

IT'S ALL ABOUT COLLABORATION

The key to an integration project is using teamwork to define and attain project success.

By Rande Allen, Polytron, Inc.



One of our company's first FactoryTalk® Batch installations is an example of such success achieved through collaboration.

Identifying the Technical Solutions

For this project, the beverage manufacturer identified four primary targets: Develop a batch control system that has:

1. Extensive reporting features.
2. Multiple human-machine interfaces (HMIs).
3. Provisions for scheduling, material tracking and batch reporting.
4. Batch S88 Standards.

This was our technical challenge. We partnered with Rockwell Automation and its local distributor to design a process system that met the customer's goals. The system consisted of (see **Figure 1**):

- >>Rockwell Software® FactoryTalk Batch, eProcedure® and Material Track™ from Rockwell Automation.
- >>A FactoryTalk View® Supervisory Edition client with three servers.
- >>An Allen-Bradley® ControlLogix® Programmable Automation Controller (PAC) backbone with a ControlNet network tied to multiple remote racks.

>> Who says “new” is always a good thing? Faced with the challenges of managing a *new* product launch, implementing *new* technologies in an existing facility, and hiring and training *new* employees could create significant issues, and limit the chances of project success, if not managed properly.

We've learned project success doesn't hinge solely on an integrator's expertise or hardware and software reliability. It's achieved when the customer defines its picture of success and collaborates with the entire team — the integrator and solution provider — to create a plan to attain that success.

Process System Architecture

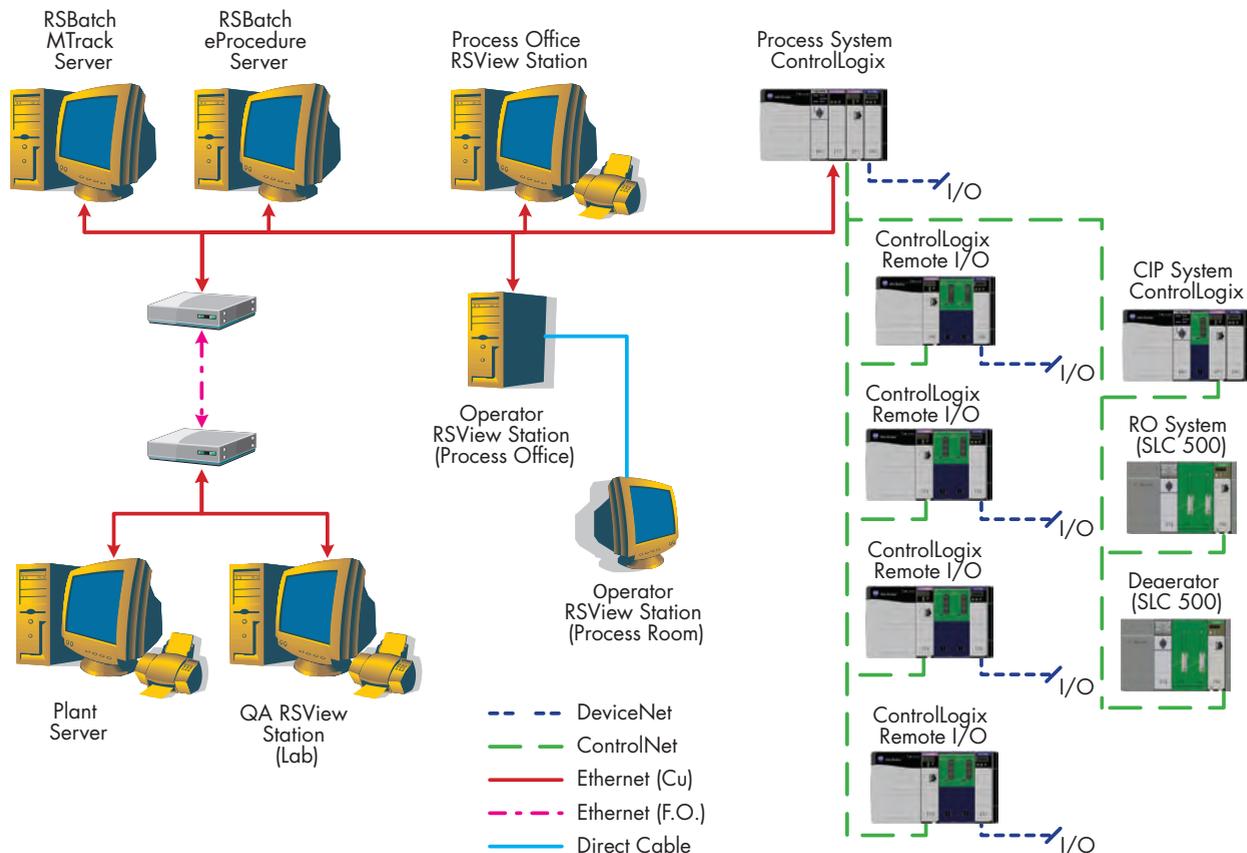


Figure 1. In the new batch control system designed by Polytron and Rockwell Automation, FactoryTalk Batch provided the basis for the automation of procedures and recipe management, eProcedure provided instructions for manual batch operations, and FactoryTalk View client/server configuration provided monitoring and control access at multiple locations in the facility.

>>Allen-Bradley SLC™ programmable logic controllers (PLCs).

>>A DeviceNet network tied to field devices.

FactoryTalk Batch provided the basis for the automation of procedures and recipe management, eProcedure provided consistent instructions for manual batch operations, and FactoryTalk View Supervisory Edition client/server configuration provided monitoring and control access at multiple locations in the facility. Mindful of S88 industry standards, Polytron ensured the system incorporated standards that would encompass the design philosophy around organizing

equipment, procedures and overall software/hardware integration.

Meeting Project Challenges

Our next challenge involved typical project-management issues, including shortened timelines, hiring new employees, and HMI changes.

These obstacles aren't new to anyone who has worked on a systems integration project. However, the approach Polytron took to meet these challenges was new. We used PolySimSM, our proprietary emulation and data-management model that provides direct process control feedback based on typical system variables.

PolySim is comparable to being in a flight simulator. Instead of sitting in a cockpit, the engineer, designer and/or operator sits in front of an HMI and interacts with actual control buttons that send/receive signals to/from a PAC and the PolySim computer. In other words, PolySim emulates the system's I/O by modeling the behaviors of the PAC racks and the devices they control (see **Figure 2**).

During system design, we used PolySim to review system functionality with the client. This provided the client's preventive maintenance and plant personnel with an opportunity to provide feedback about how the system would operate.

We then used PolySim to conduct a Factory Acceptance Test of the control system. This increased the client's level of familiarity/trust in the system and our confidence during start-up.

Finally, we integrated PolySim into operator/technician training. Since many employees were new to a processing environment, PolySim provided invaluable real-world experience without impacting system in-

stallation and debug. Using PolySim eliminated material waste typically realized during training, and allowed training, Clean-In-Place (CIP) water flushes, and testing activities to occur concurrently. The trainee's confidence

>> Create a Collaborative Plan

All system designs must begin with a discovery period to clearly formulate the client's wish list. Unfortunately, some integrators are more focused on defining client needs based on their experiences, which limits the range of available functional/technical options. Other integrators allow clients to create a laundry list of "wants," then under-deliver because of lack of knowledge and expertise.

Instead of limited or limiting options, it's best to take the collaborative approach in which the client needs are identified, documented and challenged. When appropriate, Subject-Matter Experts such as Rockwell Automation are brought in early-on to assist in identifying available technical options and their associated challenges.

This discovery process begins with determining the who, what, when and why of the project.

Why? *Why is the business focused on installing a new line or process system?*

Is it a new product rollout in which speed to market and confidentiality are critical components? Is it for capacity increases — planning for future growth in utilities and infrastructure — that can bring large long-term payoffs?

Some integrators and clients believe the integrator's task is to assist in completing the project without trying to understand why. At Polytron, history has taught us that if we understand "why," we're better prepared to make suggestions and decisions that meet client goals.

Understanding the client's business drivers and needs helps everyone relate to risks and opportunities associated with the project. The team's attention then can be focused on critical items that will ensure success and on opportunities that are aligned with the client's business strategy.

What? *What functionality would you like of the system? What sort of interface is your organization anticipating? What functionality would you like automated?*

These questions help answer this question: What do you want your control system to do? In the main article's installation project, the client wanted a system with a batch control program that would provide extensive reporting features; a system with multiple HMIs; a system that provides future scheduling capability, ingredient/inventory tracking and detailed batch reporting; and a system that reflects Batch S88 standard. By asking appropriate "what" questions, we were able to create a list that was, in some instances, different from the original specifications and scope of work. However, those

specifications met the overall goal of creating a feasible project design that met the client's current and future needs.

Who? *Who is going to operate the new system? When are resources coming onboard? What is their required level of experience and knowledge? What is the hiring/staffing plan, and who is going to manage these tasks?*

Focusing efforts on designing and installing a system without appropriate focus on human capital happens often. It's vital to define hiring/staffing and training plans for the system in the planning phase. Depending on the plan's complexity, you also may need to hire additional resources to manage the plan, as is the case with many clients who don't have a formal training department.

When? *When is the project scheduled for completion, and what are the negative financial implications if the project is delayed?*

These questions might seem obvious, but surprisingly few project team members understand how decisions can impact the project. Understanding this can assist everyone on the project team to make well-informed decisions that don't negatively impact the schedule.

These are just a few of the questions to ask during the discovery period. They are a good starting point for understanding project expectations. Asking the right questions of engaged individuals with the appropriate level of authority is a crucial step in defining the collaborative success plan covering all facets of the project, including equipment, system design, schedule and people.

Process System PolySim Architecture

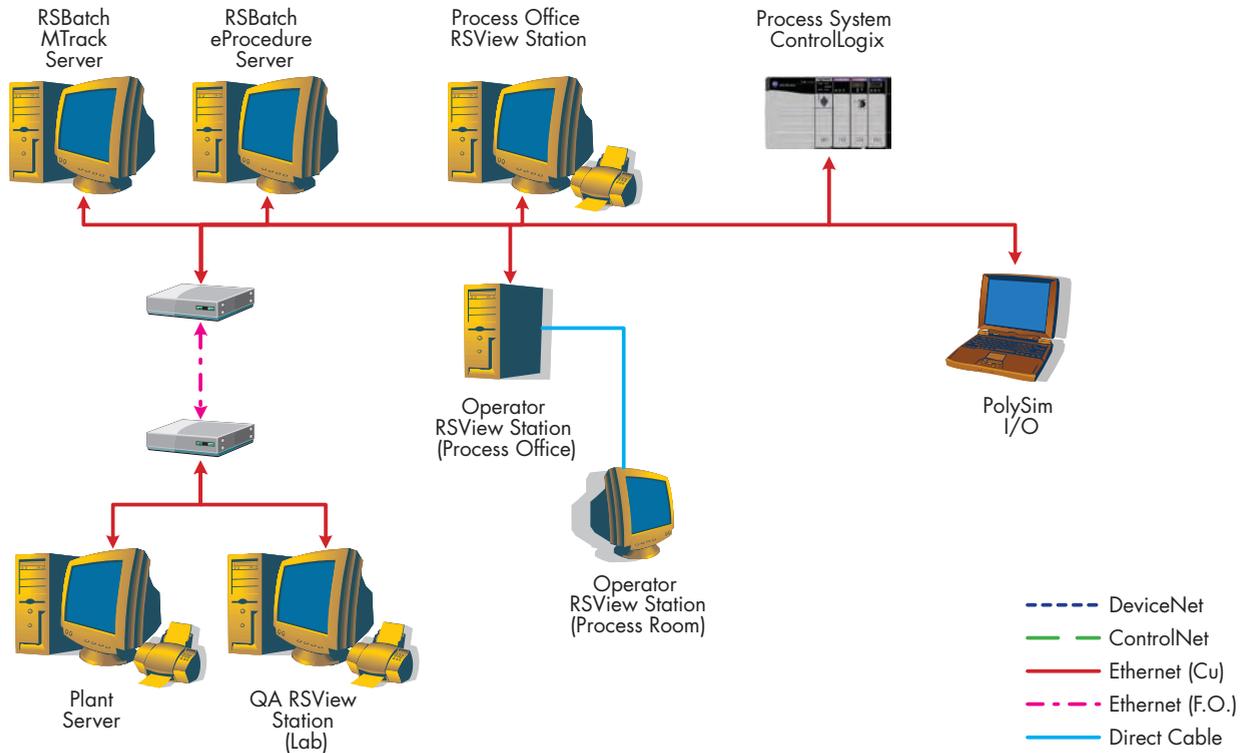


Figure 2. The PolySim tool emulates a system's I/O by modeling the behaviors of the Programmable Automation Controller (PAC) racks and the devices they control.

level increased, as they were able to troubleshoot, run multiple batches, and test questionable batching scenarios in the classroom.

Defining Project Success

Project success has various definitions, and those definitions vary with respondents. Fortunately for this project, success has already been realized and was defined by:

- >>The first production batch met all quality specifications.
- >>In spite of numerous schedule changes, the team met the product's testing deadline.
- >>The project was completed ahead of schedule.
- >>Overall project costs were under budget.

>>No accidents, spills or releases occurred during start-up.

We attribute this to collaboration, hard work, diligent planning, strict project management and forethought of technical solutions. By defining the scope of work and understanding the impact variances could have on project schedules, Polytron led the team down the road of success.

The manufacturer said they were pleased because Polytron, along with PolySim and Rockwell Automation, "enabled our team to deliver the project on time with no accidents, spills or releases, and with the first batch fully meeting all quality specifications." The client understood simulating critical alarms and process set points, cross-checking actual programmed controls

against functional specification, and training the operations team before start-up made all the difference. □

Rande Allen is the Training Manager with Rockwell Automation Solution Provider Polytron, Inc., Norcross, Ga. Polytron is a systems integrator that provides electrical engineering, project management and training services for the food, beverage, consumer products and pharmaceutical industries.

Polytron, Inc.

www.rockwellautomation.com/go/p-polytron

Rockwell Software FactoryTalk

www.rockwellautomation.com/go/tj10ft

Rockwell Automation

Solution Provider Program

www.rockwellautomation.com/go/sitj