

The logo for duolog technologies. The word "duolog" is written in a large, blue, lowercase sans-serif font. Below it, the word "technologies" is written in a smaller, green, lowercase sans-serif font. To the right of the text is a small blue square icon with a white circuit-like pattern inside.

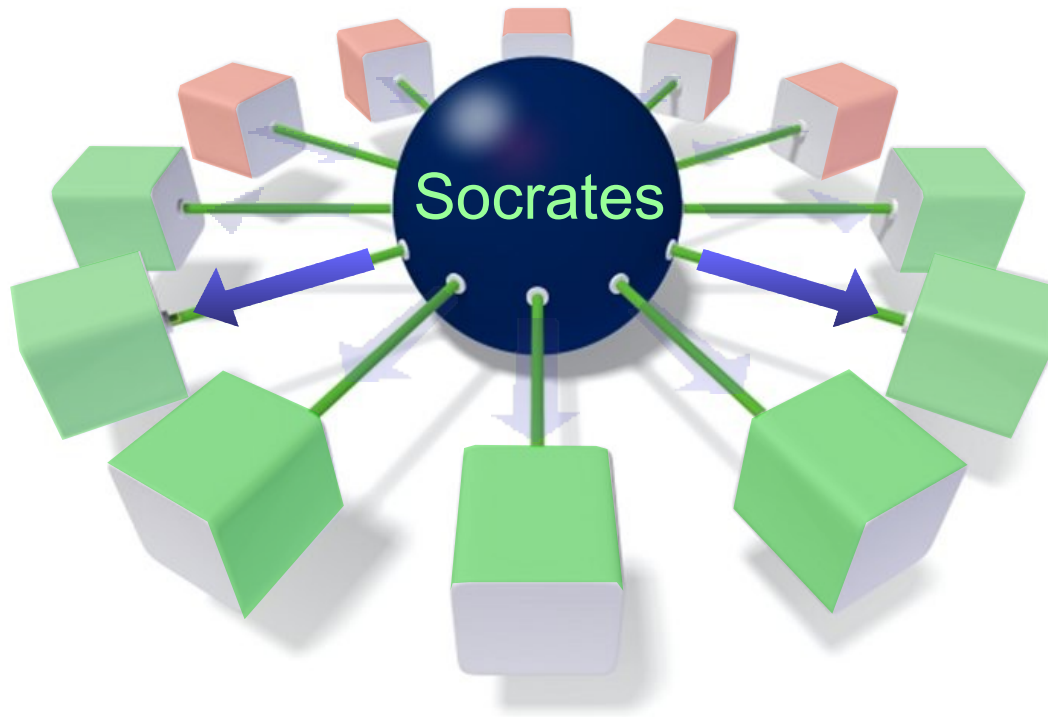
duolog
technologies

SoC Integration Solutions





Socrates Integration Platform

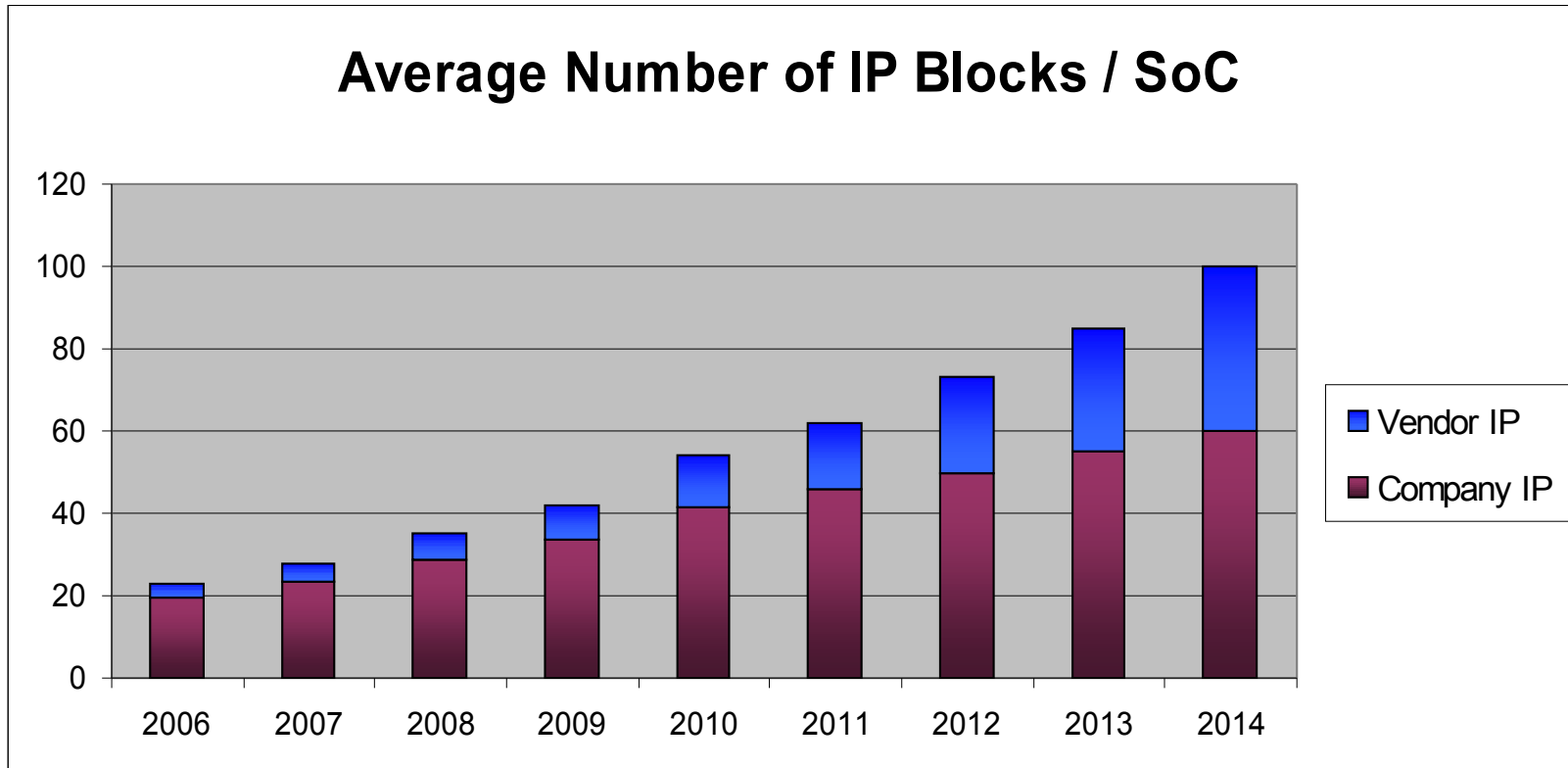


Rapid, Robust, Repeatable SoC Integration

SoC **Complexity** is Increasing



IP Use & Reuse is Increasing



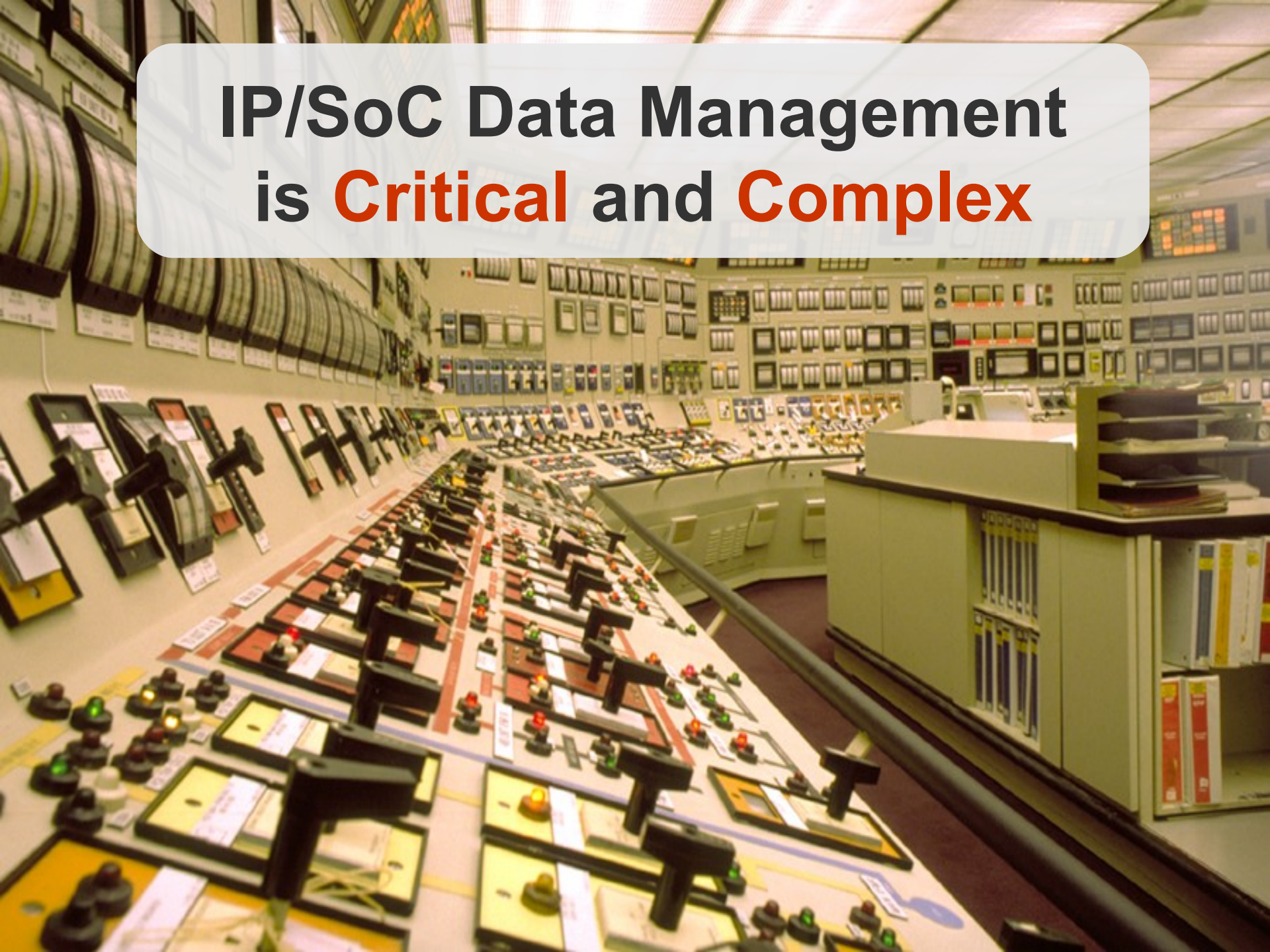
- Average % of 3rd-party IP blocks in a system was **20%** in 2009
- This is expected to grow to **40%** by 2014
- IP usage will grow by **250%** in same period


Source: Gartner, IPSoC 2010

Today's **Subsystems**
are Tomorrow's **IPs**



IP/SoC Data Management is **Critical** and **Complex**





**Success Depends on
Efficient System Integration**

SUCCESS



SoC Integration

■ IP Management

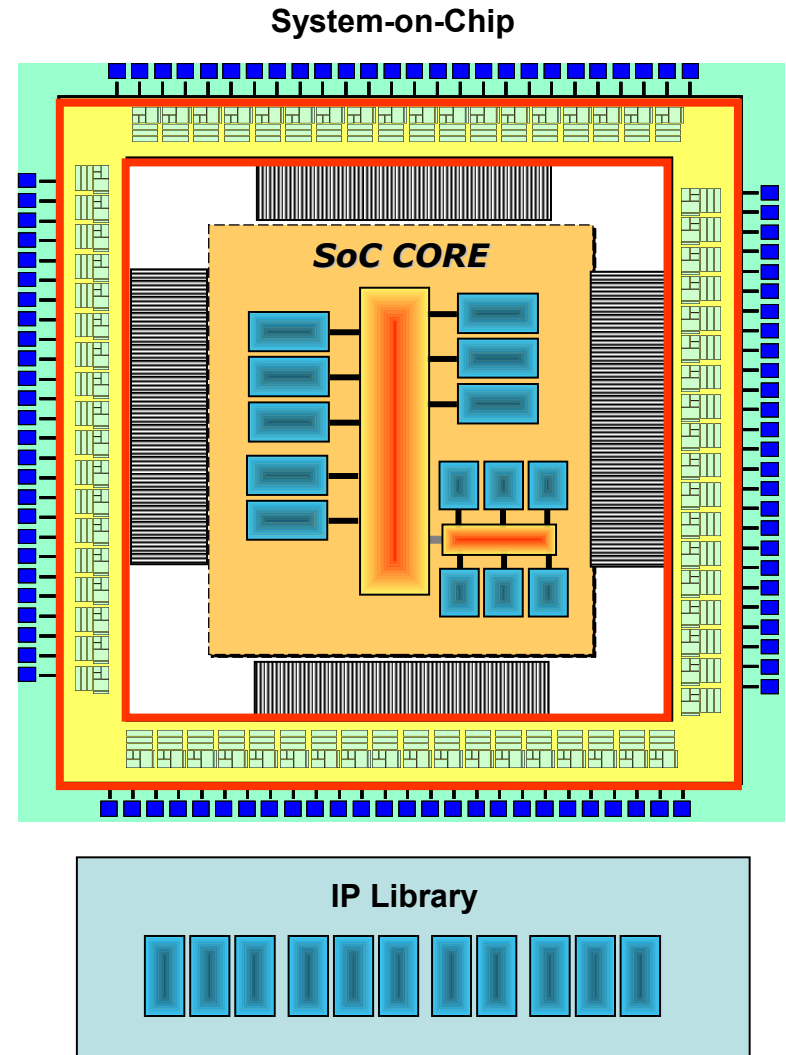
- IP Creation
- IP Packaging / Standardization
- IP Content Management

■ IP Integration

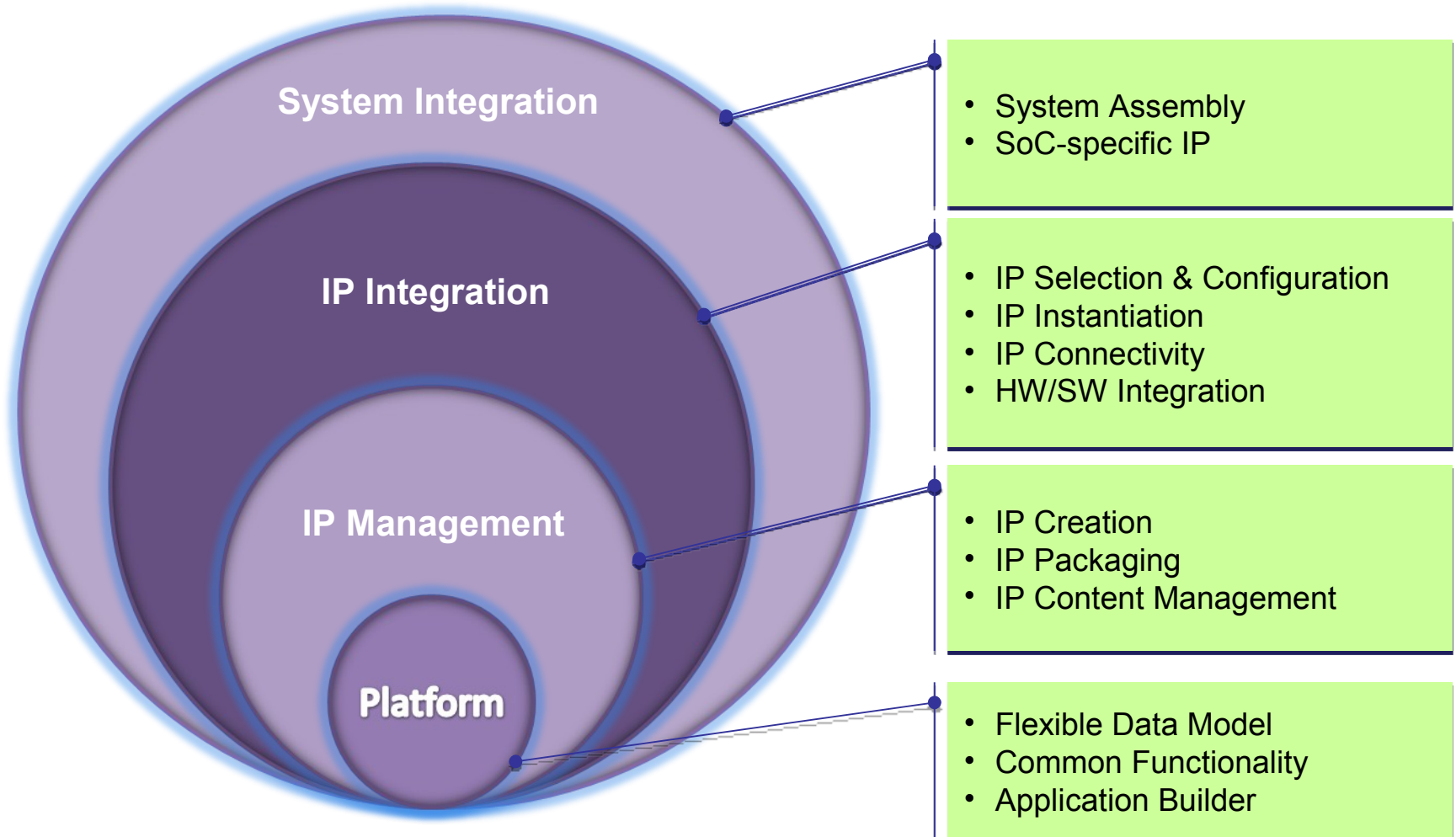
- IP Selection & Configuration
- IP Instantiation
- IP Connectivity
- HW/SW Integration

■ System Integration

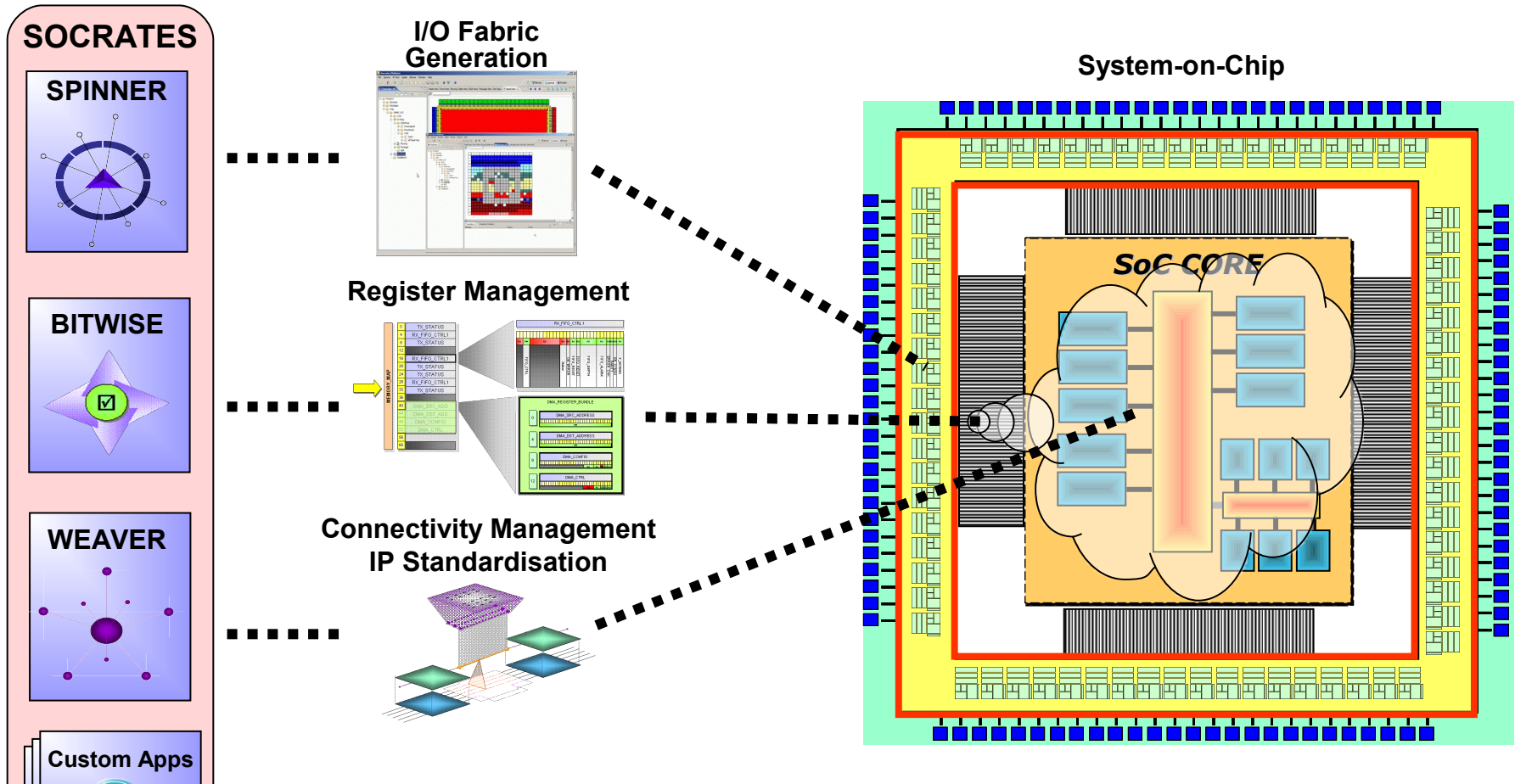
- System Assembly
- SoC-specific IP



Socrates Integration Platform



Socrates Integration Applications



**Rapid, Robust, Repeatable
SoC Integration**



Socrates Bitwise

Bitwise manages the HW/SW interface of an IP or system

- Capture or import design data
 - Components, memories, registers, bitfields, memory-maps
 - Import via IP-XACT, CSV, XML etc.

- Validate design integrity
 - Coherency checks run on-demand & on-the-fly

- Generate correct-by-construction outputs
 - Documentation, IP-XACT, RTL, HVL, SystemC, C/C++ etc.
 - Custom generators



Socrates Weaver

Weaver manages IP interconnect and system hierarchy

- Capture or import design data
 - Component, interface and port information
 - Import via IP-XACT or legacy formats

- Create system assembly specification
 - Unique 'rules-based' connection synthesis
 - Massive potential for reuse

- Generate correct-by-construction outputs
 - Infrastructure RTL, IP-XACT, review documentation
 - Custom generators



Socrates Spinner

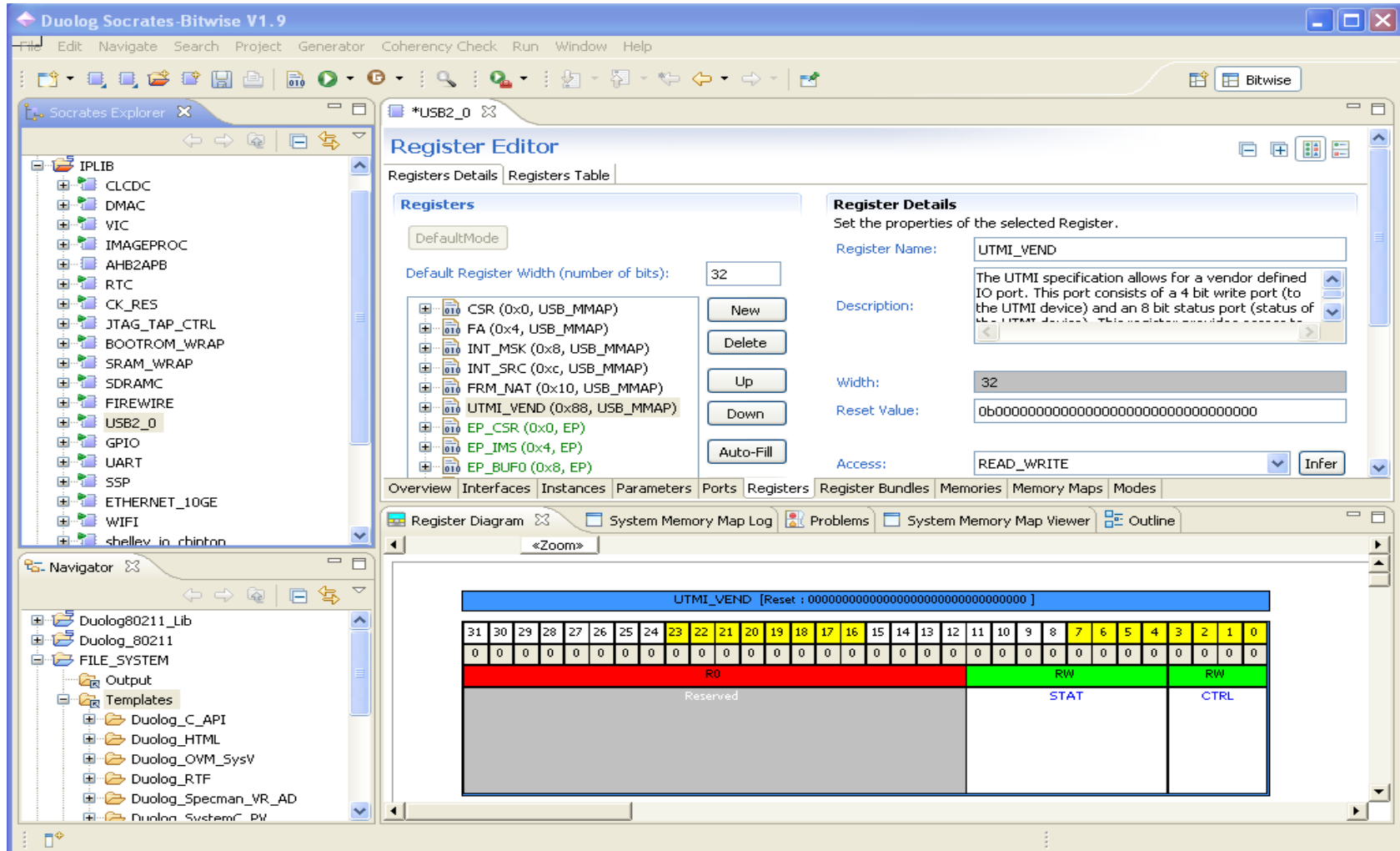
Spinner specifies and generates the I/O Layer for the chip

- Capture or import design data
 - Chip core, I/O & BSCAN cells, package information
 - Import via IP-XACT or legacy formats

- Create I/O Layer specification
 - Functional & test multiplexing
 - DFT, power management and control requirements
 - Chip configuration scenarios

- Generate correct-by-construction outputs
 - VHDL/Verilog RTL, IP-XACT, documentation, testbenches
 - Custom generators

- Eclipse-based, Graphical or Command-Line Interfaces



The screenshot displays the Duolog Socrates-Bitwise V1.9 software interface. The main window is titled "Register Editor" and shows details for the "UTMI_VEND" register. The interface includes a "Socrates Explorer" on the left, a "Register Editor" in the center, and a "Register Diagram" at the bottom.

Register Editor Details:

- Register Name:** UTMI_VEND
- Description:** The UTMI specification allows for a vendor defined IO port. This port consists of a 4 bit write port (to the UTMI device) and an 8 bit status port (status of the UTMI device).
- Width:** 32
- Reset Value:** 0b00000000000000000000000000000000
- Access:** READ_WRITE

Register List:

- CSR (0x0, USB_MMAP)
- FA (0x4, USB_MMAP)
- INT_MSK (0x8, USB_MMAP)
- INT_SRC (0xc, USB_MMAP)
- FRM_NAT (0x10, USB_MMAP)
- UTMI_VEND (0x88, USB_MMAP)
- EP_CSR (0x0, EP)
- EP_IMS (0x4, EP)
- EP_BUF0 (0x8, EP)

Register Diagram:

UTMI_VEND [Reset : 00000000000000000000000000000000]

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
R0																RW								RW							
Reserved																STAT								CTRL							



Socrates Benefits

- **Centralized source data**
 - No duplication of data
 - No misalignment between engineering teams

- **Auto-generated documentation and code**
 - Less effort wasted on tedious & error-prone tasks
 - More consistent design collateral

- **Correct-by-Construction methodology**
 - Fewer bugs, less debug effort
 - More predictable schedules

- **Customizable generators**
 - Teams draw precisely the data they need from the source
 - Quick and easy to modify or create generators



Socrates Benefits

- **Enables large-scale reuse**
 - Packaged IP, generators, rules
 - Productivity increases with each derivative product

- **Standards-based**
 - IP-XACT, Eclipse
 - Interoperable with third-party tools and flows

- **Immediate and non-disruptive deployment**
 - Import utilities for legacy data
 - Custom generators to mimic existing design collateral

- **Mature & professional products**
 - Tools work and benefits seen “out-of-the-box”
 - Proven on multiple designs



Customer Feedback



“Socrates has fully automated the creation and management of the I/O layers and has greatly enhanced the quality and timeliness of our deliverables”

“Duolog tools have taken four to six weeks off our schedules”

OMAP Program Manager, Texas Instruments

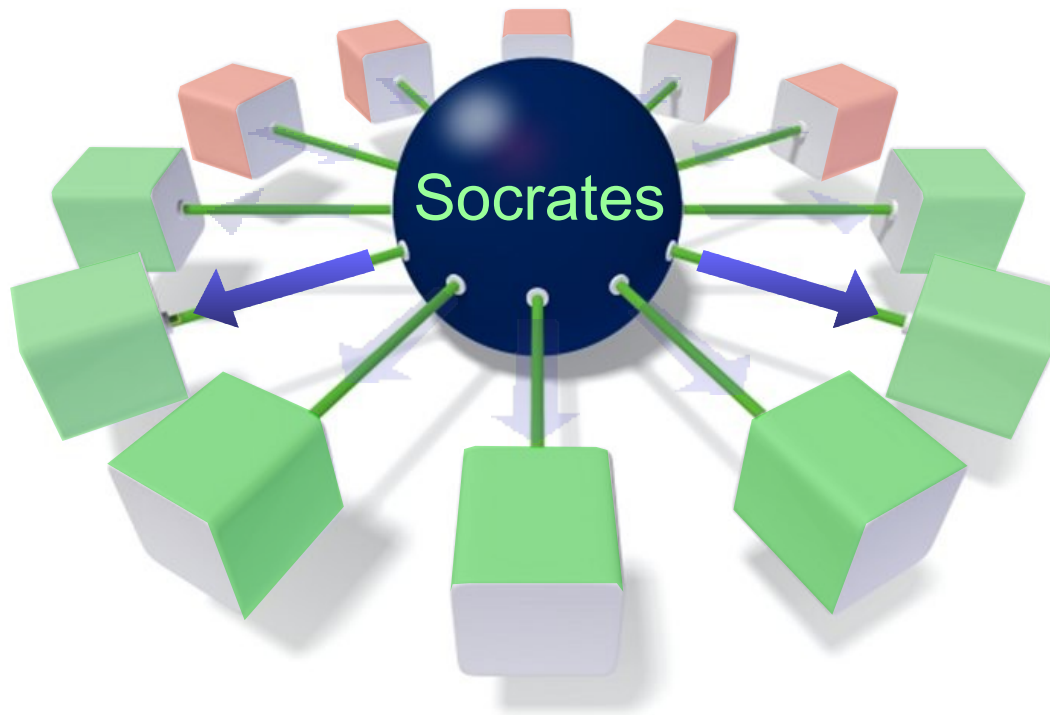
“Socrates has eliminated a whole category of bugs from our flows.”

“This tool is the centre-point of our design information and is used throughout the engineering functions in the company.”

SVP, Product Development, Intune Networks



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