PROCESS IMPROVEMENT:
IDENTIFYING THE MOST ELUSIVE SOURCES OF COST

Every utility is a multifunctional organization where a variety of disciplines all work together using complex processes. As most industry professionals know, these processes can break down, yielding churn and wasted funds. Everyone in the organization has their own thoughts on why processes degrade. These varying opinions make it difficult to identify causes. How can executives get the whole picture to remedy the issue?

The reality is that each perspective is just one drop in a wider sea of data. When the data are collated and analyzed, the causes of process inefficiency become abundantly clear. A process assessment using data-driven analysis can provide targeted justification for a performance improvement strategy. At a minimum, it may validate preconceived notions of improvement needs, confirm strategy, and identify costs stranded in inefficient processes. At best, it can lead to a paradigm shift in performance strategy and initiatives, based on aggregated ground-level data combined with industry best practices, with a corresponding reduction in costs.

Scoping the Assessment

Process improvement initiatives in utility settings typically focus on core business processes that are significantly integrated and interdependent. Typical characteristics of these core processes are as follows:

- They each have their own requirements, but their output and ultimate success depend on how well they interface with each other.
- They are prone to unnecessary steps, missed handoffs, duplication of efforts, excess resource consumption, and less-than-optimal results.
- They require analysis of all aspects of process requirements, design, and performance.
- Cost and staffing benchmarks provide excellent guidance to help identify problem areas.
- Financial and non-financial performance indicators provide additional insight.

Examples of these core processes include business processes, work management, equipment reliability, configuration management, and design engineering.

True improvement of integrated utility processes can only be achieved through comprehensive assessment, data-driven analysis, and actionable insights. Inefficiencies and areas for improvement need to be identified and paired with recommendations to streamline processes and close performance gaps. These recommendations then need to be brought together into tangible implementation plans with specific actions, estimated cost savings, and realistic timelines.

What Good Processes Look Like

"There is nothing so useless as doing efficiently that which should not be done at all."

—Peter Drucker

For more than 25 years, MCR consultants have been identifying and refining best practices for core processes through successful client implementation. These best practice processes are consistent with industry standards and are organized using a work breakdown structure (WBS) for more effective implementation. Since every utility is different, it is important to understand how those nuances affect successful process implementation. MCR best practice processes align with standard processes at the higher WBS levels 1 and 2, with much more granularity and individual utility detail at WBS level 3.

Our approach begins with a process variance analysis of key process areas identified by benchmarking and other performance analyses. Using MCR best practices as a foundation, MCR consultants compare client process implementation from the following perspectives:

- **As implemented**—comparing how processes are executed against best practice.
- **As proceduralized**—comparing how processes are executed against current utility procedures.

The process analysis focuses on cross-functional mapping of workflows. Processes are mapped through swim lane diagrams to identify key interactions between organizations and handoffs between process steps.

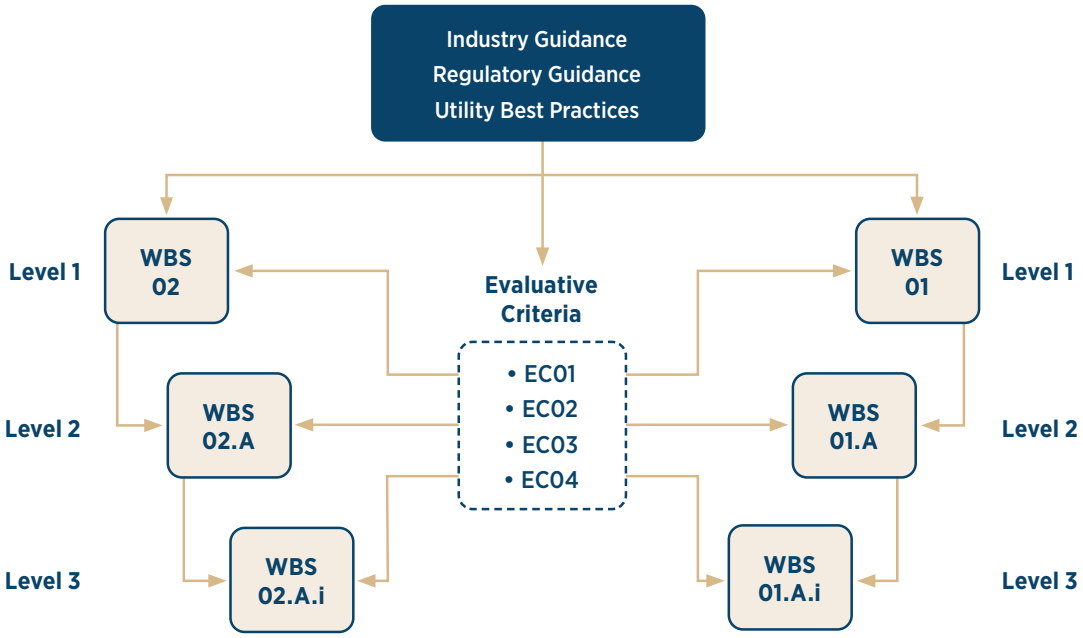
Gathering Data in the Trenches

Examining processes "as proceduralized" simply involves gathering the necessary utility procedures, reading them, and translating the information into process maps. The "as implemented" analysis is more complicated and starts with dozens of interviews conducted across the organization to examine intra- and inter-departmental process implementation and performance. Interviewees range from senior management to first-line supervisors, in roles that include both core processes like work management and engineering and enabling processes like support services and training.

MCR employs an extensive library of hundreds of interview questions to ensure complete coverage spanning all aspects of key processes. Each interview is customized for the organization using questions

associated with specific cost centers and WBS steps. Interview questions are tied through evaluative criteria to the hierarchy of WBS steps and organizations, enabling interviewers to drill down through different levels of process maps, obtain unique and measurable feedback on specific process steps, and relate them to similar tasks across the organization. This relationship is seen visually in Exhibit 1. The evaluative criteria draw on regulatory guidance, industry best practices, and MCR's extensive experience.

Exhibit 1: Illustrative WBS Hierarchy and Evaluative Criteria Relationships



Hierarchical map of industry guidance and best practices to evaluative criteria, culminating in process assessment for all WBS levels

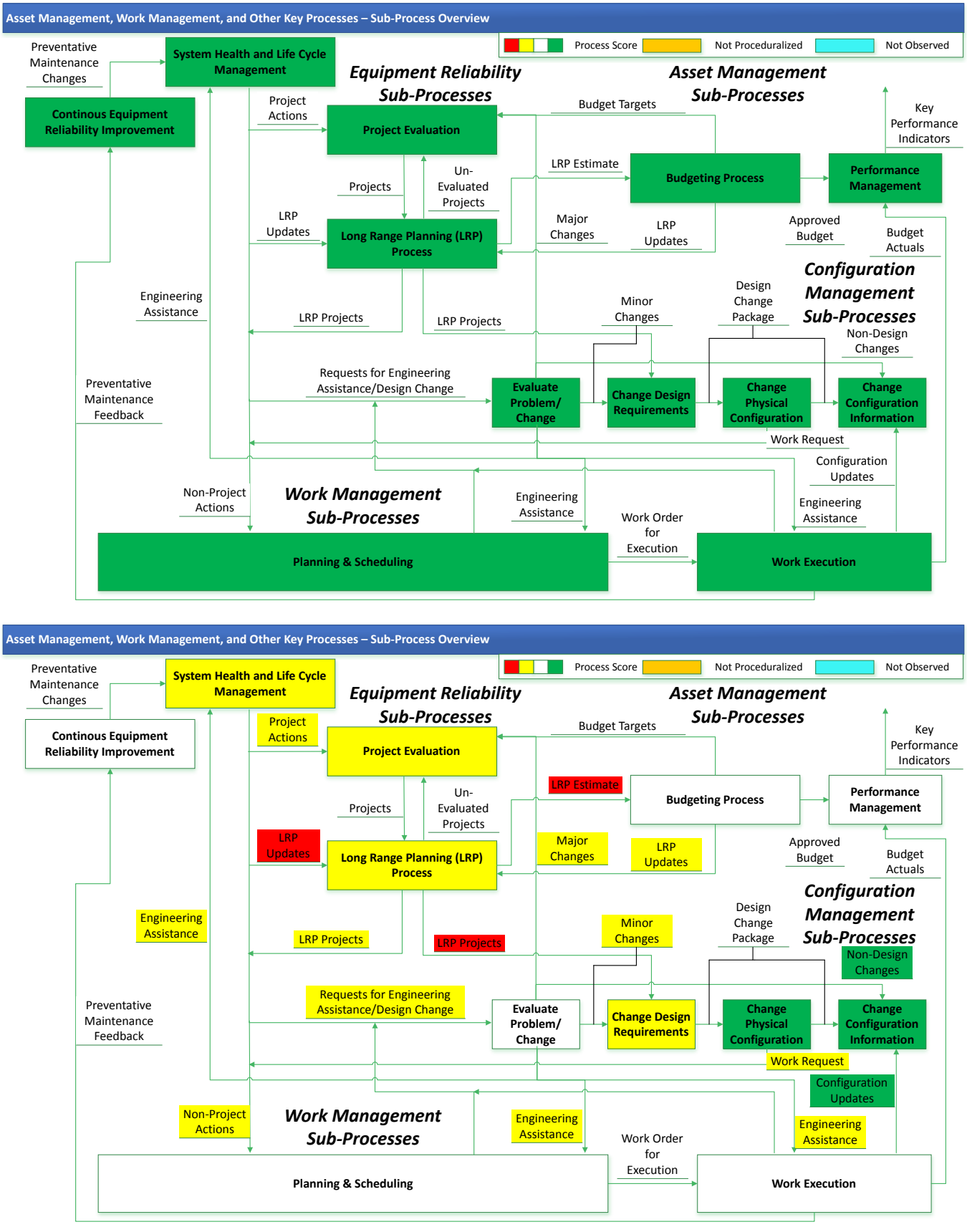
Likewise, leveraging the evaluative criteria, MCR consultants perform multiple surveillances of key meetings to gain additional insight into the actual implementation of core processes as well as departmental levels of engagement. Key meetings that are monitored include but are not limited to:

- Daily plans.
- Work control scoping and readiness.
- Craft morning briefs, including pre-job briefs.
- Investment and/or resource allocation.

Translating Process Assessment to Data

Every interview and meeting yield comments regarding effectiveness of process implementation, resulting in several thousand comments each tied to a specific WBS step and the responsible organization. Additionally, every comment is scored based on the evaluative criteria using a common bad-to-good performance scale of 1, 2, 3, or 4 (color coded as red, yellow, white, and green, respectively). Using the

Exhibit 2: Illustrative Process Variance Analysis Scoring Map



Color-coded scoring map showing process performance across WBS steps and handoffs

process hierarchy, every WBS step from level 3 to level 1 is color coded according to the composite score of all comments at that level. An example of this can be seen in Exhibit 2 on the previous page.

The level 2 process map shown in Exhibit 2 aggregates the color coding of nearly two dozen different level 3 WBS best practice process maps, based on associated comment scores. These scores roll up through level 2 (and subsequently to level 1, representing the overall process). Every WBS step and organizational hierarchy can be drilled into to reveal every scored comment from every question for every interview based on the assigned evaluative criteria. The result is complete, compelling, and transparent, leaving no room for dispute. Specifically, in Exhibit 2, clear deficiencies can be seen in the flow and execution of projects from the System Health and Life-Cycle Management sub-process through Project Evaluation and Long-Range Planning.

Notably, Exhibit 2 shows that process step handoffs are scored in addition to the process steps themselves. This approach addresses the shortcomings of most performance improvement efforts: Organizations are siloed and inherently optimized at a functional level, not cross-functionally. In contrast, MCR's assessment pays close attention to the handoffs between organizations, which, like the process steps, can be rolled up through specific hierarchies. Focusing on the aggregation of these handoffs results in a table such as the one in Exhibit 3.

Exhibit 3 illustrates the distance between cost centers, providing a single view of all interactions within and between cost centers. Drilling down into any intersection shows specific deliverables produced or required, with the corresponding score for each.

Exhibit 3: Illustrative Process Handoff Scoring Map, "The Distance between Cost Centers"

Distance Between Cost Centers			Child										
			A	B	C	D	E	F	G	H	I	J	K
			Cost Center A	Cost Center B	Cost Center C	Cost Center D	Cost Center E	Cost Center F					
Parent	A	Cost Center A	1.025	1.277	1.802	2.356	1.602	3.097					
	B	Cost Center B	3.495	2.377	3.172	1.935	2.048	3.615					
	C	Cost Center C	1.814	3.731	1.546	1.184	2.556	3.085					
	D	Cost Center D	2.618	3.335	2.162	3.217	1.501	2.503					
	E	Cost Center E	3.421	3.535	1.968	2.737	1.732						
	F	Cost Center F	1.29	3.55	1.483		3.218	3.731	1.886	2.715	3.315	3.438	2.84
	G	Cost Center G	1.903	1.924	3.755	1.444	1.95	3.679	2.428	3.902	2.623	2.863	3.542
	H	Cost Center H	3.721	1.326	1.223	3.499	3.089	2.506	3.668	3.799	1.624	3.101	1.587
	I	Cost Center I	2.22	1.099	1.051	1.393	3.91	3.762	3.603	2.41	1.378	2.932	3.884
	J	Cost Center J	2.465	1.813	3.791	1.175	3.129	1.272	2.284	3.278	1.93	3.637	1.364
	K	Cost Center K	2.471	1.661	2.813	3.794	1.797	1.768	3.173	2.179	1.649	3.204	3.803

Cost Center F to Cost Center C
- 7.3.3-7.3.4: Score = 1.11
  - Deliverable A
- 7.3.7-7.3.8: Score = 1.04
- 7.5.1-7.5.2: Score = 2.25
  - Comment 1: Score = 2
  - Comment 2: Score = 3
  - Comment 3: Score = 2
  - Comment 4: Score = 2

Matrix of process handoff scores between cost centers, highlighting areas for improvement

Improving Governance

MCR's approach to process improvement addresses performance issues at a tactical level within organizations. To address higher-level issues, this approach can be adapted to audit organizational performance against business governance documentation. MCR's governance audit addresses enterprise-wide topics such as roles and responsibilities, accountability, business integration, and alignment with business goals. In this approach, interview comments are tied to corresponding governance requirements. Once comments are scored, heat maps can be generated to compare organizational performance against specific governance requirements. Comments are then aggregated to generate observations and actionable recommendations to resolve issues.

The New Role of Artificial Intelligence

Historically, the process of reviewing interview comments was a labor-intensive task. Thousands of comments were reviewed and scored manually one at a time, taking weeks to complete. Recently, MCR has successfully developed a proprietary AI agent to automate this process. This agent performs as well as an MCR human expert and can score comments in a fraction of the time. This change in throughput opens the door to exciting possibilities. For example, business process performance in the field can be evaluated in near real time, or process improvement can be accomplished at larger enterprise scales with newfound expediency.

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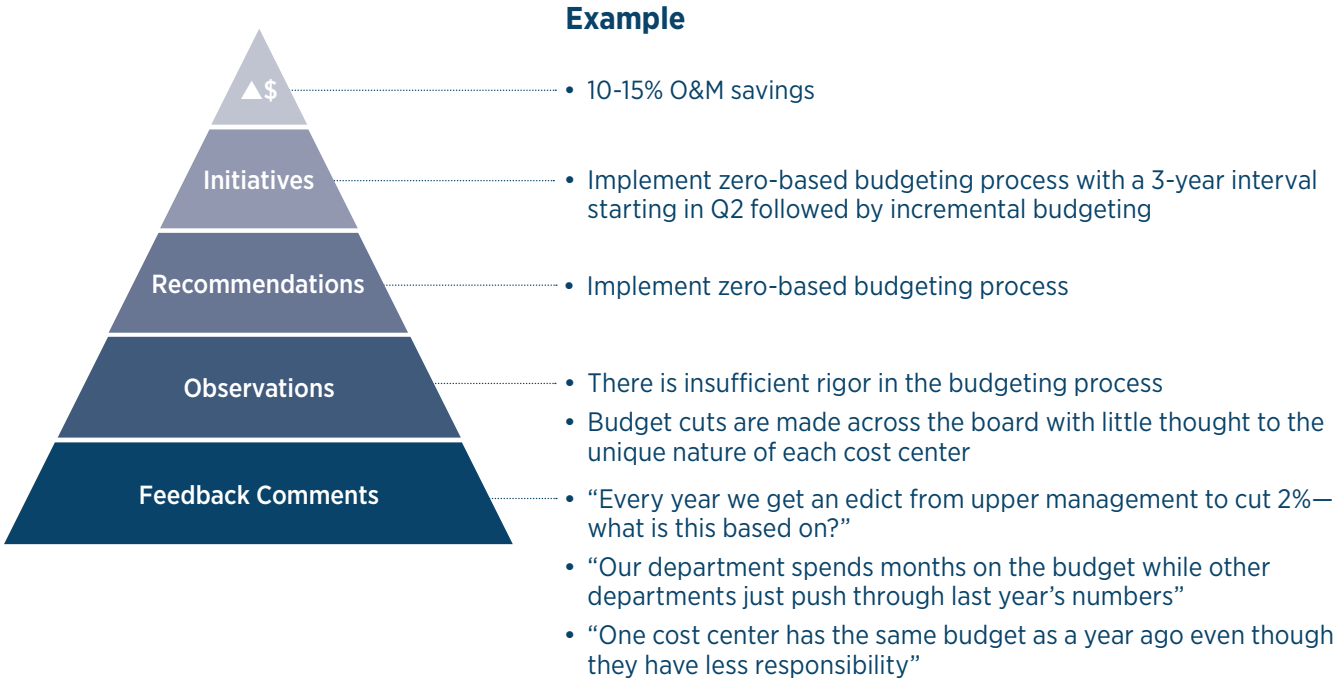
Distilling Data to Action

While compelling and insightful, the organizational rollups of scored comments may lead to the question: "What do I do with thousands of scored comments?" The MCR team classifies every comment, helping to summarize collections of scored comments. Further analysis of observations leads to the creation of specific recommendations to address reasons for poor performance. Recommendations are further classified as Core, Essential, or Basic, with Core being the focus of project plans for improvement. The most urgent Core recommendations may require only a half dozen substantial project plans. Exhibit 4 illustrates how comments are synthesized into observations and recommendations, resulting in initiatives with clear cost savings.

Exhibit 4: Performance Improvement Initiative Generation Model



Hierarchy illustrating the transformation of feedback into observations, recommendations, initiatives, and cost savings

Common Solutions

So, what kind of initiatives are we talking about? The most common initiatives resulting from MCR's process analysis and optimization are tools, techniques, and solutions supporting the following:

- Integration of engineering processes into work control and business planning.
- Life-cycle management plan implementation for key plant systems.
- Project business case evaluations.
- Long-range planning process implementation for outage and online work.
- Zero-based budgeting across the enterprise.
- Staffing optimization with workforce planning.
- Work management process improvement with focus on scope, schedule, and cost.
- Integration of risk valuation methodology in all key processes.

Do Not Accept Defeat—Processes Can Be Improved

Like most attempts at improving organizational management, processes, and assets, the benefits require substantial effort and depend on timing, expertise, and available resources. A targeted, data-driven approach is needed to accomplish the objectives. MCR's approach to process improvement—and by extension performance and cost improvement—changes the paradigm. It blends typical motivating

factors (e.g., benchmarks, employee surveys, costs, industry guidance) with industry best practices and employee feedback on targeted areas to generate grounded initiatives to address costs. Utility processes are linked to interview/audit feedback and scored across multiple perspectives, resulting in observations, recommendations, and targeted implementation initiatives tied to cost savings opportunities in real dollars. In short, MCR's approach to process improvement enables any organization to engage in a comprehensive process improvement assessment with fewer resources and more insightful results than otherwise possible.

About the Author

Tim Schlimpert is a Vice President at MCR and leads the Utility Cost Management practice. He has more than 30 years of utility industry experience in nuclear power plant operations, maintenance, work control, business operations, process improvement, and technology solutions, and has achieved significant performance improvements for his clients. Tim provides the often-elusive connection between corporate strategy, long-range planning/budgeting, work management, and technology through industry-leading life cycle management practices.

About MCR

MCR helps energy companies transform their management and operations by enabling significant advances in performance through the integration of deep industry insights and leading-edge information technology.

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