

Automation in the Energy and Utilities industry

Points of view and takeaways from industry CIOs

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Context

Seven chief information officers (CIOs) from energy and utilities (E&U) companies met to discuss the automation journey of their businesses.

Topics from the discussion include showing value and proving ROI of automation, process mining and business automation, and best practices for infrastructure automation.

These CIO forums provide an opportunity to share leading practices and discuss topics of mutual interest based on an agenda created through advance interviews.

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Quotes from the E&U IBM CIO Roundtable

Prioritizing automation investments

“We’re trying to be business value-driven to drive investment in the [automation] space. So, not a ‘If you build it, they will come’ mindset, but getting the business to really start thinking differently about their current business, their current cost drivers, where they have a lot of labor-intensive, repetitive tasks, and then bringing those items forward.”

Simplifying with automation

“The thing we’ve learned is, don’t start out trying to automate a complex process. Look at your process first and simplify it, and then try to automate it.”

Measuring automation ROI

“The challenge that we often have when we go into any kind of IT initiative is that it’s hard to truly demonstrate what you’ve done. It’s very hard to quantify the monetary benefits of automation in particular. You’re not actually taking costs or FTEs out of the organization, and so that’s where I think the cynicism comes in. When you look at it from your finance person’s point of view—they look into what you’re spending, which can be millions and millions of dollars, but is it actually saving anything.”

Proving trustworthiness of automation

“I think that the big picture, end to end, is culture. We’re in an industry of ‘trust and verify’ especially with gas or electric or water infrastructure. And whatever company you’re in, there’s a lot of trust that goes with automated switching, for example.”

Market context

Intelligent automation in energy and utilities

Automation of processes across functions and departments offers organizations the opportunity to realize a plethora of meaningful business benefits. Intelligent automation is one of the cornerstones of an organization’s digital transformation as it consists of the orchestration and transformation of disparate workflows using exponential technologies such as AI. These technologies provide organizations with a competitive advantage as they can deliver more efficient and satisfying customer and employee experiences, all while reducing operational costs and improving productivity.

To help utilities reinvent the plethora of processes within the business, adoption of tools such as Robotic Process Automation (RPA), process mining, document processing, and data visualization are key. RPA has strong potential to provide value for E&U companies so they can reduce cost on the business or invest in delivery of new services. As utilities face constant requirements to optimize operations and maintenance (O&M) expenses, RPA in business areas like customer services, metering, billing exceptions and procure-to-pay can enable an increase in worker capacity by 15%-25%.¹ Beyond task automation, energy and utility companies need to reinvent their operational processes with end-to-end workflows.

Business automation in E&U

Energy and utility companies face many challenges—from traditional operations to emerging challenges associated with policies to reduce carbon emissions. Operational areas such as asset management, energy systems, customer and enterprise operations have a plethora of processes that are opportune for automation use cases. Automation of processes across business functions offers opportunity to reduce back office, operational and maintenance expenses.

Business areas to implement RPA for E&U

Transmission & Distribution	Design and plan network, build, operate, maintain
Metering	Manage meters and meter data
Generation	Build, operate, maintain, and retire
Customer	Provide network access, billing, and collections
Corporate	Regulatory reporting, finance, procurement, human resources

Operations areas fit for automation in E&U

Digital solutions that address the utility operations areas for assets, energy systems, customers, and enterprise operations are well positioned and poised for automation.

Utility areas	Asset operations	Customer operations	Energy systems	Enterprise operations
Processes (sample)	<ul style="list-style-type: none"> Asset hierarchy and costs Asset condition and performance Maintenance policies Contract and warranty management Remote inspection and monitoring Risk and performance monitoring Asset analysis and diagnosis Work and outage planning 	<ul style="list-style-type: none"> Customer acquisition, onboarding, satisfaction Metering and billing On-time activation Times, rates, resolution Customer service plan changes A/R and cash collections Billing cycle time Cross-selling and new service 	<ul style="list-style-type: none"> Internal approvals Permitting Insurance Plan and schedule construction Dispatch Monitor consumption and dispatch Manage energy flows Manage energy ecosystem 	<ul style="list-style-type: none"> Regulatory reporting Contract admin and management Vendor management Supplier onboarding Procurement, invoicing, payments Talent acquisition and development Governance, risk, and compliance
Automation use case (examples)	<ul style="list-style-type: none"> Manage compliance risks Automate manual master data entry Accounts payable process (streamline P2P) IT functions (password resets, new user registration, activate and deactivate user) 	<ul style="list-style-type: none"> Start, stop transfer service Demand response Green advocacy Personalized offers Billing and settlement Complaints, collections, claims Omnichannel service 	<ul style="list-style-type: none"> Load forecasting Demand side management Energy storage optimization and dispatch Grid interface behavior Self-healing Dynamic rating Manage energy ecosystem 	<ul style="list-style-type: none"> Invoice processing Supplier and supply chain management Application monitoring Regulatory reporting Employee data management HR compliance and reporting Energy trading
Efficiency gains¹	25%–40%	Up to 20%	30%–40%	Up to 35%

that span multiple business functions to unlock the full potential of digitalization. Top use cases for E&U organizations in business automation include automating and optimizing business operation and supply chain process in areas like enterprise asset management and enterprise resource planning (ERP); prescriptive maintenance actions that govern the rules for maintaining assets; enterprise records management for compliance; and reducing the cycle of omnichannel customer operations with intelligent end-to-end workflows. If cross-departmental collaboration is achieved, the benefits can reach up to 40% O&M reduction in some areas.¹

Process mining in E&U

Process mining is becoming the norm to accelerate the identification of inefficient and long running processes and help utilities identify the right automation strategy to implement. Market-leading platforms help utilities to replace traditional process mapping techniques. E&U companies should use a structured approach to roll out process excellence, powered by process mining and discovery, across the entire organization. Starting with a first proof-of-concept in a selected process allows learning for a full implementation and fuels end-to-end automation. Example areas where E&U can use process mining are to analyze deviation and non-conformance, find unexpected flows, monitor payment mismatch, monitor automation by region, and monitor cash flow on early payment.

The process mining journey for energy and utilities companies starts with process selection—choosing the right areas based on volumes, process maturity, system landscape and business priorities. This is then followed by data collection and system

connection—where data is extracted from relevant IT systems and a data model of end-to-end process is loaded into the process mining engine. Next is the discovery phase—using visualization and simulation to view inefficiencies, uncover execution gaps, and generate what-if scenarios to test the expected ROI of the planned automation. This segment of the journey turns disparate data into powerful insights. The journey then moves into the action phase—where process improvements are then implemented. This segment of the journey shifts from discovery of insights to business value. The E&U process mining journey rounds out with sustaining value—where utilities realize continuous and sustainable process improvements throughout the full organization. This final segment enables continuous value creation for the E&U business.

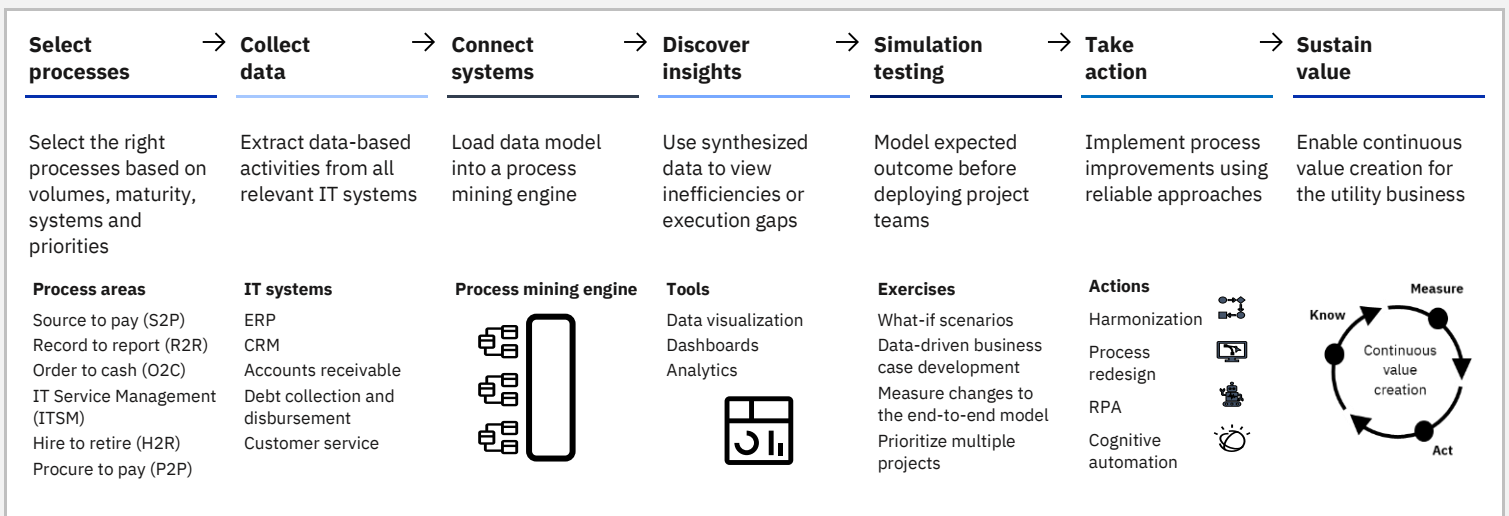
Automation leadership in E&U organizations

To successfully master the human factor in such transformation, energy and utility companies will require new forms of leadership, inspiration, and employee engagement. E&U CIOs, with the support of their technology organization, are the champions of automation within the utility business. They must bring together business and IT functions to get full buy-in on the automation of specific processes. Close partnership with operations and back-office leaders can help E&U CIOs to master the cultural shift that comes with human-technology partnerships—to get all parties on board and in full utilization of the new automation capabilities and ensure success.

To hear directly from the E&U CIOs who participated in the roundtable, continue to the next section.

Process mining to automation journey for E&U

Organizations should use a structured approach, powered by process mining and discovery across the entire business—shown here is a recommended journey for E&U.



CIO Roundtable takeaways

Automation and proving ROI

Energy and utilities companies are at various stages in automation journeys, with several CIOs describing their efforts as being at the beginning stages or infancy. While cloud technology and AI have made end-to-end automation feasible in theory, in practice, energy and utilities company CIOs need to secure buy-in from an array of stakeholders, from finance heads and the C-suite to engineers and field workers, to HR and back-end office, and customers. Challenges are often less a matter of tools and technology and more a matter of demonstrating value of automation in employees' work.

One executive shared that their company was implementing automation in incremental steps, and that they had success starting with the back-office operations, customer service, tax operations and similar functions. Another CIO has started with automating transactional processes, such as trading, to demonstrate the efficiency and increased accuracy of automating some manual repetitive jobs. While automation of field operations is further in the future, there are current opportunities to automate alerts to field supervisors, for example.

As energy and utilities companies move to automate their processes, a major challenge has emerged around proving the value of such efforts. While the benefits of automation are often

realized in efficiency and productivity gains, they do not always appear on the balance sheet, making it difficult for CIOs to prove the value of automation especially in terms of financial gains and return on investment.

Demonstrating ROI on automation is made more challenging by the difficulties of a large-scale shift and the timeline of proving value. It is very challenging to shift to automation, and there is often pressure to produce quick ROI results to justify the money needed for implementation. However, proving ROI quickly is very difficult—measuring such indicators as increased efficiency, enhanced employee satisfaction due to performing higher value work, stronger customer satisfaction and loyalty, or whatever the measurement might be, will naturally include a one- to two-year lag to gather the data and analyze how the automation is working.

Even as the IT leaders face skepticism on the ROI of automation, they are also feeling pressure from leadership to chase after the latest and greatest tools. One CIO shared that, while C-suite leaders can get caught up in the array of tools and providers available, it is more important to identify the process indicators that the company wants to measure, rather than getting distracted by various tools.

Demonstrate ROI of automation for E&U

One of the biggest challenges of new technology investments in any industry is establishing the right metrics to measure ROI—shown here are example metrics for E&U.

<p>ROI metrics from E&U CIOs</p>	<p>Increased efficiency of processes</p> <p>Enhanced employee satisfaction</p> <p>Stronger customer satisfaction and loyalty</p>
<p>Other potential ROI metrics for E&U</p>	<p>Reduced time to delivery of services</p> <p>Reduced operations and maintenance expenses</p> <p>Number of issues avoided with prediction and optimization</p> <p>Decreased problem resolution time, such as outages and bill adjustments</p>

Process mining and business automation

Many energy and utilities companies are moving from siloed, manual processes to automated business processes. This shift often faces cultural headwinds as people’s acceptance of automation can differ significantly. While IT teams may take the lead on implementing and piloting automation as early adopters, and they can champion its benefits to their companies, there are benefits to having multidisciplinary teams across the company help design and implement the automation process.

Several executives have found it challenging to engage different teams and work groups in process mapping, particularly engineers and field workers. One leader shared that a change in mindset is crucial—if people decide they aren’t going to accept a new process, they’re not going to do it. IT needs to demonstrate benefits that employees can see and relate to their own work if they are going to get on board with automation.

Members stressed that the shift to automation is as much a cultural shift as it is a change of processes. One CIO shared that people don’t like to have a change like automation forced on them. Instead, the CIO has found that when IT eases up and lets people decide what they need, “it is surprising how many times they find their way to the right decisions.”

IT leaders are taking the lead on process mining, starting with their own processes, and showing how automation can lead to higher value work. For example, one leader shared that their IT

team had automated many of its more manual data processes, such as collecting, cleaning, and de-duplicating, which has now freed up their high-level data scientists to do the more interesting work of analyzing the data. Another CIO has worked with several different teams to identify which tasks they want to automate. Now, employees are realizing that the ability to automate manual, repetitive tasks frees them to be more productive in work that only humans can do.

While different employees and internal teams may be slower to adopt automation of infrastructure and business processes, one executive noted that customers really like and appreciate automated processes. They shared the example of a customer needing to arrange for payment of their bill. A longtime customer may be embarrassed if they need to make arrangements to pay their bill, but with an automated process now they don’t have to talk to anyone and can just do it over the phone.

While companies are automating infrastructure, there is a trust element that goes with shifting from processes that have long been manual. Technicians who have been working in the field may mistrust that they will be able to obtain higher value work. Further, the nature of electricity or gas is that people want to know that a human who can think critically is managing the process in case of storms or other emergencies that might take out the grid or otherwise cause customers to lose service.

Actions for automation leaders in E&U

Those who build new forms of leadership, inspiration and employee engagement will realize the greatest benefits of automation and technology overall.

<p>Elevate human-technology partnerships</p> <ul style="list-style-type: none"> • Establish the organization’s true and aspirational purpose • Adopt human-centric design to enhance enterprise experience • Orchestrate compelling (trusted) human-technology interactions 	<p>Cultivate smart leadership, skills and culture</p> <ul style="list-style-type: none"> • Embrace disruption and lead as a change agent • Foster a culture of collaboration and innovation across ecosystems • Drive accountability for new workflow-aligned skills 	<p>Perform with purposeful agility</p> <ul style="list-style-type: none"> • Team across boundaries to accelerate innovation • Adopt agile principles and design thinking mindsets while sidestepping chaos • Sustain agile at industrial-strength scale
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Conclusion

IBM CIO Roundtables provide a forum for E&U leaders to address various topics around the digital technologies that transform and power their businesses—such as automation, security and data.

Contact your IBM representative today if you would like to participate in the next IBM CIO Roundtable for E&U.



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¹ Figures are derived from direct IBM work experience with more than 20 large scale transformational implementations for clients in the energy and utilities industry. All client examples cited or described are presented as illustrations of the manner in which some clients have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual client configurations and conditions. Contact IBM to see what we can do for you.