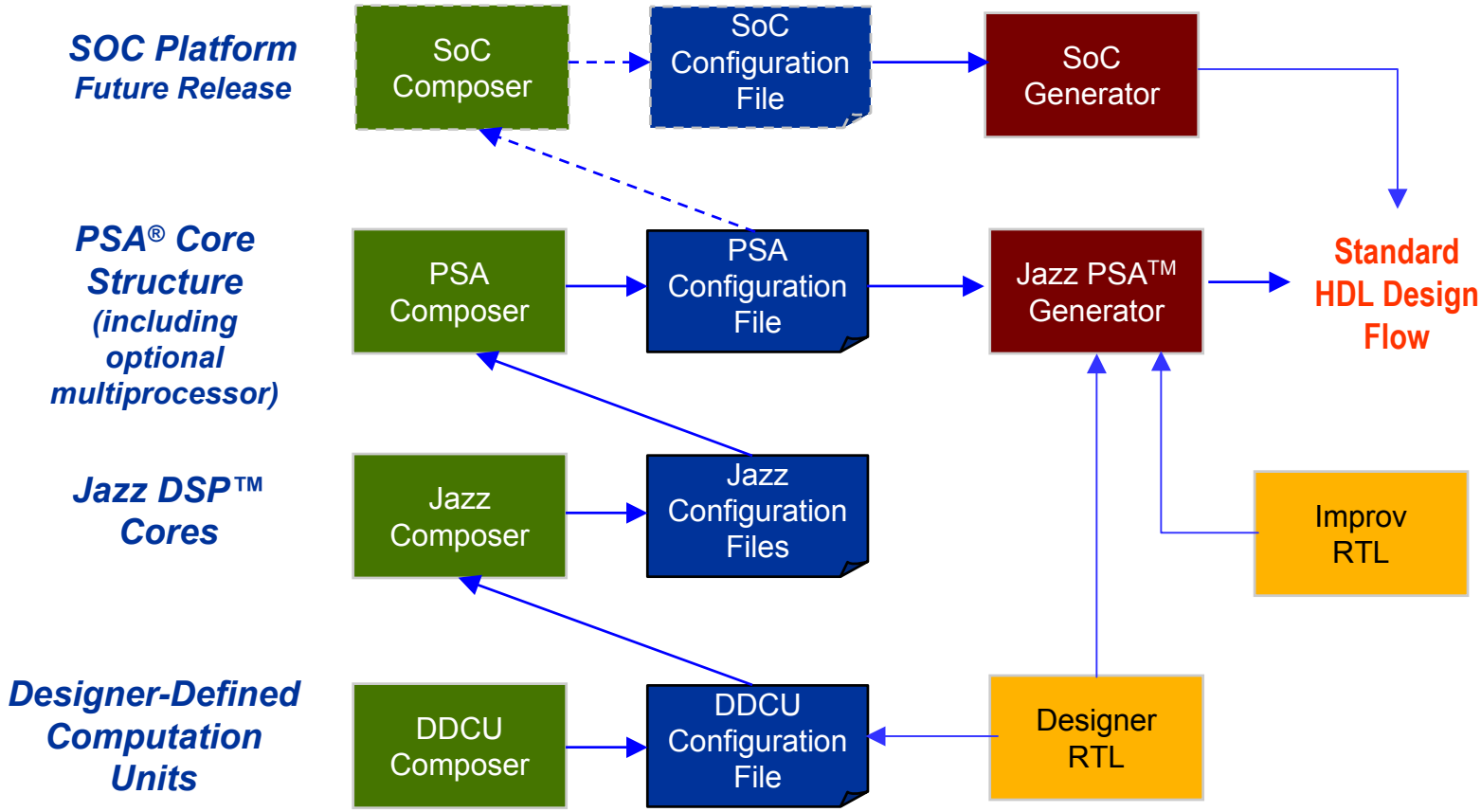
'Composer' Hierarchical Configuration



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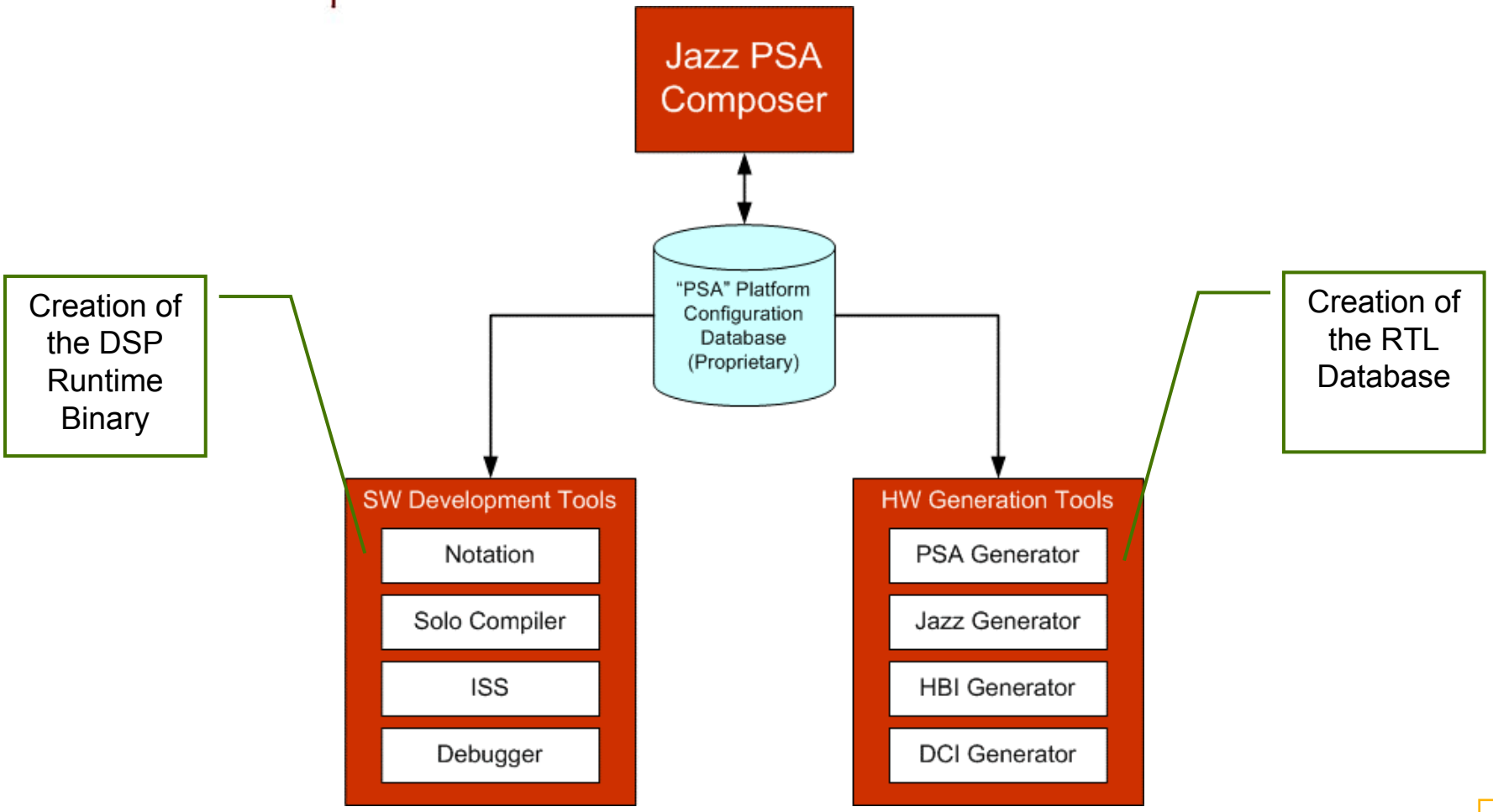
Original Jazz PSA Tool Flow



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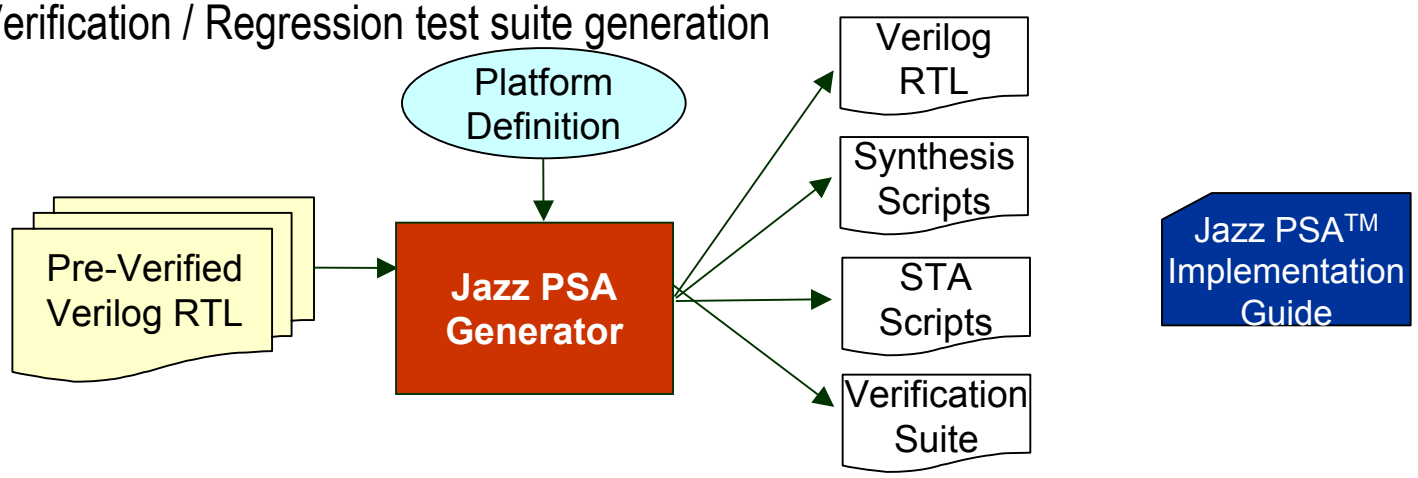
Jazz PSA Generator

- Jazz PSA Generator provides everything you need to implement a Jazz PSA™ Platform in a standard ASIC methodology
- Full Design/Verification methodology support
  - Generates netlist of pre-verified Verilog RTL
  - Automatic synthesis script generation
  - Automatic static timing analysis script generation
  - Verification / Regression test suite generation



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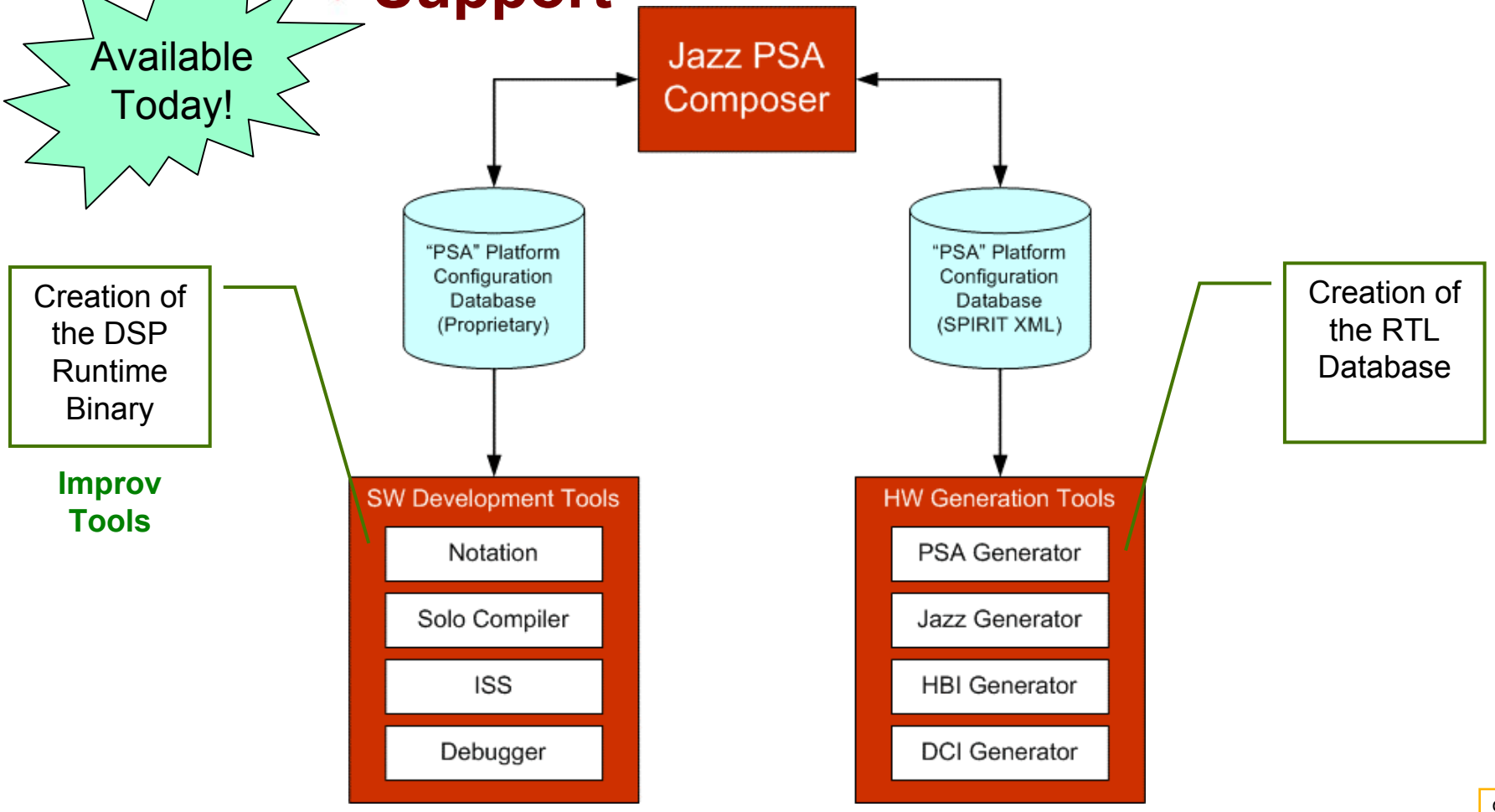
Jazz PSA Tool Flow with SPIRIT Support

Available Today!



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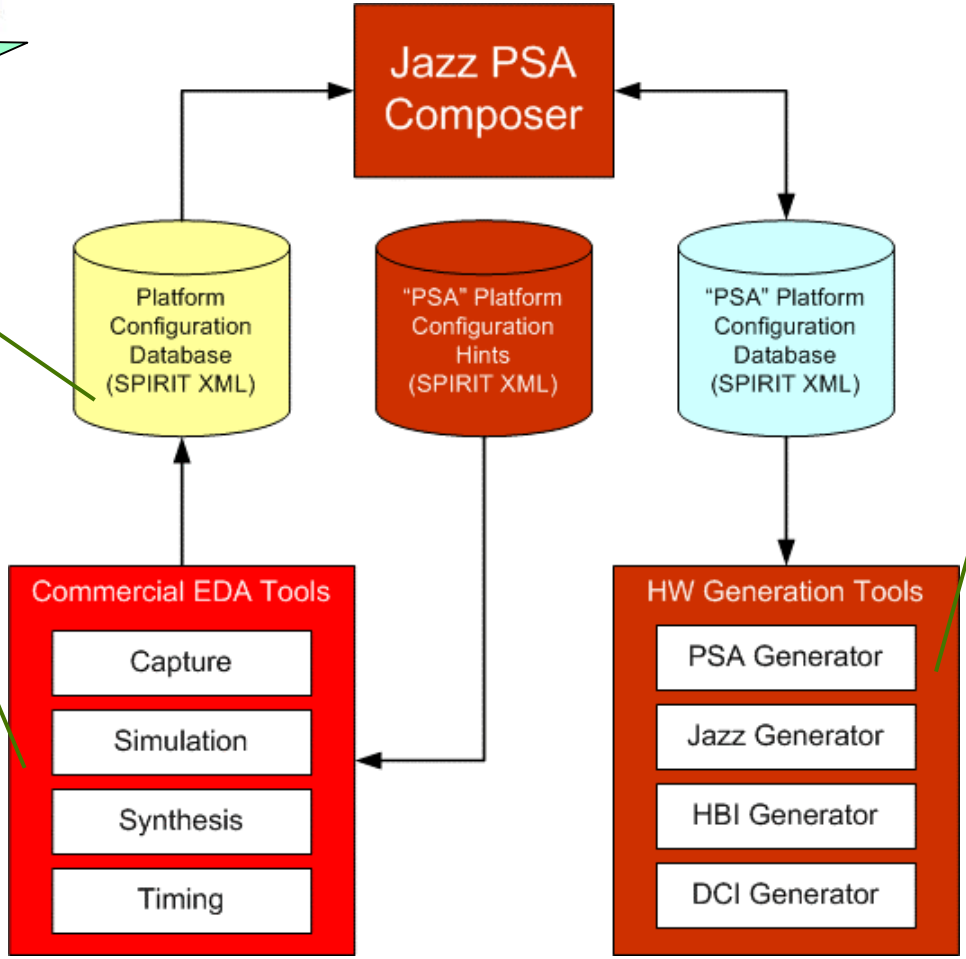
Initial SPIRIT Design Flow Integraton

Available Today!

I/O Based Jazz PSA Platform Description

Creation of the SoC Platform

Commercial EDA Tools



Creation of the RTL Database

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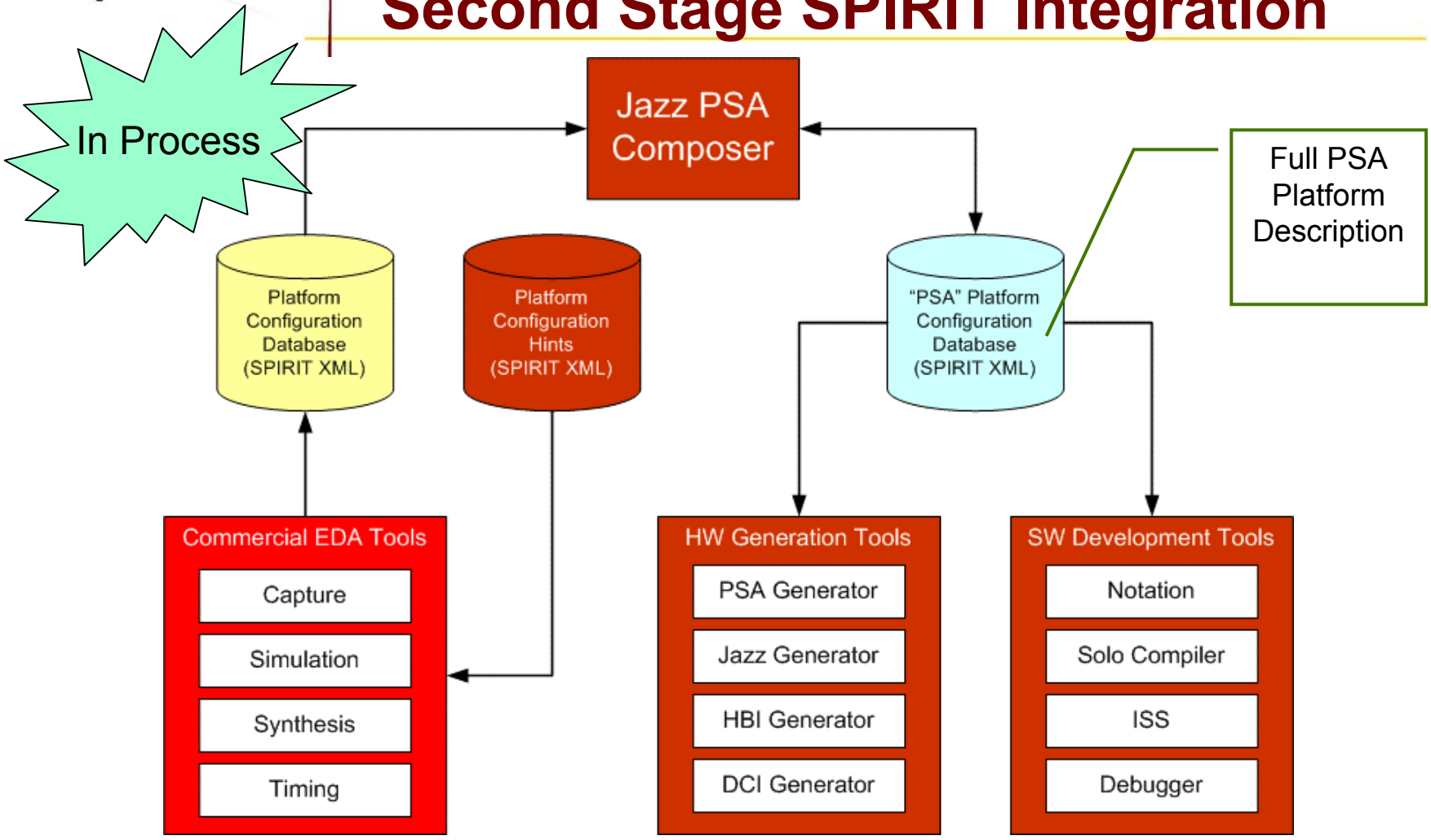
Second Stage SPIRIT Integration



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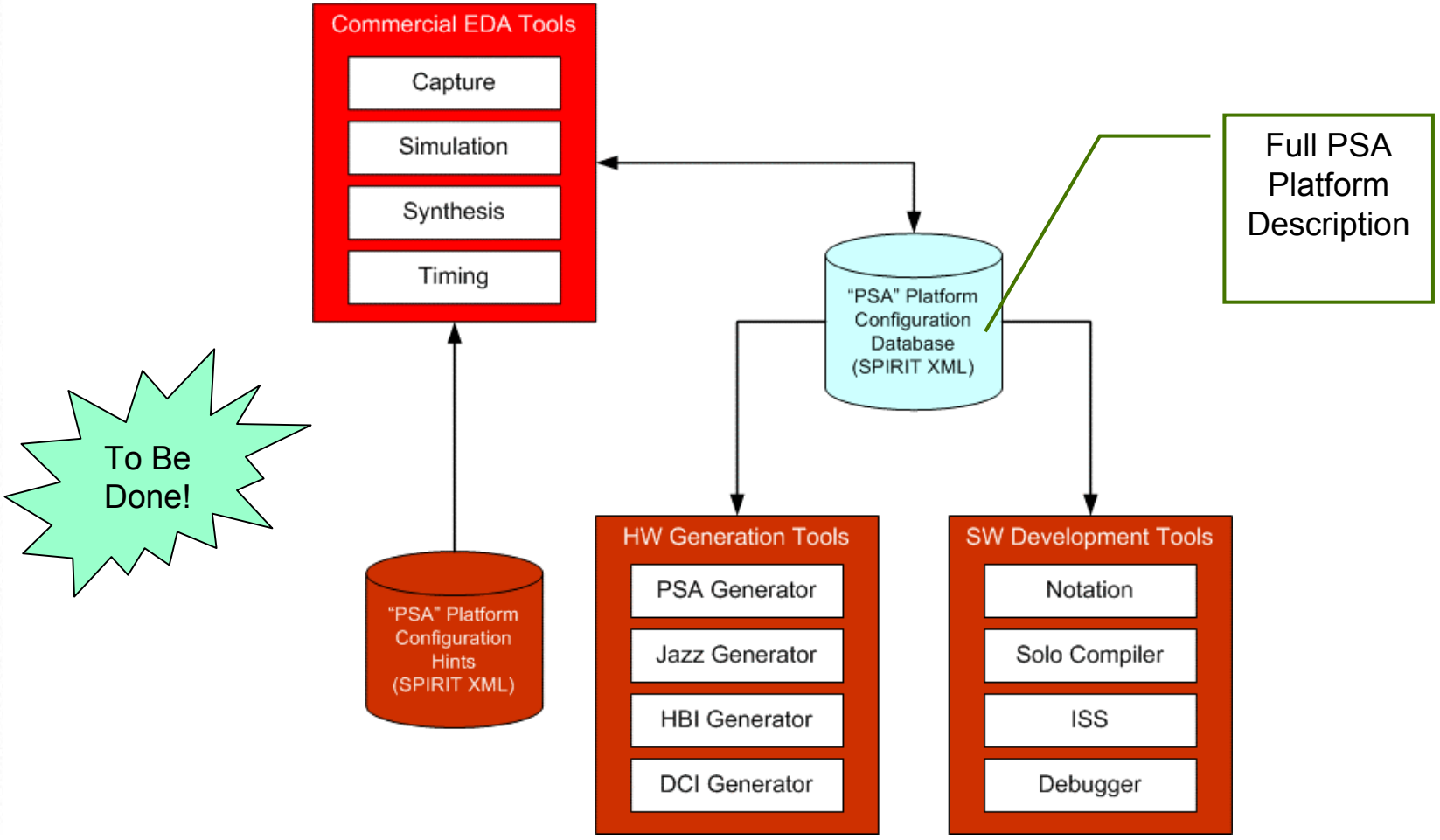
Complete Native SPIRIT Support



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Conclusions

- Iterative approach has provided low cost, low risk implementation
  - Initial goal of generating SPIRIT output has allowed external tool integration
  - Quick interconnect and functional flow verification is enabled
- Second Stage alpha shows promise for internal SW/HW generation in SPIRIT
- Final integration will integrate into single data base for faster processing and robust verification.
  - Allow tight integration with EDA tools at multiple levels