IC Design Services & Manufacturing Services for 90nm Technology

Contents

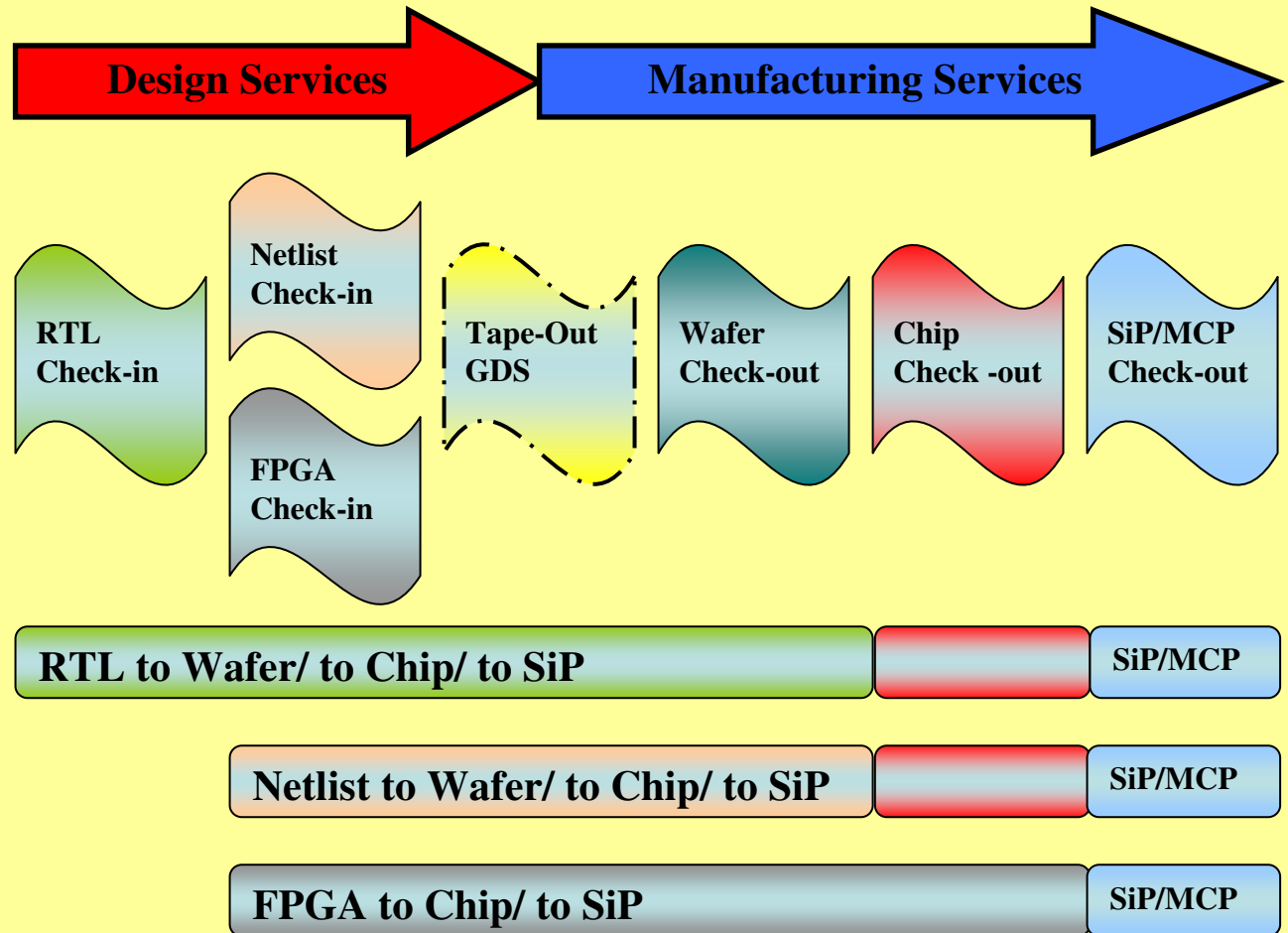# Service Overview- Scope

1. Technology Competence
90 nm, 0.13 um, 0.18 um, 0.25 um, 0.35 um, 0.5 um Ultra-Low-Power, Low-Power, High-Performance, High-V

2. Multi-foundry

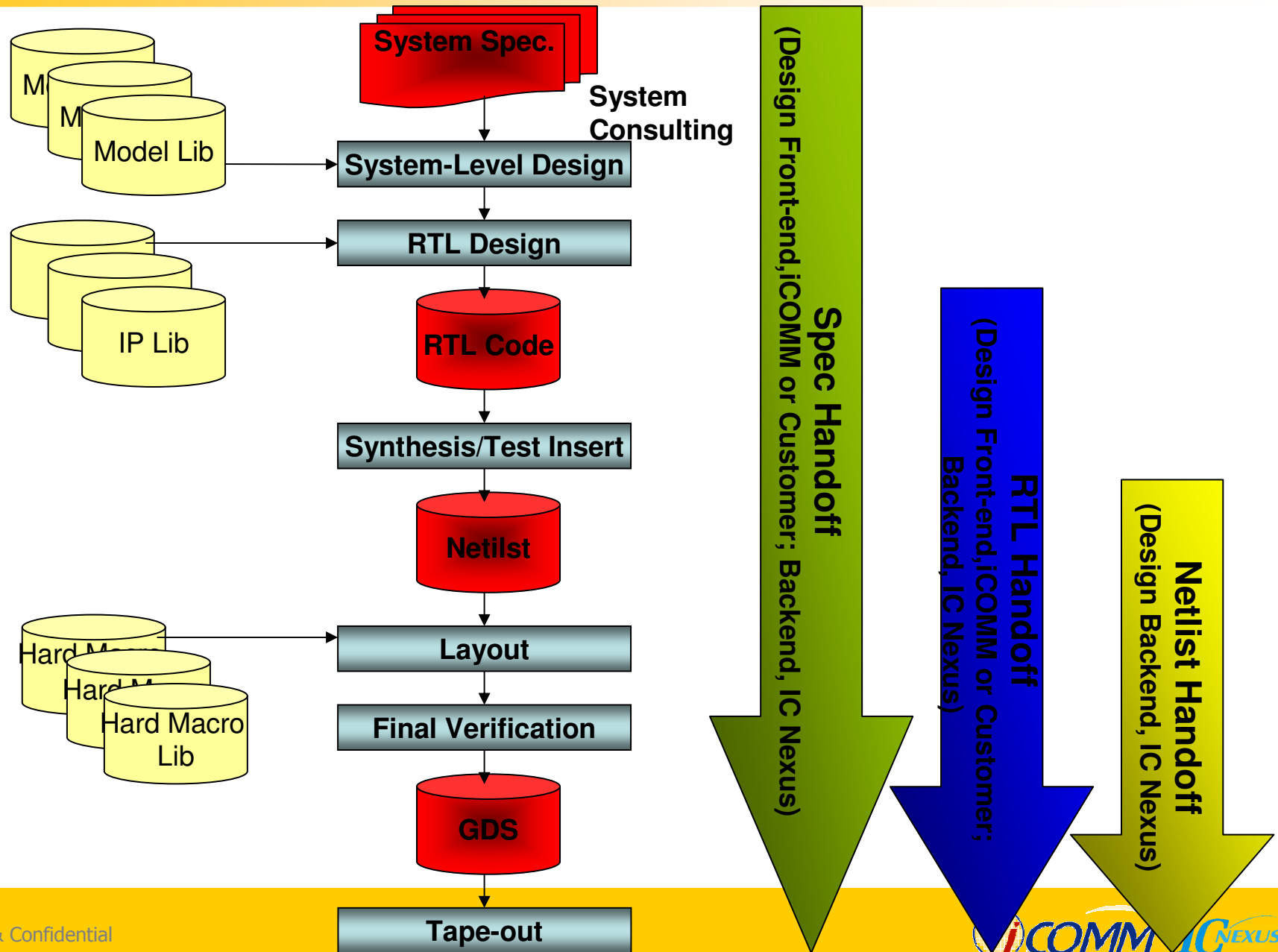**3. Comprehensive IP Portfolio**

4. ARM Platform

PS. Mixed-signal, embedded flash ASIC, Structured ASIC, and MPW business models are also available

Design Services → **Manufacturing Services** →

RTL Check-in

Netlist Check-in

FPGA Check-in

Tape-Out GDS

Wafer Check-out

Chip Check -out

SiP/MCP Check-out

RTL to Wafer/ to Chip/ to SiP | SiP/MCP

Netlist to Wafer/ to Chip/ to SiP | SiP/MCP

FPGA to Chip/ to SiP | SiP/MCP

Service Overview- Target Segments

90nm Design Services- Handoff Models

System Spec.

System Consulting

Model Lib

System-Level Design

RTL Design

IP Lib

RTL Code

Synthesis/Test Insert

Netilst

Hard Macro Lib

Layout

Final Verification

GDS

Tape-out

Spec Handoff
(Design Front-end,iCOMM or Customer; Backend, IC Nexus)

RTL Handoff
(Design Front-end,iCOMM or Customer; Backend, IC Nexus)

Netlist Handoff
(Design Backend, IC Nexus)

90nm Design Services- Netlist Handoff Example

Private & Confidential

90nm Manufacturing Services

Wafer Production

Mask Set

Raw Wafer Model

Wafer Sort/ Wafer Probe

Probe Card Test Programs

Wafer Saw

KGD Model

Die Sort

Packaging

Substrate

Final Test

Load Board Chang Kit Test Programs

Pkged & Tested Chip

Warehousing

Logistics

Shipping to Customer

RADLogic

ICNEXUS

iCOMM
Technologies Inc.
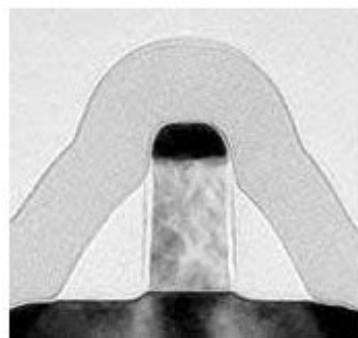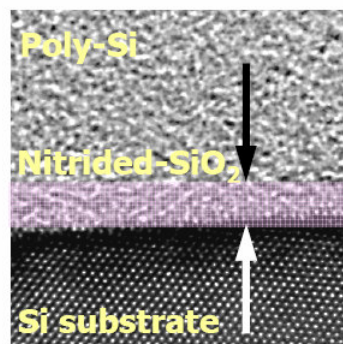
ICNEXUS
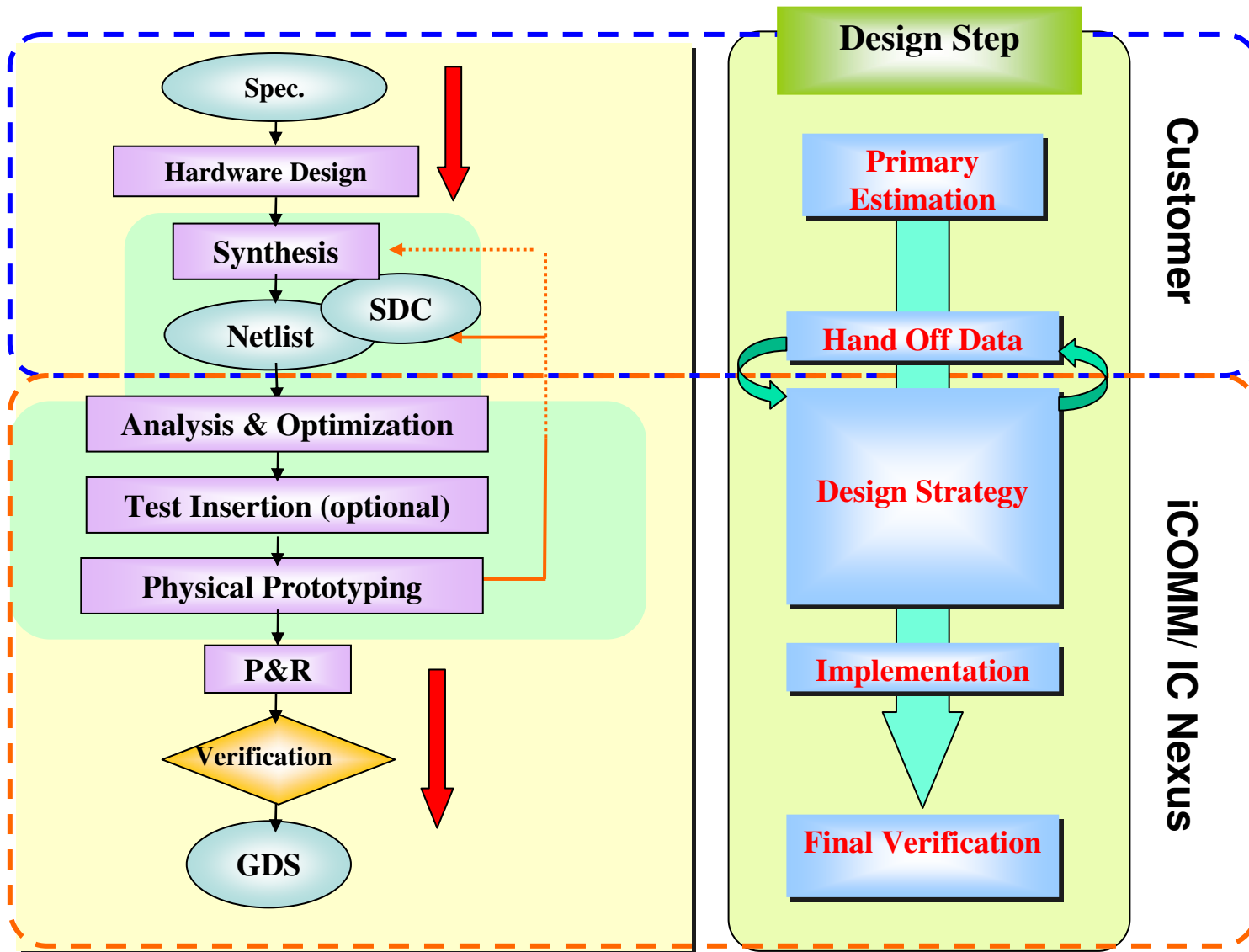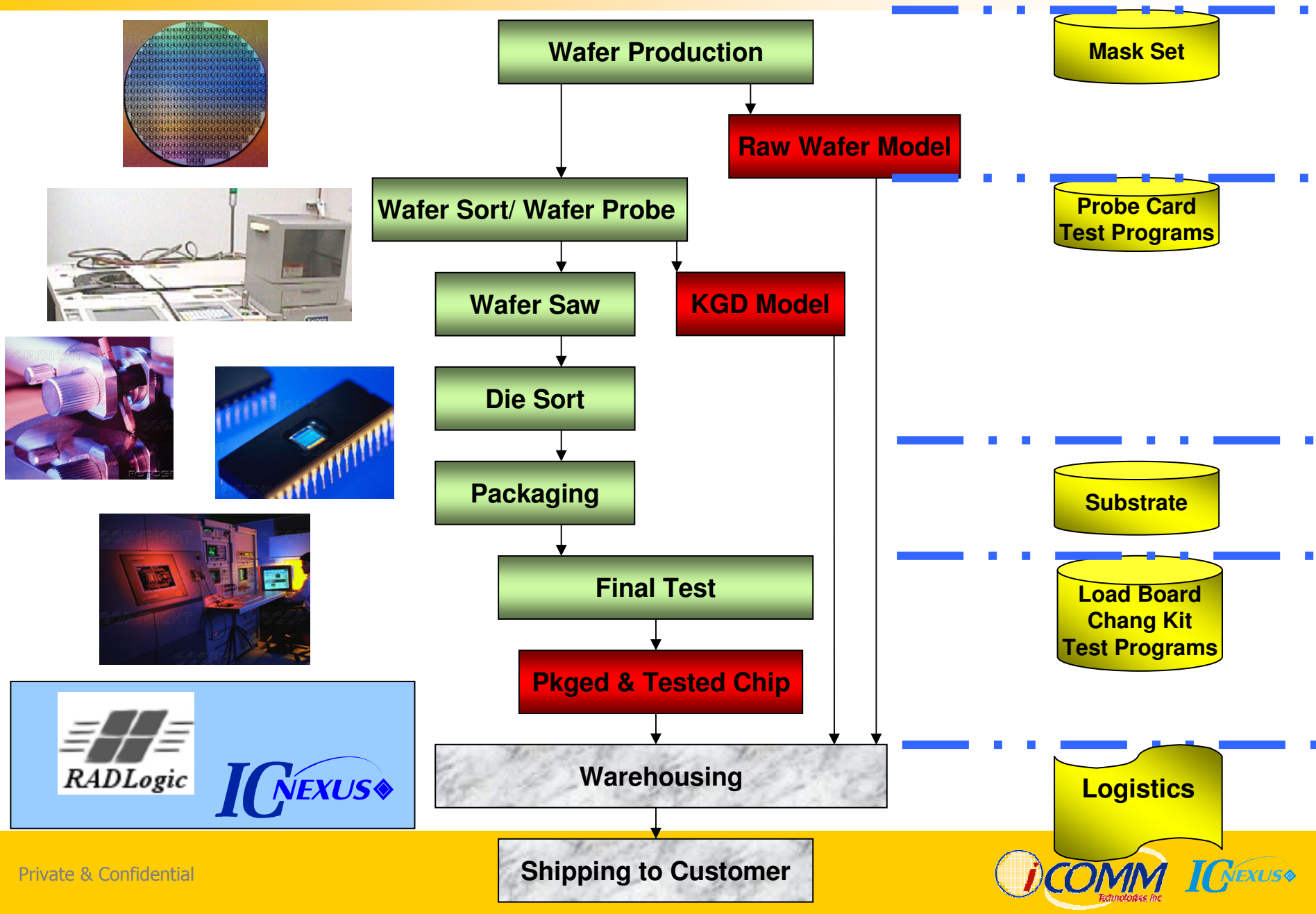
Fujitsu 90nm Wafer Foundry- Highlights

➢ **Rank Top 5 ASIC Supplier Worldwide (From: Gartner Dataquest)**

➢ **Proven Track Records of 90nm**

    PRIMEPOWER and PRIMEQUEST Computing Processors and chipsets; FOMA 3G Mobile Phone Base-band Chip; Transmeta CPU; Lattice FPGA, etc. In excess of 30 taped-out products with Chipsizes from 20mm^2 to 450mm^2.

➢ **High Performance Transistors**

    Advanced Lithography and Etch Technology to Achieve 40nm Gate Length; Low Temp Process for Shallow Junction; Process Optimization for High Carrier Mobility; Low-k (~2.9); Dual Damascene Cu; High Density 6T SRAM with sub-1um^2 cell.
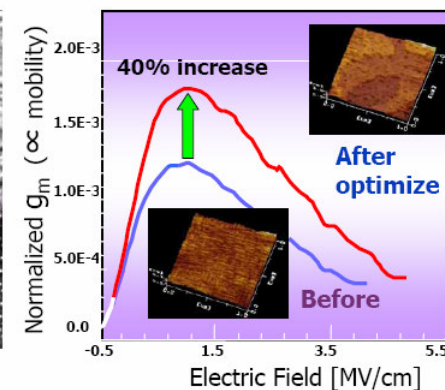

<40nm Gate>

1nm-thick Gate Oxide

Poly-Si
Nitrided-SiO$_2$
Si substrate

Surface Cleaning

40% increase

After optimize

Before

Normalized g$_m$ (∝ mobility)

Electric Field [MV/cm]

iCOMM Technologies Inc.   IC NEXUS

Fujitsu 90nm Wafer Foundry- What We Offer

♦ **Low-Leak to High-Performance Process**

Ex. Low-Leak Process Cell Library Lineup

Cell Type / Feature	Low Leak	Standard
High Speed	CS101SZ	CS101MZ
Standard	CS101SN	CS101MN
Low Leak	CS101SL	CS101ML

PS. You can combine same or different cell types with different feature cells in one design under same process

♦ **Less NRE Cost, Unit Cost, and TCO Total Solutions Through Our Current ASIC Business Model Offerings**

♦ **Fujitsu Proven in-house and Partner Comprehensive IP Portfolio**

iCOMM Technologies Inc.   IC NEXUS

Fujitsu 90nm Wafer Foundry- Benchmark
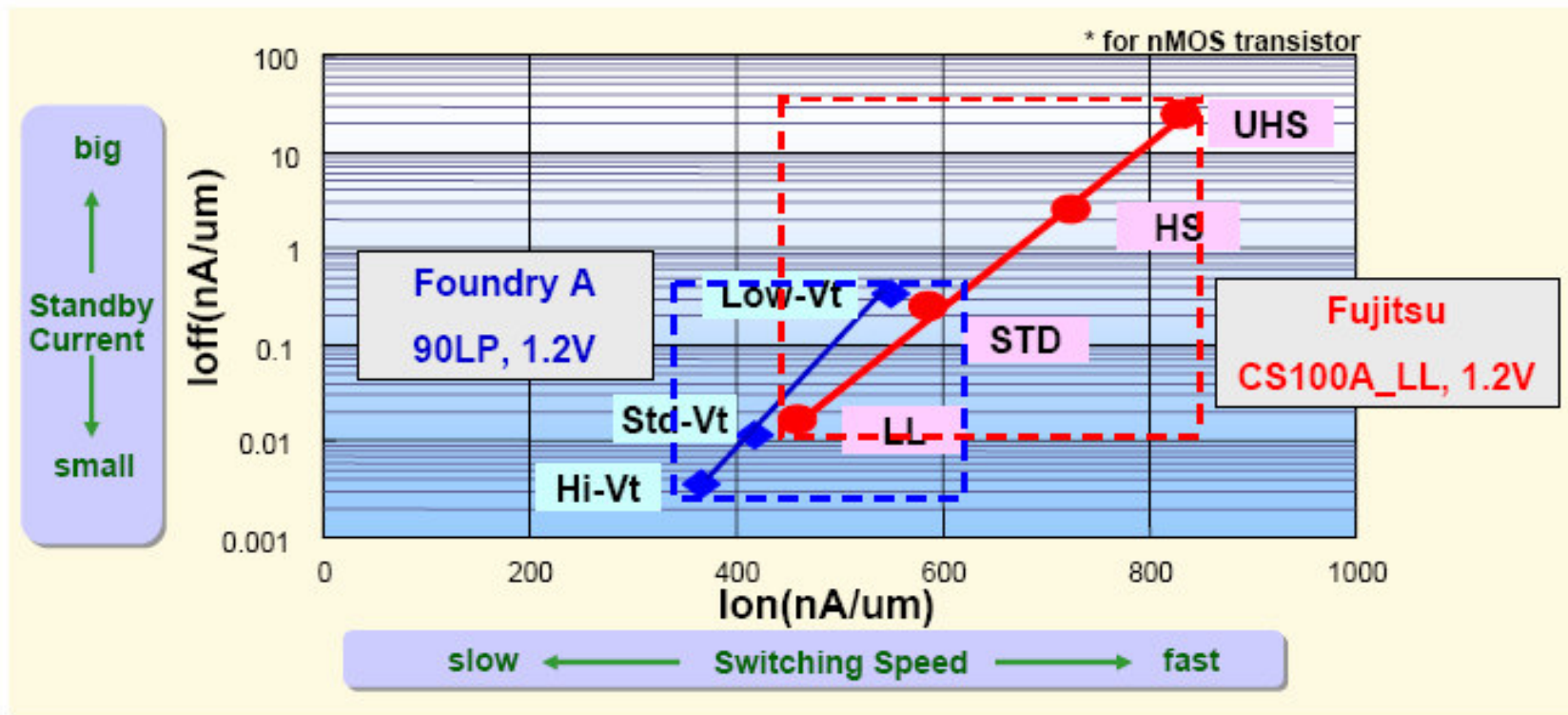
CS100A_LL process covers a *broad range* of requirement for both high performance and low leakage current.
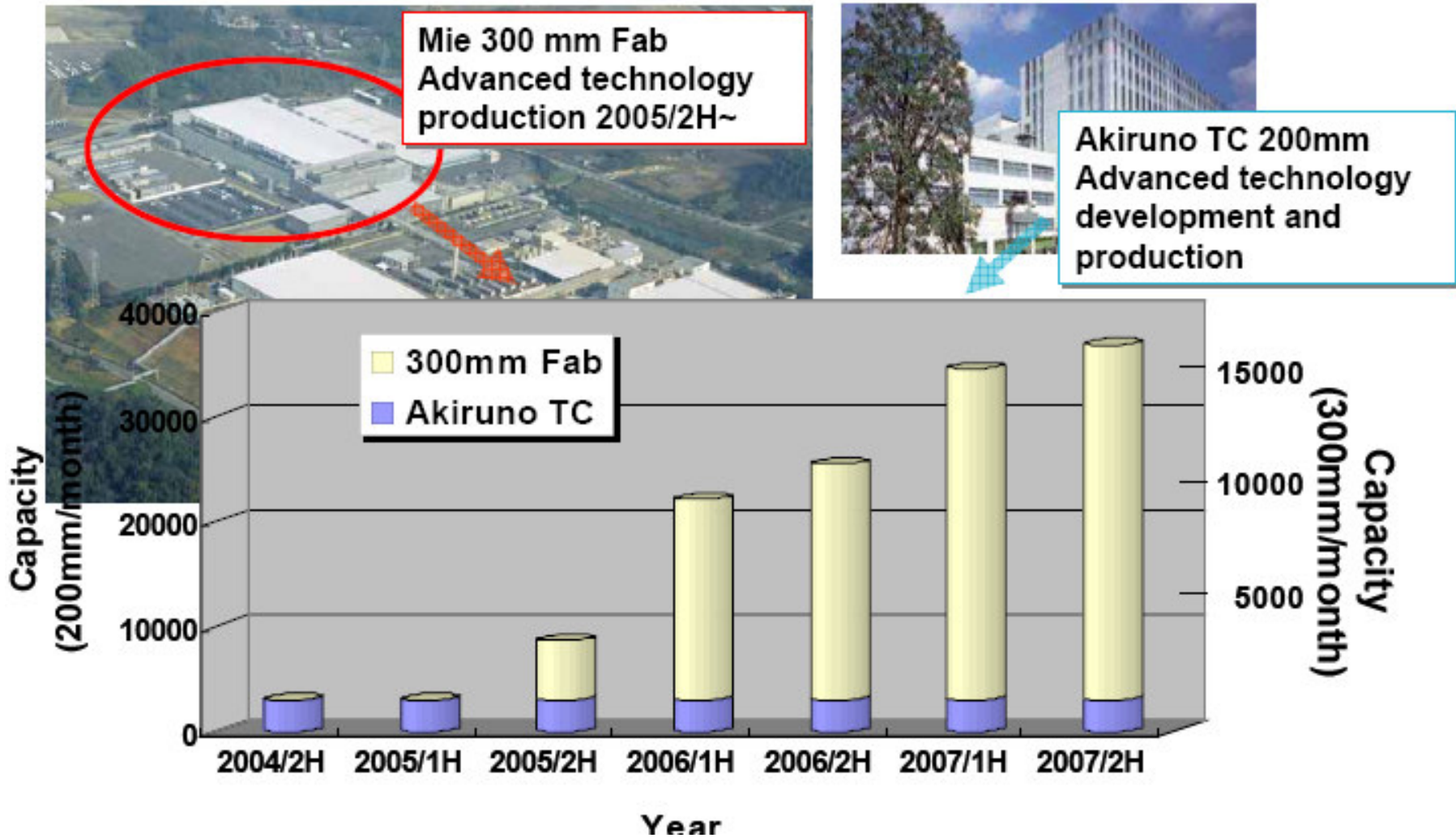
Note:
CS100A_LL: Low-Leak Process
LL: Low –Leak Tr.   STD: Standard Tr.   HS: High-Speed Tr.   UHS: Ultra-High-Speed Tr.

Fujitsu 90nm Wafer Foundry- Capacity

Mie 300 mm Fab
Advanced technology
production 2005/2H~

Akiruno TC 200mm
Advanced technology
development and
production

90nm IP Portfolio- Overview

♦ **We offer various silicon-proven digital and analog IPs by teaming up with foundries, pure IP vendors, and design house partners.**

♦ **Our customers get the advantage of one-stop shopping ensuring successful IP integration**

90nm IP Portfolio- List (Partial)

➢ **MPU**

- ❑ **ARM7TDMI-S**
- ❑ **ARM926EJ-S**
- ❑ **ARM946E-S**
- ❑ **ARM1176JZF-S**

➢ **Interface Macro**

- ❑ **USB2.0 Device PHY; USB2.0 Host PHY; USB2.0 OTG PHY; USB1.1 PHY**
- ❑ **PCI-Express 2.5G Endpoint PHY**
- ❑ **DRAM Interface: DDR2 Controller Interface- 400~533Mbps x32; 400~533Mbps x16; ~800Mbps x16. Mobile DDR 266Mbps**
- ❑ **S-ATA 1.5G/3.0G Host/Target PHY**

➢ **Special I/O**

- ❑ **SSTL2 for DDR333; SSTL18 for DDR400; SSTL18 for DDR667**
- ❑ **LVDS**
- ❑ **PCI-66**
- ❑ **I²C**

➢ **Others**

ADC/DAC; PLL; DLL

Conclusion

➢ **You One-Stop Shop Partners From Spec to Silicon**

➢ **Strategically Allied with Top 90nm Wafer Foundry-Fujitsu to Provide Mature Production Services**

➢ **Broad Range of IP Portfolio Specifically meeting Modern Technology Trend**

➢ **Worldwide Service Network to Facilitate Services Globalization**

➢ **Proven Records of Success**

Your Long-term ASIC Partner –
iCOMM & IC Nexus