

Challenge

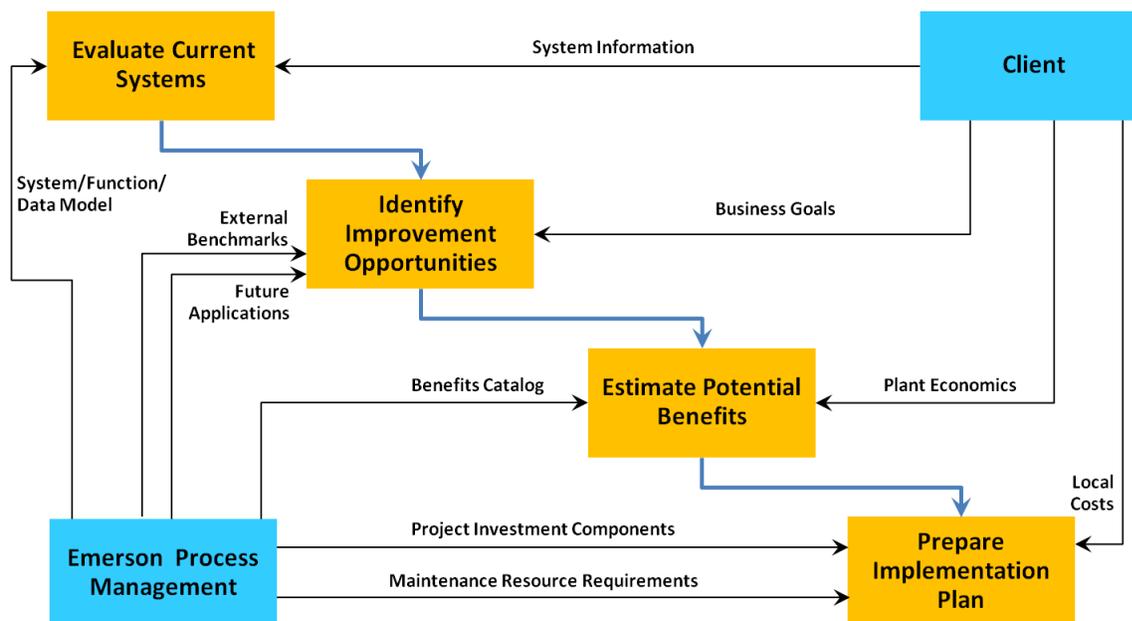
At many plants, outdated legacy automation assets delay or complicate adoption of advanced automation technologies and information systems that could introduce significant operational improvements. Typical situations at plants include:

- Need to determine whether updated automation technologies could be expected to make significant improvements in plant performance, compared to current baseline
- Need assistance defining viable and profitable modernization options and plans
- Need help generating a compelling business justification and are interested in updating legacy process automation assets
- Need assistance with overall automation modernization planning and benefit identification in support of a plant-wide automation modernization initiative
- Need to develop modernization scope of work and identify capital budget totals for future automation modernization programs

These tasks may require researching state-of-the-art automation options and developing long term modernization plans, which are labor-intensive activities. Many plants run lean, having too few available engineering resources to dedicate to modernization planning. Yet, it is important to develop a viable plan, associated cost estimates and schedules before engaging in detailed engineering stages. How do you get started?

Solution

One answer is to outsource. Emerson provides Automation Modernization Studies, which are “conceptual engineering” efforts to develop economically justified plans that meet current and projected process automation needs. Studies are tailored for each facility and are conducted by senior consultants with in-depth industry and process automation expertise and extensive modernization experience. These consultants utilize a proven methodology, depicted in the following diagram:



Two categories of studies are described here. An automation modernization study is applicable for a process unit or other single, bounded plant area or issue, whereas a master plan study encompasses multiple plant units or an entire facility.

Automation Modernization Study

The automation modernization study is an engineering service to establish current process unit performance to business and operational goals, define future goals, and provide a plan for achieving those goals through automation improvements.

Scope of Service

- Establish business and operations goals and key performance criteria
- Evaluate current operations and installed automation instruments, control valves, control systems, advanced automation and infrastructure, including cabinets and wiring
- Develop a benefits analysis of operational improvements attainable through modernization
- Identify and distinguish modernization options for migrating existing automation and infrastructure
- For unit specific project plans, develop an equipment bill of materials, I/O lists, simple system architecture diagrams, engineering and installation scope of work, process flow diagrams (or red-lined P&IDs)
- Estimate turnkey project costs ($\pm 30\%$ to $\pm 50\%$)
- Analyze financial return on investment for modernization options
- Prepare a modernization strategy and implementation plan

Activities

- **Information Gathering.** Prior to onsite work, an Emerson consultant will request and review a list of base plant and process information for preliminary analysis.
- **Business Driver and Process Unit Review.** Onsite meetings will be held to establish operational and process related business goals and key performance indicators.
- **Current Status Review.** To establish a current baseline, the consultant may engage in reviewing documentation, conduct a site walk-down, field review and / or evaluation of process areas and existing automation assets.
- **Opportunity Identification.** Data collection and investigation to identify potential improvement sources and quantify projected economic gains.
- **Offsite Analysis and Report.** After the visit, typically the consultant will review the information gathered at site and develop recommendations and a forward action plan.

Deliverables

- Onsite consulting and formal assessment
- Detailed report documenting results, analyses, modernization plans and recommendations
- Management presentation and meeting to review and discuss results and recommendations

Duration

A modernization study typically requires *one to three weeks on site*, followed by two months to prepare and deliver the report. Times vary in accordance with scope and complexity.

Automation Modernization Master Plan Study

The automation modernization master plan study is used to develop a technology vision that is facility wide or encompasses multiple plant units. Deliverables will include turn-key cost estimates for return-on-investment analysis for project justification and prioritization and a long term implementation roadmap.

Scope of Service

- Evaluate status of existing plant automation systems and infrastructure, which can include field instrumentation, control systems, equipment cabinets, field cabling, advanced automation strategies and integration to production management/MES per process area.
- Analysis and quantification of expected process improvement and economic benefits per process area.
- Develop automation modernization plans including architectural drawings and scope of work documentation per process area.
- Cost estimates ($\pm 50\%$) for overall investment program including all hardware, software, field instrumentation, engineering services and installation costs along with project schedules per process area.
- Recommended project prioritization.

Activities

Master plan activities are similar to those for a Modernization Study, and apply for multiple units or an entire facility. Thus, additional time is required for data gathering, analysis, report generation, additional site visits and offsite engineering activities. Likewise, the report and recommendations are more extensive.

Deliverables

- Onsite visits and formal analysis
- Final master plan report documenting results, benefits analysis, automation modernization planning, cost estimation, financial analysis, and recommended project implementation plans
- Recommended project prioritization

Duration

A master plan study typically requires *three to four months* and involves *multiple site visits*, interspersed with home office engineering activities. Duration depends on scope and complexity.

Ordering Information

Contact your local Emerson sales office to retain Modernization or Master Plan Study services. Emerson will issue a written proposal for your review and approval to ensure that scope, deliverables, timing and budget meet your needs and expectations.

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