

The Next CIO

How Enterprise Technology Management Powers Autonomous IT (Abridged edition)

Today's CIO faces three very complex challenges:

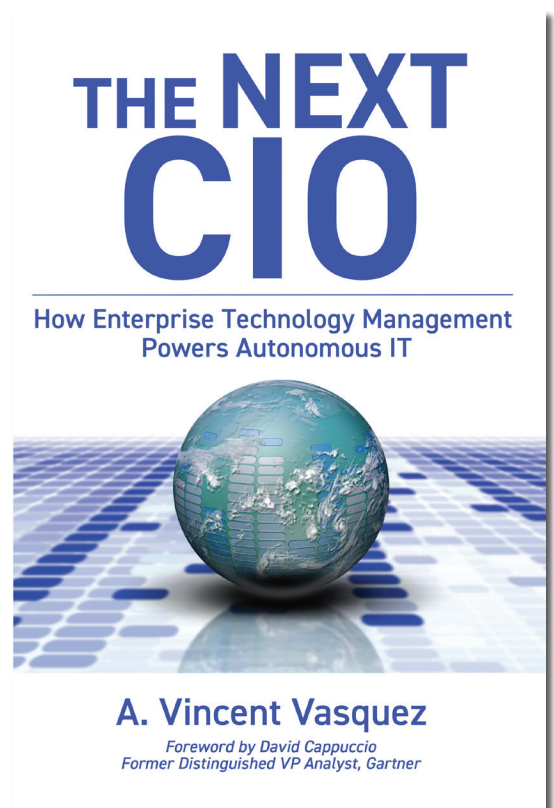
- How to manage the broad portfolio of often siloed enterprise technology required to run the modern business?
- How to improve the efficiency and security, while also lowering the cost, of running processes typically implemented through organizationally expensive and inefficient manual workflows that operate across these technology silos?
- How to find budget to fund disruptive technology initiatives like digital transformation?

Historically, increased complexity has given rise to new categories of software applications that simplify processes and drive efficiencies, helping the CIO's peers to be more successful in their respective functions, such as **CRM** (*lead-to-cash*), **HCM** (*hire-to-fire*) and **ERP** (*procure-to-pay*).

The Next CIO, argues that the modern CIO needs a similar application:

- **ETM** (Enterprise Technology Management) provides *plan-to-EOL*, enabling CIOs and the IT organization to define, automate and optimize the end-to-end processes that derive value from the entire often siloed enterprise technology portfolio throughout the technology lifecycle.

An ETM application would help to improve process efficiency, enhance security and compliance, and deliver business observability on the journey to powering autonomous IT.



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***The Next CIO* – abridged edition – compliments of Oomnitza**

Oomnitza offers the industry's most versatile Enterprise Technology Management platform that delivers key business process automation for IT.

Our SaaS solution, featuring agentless integrations, best practices and low-code workflows, enables enterprises to quickly achieve operational, security and financial efficiency leveraging their existing endpoint, application, network infrastructure and cloud infrastructure systems.

We help some of the most well-known and innovative companies to optimize resources, mitigate cyber risk, expedite audits and fortify digital experience.

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Contents

Funding Digital Transformation 4

Three Options to Fund Digital Transformation 4

Raid operating income 5

Squeeze operating costs 5

Improve enterprise technology process efficiencies 5

Rating ET Process Maturity 6

The five levels of ET process maturity 7

Barriers to Enterprise Technology Process Maturity 8

Siloed management tools 9

Scattered and fragmented data 11

Poorly defined ET processes 12

Lack of ET Process Maturity means opportunity 12

The ETM Framework 13

Enterprise Technology Portfolio 13

Enterprise Technology Management Processes 14

ET Process Maturity Framework 15

Level 1: No Process 16

Level 2: Described 16

Level 3: Partially Automated 17

Level 4: Fully Automated 17

Level 5: Continuously Optimized 18

Collaborating CIOs? 18

Introducing the ETM Application 19

ETM Application Architecture 19

Dashboard, KPIs and Notifications 20

Empowering Autonomous IT 21

NOTES 21

Funding Digital Transformation

As a CIO, your team is no doubt constantly barraged with the “what abouts.”

What about Web 3.0? What about cryptocurrency? What about security? Why aren’t we doing more in artificial intelligence and machine learning? What about IOT? What is our cloud migration strategy?

And what about digital transformation – something that every CIO has firmly on their must-do list?

But it takes money and headcount to digitally transform your business. It takes money to investigate and act on all the “what abouts” potentially relevant to helping your IT organization deliver more value to the business.

So, where’s the budget going to come from?

The CFO certainly isn’t handing out money like Halloween candy. And you’ve already done several cost-cutting rounds. You no doubt have tried to squeeze as much cost from your vendors as possible. And you’ve likely outsourced at least some of your organization’s workload to IT managed service providers that can do your “mess for less.”

In other words, a primary concern of the next CIO is cost management. How can a next-generation CIO take more cost out of the IT organization’s budget to fund “what abouts” like digital transformation? That said, the next CIO also needs to improve IT efficiencies and data security that are, in a way, byproducts of running a smarter IT organization that can reduce operating costs. CIOs who run a smarter IT organization also gain improved observability into the processes used by the team and supported business entities to run the parts of the business that leverage technology. This enables the next CIO to better articulate the IT organization’s value creation back to the business.

Three Options to Fund Digital Transformation

Returning to cost management, CIOs have three major options to fund transformational initiatives such as digital transformation, as seen in Figure 1.



Figure 1: Three options to fund digital transformation

Raid operating income

For incumbent companies, one option is to dip into operating income. After all, the money is sitting right there in the bank if the company is profitable. However, this approach results in lower recorded profits that can drive investors right into the arms of disrupting competitors.

So, funding through operating income is an option, but not a great one.

Squeeze operating costs

Another option is to look at the cost side of the balance sheet. For instance, a company can use an IT-managed service provider to outsource its existing operating workload like running the email system, managing the network, or re-architecting the cloud-destined legacy applications. A company can also outsource emerging activities like security so additional headcount doesn't have to be hired.

This can be a good option, as managed service providers gain cost advantages through specialization and the use of manual labor sourced from lower wage geographies. By taking this route, the CIO can repurpose operating headcount to projects that are seen as more strategic for the company. And then every three years or so, the CIO can issue new RFPs, continually trying to lower the fees charged by vendors for their outsourced workloads.

However, most IT organizations have already completed multiple rounds of these types of cost-cutting measures, so don't expect to find much low-hanging fruit here. Certainly, there may not be enough potential savings available to free up significant budget to accelerate success exploring and adopting "what about" disrupters, that is unless something truly transformative can be applied to radically improve IT productivity.

This takes us to the third option.

Improve enterprise technology process efficiencies

A third option is to leverage digital transformation itself and transform the CIO and IT organization's processes and associated workflows. This option enables the CIO to improve IT productivity by digitally transforming enterprise technology (ET) management processes – those process that touch the entire technology portfolio deployed by the overall company.

Further, digitally transforming enterprise technology processes and workflows will also improve the quality of service that the CIO's IT organization delivers back to the business. For instance, customer experiences for companies with retail outlets could be improved if the ET processes more efficiently ensure that point-of-sale (POS) devices are always working and up to date, so the maximum number of checkout lines are always available.

Let's explore this third option in more detail, starting by looking at the maturity of existing enterprise technology processes.



Universal Studios

Figure 2: ET = Enterprise Technology (not extraterrestrial)

Rating ET Process Maturity

For most incumbent companies of reasonable size, the ET process landscape is inherently complex, as technology impacts nearly every operational process, from purchasing and keeping data and employees secure to maximizing the value attained from the technology purchases.

Take the routine process of secure offboarding an employee as an example – from employee termination set, to all access revoked and company-issued technology returned. This separation-to-recovery process is described with the following steps:

- **Separate:** Terminate employment in HR system such as Workday; notify IT, HR, finance, legal and other functional stakeholders of the change in employee status; handle for voluntary or involuntary separation
- **Deprovision:** Lock corporate laptops and mobile devices; revoke access to endpoints, network, infrastructure (cloud) and SaaS/on-premises applications such as Salesforce, Microsoft 365 and SAP; cover access within and outside the purview of single sign-on (SSO); preserve employee’s previously accessed data and workspaces
- **Reassign:** Transfer ownership of and access to documents, data, cloud resources and other work product to others; set up mail forwarding and auto-replies; delete recurring calendar invites
- **Recover:** Initiate returns of corporate devices and accessories; reclaim cloud resources and return application licenses to entitlements pool; enforce legal hold and data preservation requirements
- **Reallocate:** As appropriate, reimage and return employee-issued devices back into inventory
- **End of Life:** As appropriate, sanitize and wipe devices; destroy, donate or recycle; store certification of destruction; update financial audit manual and financial systems for audit readiness

Using the eye test, a complete employee offboarding process is complicated, touching many organizations and technologies. Partially because of this complexity, this process is often implemented through multiple workflows that contain many manual tasks and require different personnel to use different, siloed technology management tools. This approach is inherently more expensive and more prone to human error than if the tasks were automated across the IT management tools.

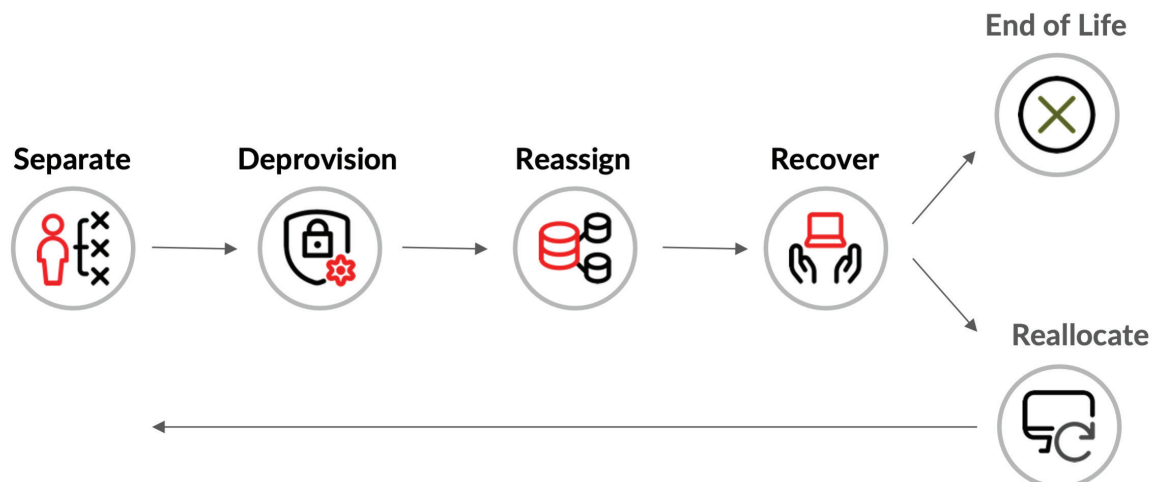


Figure 3: Secure employee offboarding process

The five levels of ET process maturity

For instance, at the lowest level of maturity, a business has no process defined and the work is being done ad hoc, reacting to issues and likely following steps stored in an employee’s head – an employee who someday may leave for greener pastures.

On the other end of the maturity spectrum, a process is not only fully automated but also optimized to run as efficiently as possible. A process at this level of maturity is likely automated and proactively predicting situations so actions can be taken before an issue negatively impacts business outcomes or user experiences.

An ET process can run at one of five levels of maturity, as shown in Figure 4:

Level	Stage	Description	Rating
1	No Process	<ul style="list-style-type: none"> Process is not defined Work is done manually, reactive and ad hoc 	Bad
2	Described	<ul style="list-style-type: none"> Process is described Work is done manually 	Poor
3	Partially Automated	<ul style="list-style-type: none"> A degree of process automation has occurred augmented with manual intervention 	Fair
4	Fully Automated	<ul style="list-style-type: none"> Process is fully automated and measured 	Good
5	Continuously Optimized	<ul style="list-style-type: none"> Data is used to proactively deliver, optimize and continuously improve process 	Excellent

Figure 4: ET Process Maturity levels

- Level 1: No Process** – The process is undefined. Work is done completely manually, is ad hoc and reactive. This is the most inefficient state, so Level 1 gets a bad rating.
- Level 2: Described** – The process is described but implemented manually. Manual processes are inherently inefficient, so Level 2 gets a poor rating, as completely manual processes in general are more expensive and take more time than letting computers do the work through automation.
- Level 3: Partially Automated** – The process utilizes automation to make it more efficient, but still depends on manual intervention to complete. Because some level of automation is involved, Level 3 gets a fair rating.
- Level 4: Fully Automated** – The process is completely automated and completion time is measured. Given the process requires no inefficient manual intervention, Level 4 receives a good rating.
- Level 5: Continuously Optimized** – The process uses data to optimize and continuously improve its activities. It is executed, monitored, and managed through dynamic workflows, making decisions based on output from automated tasks, adapting to changing circumstances and conditions, and simultaneously coordinating multiple tasks. Level 5 receives an excellent rating, as processes at this level are running as efficiently and securely as possible.

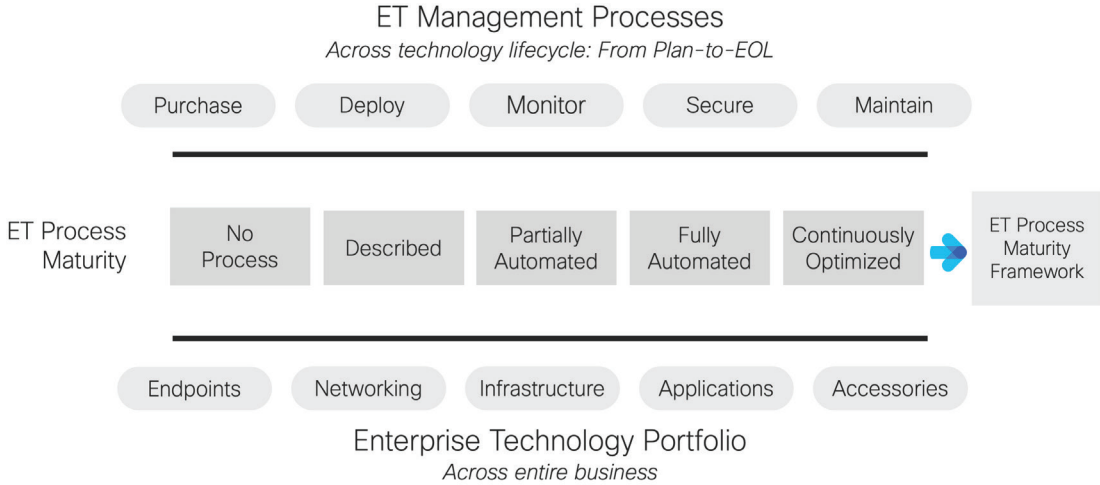


Figure 5: ETM Framework with ET Process Maturity levels

Figure 5 shows how these five levels of ET Process Maturity fit into the ETM Framework.

Of course, a framework is only useful if it can inspire and motivate change that brings more success to the organization. This is where the ET Process Maturity Framework will come into play.

But before we go there, a natural question is: Why aren't all ET processes automated? For one, not all ET processes are candidates for full automation. For instance, some processes will require manual approvals, a physical activity to occur like returning a company-issued laptop or might be too complex to fully automate.

That said, what are some of the other reasons why all ET processes are not running at level 5: fully automated and continuously optimized?

Barriers to Enterprise Technology Process Maturity

As shown in Figure 5, IT organizations face at least three barriers to ET processes operating at maximum maturity: siloed management tools, scattered and fragmented data, and poorly defined ET processes.

Barriers to ET Process Maturity

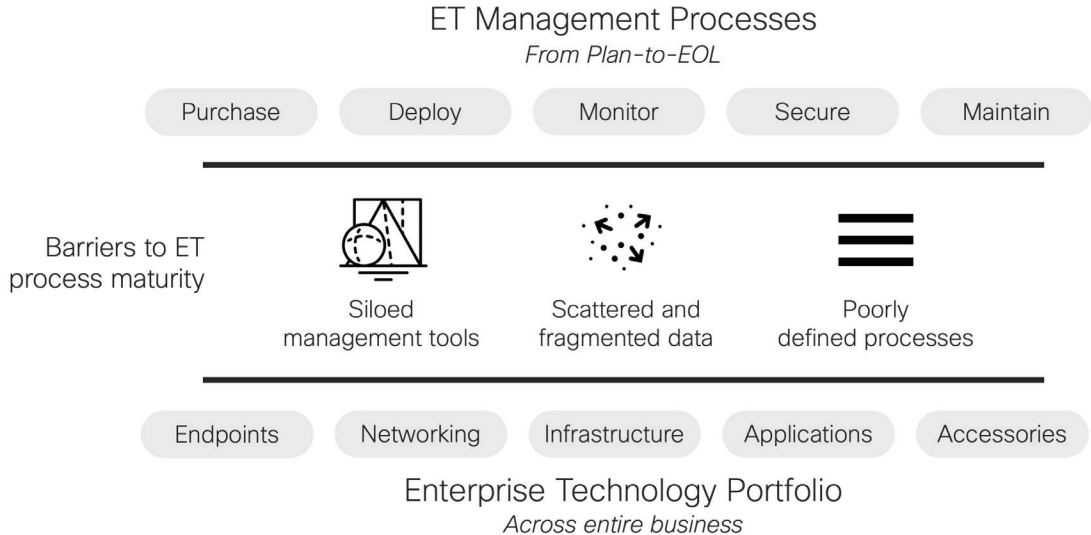


Figure 6: Three barriers to ET Process Maturity




































	Purchase 	Deploy 	Secure 	Monitor 	Maintain 
 Endpoints					
 Applications					
 Infrastructure					
 Networking					
 Accessories					

Figure 7: Point tools used to manage technology portfolio

Siloed management tools

For the most part, all people in the CIO’s IT organization work in their own silos, taking care of the work needed in each domain of the organization. Unsurprisingly, each siloed group adopts its own set of tools to help bring efficiencies to their jobs, with examples shown in Figure 7.

Because there are many types of technologies and different phases of technology management, IT teams use a combination of management tools: one each for software, endpoints, networking, on-premises and cloud infrastructure, and so on.

For instance, the folks responsible for the network will no doubt use a network management tool to help them manage all the complexity involved in keeping a network running. The DevOps folks will likely use application management tools to help them ensure optimal user experiences.

The CISO’s team will no doubt have its own set of security tools to mitigate vulnerabilities, enforce policies, and triage issues. In fact, according to one estimate, the average enterprise deploys over 130 security tools, while a medium-size company relies on 50–60 tools on average to help keep the organization secured.^[1]

Many of these siloed groups implement some level of task automation to help bring efficiency to their individual jobs. This is a good start, but it is not the same as automating entire ET processes.

If an IT organization wants to automate a process that touches various technologies, one option is to stitch solutions together themselves by doing their own custom integrations. This approach is not only time consuming (of IT resources that are already in short supply), but it also risks incurring additional costs as the custom automation needs to be supported and maintained as the point tools update.

Another option is to follow various vendors such as SAP as they expand their process footprint beyond being considered point products. For instance, SAP offers several processes that expand beyond traditional ERP, such as recruit-to-retain Human Resource Planning (e.g., Talent Acquisition & Onboarding, Personnel Administration and Performance & Succession), Financial Management (e.g., Field Sales Monitoring, Customer Profitability and Vendor Procurement Monitoring), and Customer Asset Management (e.g., Equipment Maintenance, Equipment Refurbishment and Equipment Disposal). That's quite a broad range of ET process functionality.

However, it seems like a very tall ask for SAP to operate as a best-in-class offering both across all ET management processes (including security) and the entire enterprise portfolio from endpoints to infrastructure and applications. For instance, to expand into human resources, SAP bought SuccessFactors. However, as Alain Brouhard – former CIO at Coca-Cola – shares, a company might prefer to use a different HRM application and not be forced into an SAP-dominated process world.

Plus, it's difficult to imagine SAP – or any other company – buying point products across the entire ETM framework, many of which likely wouldn't be for sale, such as cloud provider management software including AWS Systems Manager.



Scattered and fragmented data

One consequence of using point tools is that an enterprise's data about technology gets scattered across the siloed tools with no centralized system of record. Since point-tool functionality varies, they often have limited data that only concerns the technology function they are managing. This results in fragmented and often inaccurate enterprise technology information, making it difficult for a business to understand the state of its entire technology portfolio.

For instance, the CIO of a healthcare provider had to manage the technology for hundreds of dental offices across the country. As part of this service, the CIO's team manages each dental office's networked x-ray machines (endpoints) throughout their lifecycle. If this process were automated, the IT team might be able to:

- Track which systems are approaching end of life, so they can be scheduled to be replaced before offices struggle with outdated equipment
- Forecast and budget for replacement x-ray equipment, avoiding any budget request or supply chain surprises
- Ensure newly purchased systems are configured correctly and patches are maintained
- See and respond to detected security threats and policy violations
- Track the historical reliability of each of its deployed systems, which can be useful in working with their x-ray vendor

Today, the unfortunate reality is that most IT organizations' processes are not automated or optimized. For instance, most IT organizations can't click a button and receive – within a few minutes +/- a second or two – an entire inventory of all technology deployed by the organization with exact locations, owners, lifecycle stage and security state. This would be handy for that healthcare provider to help them manage those networked dental office x-ray machines, and to ensure the operational availability for the dental practices they serve along with exceptional experiences for their customers.

Instead, it's typical for different IT staff members to log in and out of several point solutions to access the data required to run various ET processes. This requires several manual interventions, including manually normalizing, aggregating, and analyzing disparate data sets. In the case of our healthcare provider, the risk is that it may take a long time to remediate critical performance or operational issues on some x-ray machines, while new x-ray machines may not be ordered on time to meet the needs of their customers, thus fueling ET process inefficiencies.

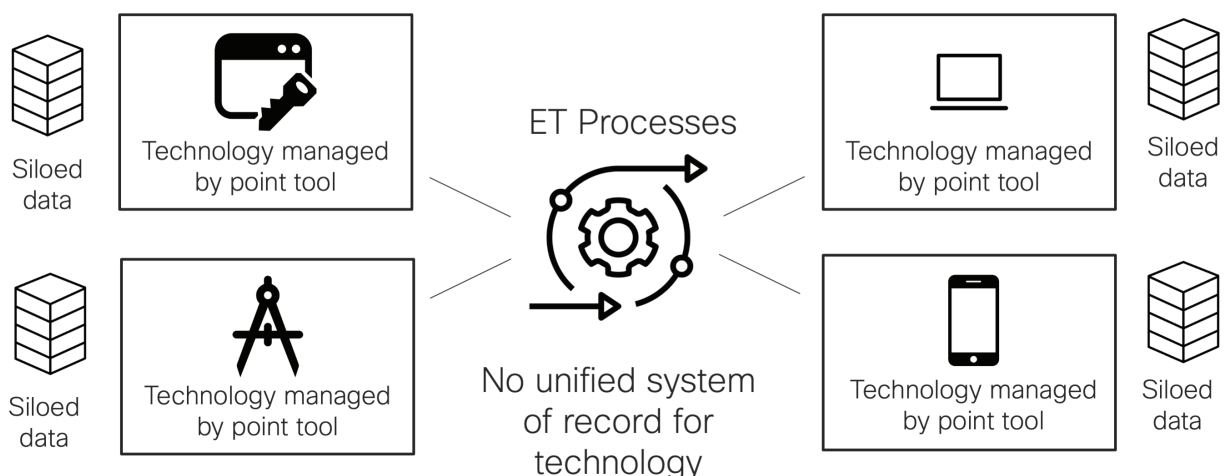


Figure 8: Data about technology is scattered and fragmented

Poorly defined ET processes

Speaking of processes, the unfortunate truth is that many IT organizations have not defined all their ET processes. Or if they have, they tend to be defined in lengthy PDF files that are hard to define and follow and even more difficult to govern, maintain and share consistently.

The reality is that due to many operating pressures, people often didn't have the time to follow processes exactly. Plus, there are too many exceptions because the world is more complex than considered in the written-down processes. So, when it's announced that auditors are coming in six weeks, everybody starts working like crazy to update log files, protocols and so forth to prove that we are living the system.

This frenzy to pass an audit just reduces the operating efficiency of the IT organization.

For maximum IT efficiency, processes would ideally be defined in software. This way, not only can they be automated, but details around what tasks were completed and when can be precisely tracked.

Lack of ET Process Maturity means opportunity

On the other hand, the fact that existing ET processes are not described or lack relative maturity implies there is room for improved efficiencies, and therefore, great opportunity for the CIO. If enterprise technology processes can be made more efficient through automation and continuous optimization, more money can be saved from existing IT budgets, which could be reallocated to fund innovative initiatives such as in digital transformation.



The ETM Framework

To help us answer how the CIO might improve the maturity of the IT organization’s ET processes, we’ll introduce the Enterprise Technology Management (ETM) Framework, as shown in Figure 8. This simple but powerful framework consists of two components:

- **Enterprise Technology Management Processes** are the processes used to run the business that touch the company’s enterprise technology portfolio.
- **Enterprise Technology Portfolio** is the entire inventory of technology used by the business.

Let’s look closer at each of these components, starting with the technology portfolio.

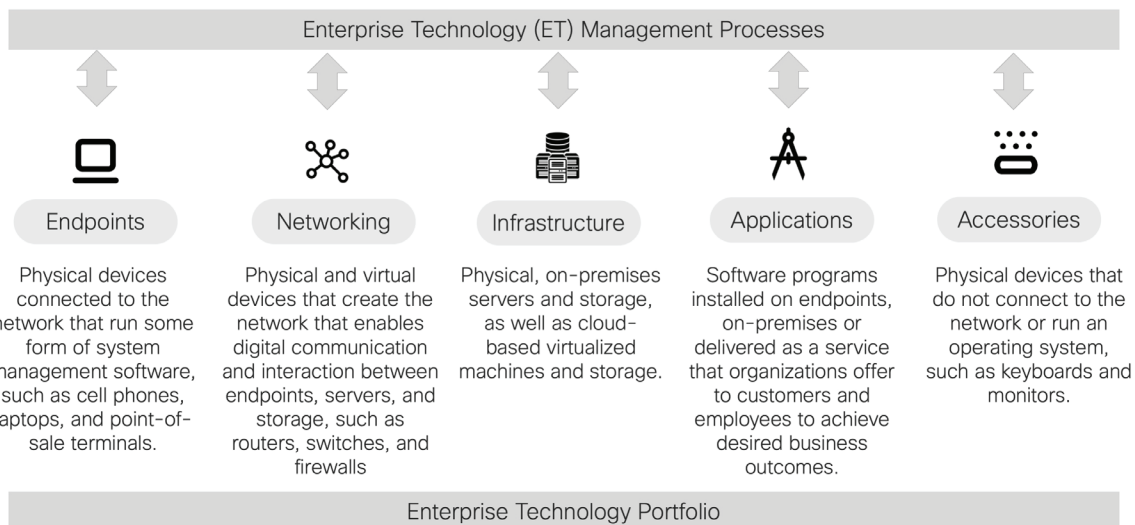


Figure 9: Enterprise Technology Portfolio

Enterprise Technology Portfolio

To help with this complexity, the ETM Framework segments all technology into five broad categories, as shown in Figure 9.

1. **Endpoints:** Physical devices connected to the network that run some form of system management software, such as mobile phones, laptops, and point-of-sale terminals.
2. **Networking:** Physical and virtual devices that create the network to enable digital communication and interaction between endpoints, servers and storage, such as routers, switches, and firewalls.
3. **Infrastructure:** Physical, on-premises servers and storage, as well as cloud-based virtualized machines and storage.
4. **Applications:** Software programs installed on endpoints, on-premises or delivered as a service that organizations offer to customers and employees to achieve desired business outcomes.
5. **Accessories:** Physical devices that do not connect to the network or run an operating system, such as keyboards and monitors.

Enterprise technology management processes are then applied to maximize the usefulness of this technology to the business.

Enterprise Technology Management Processes

Enterprise Technology Management Processes include all the processes managed by the IT organization that utilize technology to meet the needs of the business. At a high level, the objective of these processes is to deliver maximum value to the organization through optimal use of technology, budget, and associated headcount resources required to run the processes.

As shown in Figure 10, the ETM Framework segments these processes into five general categories that track the technology lifecycle:

1. **Purchase Management** (*plan-to-procure*): The processes required to manage the acquisition of technology to be used by the organization.
2. **Deploy Management** (*receive-to-utilize*): The processes that put purchased technology to use within the organization.
3. **Monitor Management** (*observe-to-reconcile*): The processes that ensure the organization continues to attain maximum value at minimum cost from its deployed technology.
4. **Secure Management** (*detect-to-remediate*): The processes that act on identified security exposures and enforce policies that have been violated.
5. **Maintain Management** (*resolve-to-EOL*): The processes that resolve identified cases involving issues with the use of technology.

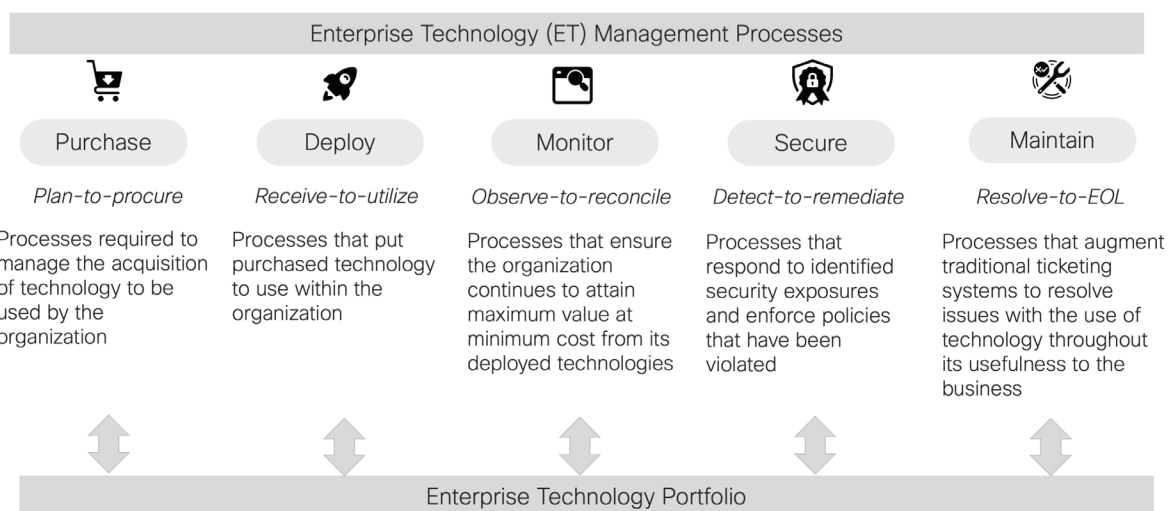


Figure 10: Enterprise Technology (ET) Management Processes

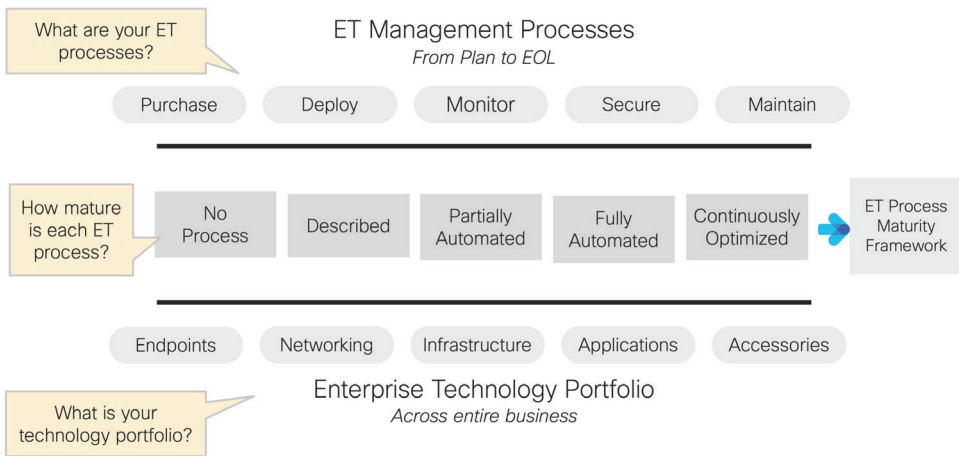


Figure 11: ETM Framework with essential questions

ET Process Maturity Framework

At the end of the day, IT delivers services to the business implemented from processes executed through workflows. If the CIO is going to save costs by making ET processes that touch technology more efficient, then a natural question is, how mature are the existing processes used to deliver the IT services?

To answer this question, we return to the ETM Framework, as shown in Figure 11. We start by taking an inventory of your ET processes. After all, you'll need to know what your processes are before you can rate their maturity.

Each ET process can then operate at one of five maturity levels: No process, Described, Partially Automated, Fully Automated, and Continuously Optimized. This provides the organizing principle around the ET Process Maturity Framework.

The ET Process Maturity Framework provides a way for the CIO to identify specific opportunities to improve ET processes, ultimately with the objective of delivering more value back to the business.

As shown in Figure 12, the ET Process Maturity Framework defines a five-level service maturity journey that can be applied to each ET process used to deliver IT services to the business. An IT organization can have several ET processes at all levels of maturity on their journey from ad hoc and reactive to automated and proactively optimizing processes.

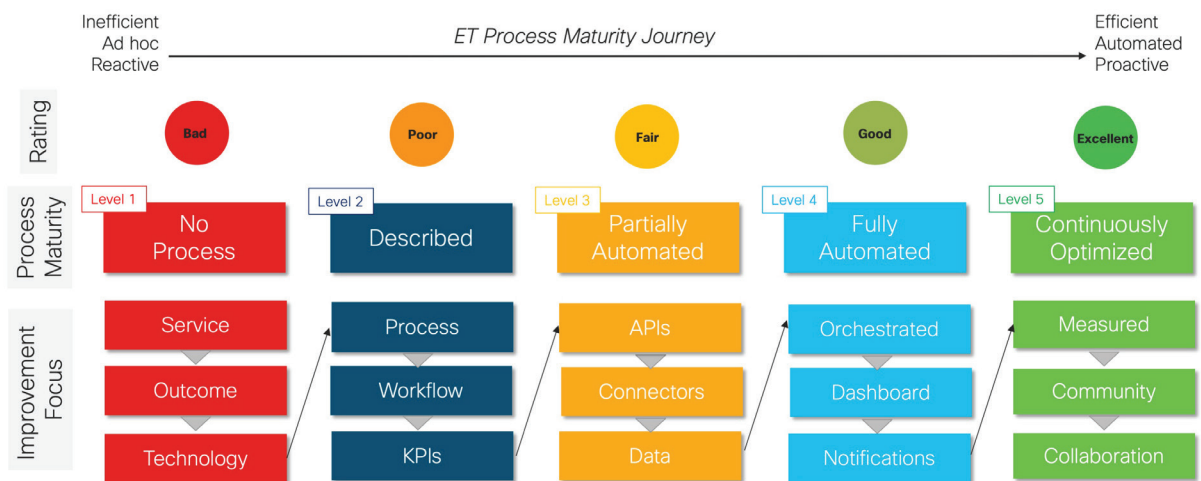


Figure 12: ET Process Maturity Framework

Level 1: No Process

Description: No ET process is written down. The work is implemented completely ad hoc without a formal process described. Given there is no process, the maturity is at level 1.

Improvement Focus: Undefined-to-described

- **Service:** Formally defines the IT service to be delivered to the business entity
- **Outcome:** Formally describes the outcome this IT service should deliver. This will become crucial not only in describing the value of the service to the receiving business entity, but it will also help define if the service is delivering an appropriate level of value.
- **Technology:** Inventory the technology portfolio in scope required to implement the IT service. Ideally, a full inventory of the enterprise technology portfolio is done, creating a single source of truth. This is because it's best to start with an accurate inventory of technology that will be touched, as the full gamut of IT services will ultimately touch all technology.

Once these three actions are taken, the ET process moves to Level 2: Described.

Level 2: Described

Description: The ET process is described, but still implemented through manual tasks.

Improvement Focus: Described to partially automated

- **Process:** Describe the ET process used to deliver the IT service. Ultimately, the objective of the ET process will be to deliver the organizational goals as outlined in the IT service.
- **Workflow:** Define the workflow(s) that will execute the tasks required to implement the ET process. A workflow task can be automated and audited against compliance regulations. As a side note, if the workflow is described as part of a large PDF, then it will not be possible to move to Level 3: Partially Automated, as the workflow will need to be defined in software to be automated.
- **KPIs:** Defines the inputs, outputs and KPIs that will be used to measure how well the ET process is delivering on the organizational goals outlined in the IT service.

Anders Romare – current CIO at Novo Nordisk – shares that many IT organization ET processes he experienced are manual and not measured, so they don't really know how long these processes take to complete. A manual step might only take a few minutes to do, but the employee could get interrupted by a phone call and now those few minutes have expanded to a few hours of wall clock time. As another example, some processes might take a long time to complete simply because the employee lacked the proper training and didn't fully understand the work required.

As Romare points out, often in these situations the CIO and IT organization don't learn there are issues with the processes until the employees executing them start complaining that the workflow is not workable. There must be a more efficient way to get work done within the IT organization.

If these actions are taken, IT organizations could take an ET process to maturity Level 3: Partially Automated.

Level 3: Partially Automated

Description: The delivery of the ET process is implemented through a mixture of automated and manual tasks.

Improvement Focus: Partially automated to fully automated

- **APIs:** The APIs into technology touched by the service are identified.
- **Connectors:** Connectors into an ETM application that communicate with these APIs have been implemented.
- **Data:** The workflow that implements the process that delivers the service is written in software, sending and receiving data to/from the ETM application and the point management tools. At this step, this data is well defined.

If these three actions are taken, the ET process moves to maturity Level 4: Fully Automated.

Of course, automation isn't always the answer to higher IT productivity and lower costs. Melissa Gordon – current CAO at Tidal Basin Group – says she asks these basic questions when deciding whether to automate a process:

- How many hours does it currently take to complete this process?
- How much time is wasted waiting for data to transfer or information to be sent given a lack of integration?
- If we automated this process, how many hours and wall clock time would we save?

For instance, a process that currently takes 200 people to complete might save \$400,000 a year if automated. Let's say you could hire a systems integrator to do the automation and integration of the process costing \$100,000. The \$300,000 savings could then be spent on other billable work, helping to fund innovative initiatives, or translate into not having to hire additional staff if you're growing, as the 200 employees are reassigned to different tasks.

A key, of course, is understanding the complexity of the process. If automating the enterprise technology process will be quick and save a lot of time and money, it's a different trade-off than having to kick off a one-year project.

This is where the availability of an ETM application comes in. Instead of having to hire system integrators to do custom integration, or allocating internal staff to do the same, you would utilize connectors and your own teams to build automated workflows.

Level 4: Fully Automated

Description: The workflow that delivers the ET process is fully automated. The ET process is holistically managed with complete observability into the relevant IT landscape of technology.

Improvement Focus: Fully automated to optimized

- **Orchestration:** Automated tasks are unified into an end-to-end ET process, allowing IT to manage the entire process lifecycle from a single location, including development, testing, monitoring, and measuring.
- **Dashboard:** Visualization is available through a dashboard where the measurement KPIs, SLAs and XLAs can be monitored.
- **Notifications:** Alerting is in place, automatically sending notifications to the dashboard and appropriate personnel upon re-established triggers.

If these three actions are taken, the ET Process Maturity moves to maturity Level 5: Optimized.

One advantage of a fully automated ET process is the ability to add failsafe conditions to the workflow. For instance, Melissa Gordon pointed out how the Krono's ransomware attack disrupted the delivery of payroll to thousands of employees.^[2]

The thing is, many employees can't live without their paycheck. And as paychecks are often delivered on a regular basis in regular amounts, a payroll workflow could be put in place with a condition something to the effect of: If the third-party payroll system goes down for any reason, automatically continue to deliver payroll using previous payroll amounts.

Level 5: Continuously Optimized

Description: Data is used to proactively deliver, optimize, and continuously improve ET process.

Improvement Focus: Optimized to community

- **Measured:** ET process is measured both in terms of delivery time and value creation to assist in continuously improving the process. AI/ML may be incorporated to help in this optimization function. For instance, a demand forecast process might identify patterns in purchasing that can be further streamlined.
- **Community:** As part of finding continuous improvement, a community of third-party resources are identified, such as IT outsourcers and non-competing IT organizations willing to share best practices.
- **Collaboration:** In this final step, continuous collaboration occurs within the community. For instance, if one member gets hit by a ransomware attack, this can be shared with the community to warn them of the attack and provide real-time information to improve all member defenses.

At Level 5, essentially the data becomes the new operating system (to paraphrase a visionary statement by Mike Kelly, former CIO at Red Hat). Actions are completed because the data brings knowledge of what's happening in the environment, with perhaps a final manual approval if necessary.

Or perhaps you simply bypass the manual intervention altogether. For instance, if an EC2 instance hasn't been touched for, say, 90 days and there is no registered owner for the instance, an automated workflow might automatically shut the instance down. If someone complains, then the workflow could start the instance back up and now you can register the owner of the instance.

In general, people like shiny new things but are terrible at shutting things down. Does any IT company have a Shut Down Director? Where is the independent program management team and how good are they?

One technology company migrated infrastructure from its own data center to an Equinix data center and didn't move 34% of the applications, as it was discovered they weren't needed. That's 34% of applications that, for months and years, IT was using precious budget to pay for the applications' underlying compute, storage and network infrastructure, and conducting regular backups. Given IT is not very good at turning things off, having ET processes in place to do this automatically seems like a good idea.

Collaborating CIOs?

In terms of collaboration, to what extent would CIOs share best practices and knowledge with one another?

David Ching – former CIO at Safeway – is confident that CIOs would share experiences and insights. He adds that to some extent, CIOs already work together participating in different role-specific, industry and government sponsored groups.

Randall Spratt – former CIO/CTO at McKesson – shares a similar optimism around CIO collaboration, especially as it relates to security. He shares that organizations are increasingly “opening their kimonos a bit to talk to other companies, such as Microsoft, the federal government, or other companies that have deployed similar security technologies.” When hit with a security incident, a CIO wants to know if they're first in line, if anyone else has seen this type of security threat before and what to expect.

ETM applications that communicate with each other can automate this sharing of crowdsourced knowledge and best practices for the ultimate good of helping out all CIOs.

So how mature are your ET processes?



Figure 13: ETM architecture foundation

Introducing the ETM Application

If there was an application built to provide the CIO and his or her team with higher-level visibility and control into ET Management Processes that touch the entire enterprise technology portfolio, what would it look like?

Without trying to provide a formal product requirements document, let's take an architectural view of the potential ETM application.

ETM Application Architecture

Before we lay out the ETM architecture, let's start with the existing enterprise technology landscape, seen in Figure 13. This landscape encompasses the company's enterprise technology portfolio, including endpoints, networking, infrastructure, applications and accessories.

Moving up the stack, the management of this technology is provided by the ETM application sitting on top of and interfacing with existing technology management tools.

It's imperative that an ETM application not require a "rip and replace" approach regarding a company's existing technology management point tools. Rather, it's best to integrate with whatever a company might already have in place. This would also provide flexibility for operators who can use, replace, or introduce new tools as needed.

To the right of the ETM application is the ET Process Maturity Framework, which provides a way to determine where each ET process stands on the maturity journey to becoming more efficient with more secure data.

With that background, let's explore the ETM architecture – as seen in Figure 14 – in a bit more detail:

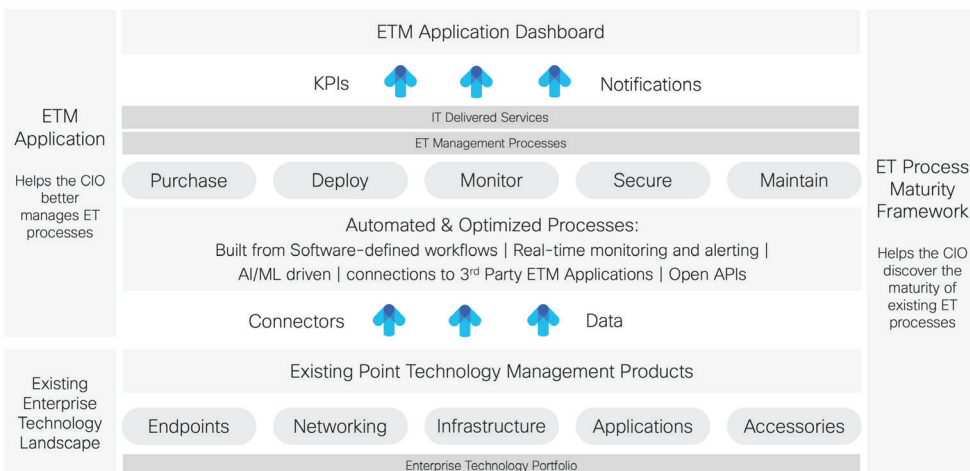


Figure 14: Full ETM application architecture

- **Integration and connectors:** An ETM application would need to help address integration challenges by providing connectors between the siloed products and the ETM application itself.
- **Data:** Ultimately, these connectors provide a mechanism for data to be exchanged between the ETM application and the point products.
- **Automated and optimized processes:** The ETM application would then enable the creation of automated and optimized processes operating at the highest level of process maturity. These processes would consume and communicate data to the point products through the connectors.
- **Software-defined workflows:** Workflows would likely use a low- or no-code, drag-and-drop interface. This way, workflows can not only be created by any part of the business, but they can be designed to adhere to any compliance regulations and provide the data necessary to pass audits.
- **Real-time monitoring and alerting:** This is important to identify, visualize, assess, and trend condition changes, and to trigger events, significantly reducing the time spent troubleshooting workflows, supporting auto-remediation workflows, and making it easier to optimize existing processes.
- **AI/ML driven to provide intelligent automation:** This would enable proactive alerting of possible issues, as well as alert filtering to minimize false alerts and prioritize responses based on the importance to the organization, ultimately improving SLAs and XLAs.
- **Connectivity:** To take process automation and optimization to the next level, connectivity to other customer ETM applications is vital. This would enable collaboration and the sharing of data and best practices.
- **Open APIs:** Having open APIs into the ETM application database provides a way for third-party tools to directly access the “single source of truth” data managed by the ETM application.

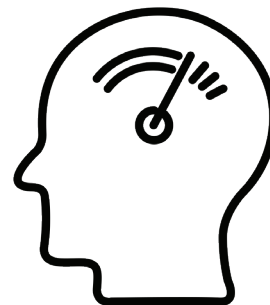
These ETM application attributes would help the CIO and IT organization more efficiently automate and optimize the ET management processes to ultimately deliver more value back to the business.

Dashboard, KPIs and Notifications

Ultimately, the objective of process automation and optimization provided through an ETM application is to centralize and streamline enterprise technology processes, such as technology lifecycle management, improving IT efficiency and productivity. To further this objective, the interface into an ETM application would need to be through a self-service portal that provides a configurable dashboard.

This dashboard would inform and measure KPIs that the CIO and perhaps other users like board members, CIO’s staff, and heads of lines of business want to monitor. The dashboard would also capture notification of prioritized events.

An ETM application would help the CIO and IT to better manage the ET processes that deliver the experiences and outcomes that the business requires to succeed. This means an ETM application needs to help the CIO better manage enterprise technology by enabling more automated and optimized processes that utilize this technology, improving ET process efficiency, enhancing security and compliance, and delivering broader business observability.



Empowering Autonomous IT

So, where is this headed? If the industry were to create an ETM application, how would we define success?

You don't have to look very far to see another industry with the objective of removing manual operation in favor of automation. Think: autonomous, self-driving cars. Sure, they are set up to have manual intervention if needed, but they would likely define success as a time when all cars on the road are 100% self-driven – everyone just kicking back and enjoying the view.

Amazon smart warehouses (aka fulfillment centers) offer another example. They start with their deep learning AI to predict what people are going to buy. The algorithm makes assumptions about you based on your age, location, socio-economic background, and purchase history. Then before you click “add to cart”, the algorithm anticipates what you'll want in the near future and stocks your local warehouse accordingly.

Once you've clicked buy, the autonomous, “self-driving” begins. It used to be that Amazon workers walked ten-plus miles per shift manually picking up boxes from shelves. This is no longer the case. Amazon's modern fulfillment centers are now controlled by robots that move entire shelves of products (known as pods) to the human pickers. The robots don't run into each other as they're controlled by a loosely described AI-driven air traffic control network that coordinates the route for every robot.

IT organizations are faced with a similar challenge that Amazon faced when fulfillment processes were largely done manually (probably operating at Level 2: Described on the ET Process Maturity Framework). Likewise, many of IT's ET processes are operating at Level 1 or 2 – either not defined or described in large PDF documents. How much spend could an IT organization save if it moved all its ET processes to Level 3, 4 or 5 – toward being an autonomous, self-driving IT organization?

Put another way, success would be defined when an IT organization's ET processes are, for the most part, automated and continuously optimized. This way, CIOs could devote a vast majority of IT budget to adding more strategic value to the business.

In summary, the CIO (and the entire business, quite frankly) needs an application that enables them to build and optimize the automated, end-to-end ET processes that touch the ever-expanding enterprise technology portfolio. That application is ETM.

There's clearly a need. The budget wasted on running immature and inefficient ET processes – money wasted that could be redirected to funding disruptive initiatives like digital transformation – is just one of the pain points an ETM application could address. Likewise, by leveraging an ETM application to run a smarter, cost-reducing IT organization, CIOs can also improve productivity, data security and business observability, enabling them to better articulate IT's value creation back to the business.

As Alain Brouhard observes, “An ETM application could power autonomous IT, but not only that, ETM has the power to a) create a new type of “industry solidarity” when it comes to cyber security and b) enable the delivery of real business competitive advantage when it comes to digitization and technology levers.”

The time is now for the industry to build ETM applications. Who's in?

NOTES

1- The complexity of more cybersecurity tools: <https://www.cyber-observer.com/complexity-of-more-cybersecurity-tools/>

2- NPR: Hackers Disrupt payroll for thousands of employees – including employees: <https://www.npr.org/2022/01/15/1072846933/kronos-hack-lawsuits>