

# Tensoft SemiOps

SaaS Solutions for the  
Semiconductor and Sensor  
Industries including IC and  
Module Businesses





## Tensoft SemiOps Cloud Platform

**Tensoft SemiOps**  
(Semiconductor Supply Chain)

**Tensoft DemandOps**  
(Semiconductor Sales Operations)

**Tensoft SemiOps SI**  
(Supplier Integrations)

“ Supports the unique manufacturing, supply chain management, demand management, and financial accounting needs of high tech businesses ”

**15+**

Years of Experience in  
Semiconductor Industry

**100+**

Semiconductor Ecosystem  
Integrations  
(Fab, OSAT, Contract Mfg.)

**200+**

Companies' Chips and  
Sensors Built on Tensoft  
Platform Including Fabless  
ASIC Partners



# Tensoft SemiOps

*Industry-Specific Manufacturing,  
Supply Chain and Logistics Management*

Designed to easily scale with growth and support the unique manufacturing, supply chain management, and financial accounting needs of technology companies, including semiconductors, optical, RF, MEMS, Solid State Devices, LED, solar and sensor IC and module companies with fabless or partially outsourced manufacturing operations.



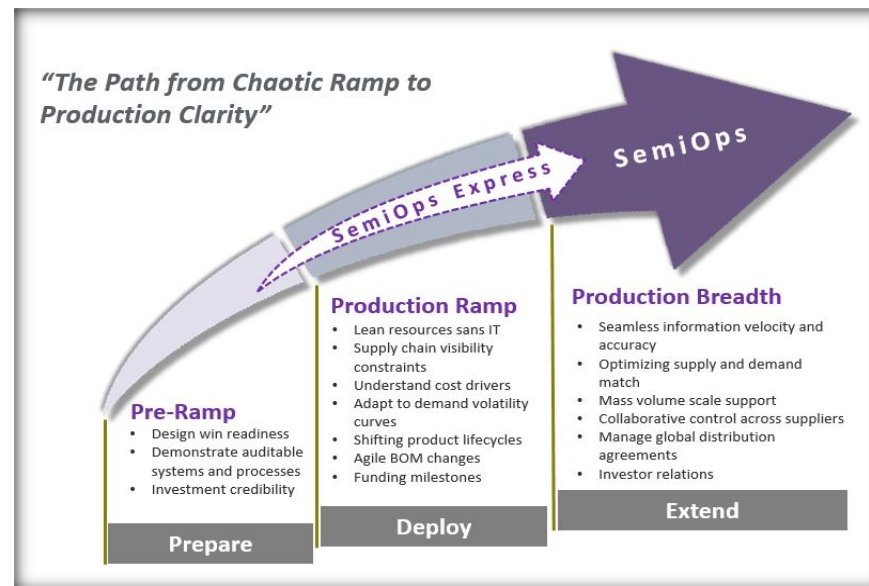
# Features Overview

## Planning & Forecasting

Quickly and accurately plan for material requirements with Tensoft SemiOps Planning and Forecasting. Improve your business performance and exploit supply chain opportunities with unified strategic, tactical and operational supply chain optimization, with visibility to all stakeholders.

## Inventory Valuation and Product Costing

Purpose built for industry finance and product costing. Includes yielded cost models, cost rolldown support, detailed cost and variance analysis, 4-way match for vendor invoices, ERP integration, historical inventory reporting, and roll forward inventory analysis.



## Operations and Outsourced Manufacturing

Complete WIP and inventory management support for semiconductor operations, including yield and cycle time history, consolidated WIP status, complete forward and backward product genealogy, auditable lot and product attribute tracking, all fully integrated with planning, customer service, and ERP.

## Customer Service and Logistics

All the tools a customer service manager needs to support orders, scheduling, shipping and drop shipment, documentation, and management metrics in a closed loop system fully integrated with invoicing and accounting. Customer service is an integral component of the Quote to Cash cycle.

TSMC												
			FAB		SORT		ASSY		TEST		PACK	
			WIP	INV	WIP	INV	WIP	INV	WIP	INV	WIP	INV
ARGUS	▣ ARGUS-W		4600	25	0	0	0	0	0	0	0	0
MCM	▣ MEMS-1		0	221999 00	0	0	0	0	0	0	0	0
MCM	▣ MEMS-3		0	330000 0	0	0	0	0	0	0	0	0
NAGA	▣ NAGA-W		325	0	0	0	0	0	0	0	0	0
Total			4925	254999 25	0	0	0	0	0	0	0	0

STATS												
			FAB		SORT		ASSY		TEST		PACK	
			WIP	INV	WIP	INV	WIP	INV	WIP	INV	WIP	INV
ARGUS	▣ ARGUS-QFP216-C		0	0	0	0	0	0	0	3000	0	0
ARGUS	▣ ARGUS-QFP216-C-TR		0	0	0	0	0	0	0	0	0	375
ARGUS	▣ ARGUS-QFP216-C-TY		0	0	0	0	0	0	0	0	0	2098
ARGUS	▣ ARGUS-QFP216-I-TR		0	0	0	0	0	0	0	0	0	2125
ARGUS	▣ ARGUS-QFP216-I-TY		0	0	0	0	0	0	0	0	4100	0
NAGA	▣ NAGA-QFP208-I6		0	0	0	0	0	0	0	180	0	0
NAGA	▣ NAGA-QFP208-I6-TR		0	0	0	0	0	0	0	0	0	1104
Total			0	0	0	0	0	0	0	3180	4100	5702

**WIP Report - Production Summary**  
*Consolidated Inventory across vendors, production stages, and product families*

Supply Chain Report (Planning Engine run at 05/19/2017 1:29:18 PM and Published on 05/19/2017 1:32:08 PM)

Lot Type	Production Family	Location	Output	Date From	Date To	Run	Excel	
All	All Families	All Locations	All Items	04/01/2017	06/30/2017			
Current				Projected F/G				
Source	Lot Type	Vendor/Location	Prod Release	Prod Lot #	Quantity	Output Item	Date	Quantity
ARGUS-BGA216-I-TR/I	WIP	AMKOR/AMKOR-K4	PROD00000307		1,100	ARGUS-BGA216-I-TR	05/28/2017	1,100
ARGUS-QFP216-I-TY/I	WIP	STATS/STATS-SG	PROD00000299		2,100	ARGUS-QFP216-I-TY	05/13/2017	2,100
ARGUS-W/I	WIP	TSMC/TSMC-F8	PROD00000287		100	ARGUS-S	06/21/2017	18,000
NAGA-BGA208-I/I	WIP	AMKOR/AMKOR-K4	PROD00000313		2,720	NAGA-BGA208-I3-TR	05/20/2017	2,448
						NAGA-BGA208-I3-TY	05/20/2017	2,448
						NAGA-BGA208-I6-TR	05/20/2017	2,448
						NAGA-BGA208-I6-TY	05/20/2017	2,448
NAGA-W/I	WIP	TSMC/TSMC-F8	PROD00000281		225	NAGA-BGA208-C3-TR	06/15/2017	32,149
						NAGA-BGA208-C3-TY	06/15/2017	32,149
						NAGA-BGA208-C5-TR	06/15/2017	21,433
						NAGA-BGA208-C6-TY	06/15/2017	21,433
						NAGA-BGA208-I3-TR	06/15/2017	32,149
						NAGA-BGA208-I3-TY	06/15/2017	32,149
						NAGA-BGA208-I6-TR	06/15/2017	21,433
						NAGA-BGA208-I6-TY	06/15/2017	21,433

*Supply Flushed to all potential finished good items*

Rolldown Validation															
Process		Attribute Set		Item#		Version									
FAB-TSMC/I		ARGUS-W/I		ARGUS-W		Released									
Process/Rev/Attribute Set/Rev/Item						U/M	Vendor Cost	Other Cost	Material Cost	Std Yield	Cumulative Std Cost	Entered Std Cost	Variance	Update	
FAB-TSMC/I/ARGUS-W/I/ARGUS-W						WAFER	1550.0000	0.0000	0.0000	100.0000	1550.0000	1550.0000	0.0000		
SORT-TSMC/I/ARGUS-S/I/ARGUS-S						DIE	0.2500	0.0000	0.0000	90.0000	8.8889	8.8889	0.0000		
ASSY-ASE/I/ARGUS-QFP216/I/ARGUS-QFP216						EACH	1.5000	0.0000	6.0000	98.0000	16.7234	16.7234	0.0000		
TEST-STATS/I/ARGUS-QFP216-C/I/ARGUS-QFP216-C						EACH	0.5000	0.0000	0.0000	90.0000	19.1372	19.1372	0.0000		
PACK-STATS/I/ARGUS-QFP216-C-TR/I/ARGUS-QFP216-C-TR						EACH	0.0300	0.0000	0.0000	100.0000	19.1672	19.1672	0.0000		
PACK-STATS/I/ARGUS-QFP216-C-TY/I/ARGUS-QFP216-C-TY						EACH	0.0200	0.0000	0.0000	100.0000	19.1572	19.1572	0.0000		
TEST-STATS/I/ARGUS-QFP216-I/I/ARGUS-QFP216-I						EACH	0.6000	0.0000	0.0000	90.0000	19.2483	19.2483	0.0000		
PACK-STATS/I/ARGUS-QFP216-I-TR/I/ARGUS-QFP216-I-TR						EACH	0.0300	0.0000	0.0000	100.0000	19.2783	19.2783	0.0000		
PACK-STATS/I/ARGUS-QFP216-I-TY/I/ARGUS-QFP216-I-TY						EACH	0.0200	0.0000	0.0000	100.0000	19.2683	19.2683	0.0000		
ASSY-AMKOR/I/ARGUS-BGA216/I/ARGUS-BGA216						EACH	8.0000	0.0000	0.0000	98.0000	17.2336	17.2336	0.0000		
TEST-AMKOR/I/ARGUS-BGA216-I/I/ARGUS-BGA216-I						EACH	0.6000	0.0000	0.0000	90.0000	19.8151	19.8151	0.0000		
PACK-AMKOR/I/ARGUS-BGA216-I-TR/I/ARGUS-BGA216-I-TR						EACH	0.0300	0.0000	0.0000	100.0000	19.8451	19.8451	0.0000		
PACK-AMKOR/I/ARGUS-BGA216-I-TY/I/ARGUS-BGA216-I-TY						EACH	0.0200	0.0000	0.0000	100.0000	19.8351	19.8351	0.0000		
TEST-AMKOR/I/ARGUS-BGA216-C/I/ARGUS-BGA216-C						EACH	0.5000	0.0000	0.0000	90.0000	19.7040	19.7040	0.0000		

**Standard Cost Rolldown Validation**  
*Yielded cost rolldown through IBOM for unlimited versions of standard cost*

# What are the benefits

## Supports Semiconductor Manufacturing

Supports inverted BOM one-to-many production model. Yield and cycle time requirements, binning and complex package options, as well as downgrades and rework, are all full supported.

## Delivers Full Lot Genealogy

Wafer lot, internal lot, and vendor lot can be tracked for every step in the process. Unlimited production attributes can be tracked and used for detailed analysis. Every part has full genealogy associated with it at all times.

## Operation Cycle Time Management

Ability to track cycle time data by product, vendor production step, and product variables for detailed sorting and analysis.

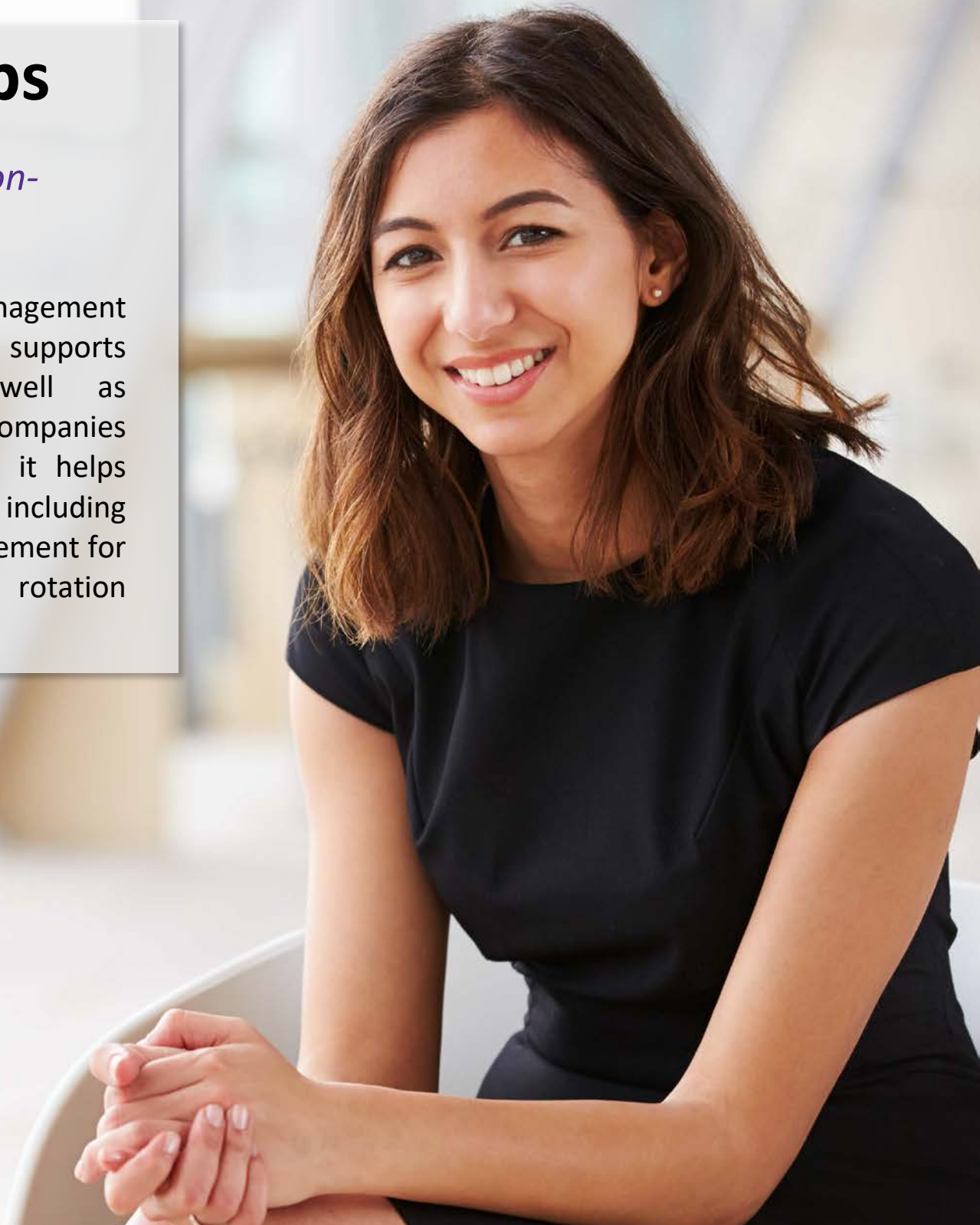
## Integrated Production Suite

Fully automated supply and demand analysis and planning through operations execution to global fulfillment processes. Benefits such as a closed loop process for 4-way match of order to approved production completion, to vendor invoice, and production pay-points fully integrated with payables process highlight collaborative system workflows.

# Tensoft DemandOps

*Managing demand in a distribution-based go-to-market model.*

It delivers order-to-invoice, returns management and distributor management that supports industry-specific requirements as well as distribution-based requirements. For companies that sell through distribution channels, it helps manage the distributor relationship, including managing price guarantees, credit management for sales to specific customers and stock rotation support.





# Features Overview

## Booking, Billing and Backlog

Includes built-in bookings tracking, billing and backlog reporting. This includes change tracking for bookings, and commit date change tracking for backlog. Automate what is usually a time consuming and painful process for most organizations.

## Distributor Inventory Tracking

End customer level tracking. Updated from shipments, returns, and distributor reported point of sale (POS) data.

## Production Planning and Demand Management

Backlog plus forecasts plus insight into distributor and channel inventory are key inputs into reviewing and judging your demand plan. We help put all of this together for you to best prepare the forecast for production planning.

## Returns Management

Includes RMA to credit processes.

## Shipping Support

Multiple shipment options available for Tensoft customers including shipper portal, integrated shipment (allowing supplier to do shipping separately) and quick ship model (simplified model to record outside fulfillment that is not integrated).

## Distributor Orders

Distributor specific or end customer specific pricing, distributor shipping accounts and requirements.

## Ship & Debit and Price Guarantees

POS end customer quote identification, match to distributor

inventory, credit generation and invoice reset for price guarantees.

## Stock Rotation

Integrated with returns management and includes matched or unmatched returns.

## Easy Integration

Seamless integration with Tensoft cloud apps and Microsoft Dynamics ERP, including Dynamics 365.

## Sales Order Management

Order to invoice options for various business models including traditional push/pull production, VMI and NRE. Consideration to SalesOps and production responsibility split.



\*Certain features may be in development for future release. Please inquire on product roadmap questions.

# What are the benefits

## Increase Planning Accuracy

Judge and adjust your demand plan by comparing forecasts to the existing inventory at the distributors.

## Efficient Distributor Management

Manage distributor relationships like rebate management for sales to specific customers, managing price guarantees and stock rotation support.

## Broaden Visibility

Integrated point of sale data provides insights on sales to customers by distributors and the available inventory.

## Controlled Order Management

Leverage different order management flow models to best support multiple business scenarios. Supports NRE, VMI or vendor hub models and traditional orders.

## Streamlines Shipments

Shipping terms based on end customers including the ability to enter quotes, match multiple quotes on the same order, as well as quotes by line; and the ability to identify end customers on an order.

STDORD-01002 - 1 Save Save & New Cancel

**Basic Information**

Line Number *	1	Customer PO Line	1
Marketing Part	ARGUS-270-T1 (ARGUS-270-1)	Marketing Part Description	ARGUS-270-1
Customer Part	Type or double-click for list	Customer Part Description	
Part	400XPROC	Part Description *	400 GHz Proc version X
Is On Hold	<input type="checkbox"/>		

### Order Management (Parts)

Support for customer, marketing, & internal part numbers.

**Line Order Data**

Quote Doc	TR-5050861	Quote Doc Line	1
End Customer	Tensoft (Tensoft-US)	Price List	Retail Price
Currency	USD	Unit Of Measure *	Each
Unit Price *	1.4508	Quantity *	100000
Mark Down	0.025	Cancel Quantity *	0
Net Unit Price *	1.4358	Net Quantity	100000
Line Total	143580	Shipped Quantity	0
Request Ship Date	04/15/2017		

### Order Management (Pricing)

Support for distributor or design win based pricing – including quote match & end customer tracking.

**Shipping Details**

Ship To Business	Tensoft (Tensoft-US)	Ship To Location *	PRIMARY
Ship From Business	AMKOR-K4 (AMKOR-K4)	Ship From Location *	PRIMARY
Shipper Business	Tensoft, Inc. (Tensoft)	Shipper Method *	DHL (Ground (3-5 Days))
Shipper Account			
Shipper Notes			

### Order Management (Shipping)

Support for customer specific shipping accounts and instructions.



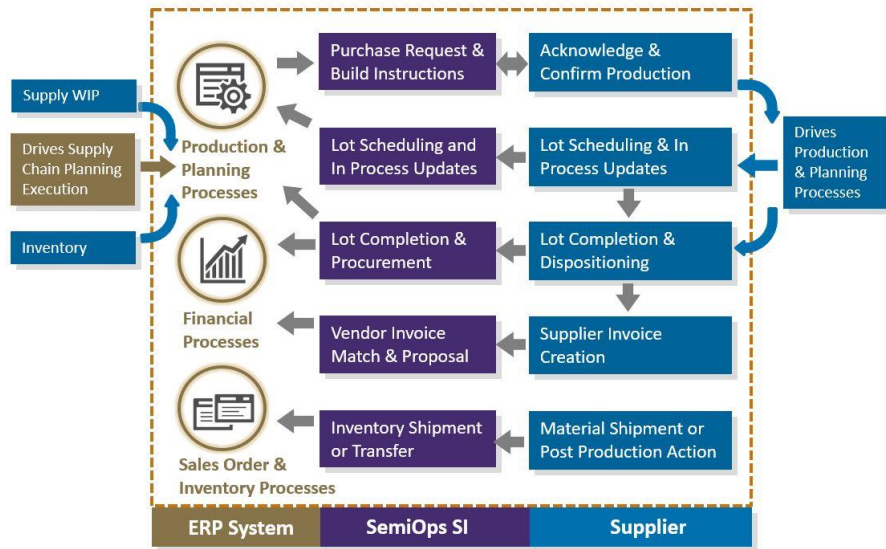


# Tensoft SemiOps SI

## *Supplier Integrations-as-a-Service*

Simplify the typical integration challenges across the fabless semiconductor supply chain by automating communications with suppliers, and gaining visibility into real-time production activity.

With Tensoft SemiOps SI, you can easily and more accurately track product progress from wafer fabrication, through OSAT production, to delivery. Successfully connected with most first-tier subcontractors and many second-tier subcontractors, Tensoft's proven cloud-based solution ensures integration to smaller suppliers as well as internal production stages and systems.



## Supplier Enablement Via a Closed Loop, Collaborative Supply Chain

Tensoft SemiOps SI synchronizes operations and production finance transactions through collaborative information exchange at every major stage of production. Delivered as a highly secure, turnkey subscription service, SemiOps SI additionally includes an enterprise grade integration platform with prebuilt connectors to major ERP systems for automated data population.

## What are the benefits

### Increase Velocity

Speed information flow to all relevant parties, including internal clients, partners and customers.

### Improve Efficiency

Communicate effectively with all suppliers at all phases of the process. Automate time-consuming transactions, eliminate error correction.

### Broaden Visibility

Gain access and insight into detailed levels of supplier data and history to improve planning, transparency and oversight.

### Better Data Accuracy

Easily detect and correct errors or discrepancies in vendor data before it goes into the ERP system.

### Reduce Costs

Efficient and accurate data collection helps reduce costs by saving time and conserving valuable resources.

### Measure Supplier Performance

Real-time communication, requested execution validation, and continual synchronization and comparison provide data to measure supplier performance and help ensure accountability.

# Features Overview

**Live Integrations with Top-Tier Suppliers** Successfully connected to most first-tier suppliers and many second-tier suppliers. Flexible, proven methodology for adding suppliers allows integration via the most optimal method in each circumstance.

**Production Orders and Forecast Information** Communicates outbound forecasted and actual production requests to the supplier and returning inbound production order acknowledgements.

**WIP Options** Collects real-time updates on supplier material moves, released lots, expected outdates, and on-time delivery status. Complete history maintained for traceability.

**Shipment Options** Collects production completion data to record lot movement, actual cycle times and yields, production genealogy information, and confirmed production receipts. Pay-point completion steps queued for production control acceptance and the integrated production payables process. Lot clarity and procurement requirement rules enforced.

**Industry Specific Integration to Supplier and Internal Systems** Flexible options for Tensoft's fully managed integration service. Multiple connectivity models available, depending on supplier systems and capabilities. B2B integration models vary depending on subcontractor's technological requirements spanning spreadsheet or flat files to sophisticated RosettaNet transactions. Connects internal shop floor systems too.

**Supplier Data Integrity Monitoring** Move hard data evaluations with suppliers by maintaining a complete history of on-time delivery, supplier data quality and supplier performance. Identify exceptions and mismatches in supplier systems through comparisons to internal production control data.

**Data Cleansing** Built-in processes for data cleansing and upload validation provide for clean data through an always-running and always-available system. Allows customers to check for discrepancies and fix errors before acceptance.

**Self-Service Analysis & Reporting** Access to both raw data and robust analytical tools to sort, query and intelligently interpret critical data and key trends across the supply chain spectrum. Powerful dashboard options available including Microsoft Power BI.

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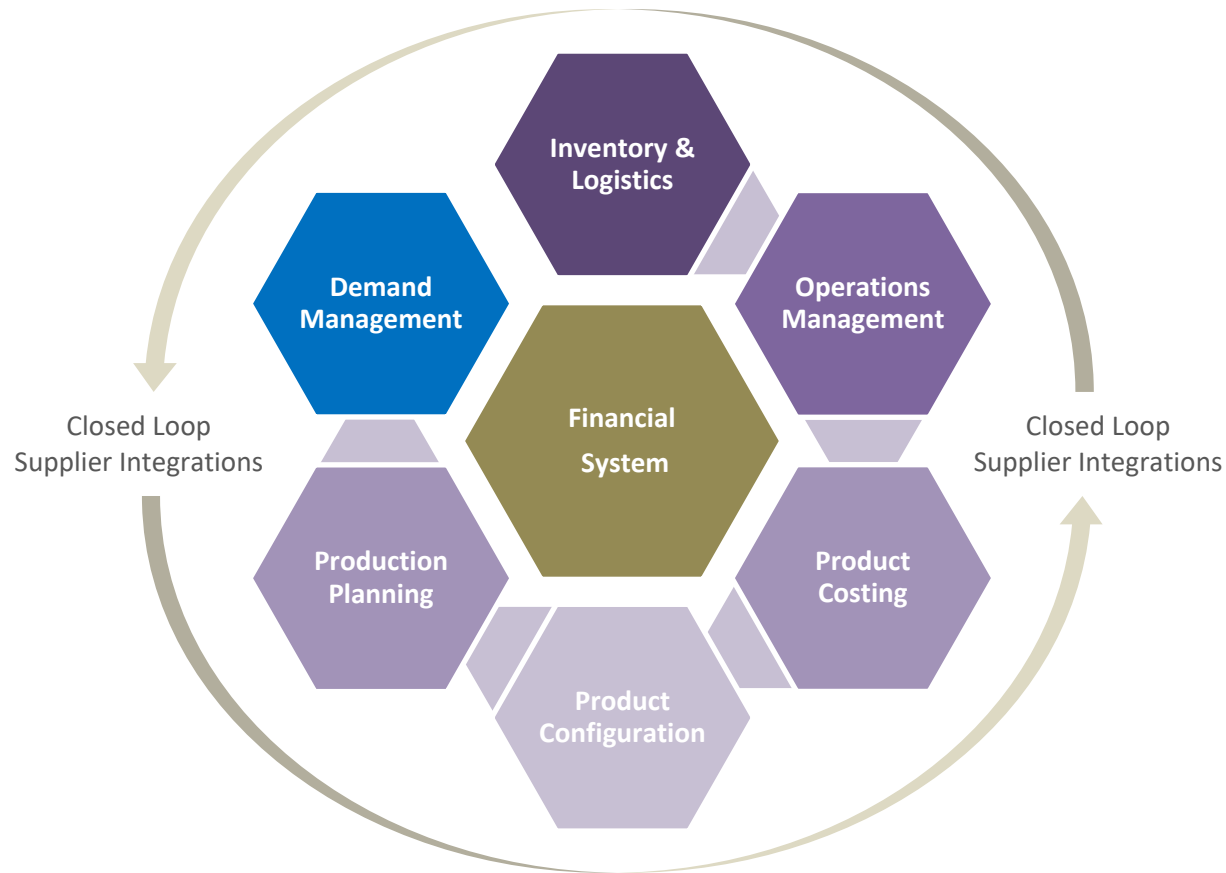
***“Tensoft SemiOps SI leverages Tensoft’s 16+ years of experience in integrating to suppliers; we have 100+ active integrations. It builds on our best practices for a high-quality experience along with our semiconductor industry knowledge.”***

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*Scale your business with Tensoft*



*"We chose Tensoft because of their proven ability and reputation for providing industry specific, end-to-end ERP via a SaaS model. Tensoft SemiOps offers functionality - including semiconductor operations management, distributor Point of Sale analysis, and executive dashboards - that's essential to our corporate goals, and the on-demand model gives us access and support for our global operation."*

*— Eric Erdman, CFO, ViXS*