



Solutions for

PHARMACEUTICAL SUPPLY CHAIN PLANNING

gain global visibility across your extended supply chain

Pharmaceutical companies face enormous challenges inherent to a complex business environment. Increasing competition, rising raw material prices, customer service demands and mounting workloads contribute urgency to establishing lean, flexible enterprises.

The WAM/ORTEMS solution balances the various facets of complex operations to help life science organizations streamline supply chains.

Our solution leverages existing IT investments and provides an integrated platform to:

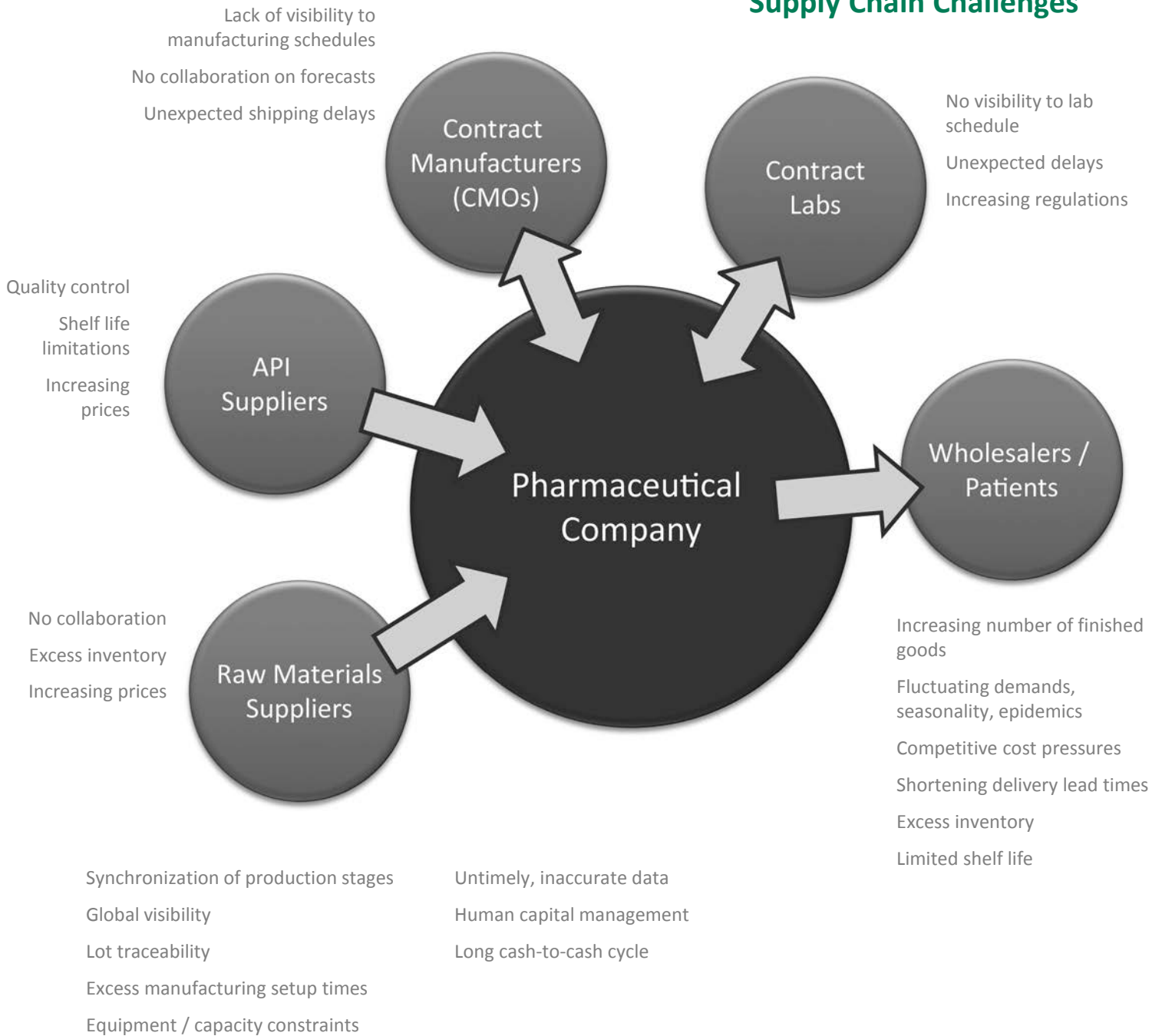
- Reduce Operating Costs
- Improve Customer Service
- Reduce Manufacturing Lead Times
- Reduce Inventories
- Improve Collaboration & Information Sharing
- Improve Flexibility to React to Market Fluctuations

Pharmaceutical manufacturers can expect price and volume volatility to remain a fact of life beyond this decade. Government regulations further complicate operations planning and scheduling as well as quality control lab planning. Such uncertain market conditions make up the unprecedented challenges for pharmaceutical companies seeking to optimize profitability and operating assets while meeting stringent quality requirements.

Global, multi-product line pharmaceutical firms often function internally as a loose conglomeration of independent supply chains with poor visibility and coordination between dependent operations. Often an information infrastructure exists that was built on a complex mix of applications and systems. Decisions and supporting data are in disconnected silos preventing the real-time flow of information and an accurate assessment of the overall supply chain activity. A truly global S&OP process seems unattainable given the degree of fragmented systems and processes.

Supply chain best practices and enterprise planning software can effectively overcome all of these challenges providing decision support analytics and visibility to respond to rapid changes in demand based on accurate assessments of asset capabilities and constraints.

Pharmaceutical Supply Chain Challenges



Pharmaceutical supply chains are highly complex with multiple stages of manufacturing that often require the coordination of independent companies or product lines involving the participation of dozens or hundreds of people.

In this environment, small problems can quickly become large obstacles to reliable performance. Timely, high quality

operating data and analytical tools are necessary to overcome these challenges and improve operations.

Manufacturers carry large working capital burdens to support the long make span between raw material purchases and finished product shipments to channel partners and consumers. Streamlined production practices can reduce working

capital requirements, inefficiency and waste.

Incremental improvements in supply chain operations can unlock tremendous corporate value. Companies that employ industry best practices in their supply chains gain significant competitive advantages in terms of margins, capital employed and time to market.

Gain global visibility across your extended supply chain

Visibility into supply chain operations ensures balanced production, prevents excess inventory, minimizes validity expiration risk, and costly order expediting. Accurate supply chain computer models predict demand and inventory levels, warn of delays, and support scenario planning to address critical events; the insight needed to support effective decision making.

Reduce time to market

Faster to market means higher revenue and larger market share. Advanced planning systems support better product launch planning and scheduling of critical resources including bottleneck resources and QC Labs.

Improve collaboration

Accurate demand forecasts and dependable schedules are achieved through close ties with trading partners, suppliers and customers. True collaboration within your own organization—sales, marketing, procurement, production, QA/QC, distribution—provides the best foundation for effective decision-making. Further collaboration with contract manufacturers allows for more efficient use of resources and can provide enhanced visibility to the overall flow of materials. The WAM/ORTEMS solution supports improved collaboration among all parties to provide critical information to supply chain stakeholders.

Reduce cash-to-cash cycle times

Inefficient scheduling of manufacturing resources can waste significant capacity and time. Advanced planning solutions help maintain optimal production schedules and leverage assets to near-capacity levels which reduce overall cash-to-cash cycle times by as much as 50%.

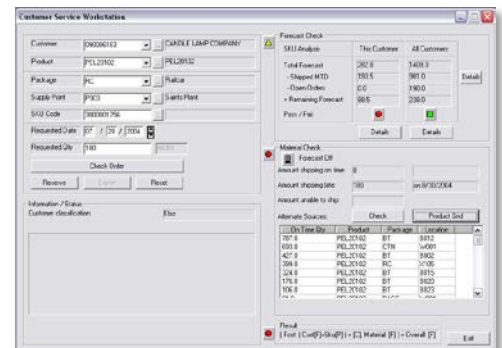
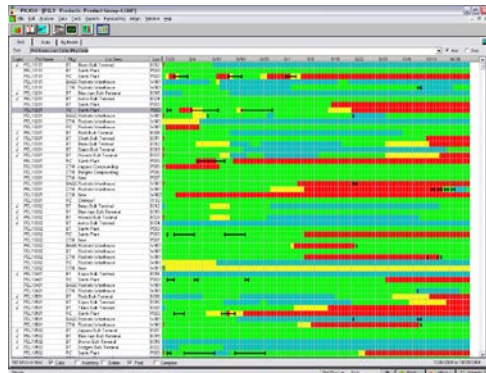
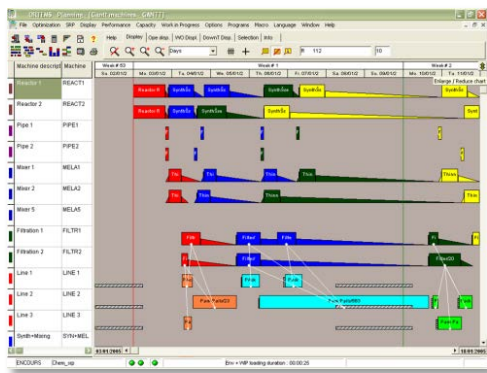
Integrate systems across your extended supply chain

Many pharmaceutical supply chains operate as a collection of companies and departments—each with its own planning and tracking system operating as separate silos of information. In this common scenario, it's difficult to generate a true picture of the supply chain performance. The WAM/ORTEMS solution leverages certified integration technology to connect ERP, MES, and LIMS systems together with supply chain planning to provide a comprehensive assessment of your manufacturing environment.

Leverage flexible planning and scheduling

Scheduling around the heavy and often unpredictable workloads of QA/QC labs while trying to balance production against fluctuating demand is extremely challenging. Trying to tweak spreadsheets to keep up with changing markets makes this challenge even more difficult. The WAM/ORTEMS solution supports process and constraint modeling to minimize changeovers, maximize use of production assets, regenerate optimal schedules in the face of unplanned events and maintain cost-effective production plans.





Detailed Operations Scheduling

The WAM/ORTEMS Scheduling module serves as a catalyst for effective communication and teamwork across API and secondary production departments as well as Lab/QA and maintenance planning functions. Changes made to schedules are automatically incorporated into planning modules, allowing all stakeholders to immediately see the impact on capacity utilization and timing of batches and requirements across all areas. By simulating the timing of events across the material flow chain, the solution enhances communication between corporate and plant planners regarding plan attainment and plan vs. actual performance.

Schedule Optimization

The WAM/ORTEMS scheduling solution creates and maintains optimal production plans for your organization by analyzing the characteristics, capacities and constraints in your production environment. To create an effective plan, the schedule optimizer first determines the optimal cycle characteristics such as cycle length, product sequence, and frequency. It then considers variable production costs such as product-to-product transitions and deviated lot re-work and evaluates on-time shipping impacts to manage inventory risk. The end result of this analysis is a production schedule—created and/or updated in a matter of seconds—that provides the best balance between operational efficiency, inventory holdings, and customer service.

Grid Supply Chain Monitor

Our Grid Supply Chain Monitor serves as the core of the planning system. The highly graphical interfaces of the Grid provide an all-in-one look at inventory projections, latest demand forecast, planned production and material movements across all of the products in a business. Extensive drill-down and ease-of-use features dramatically enhance the usability of data sourced from Enterprise (ERP) and Operational systems.

Order Promising

The WAM Order Promising module provides real-time available-to-promise (ATP) functionality and order status updates supporting day-to-day activities of customer service personnel. The available-to-promise analysis synthesizes inventories, production schedules, orders and forecasts to compute future daily availability, and also provides visibility and options to alternate sourcing if available. In markets where supplies are tight and demand class allocation is critical, this tool enables a critical link between S&OP and order fulfillment.

Our solution works with today's most common enterprise data systems. It is designed to extend the functionality of your existing systems by providing real-time visualization, collaboration and "what-if" analysis tools to your supply chain organization.



Contract Labs

Faced with increasingly strict regulations, contract laboratories must endure increasing pressure from health authorities (FDA, EMEA, MHWL) with respect to quality control processes. They must be able to deal with long quality control processes which in turn lengthens their product cycle times and slows down product releases which results in higher inventories.

Operating under these difficult conditions, laboratories struggle to:

- produce an adequate amount of certificates to keep up with production
- process all of the new approval requirements, related tests and clinical tests given the increase of new product introductions
- avoid late tests, which are on the rise
- maintain quality control costs and productivity

Planning and scheduling around contract labs introduces timing and production issues which can cause significant problems. Ideally, the planning team should have visibility to the lab. The WAM/ORTEMS solution supports inter-departmental and inter-company collaboration on forecasting and scheduling which can help avoid delays, conflicts, over scheduling of resources and costly, last-minute solutions.

Our Solution Provides

- Mid-Term Planning:
 - Modeling of work centers
 - Long / mid-term load leveling for analysts and equipment
- Short-Term Planning:
 - Test campaign grouping engine
 - Constraint-based assignment of tests to analysts and equipment
 - Modeling of individual equipment and analysts with calendars (vacations, training for analysts; maintenance for equipments), efficiency and priority
- Gantt Charts & Dispatch Lists
- Customizable Key Performance Indicators (KPIs)
- Modeling the Control Hierarchy (batch / samples / tests)
- Linked Tests
- Multiple Resources (analysts and equipment)
- Modeling the Unplanned, Indirect Load (R&D, technical department, stability) with Contract Dates
- Visualization of Load/Capacity
- Lists of Tasks to be Performed by Analysts



- 20% reduction in inventories
- Improvement in customer service rate – lead time simulation in less than 1 hour
- One month reduction in the new product introduction cycle
- Reliability of production commitments communicated to all subsidiaries



- 50% time savings on schedule creation
- Constraint based scheduling
- Extension of planning horizon to 2 weeks
- Increased visibility to global supply chain operations



- 90% increase in customer service
- Schedule visibility and coordination across 100 people
- Solution integrated into BPCS planning process
- Full control over finite capacity production resources



Pharmaceutical & Dietetics
Contract Manufacturing



Over 20 Years of
Customer Success

LOW TCO

Our solution has a low Total Cost of Ownership (TCO), a fraction of the licensing and annual costs found among solutions from global ERP providers.



FAST ROI

Our solution consistently delivers rapid Return on Investment (ROI), often fully recovered within the first year of use.

TYPICAL IMPROVEMENTS FROM SUPPLY CHAIN PLANNING SOLUTIONS

15% - 50%	Reduction in Finished Goods Inventory
15% - 30%	Reduction in Raw Materials
10% - 25%	Work-in-Process Reduction
4% - 20%	Improvement in Customer Service Levels
2% - 10%	Days Reduction in AR from Order to Cash Streaming
2% - 10%	Reduction in Purchase Costs
10% - 33%	Reduction in Logistics Costs
2% - 6%	Increase in Plant Throughput
2% - 10%	Reduction in Overhead from Better Visibility and Communication

A Complete Solution



WAM Systems delivers advanced supply chain planning solutions designed for the process industry. WAM's solution is used throughout the global process industry, providing a broad set of visualization, decision support, and optimization tools that address the unique challenges found in managing complex supply chains. WAM's solution addresses a wide range of business processes including collaborative demand management, inventory and distribution optimization, production planning and scheduling, and procurement planning. The company and its worldwide partners also provide a full range of consulting, support, training and implementation services. For more information on WAM Systems, visit www.wamsystems.com.



ORTEMS, a leading provider of manufacturing planning and detailed production scheduling solutions, offers innovative solutions based on Agile Manufacturing concepts. ORTEMS is the ideal complement to ERP systems due to the power of its finite capacity optimization engines, the efficiency of its models for dynamic synchronization of production flows and the quality of its certified integrations. ORTEMS provides a dynamic, comprehensive model that integrates the performance of its synchronized MRP technology, which enables obtaining optimal customer service rates in a pull planning production environment. ORTEMS customers include Almirall, Dow Corning, Givaudan, Johnson & Johnson, JohnsonDiversey, Merck Serono, MSD, Nestlé, Rhodia, Sanofi-Aventis, Total, Wyeth and Zambon. For more information about ORTEMS, please visit www.ORTEMS.com.