Reynolds American Real-Time Systems Transformation

PROJECT PROFILE

Reynolds American

Reynolds American, Inc. (NYSE: RAI) is the second-largest tobacco company in the United States. Its holdings include R. J. Reynolds Tobacco Company, American Snuff Company (formerly Conwood Company), Santa Fe Natural Tobacco Company and Niconovum AB and R. J. Reynolds Vapor Company.

Reynolds American's subsidiaries manufacture and market a variety of tobacco products, including cigarettes (Camel, Pall Mall, Kool, Winston, Salem, Doral, Misty, Capri, and Natural American Spirit brands) and moist snuff (Grizzly, and Kodiak brands).

In addition, RAI's new VUSE electronic cigarette is quickly becoming a market leader with RAI capitalizing on 100 years of tobacco expertise, and designing and assembling the product in the USA.

In 2012, Reynolds American's operating companies sold about 28% of all cigarettes, and 32% of moist snuff sold in the U.S.

Call to Action

"We are facing many new challenges and opportunities. Some are internal to our business and operations while others are external forces that have the potential to significantly impact our customers and the industry. Manufacturing must continue its drive to deliver superior results in all aspects of our business."

Tommy Hickman
Senior VP of Operations, RAI Manufacturing Strategy

Manufacturing systems could no longer be seen as a "black box" but had to be used as a tool to drive efficiency and cost savings. In addition, Reynolds American's systems were home-grown solutions developed over a 20 year period and obsolescence was a major risk.

Key requirements for the business to support the manufacturing strategy and create a high performance culture included:

- Eliminating reliance on custom legacy solutions and risks associated with obsolete hardware

- Selection of an industry-leading MES solution that truly integrates with the ERP layer

- Providing improved real-time access to data such as downtime, efficiency, and quality, along with analysis tools for continuous improvement

- Replacing isolated production scheduling systems and manual activities with an integrated scheduling system

- Improving track and trace capabilities by replacing time-consuming manual methods with efficient automated methods

- Providing a framework for incorporating anticipated FDA regulatory requirements

Responding to the Call

How to get started on the transformational journey was the fundamental challenge faced by RAI leadership. To address this challenge, RAI partnered with Brock Solutions to develop a Framework Study designed to answer a wide range of questions including:

• Architecture – understand the "as is" and propose a "to be"

• Solution Provider Platform – which commercial off the shelf software best meets RAI's need

• Business Case – where MES drives the most value while managing inherent risk of change

• Resource requirements – both internal and external

• Implementation Roadmap – specific activities, timing and expected outcomes

The result of the framework study process provided RAI with a clear path forward, alignment across the enterprise and a clearly defined program with accompanying governance.
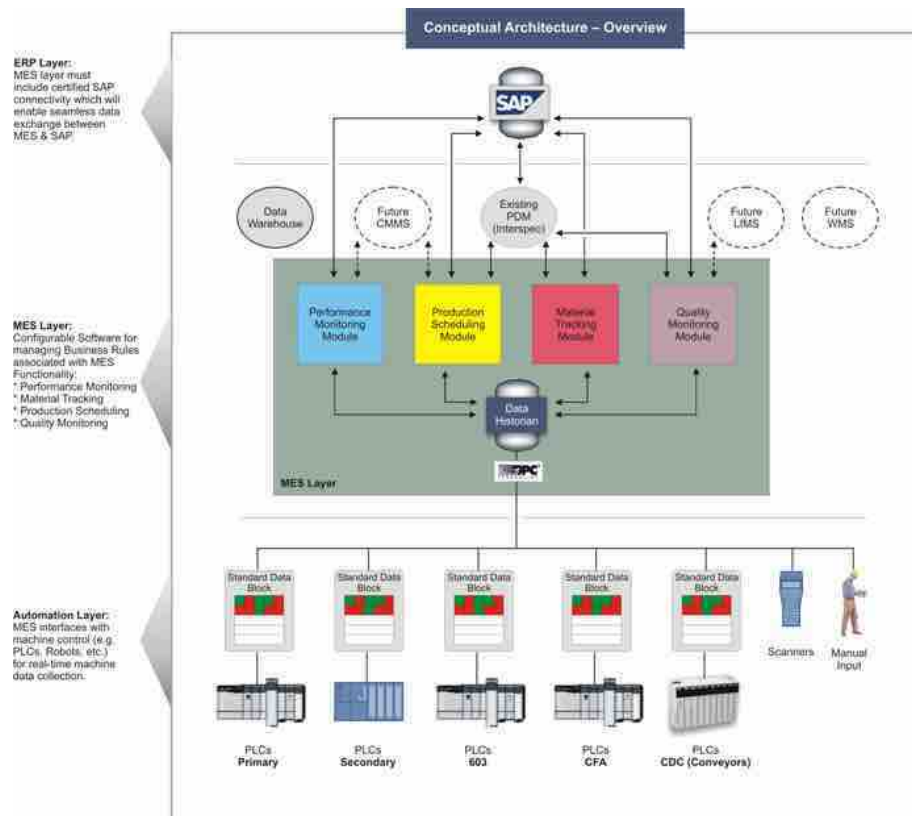

Conceptual Architecture – Overview

Program Approach

Upon completion of the Framework Study, Brock has and continues to be engaged in the implementation journey. Brock's initial mandate was to design, develop, and deploy an MES and controls system across both the main Tobaccoville facility as well as at RAI's various operating companies. The ability of the team to develop and deploy standardized solutions has been an important contributor in enabling RAI to respond to ever-changing business conditions.

Program at a Glance
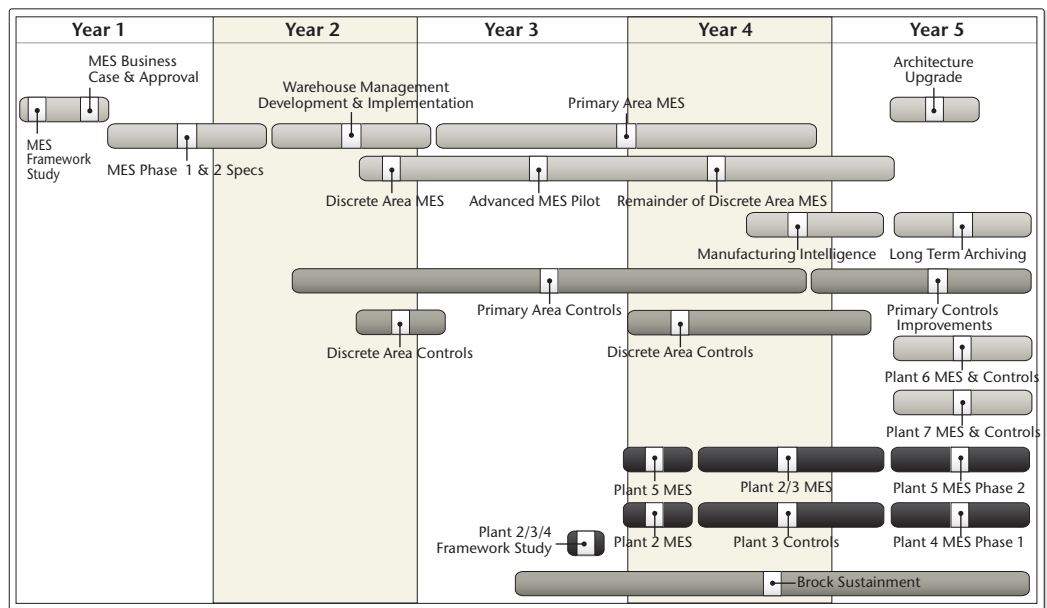
Our approach from the beginning of the program was to embed a continuous improvement mindset throughout delivery of the various projects that have made up this transformation program.

Complementing the traditional waterfall methodology, we have ensured that all aspects of continuous improvement are addressed.
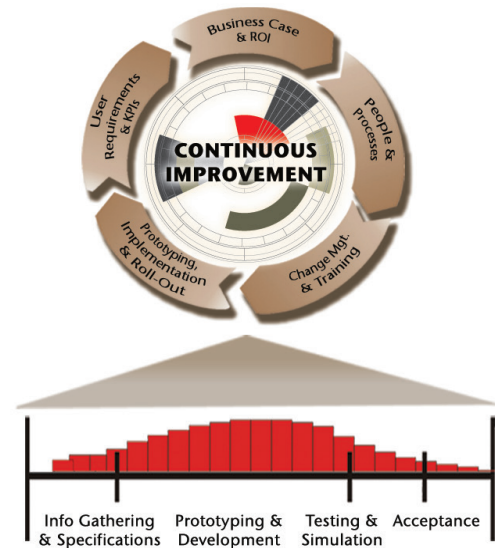
Over the lifecycle of the program, Brock has been responsible for designing, implementing and sustaining the new Manufacturing Execution System (MES) and controls/automation layer. Both solutions have been implemented in multiple business units and locations and are designed to meet the requirements of primary (batch/continuous), discrete, and material warehouse environments. The MES solution is built on Siemens' SIMATIC IT platform, and the controls solution is based on a combination of Rockwell, Siemens and GE technology.

6 Key Pillars of the Solution

1. Order Management
- Receive orders from SAP, link recipe from Interspec, and send to controls
- Create area and line schedules from master SAP schedule
- Automatically update SAP with actual production
- Send operation sequence to controls for recipe execution

2. Materials Management
- Material Receiving (Purchase Orders) of raw materials and non-tobacco materials
- Inventory Tracking (Raw Materials, Work in Progress, Reclaim, Finished Goods)
- Shipping of Finished Goods, plant to plant inventory, and return to vendors
- Inventory Synchronization with SAP
- Material quality management (hold codes, positive release, confirmation with SAP)

3. Traceability
- Full material and process genealogy from leaf to cigarette
- Regulatory preparedness

4. Quality
- In-process inspection, quality test data collection, analysis and reporting
- Quality status management for materials (Raw, WIP and Finished Goods)
- Operator prompting for quality checks

5. Performance Management
- Overall Equipment Effectiveness (OEE) and Downtime Monitoring
- Dashboards with real-time Key Performance Indicators
- Extensive reporting to support Continuous Improvement

6. Complete Controls Upgrade
- Updated custom control solution to standard off-the-shelf tools
- Standard add-on instructions, faceplates, etc.
- Fully configurable machine drivers
- Full integration with MES
- Data buffering through Data Concentrator

Benefits

Benefits of the program, both qualitative and quantitative, continue to be realized and tracked at RAI. In many cases, benefits have come in areas that were not part of the original business case but are the result of wide-scale adoption across the business. People are using the tools to improve operations and enable the high-performance culture change that was at the heart of their original transformation goals.

Item	Benefits
Automated Track and Trace	• Genealogy in minutes • Regulatory compliance • Reduced cost & effort in recall investigations – per event savings
Waste Tracking & Reject Analysis	• Reduced waste and rejected product (e.g. reduced primary waste – 1.24% to 1.04% • Replaced manual paper tickets
Performance Monitoring & Analysis	• Increased equipment uptime, throughput and less overtime
Materials Management	• Inventory accuracy improved - fewer stock outs (yearly savings) • Improved inventory accuracy and lower inventory carrying costs • Consolidation of inventory management from many systems to one
Order Management	• Greater flexibility in schedule execution • Near real-time visibility of order status on SAP
Quality Management	• QUIP process streamlined and simplified • Increased visibility of status of QUIP material
Elimination of Obsolete Legacy Platforms	• Lowered support and maintenance costs; reduced business risk
Regulatory Compliance	• Single data warehouse • Similar code base for all sites • Recipe Structure PDM pass through to controls
SAP Related	• Shorter time to reconcile SAP inventory • Improved quality control on shipping and fewer SAP interfaces for all RAI plants
Standardization	• Lower cost solution with significant re-use, same look and feel with lower maintenance costs • seamless transition of employees between areas/ simplified training/change management

Along this transformation journey we have learned some key lessons around what it takes for a program of this magnitude to be successful:

• Focus needs to be on business value

• Translated business and operational requirements into a seamless technical solution

• Design-to-Operate Mindset

• Solution must be leveragable – rolled out to other parts of the business

• Smooth implementation supported by simulation and testing approach

• Anticipate and manage changing business environment

• Flexible, well managed program roadmap

• Strong program governance

• Post-implementation sustainment support and on-going continuous improvement

"Three years ago when we started the TVL MES project, few of us could have envisioned the success that this project would achieve. After over three years together we are on the home stretch of delivering this large effort on time and on budget with a very high level of business adoption."

Jerry Romans, Jr.
VP Information Management RAI Services Company

Sustainment

Over the years that span a transformational program that is of the size and scale of RAI, there are many business process changes, organizational changes, and regulatory requirement changes that highlight the need for a Sustainment service management model that provides continuous improvement of processes and services in an outsourced environment.

The evolving manufacturing processes must continue to perform to established standards, while continuing to build-in the new business process requirements. Brock Solutions and RAI have partnered to establish a Sustainment model that provides:

• Service Management Operations (Incident & problem management, Reporting)

• Event Management (Monitoring of overall MES system health)

• Software Development Lifecycle (SDLC) Management (Change management, system enhancements)

• Program Management (Roadmap, Major project development and commissioning)

As illustrated below, the model includes many Information Technology Infrastructure Library (ITIL) based Service Management components, and can be tailored to specific requirements.
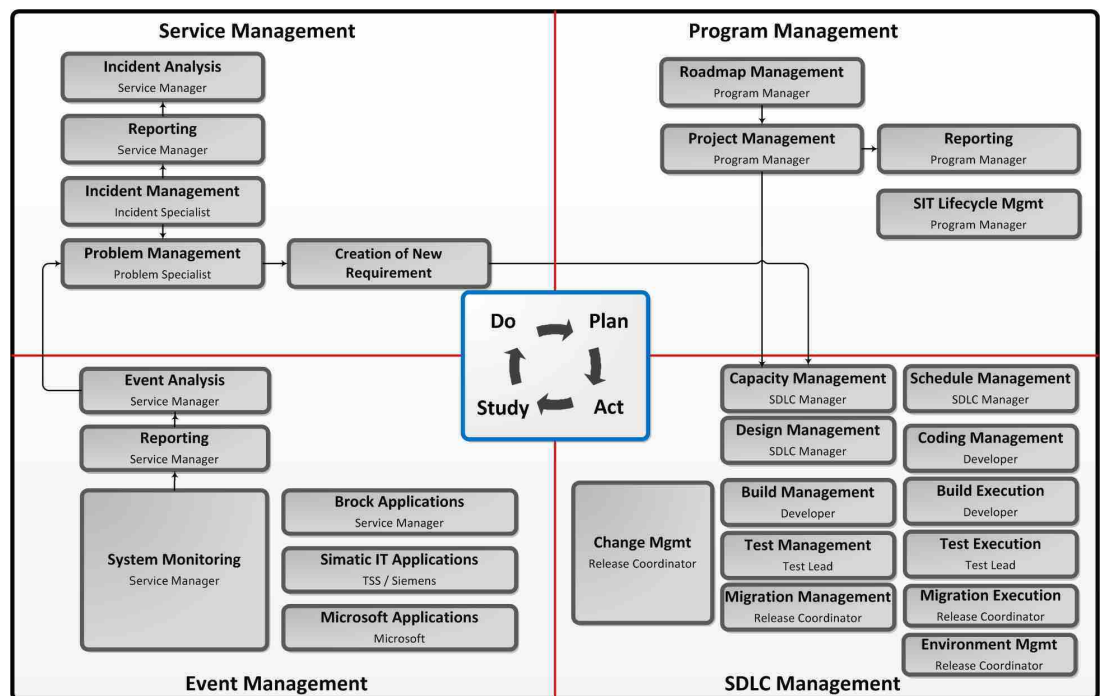
"In Brock Solutions, what we found was a highly focused and flexible partner intent on overcoming the many obstacles that crossed their path. The challenges were many... changes to the project team and project timeline, the merger of the control systems upgrade timing with the MES project, the evolution of the product and performance issues, code control requirements and release strategy adoption, plant consolidation, FDA compliance project additions, SAPOne and the expansion of the Op-co project efforts. The Brock team through it all, as your motto says, has delivered engineering solutions that perform. In our case it should say engineering and business solutions that perform."

Kimberly S Moore

Information Management RAI Services Company

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