SIS
Sukra Infotek
Futuristic Solutions

Agentic AI for Semiconductor Industry

Empowering Semiconductor R&D, Fabrication, and Operations through Agentic Intelligence & Engg. Automation

In the semiconductor industry, success hinges on precision, throughput, and process yield. At **Sukra Infotek**, we merge our deep expertise in Agentic AI, engineering simulation, and data intelligence to deliver intelligent automation that transforms fab operations, equipment performance, and product quality.

Our Agentic AI frameworks help semiconductor leaders streamline **design verification, predictive maintenance,** and **production analytics** while ensuring security, scalability, and explainability across the enterprise.

Accelerating Precision, Productivity, and Predictability

Our Core Competence

Agentic Process Automation
Multi-agent systems automating data validation, wafer inspection analysis, and cross-equipment process control.

Predictive Maintenance
AI agents that learn from sensor data, identify anomalies, and forecast equipment failures to prevent downtime.

Design Intelligence
AI-driven simulation workflows integrating CFD, FEA, and thermal modeling for chip packaging and cooling optimization.

Yield and Quality Optimization
Cognitive analytics identifying root causes of yield loss through correlation of process, equipment, and metrology data.
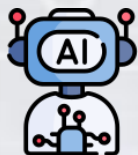
Secure AI Infrastructure
Enterprise-grade, explainable AI environments built for IP-sensitive semiconductor operations.

From process automation to Autonomous semiconductor intelligence

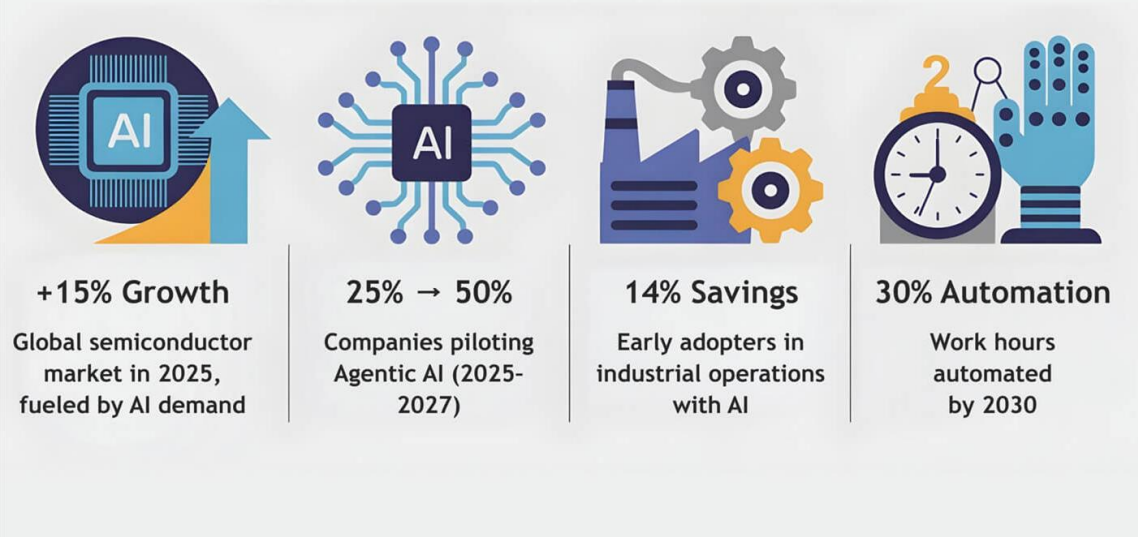| Agentic AI	Vs	Cognitive AI	Vs	Generative AI
• Orchestrates fab processes across tools • Automates end-to-end workflows • Takes corrective actions proactively		• Understands process rules & constraints • Extracts insights from fab data • Performs reasoning for defects/variations		• Generates reports & documentation • Assists engineers on request • Works only when prompted

Agentic AI = Generative AI + Context + Autonomous Actions

Application Areas

Process Equipment Monitoring

Real-time anomaly detection and adaptive control using agentic process models.

Design Verification and Simulation

Automated CFD and multi-physics workflows for advanced packaging and thermal validation.

Supply Chain and Logistics

Intelligent coordination of parts, materials, and scheduling through AI-enabled agents for production efficiency.

Quality and Yield Analytics

Correlation of fab-wide datasets to detect trends, predict deviations, and improve yield predictability.

ESG and Energy Efficiency

AI-based optimization of cleanroom airflow, thermal systems, and power utilization for sustainable operations.

Remote & Federated Ops

Secure multi-fab collaboration and remote monitoring without exposing sensitive IP.

Process and Recipe Automation

Dynamic recipe adjustment via inline metrology feedback and SPC integration.

The Numbers Tell the Story

+15% Growth
Global semiconductor market in 2025, fueled by AI demand

25% → 50%
Companies piloting Agentic AI (2025-2027)

14% Savings
Early adopters in industrial operations with AI

30% Automation
Work hours automated by 2030

Innovation & R&D – Agenetic AI

Jointly powered by

SIS Sukra Infotek Futuristic Solutions **+** **ATLAS INTELLITEK**

Agentic AI Innovation Roadmap – Semiconductor Industry

➔ Surrogate AI for Fab Process, Thermal & Equipment Models

AI engines that replicate complex fab physics — plasma behavior, deposition uniformity, thermal gradients, airflow/particle simulations, chamber pressure dynamics — enabling rapid design-of-experiments without running full-scale simulations or expensive wafer trials.

➔ Agentic AI for Autonomous Fab Operations & Process Control

Multi-agent systems that read metrology data, SPC charts, equipment logs, and recipe rules — then autonomously adjust parameters, trigger corrective actions, validate process steps, and coordinate cross-tool workflows in real time.

➔ Predictive Intelligence for Yield, Defectivity & Equipment Failures

Self-learning agents predicting drift, contamination, burn-in failures, linewidth variation, wafer breakage, pump degradation, thermal non-uniformity, and defect signatures — increasing uptime and improving yield predictability.
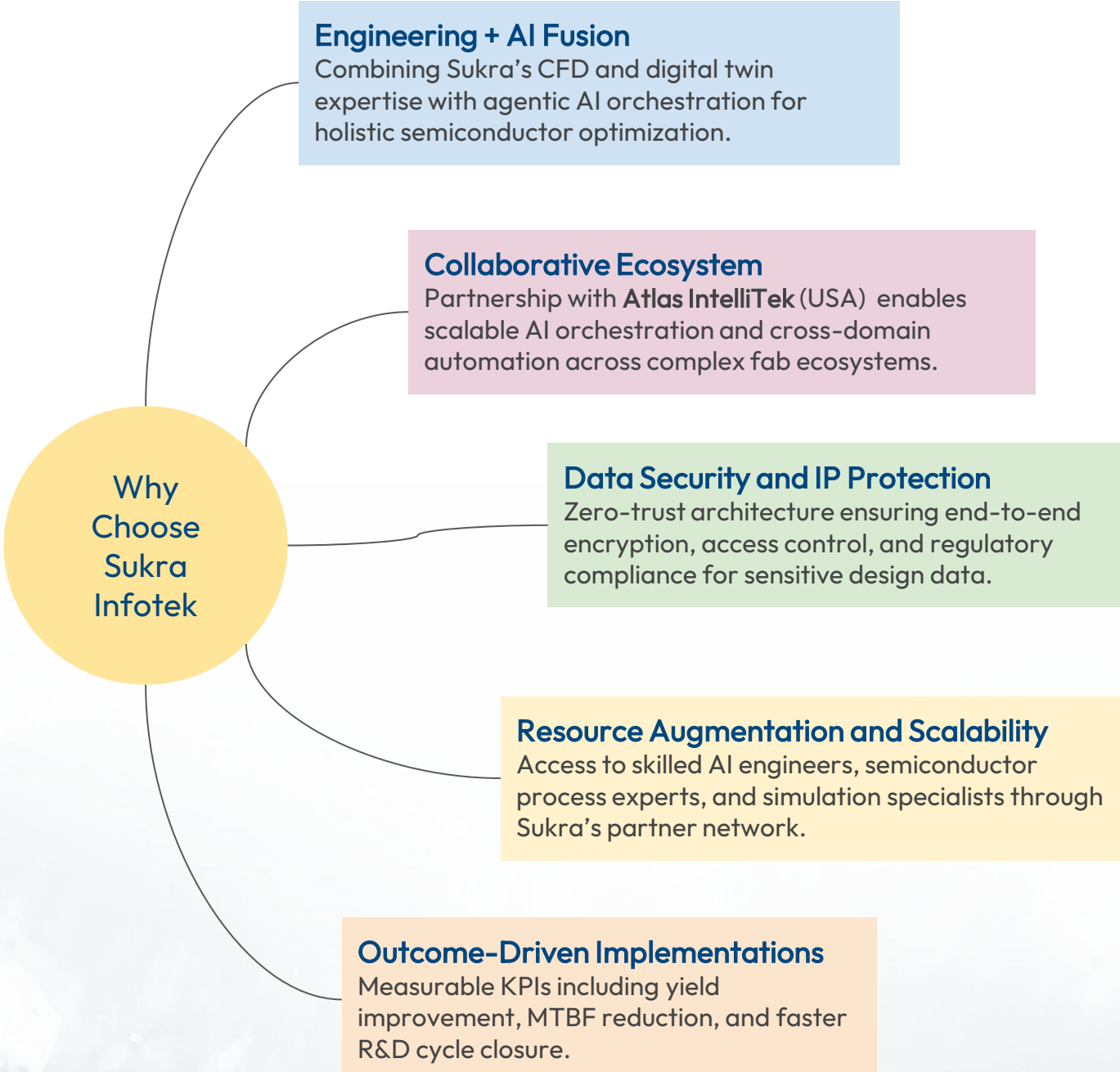
➔ Digital Twin Integration for Tools, Lines & Entire Fabs

End-to-end semiconductor digital twins combining process physics, CFD/thermal modeling, equipment telemetry, MES data, and supply chain signals — enabling real-time capacity planning, energy optimization, and "what-if" fab scenario simulation.

➔ Autonomous Quality, Compliance & Recipe Governance

AI agents that validate recipe adherence, monitor SPC violations, prepare audit logs, track ISO/ESD standards, auto-generate quality deviation reports, and ensure secure IP governance across R&D, pilot lines, and high-volume manufacturing.

Our roadmap includes physics-aware process automation, real-time fab intelligence, autonomous yield optimization, and secure digital twin-driven operations.

Engineering + AI Fusion
Combining Sukra's CFD and digital twin expertise with agentic AI orchestration for holistic semiconductor optimization.

Collaborative Ecosystem
Partnership with **Atlas IntelliTek** (USA) enables scalable AI orchestration and cross-domain automation across complex fab ecosystems.

Data Security and IP Protection
Zero-trust architecture ensuring end-to-end encryption, access control, and regulatory compliance for sensitive design data.

Resource Augmentation and Scalability
Access to skilled AI engineers, semiconductor process experts, and simulation specialists through Sukra's partner network.

Outcome-Driven Implementations
Measurable KPIs including yield improvement, MTBF reduction, and faster R&D cycle closure.

Why Choose Sukra Infotek

The Sukra Advantage ✔️

Proven Cross-Domain Expertise	Combining software engineering, AI, and computational modeling experience across industries for semiconductor applications.
AI-Powered Digital Twins	Integration of physics-based simulation with machine intelligence for design and operational decision support.
Rapid Proof-of-Value	4–6-week pilots showcasing yield improvement, reduced downtime, or accelerated design iteration before full deployment.
Interoperable and Scalable	APIs enabling seamless integration with MES, ERP, or PLM systems for unified decision intelligence.
Startup Agility with Enterprise Governance	Sukra delivers innovation speed with the governance and reliability expected by global semiconductor players.

Partner with Sukra to unlock intelligent automation and predictive precision across your semiconductor value chain.

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Reach us to learn how Agentic AI can power your next-generation fab operations.