A Four-Stage Maturity Model for IT Automation

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Executive Summary

This maturity model for IT automation evolved from EMA's research, "Data-Driven IT Automation: A Guide for the Modern CIO," completed in April 2020, as well as EMA's history of consulting initiatives in support of strategic IT initiatives. The core four-phase maturity model was first developed from EMA engagements that were designed to help IT organizations address challenges, such as cross-domain performance initiatives and configuration management database (CMDB) adoptions, in all of which automation played a significant role. It has been updated here based on current trends, with an in-depth look at guidelines and best practices for IT automation adoption.

Three Vectors for IT Evolution

There are many different ways to calculate IT's maturity level, but any approach that does not take into account the three vectors—technology, process, and organization—is likely to fail. EMA's consulting experience has echoed this requirement as it maps to each of the four stages in its maturity model. Artful leveraging across each of these three vectors can become a formula for accelerating the climb toward a more dynamic and business-aligned IT organization.

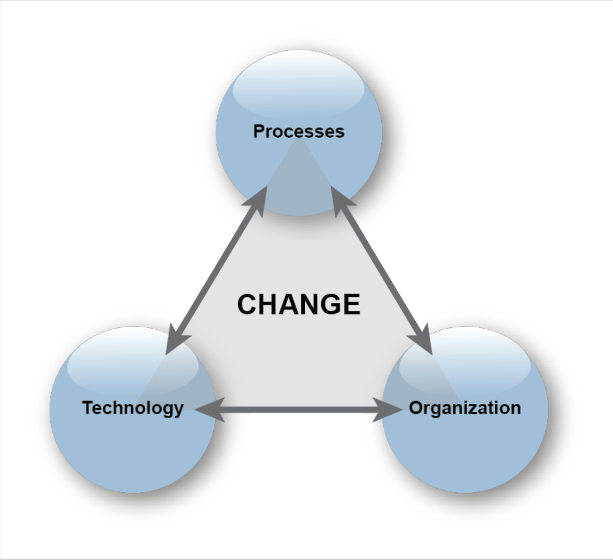

Figure 1: The three vectors of IT evolution.

In terms of automation, based on recent EMA research, these factors were mapped to each vector:

Technology:

- Breadth of use case-specific automation technologies
- Growth of unifying or cross-use case technologies
- Level of AIOps and IT analytics deployments
- Level of integration across automation technologies
- Level of analytics-automation integrations
- Number of integrations with other toolsets more generally
- Level at which analytics is driving automation more prescriptively

Process:

- Documentation of manual processes
- Breadth and depth of best practices supported
- Level of digital transformation underway
- Coupling of digital transformation with automation
- Breadth of technical metrics
- Breadth of business metrics

Organization

- Level of executive IT involvement
- Breadth of stakeholders supported across IT
- Breadth of business stakeholders included
- Center of excellence formalized as a resource for planning automation
- New team evolution in support of automation adoptions

An added note on organization

Understanding the organizational dimensions of maturity can be challenging because it requires insight into a mix of political dynamics, business dynamics, skills, and associated beliefs that can either promote or hinder communication within and across IT silos. Before the current move to cloud and more agile environments many processes and strategies were built around a static concept of IT organizational structure, and in many IT environments today, those trends persist in the face of the need for more dynamic and automated ways of working. The time when processes were fairly constant, however, is past—affecting both organizational behaviors and the use of automation in helping to transform the way IT works. Companies are no longer looking at the "best of all possible worlds," but an evolving world of constant change, just as IT organizations are no longer looking at just "back office." They are, or at least should be, constantly enmeshed in changing business needs, where automation becomes ever more relevant and needed.

Automation Adoption Across EMA's Four Stages of IT Maturity

EMA's four-stage IT maturity model continues to evolve with current trends, but its core foundation remains consistent. The four phases with an eye to automation are:

- Reactive Infrastructure Management: with task-driven automation
- Active Operational Management: with use case-centered automation
- Proactive Service-Oriented Management: with integrated automation
- Dynamic Business-Driven Management: with transformative automation

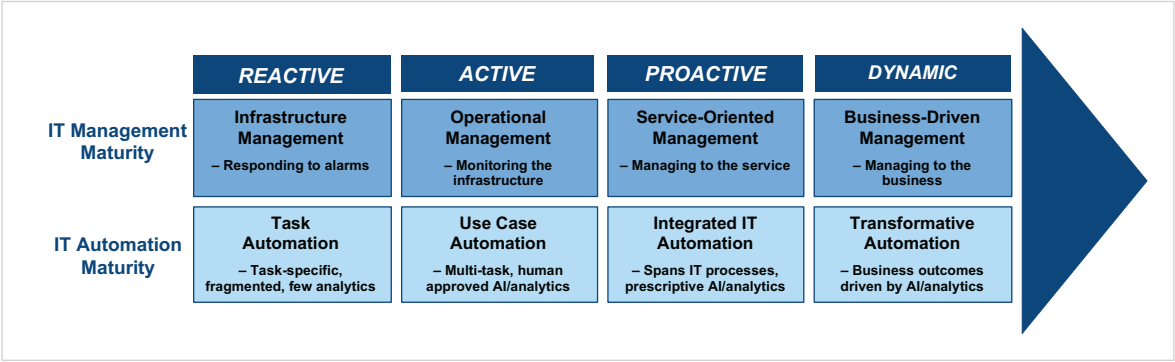

Figure 2: EMA's four-stage maturity model.

Reactive Infrastructure Management: with task-driven automation

Sad to say, many IT organizations are still struggling to survive reactively on a day-to-day basis. Management investments, including automation, are strongly siloed, often focused on element management and task-related automation. Processes largely consist of passing problems on to specialists without proactive analytic insights, sometimes randomly and with considerable OpEx overhead since guessing can lead to long, beleaguered war room debates. Security is limited to isolated point solutions, and too many management investments are done in response to crises rather than out of any strategic vision. The relationship between IT and the business it serves is likely to suffer from a lack of credibility and poor communication, with pressures to offload more and more to the cloud and outsourcing. However, IT can rebound by creating a staged plan to invest in automation and analytics, with an eye to its own unique needs and current priorities.

Task-driven automation: fragmented, with few analytics

- **Technology** – Automation is essentially isolated to one task at a time, whether it's patch management updates, workflow for trouble ticketing, change advisory board review, or an isolated requirement for job scheduling. In other words, automation is not yet well integrated on a per-use case basis, but targets only isolated components of a use case. Investments in analytics are minimal at best, so there is no effective coupling of automation with AI/analytics. Other types of integrations (e.g., monitoring tools, asset management tools) are minimal at best. Fewer than 21% of IT processes are automated.
- **Process** – Fewer than 25% of manual processes are documented. Attention to best practices insofar as they are present, have not yet embraced automation. In fact, in many IT organizations at this stage, best practices and automation may well be at war with each other. Few (if any) meaningful metrics are in place, and even when KPIs are established they are not shared broadly, but focused within the purview of task-driven stakeholders.
- **Organization** – There is no strategic oversight for automation; it is driven by individuals who own and direct their task-specific requirements. As a result, there are no plans for an automation center of excellence. Stakeholder support is also restricted by lack of use case integration and sharing.

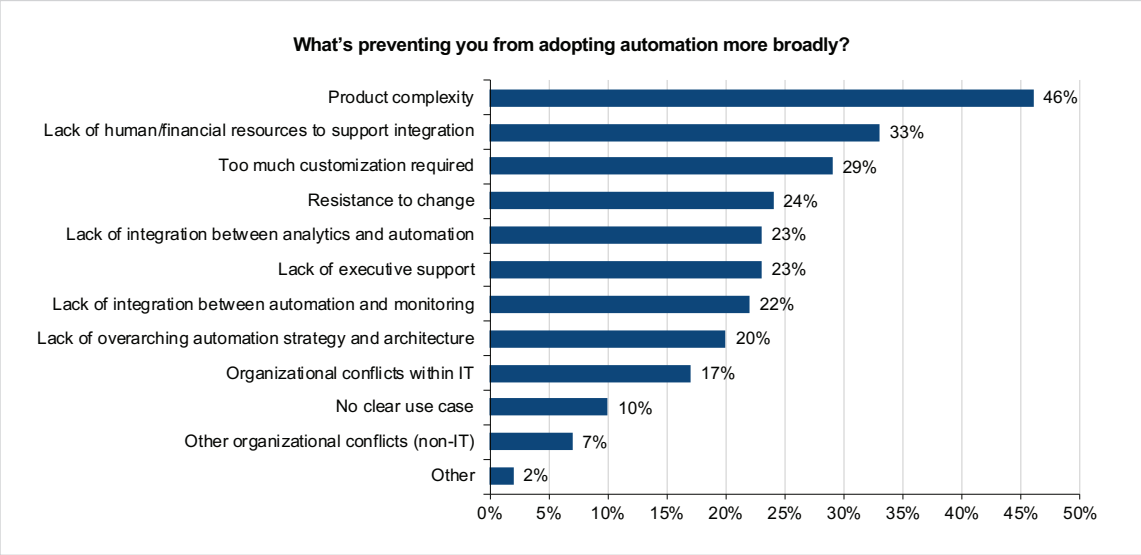

Figure 3: Those with fewer than 21% of their tasks automated ranked product complexity as their top obstacle, but EMA saw that product complexity and integration challenges were pervasive roadblocks to automation maturity at all levels.

Active Operational Management: with use case-driven automation

At this stage, IT functions primarily as a collection of skill groups (network specialists, systems specialists, applications managers, etc.) that have effective common processes well focused on use case requirements. This includes some cross-group sharing, such as operations and ITSM, from a use case-specific perspective. Security, including disaster recovery, is becoming a more primary concern, as is the move to cloud. Serious directions for multi-cloud and hybrid cloud have already emerged, while managing outsourced services has become more integrated and evolved with more progressive SLAs. Automation and IT analytics are now beginning to redefine IT processes and how IT works, albeit focused on skill group specifics with a use case-specific focus. IT organizations can begin to set the stage for the next level of maturity by investing in unifying analytic and automation technologies with broad, cross-domain awareness.

Use case-driven automation: across multiple tasks with human approved AI/analytics

- **Technology** – At this point, there is more active integration beyond task-specific automation to support use case-specific requirements beyond those limited to a single task, as the number of processes being automated rises from 21% to 40%. While analytics investments are now beginning to show their presence, including some with predictive capabilities in the form of observable patterns, their role in informing automation consistently requires human intervention. Prescriptive analytics, when present, are primarily element-centric. Workflow remains the most prevalent, but runbook, or IT process automation (ITPA), is now more common. Workload automation with greater capacities for automation orchestration is beginning to replace pureplay job scheduling tools. Integrations with monitoring, asset, discovery, and other tools are on the rise.

- **Process** – Best practices are now being combined with automation, but this is still in an early stage. While digital transformation initiatives may well be in play, they are not yet closely linked or driving automation, which remains primarily operational rather than business-aware. Technical metrics for automation are now more firmly in place, but business metrics have yet to meaningfully emerge. Between 25% and 50% of manual processes have been documented.

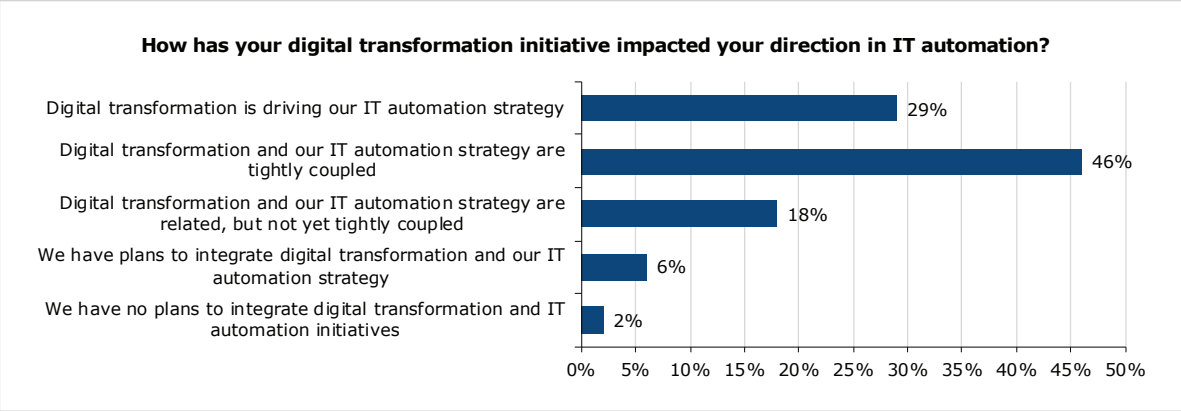

Figure 4: At this stage digital transformation is likely underway, but not yet tightly coupled with automation.

- **Organization** – The IT executive suite is now more actively involved, but IT operations remains the dominant driver for automation initiatives. There is a growing number of stakeholders, including far more aggressive cross-domain participation based on use case needs. Most prominently, ITSM and operations are more integrated. DevOps-related automation is on the rise, but still largely fragmented-based since development and operations teams are not yet effectively unified in process or politics. True collaboration between security and operations is not yet present, although awareness of the need is on the rise.

Proactive Service-Oriented Management: with integrated automation

At this stage, IT views itself as an integrated service provider, interfacing with the business as a consistent and effective unit, with a broad array of metrics to demonstrate both OpEx efficiencies and more critically sustained business requirements. End-user experience is a critical focus and customer experience is on the rise. IT's separate silos have now largely come together, including the beginnings of more unified and effective DevOps teams and more active handshakes and data sharing between security, operations, and IT as a whole. ITSM has evolved beyond being help desk-focused toward gathering information for service planning and coordinating processes for governance across all of IT, which in turn promotes higher levels of automation and efficiency. IT decision-making for automation and other technology investments has become primarily strategic rather than reactive. The terms "agile" and "self-healing" are increasingly reflections of reality rather than wishful thinking. As IT organizations move forward, higher levels of automation are becoming coupled with increasingly high levels of business stakeholder involvement.

Integrated automation: spanning IT processes, prescriptive AI/analytics

- **Technology** – Use case automation is now richly integrated and more aggressively informed by analytics, while automation across use cases is now firmly underway. Auditing and governance data for automation efficiencies, including analytics-driven automation, is also actively in play so IT can extend its automation capabilities more aggressively and strategically. Prescriptive analytics are beginning to drive automation routines directly, including a few rare instances where human intervention is not required. ITPA and workload automation are becoming yet more prevalent for unifying automation on a use case basis and across use cases, while workflow is more actively combined with social media. Integrations with monitoring and other toolsets have now become pervasive. The percentage of automated processes is now between 41% and 70%.

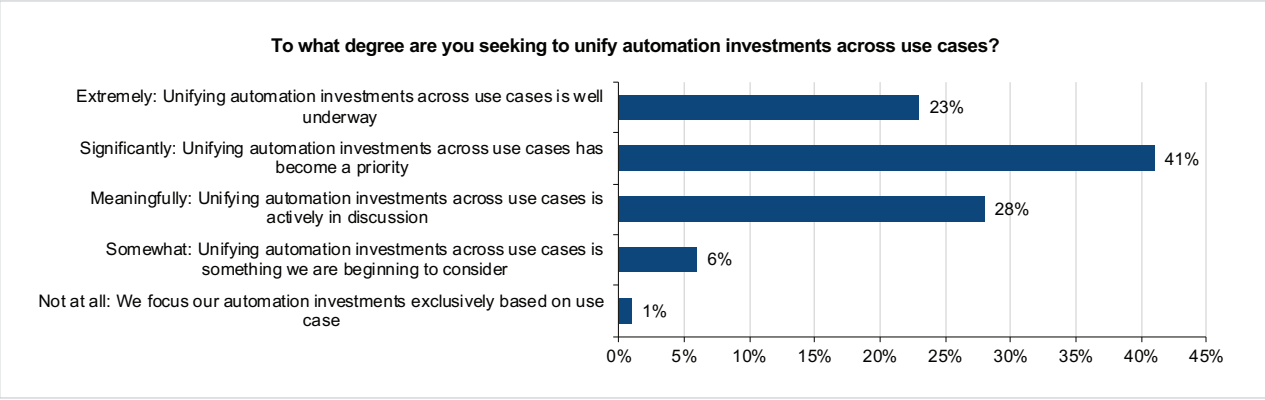

Figure 5: At this stage, IT organizations are moving from "significantly—a priority" to "extremely—well underway" in their cross-use case automation initiatives.

- **Process** – Technical metrics are rich and multi-dimensional across both use cases and integrations across use cases. Business metrics are steered mostly to business application performance requirements—e.g., *reductions in revenue loss due to downtime*—rather than to more complex business process and customer behavior impacts. Between 50% and 80% of manual processes have been documented.
- **Organization** – IT executive oversight is now driving automation across all of IT, with support from operations and other teams. An automation center of excellence has now been established with both executive and operational leadership. New teams are beginning to emerge across IT partly as a result of automation, which is now, quite literally, changing how IT works. Stakeholder participation is soaring, and as a result IT truly begins to transform through increased levels of data sharing, process sharing, and automation.

Dynamic Business-Driven Management: with transformative automation

This fourth stage is largely defined by intelligent automation, or automation informed by analytic insights associated with both IT and business performance. As a result, business-aligned automation has become so integrated with IT processes and organizational dynamics that the role of IT has shifted once again. At this stage, IT's role goes beyond supporting the business to informing on and actively shaping business behaviors based on shared objectives between key business stakeholders and IT leaders. The relationship between creating new IT services and transforming business effectiveness is understood dynamically through progressive levels of end-user and consumer behavioral analytics, as well as legal, security, and compliance needs.

Transformative automation: with business outcomes driven by AI/analytics

- **Technology** – Automation across use cases is fully underway with strategic guidelines and oversight, while process automation levels are now meaningfully above 70%. ITPA and workload automation continue to expand as they become unifiers and orchestrators for use case-specific and cross-use case initiatives. Integrations with monitoring, asset, ITSM, cloud, and other resources have also expanded, including a parallel requirement for real-time, full-stack application infrastructure discovery to provide a richer context for focusing automated actions. Prescriptive analytics are actively driving automation with human oversight, increasingly without the need for human intervention, while auditing and governance continue to track and accelerate automation effectiveness.

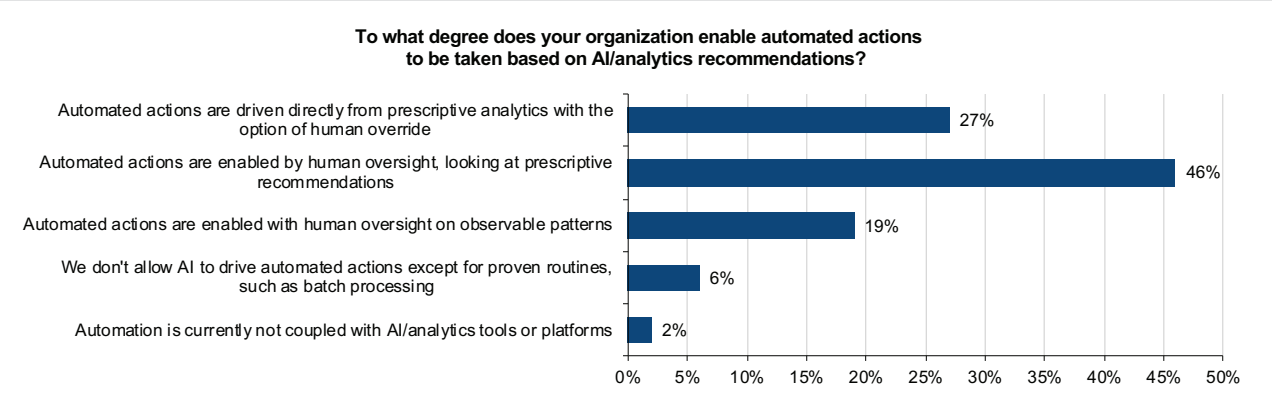

Figure 6: At this stage, IT organizations are migrating strongly into the top 27%, with prescriptive analytics driving automation.

- **Process** – Digital transformation is now directing automation initiatives across all use cases, while other best practices, such as agile/scrum, security, compliance-related best practices, and ITIL4 are actively being applied to automation. Technology metrics have become more pervasive and strategic, while business metrics focused on unique business outcomes are far more pervasive than before, with analytically informed insights regarding internal user needs and priorities and external, or customer, behaviors. Manual processes are documented above 80%.
- **Organization** – The IT executive suite, DevOps teams, and IT leadership overall have well-defined interactions with business stakeholders. For instance, a user/customer experience management initiative is well-established across both the business and IT, with an eye to in-house business process optimization as well as marketing and customer-related requirements. The automation center of excellence has grown in importance and now supports all use cases and all forms of automation, while also promoting IT-to-business dialogue. Nearly all of IT have become automation stakeholders, with multiple types of automation engaging each stakeholder. A growing number of teams have been defined within and across IT in order to optimize process changes due to higher levels of automation.

Recommendations for Going Forward

Figure 7 helps to underscore the importance of dialogue and planning, rather than simply throwing automation technologies willy nilly at a problem without strategic guidance and oversight. It also astutely prioritizes investing in automation technologies after a thorough evaluation of the current environment and requirements. Another point worthy of note in these recommendations—start with easy processes for quick wins and build from there—highlights the need for a staged set of objectives with achievable goals to encourage more cooperation and higher levels of investment.

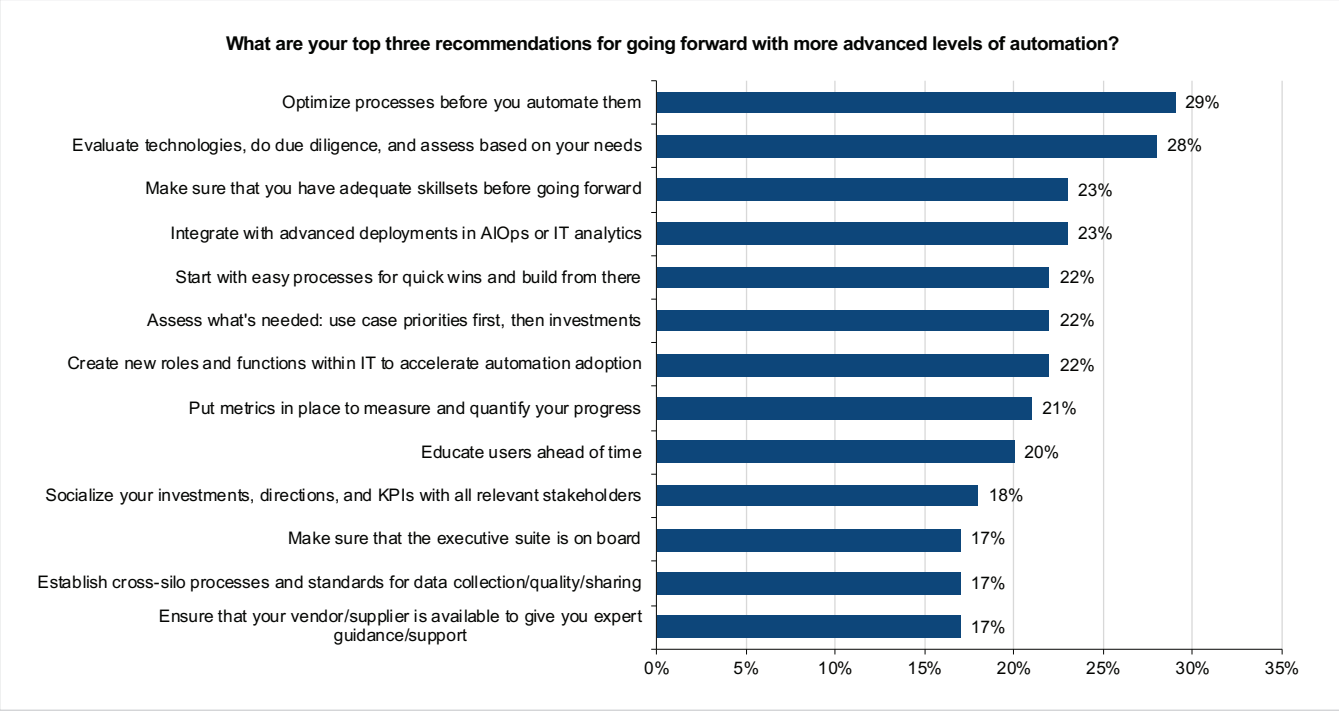

Figure 7: In providing their top three recommendations for going forward, respondents highlighted the need for process optimization, planning, and dialogue.

EMA's chief recommendations for IT automation evolution are:

- Socialize and communicate as you evolve, each step of the way.
- To do this, it's critical to understand who your stakeholders are for your current priorities and how the breadth and depth of stakeholder involvement is likely to grow going forward.
- Prioritize based on use case and need. Documentation and sharing of your priorities across all stakeholders is critical.
- Through stakeholder dialogues, develop appropriate metrics based on relevant insights and requirements. These insights will expand to include more executive views, and eventually non-IT business views, as your automation strategies evolve.
- Seek and promote IT executive involvement. Having the executive suite on board and supporting your automation initiatives is key once you're beyond just single task-driven automation.
- Document relevant processes and seek to optimize them prior to automation, but keep an open mind as to how automation might transform existing ways of working.
- Bring best practices into play while documenting processes. If you have an existing history with ITIL, COBIT, or security and compliance requirements, bring those into play judiciously, but once again with an eye to transformation via automation.
- When you are ready to invest in technology, make it a priority to do so in context with where you are in your objectives, processes, metrics, and requirements. Align your technology choices to where you can get the most value based on your current level of readiness.
- Establish an automation center of excellence, ideally with strong IT executive oversight. Leverage the center of excellence to promote better dialogue, more in-depth governance to show "what's working and what's not," and broader stakeholder commitment to automation.
- Create teams as appropriate to more fully take advantage of new automation opportunities, with shared insights and shared data.
- Promote the IT analytics-automation handshake. Plan to evolve from guidance through observable patterns, to prescriptive recommendations, to letting prescriptive analytics drive your automation routines with oversight and governance, but without requirements for human intervention.

A final word with the "More Syndrome"

One of the trends throughout this maturity model correlates strongly with what EMA calls the "More Syndrome." More progressive and effective levels of automation, as well IT and business relevance and value, have correlated across the four stages with the following:

- More automation technologies in play
- More stakeholders engaged
- More metrics in play
- More best practices supported
- More analytic deployments and integrations
- More processes automated per use case
- More integrated automation across use cases
- More teams defined specific to automation needs

However, it's always important to remember the "more" so often ignored—*more communication and planning*. It is just as important to understand your stakeholders, your overall environment and needs, and your IT and business requirements as it is to be diligent in evaluating and adopting technologies, stage by stage, to address your evolving priorities.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help EMA's clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at www.enterprisemanagement.com or blogs.enterprisemanagement.com. You can also follow EMA on Twitter, Facebook or LinkedIn.

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