



Designing for enterprise automation

Strategy and governance for data capture, robotics, autonomics and the path to cognitive



Executive summary

Designing for enterprise automation

Robotics and process automation technologies are revolutionizing many aspects of knowledge work and changing how organizations view their operations. This rapid innovation is causing executives to ask fundamental questions in business transformation, such as, “What should our new operating model look like in the next three to five years? What is achievable with these technologies? What is the future of work within our organization?”

However, few firms are currently making a great deal of progress beyond narrow demonstrations of capability and are now looking seriously at larger-scale paybacks through the new value levers available. These levers have the potential to deliver radical shifts in enterprise value and differentiation, workforce realignment and economies of operational scale. As executives look toward this horizon, they are seeking ways to create appropriate strategy and governance models for firm-wide automation decisions, while laying the foundation for a more cognitive-oriented enterprise.

Key management questions include:

- Which functions and processes should be more automated and how?
- How will automation be owned and managed, including interventions and exceptions?
- How will policies and procedures be created that both control and encourage innovation?
- How will enterprise value and differentiation be created through automation?
- How will economies of operational scale be ensured to avoid hemorrhaging cash on disconnected technology investments?
- How will knowledge work be transformed within the organization?
- How will robots share information and how will compliance, security and privacy be maintained?
- How will change implications be managed and new skills developed, particularly around process automation governance, analytics and cognitive capabilities?
- How will enterprise process automation align with corporate objectives for innovation and the business model?

While the enterprise benefits of automation go way beyond cost reduction to encompass greater control and sophistication in service operations, few organizations understand the upfront and ongoing cost drivers.

To mature automation delivery methodology and benefits realization, companies should seek to gain a thorough understanding of cost drivers, including automation management, technology environments, skills development, analysis and controls. From this standpoint, automation can be applied consistently, aligned with operational strategy over functionality.

As labor capacity is released within the organization, post-automation strategic levers will need to be evaluated and the requirements for new skill sets assessed. High-value skills in analytics, automation management and service management will be a focus as new opportunities for growth emerge. Indeed, market forces for labor and automation are evolving quickly and organizations should begin to run operational scenarios based on new, automated operating models and the impacts of future work.

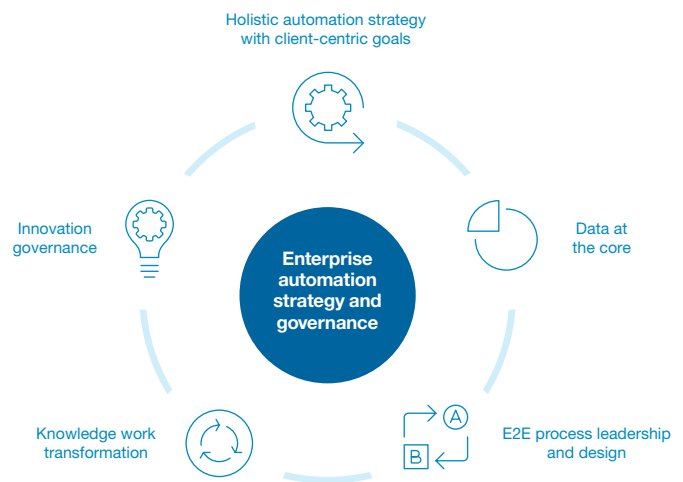


Figure 1. IBM's framework for enterprise strategy and governance

Enterprise automation: IBM's five key elements

Based on world-leading capabilities in design thinking, cognitive architecture and globalized value chains, IBM has developed a set of organizing principles and a framework for enterprise automation strategy and governance (see Figure 1).

1



Holistic automation strategy with client-centric goals

This requires a holistic automation strategy aimed at improving the client and stakeholder experience. Economies of operational scale are exploited, with increased firm-wide adoption and deployment. In addition, it is essential to gain clarity on automation goals to help orchestrate the automation strategy across the service delivery organization.

2



Data at the core

Large-scale data integration across structured and unstructured data sets is also necessary. This involves intelligent data capture, data governance and an understanding of data journeys as the foundation for process transformation. From the extraction to the processing and generation of data, quality and lineage are integral to an operating model powered by robotics, autonomics and cognitive capabilities.

3



End-to-end process leadership and design

This step means that process owners are leading automation strategies beyond the narrow ranges of task automation within functional silos. It requires using key principals of design thinking, end-to-end business process management, cross-functional use cases, change management and communication strategies.

4



Knowledge work transformation

Robotic and cognitive processes drive value in knowledge work, augmenting the current workforce by reducing “generic” activities, reducing requirements for additional full-time equivalents (FTEs), achieving otherwise impossible monitoring functions and enabling the extension of customer services to generate new revenue.

5



Innovation governance

This step involves the alignment of business cases for automation programs with strategic imperatives, as well as risk and regulatory demands. This helps ensure consistency in how the organization will optimize value and adapt to increasing analytical and automation skill sets as it evolves its capabilities.

Figure 2. Enterprise process automation: IBM's five key elements

Envisioning for enterprise automation

Why do organizations need enterprise process automation?

Automation strategy and governance supports key enterprise objectives:

- Enterprise value creation and differentiation
- Workforce transformation and optimization
- Economies of operational scale

What do organizations need to do?

- Define a vision for automation at scale
- Determine best-fit governance model
- Define a communication strategy
- Engage business units and core process owners
- Define a roadmap for the growth of automation within the organization
- Define candidate processes for automation by:
 - Workload volumes
 - Labor characteristics
 - Operational alignment
 - Strategic relevance
- Define the impacts of prototyping projects
- Define the metrics for automation value

What are the key activities for organizations?

- Automation advisory (data capture, robotics, autonomics and cognitive)
- Design thinking and use cases
- E2E automation assessment
- Data journey maps
- Data, technology and platform strategy
- Develop short-term and long-term business cases
- Operating model and automation roadmap (D/BOT)
- As-a-service delivery conception
- Compliance, privacy, security and risk framework
- Testing center of competency
- Rapid prototyping
- Workforce and talent management
- Change management support program
- Benefit realization and governance model

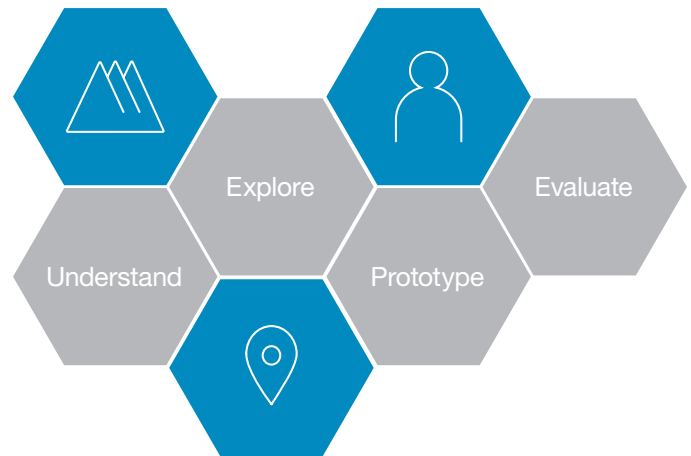


Figure 3. IBM Design Thinking approach for rapid prototyping

How does IBM co-create with clients to enable enterprise process automation?

- IBM automation transformation, along with robotics and cognitive leadership, bring best practice ideas and opportunities from across IBM's global portfolio, Centers of Excellence (CoEs) and the IBM Business Partner ecosystem
- IBM Design Thinking can define an optimal vision, strategy and governance model for enterprise automation, serving all internal and external stakeholders
- Stakeholders and roles are identified and characterized, assessing and testing new processes for automation and managing virtual workforces
- E2E processes and opportunities for data business process management, robotics, autonomics and cognitive integration are jointly defined
- Robotic opportunities, paths to cognitive, and the transformation of tasks and roles are jointly defined
- IBM Global Financing helps determine optimal business case scenarios for process transformation

The path to cognitive assistance

In defining an enterprise process automation strategy and governance model, a full spectrum of capabilities is required to execute and define how end-to-end processes should be automated (see Figure 4).

Techniques in business process management determine critical steps to ensure that inefficiency is not automated and that new agility is enabled in the process. End-to-end process automation can then be determined effectively, with consistent approaches to redesigning operations combining robotics, autonomics and cognitive.

While autonomics represents the self-managing aspects of process automation, cognitive robotics is about involving artificial intelligence disciplines such as perception, attention, anticipation, planning, memory, learning and reasoning.

In laying the foundation for a path to cognitive, key capabilities should be developed within enterprise automation frameworks:

- **Cognitive applications**
Cognitive-by-design applications
- **Cognitive application programming interfaces (APIs)**
Service touchpoints and decision functions for robotic tasks
- **Cognitive process mining**
Insights on robotics and other processes, with machine learning algorithms for self-optimizing
- **Cognitive process orchestration**
Direct, initiate and control robotic tasks
- **Cognitive expert systems**
Systems based on theories of expert human reasoning and learning

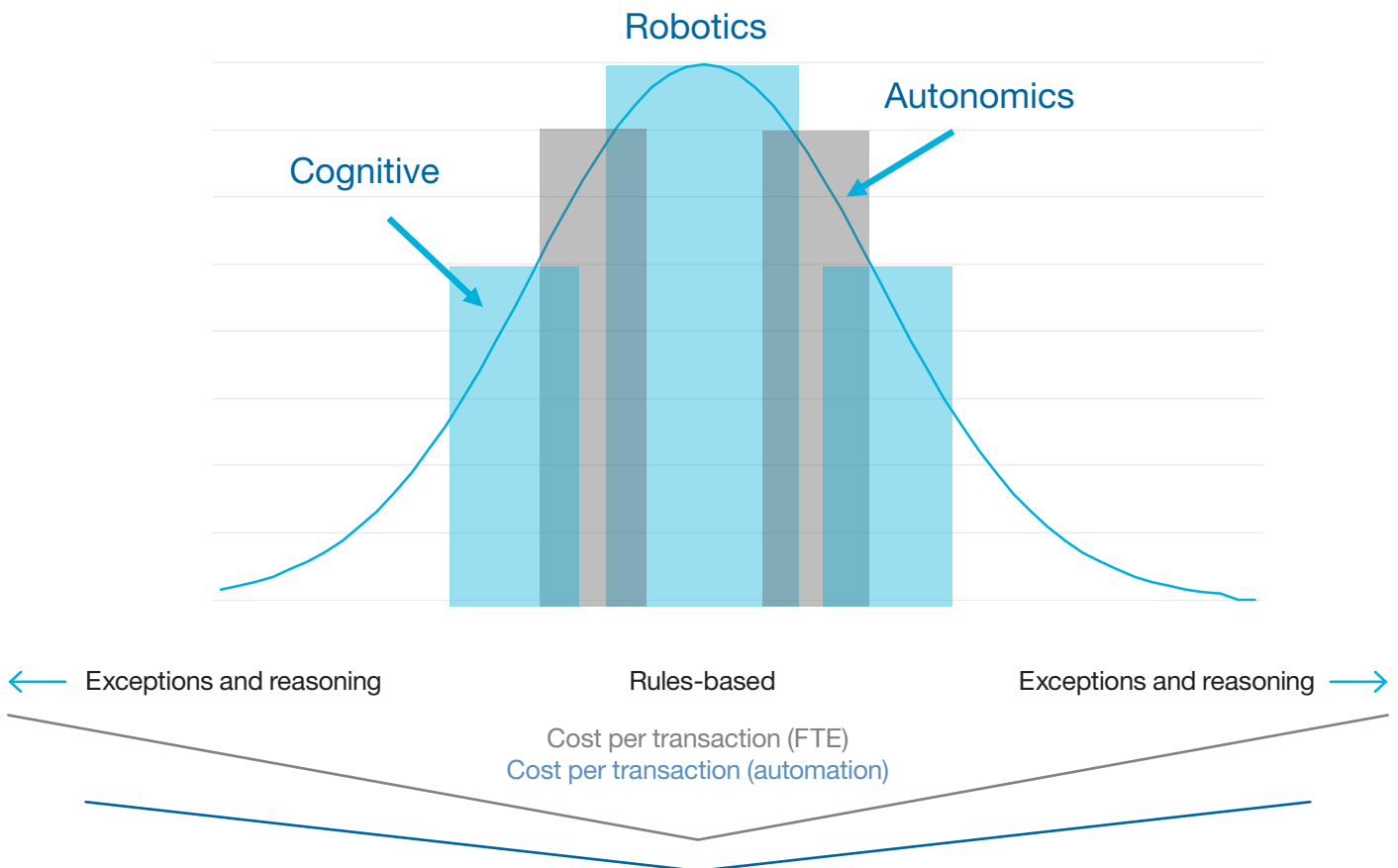


Figure 4. IBM helps automate business processes through the application of robotics, autonomics and cognitive

“New technologies – such as robotics, machine learning and blockchain – have C-level executives asking, “What should the bank operating model and ambition for a competitive cost base be for 2020 or 2025? What is achievable with these technologies?”

Maturing benefits realization for governance and enterprise value

Pilots and proofs of concept (PoCs) often leave a void between their relative success and the enterprise-level business. Multiple automation instances do not account for the complexities of change and technology integration at the business unit and organizational level. Furthermore, the skills required for robotics, represent but a segment of the skill sets required for enterprise process automation.

There are a vast array of processes that can be automated within an enterprise. Business-led virtual workforces must be aligned and supported by dedicated IT functions, maturing through narrow implementations toward centralized teams, CoEs and fully embedded enterprise capabilities (see Figure 5).

Benefits realization maturity matrix from IBM			
	Level 1	Level 2	Level 3
Identification and documentation	<ul style="list-style-type: none"> Benefits identified and listed in business case Limited evaluation of the scale and value of benefits No prioritization of benefits 	<ul style="list-style-type: none"> Benefits identified and documented in the business case Values assigned to all financial benefits Judgement-based prioritization of benefits 	<ul style="list-style-type: none"> Benefits identified and documented in business case Clear objective assessment of value for financial benefits or scale for non-cash releasing benefit Prioritization of benefits linked to value assessment and business priorities
Realization planning	<ul style="list-style-type: none"> Benefits linked to program delivery milestones 	<ul style="list-style-type: none"> Benefits linked to program delivery milestones Baseline measures established for financial benefits High-level risks to benefits realization identified 	<ul style="list-style-type: none"> Clear map of technical deliverables to benefits Baselines established for all benefits Risks to benefits realization identified and mitigation plans documented
Ownership and delivery responsibility	<ul style="list-style-type: none"> Business areas accruing benefits identified Limited business engagement 	<ul style="list-style-type: none"> Business owners identified and engaged in initial benefits realization planning 	<ul style="list-style-type: none"> Benefits delivery considered in program governance with limited business engagement Ad hoc reporting of benefit delivery for financial benefits
Governance	<ul style="list-style-type: none"> No specific benefit realization governance processes established 	<ul style="list-style-type: none"> Benefits delivery considered in program governance with limited business engagement Ad hoc reporting of benefit delivery for financial benefits 	<ul style="list-style-type: none"> Regular governance for review of benefits with appropriate IT, program and business engagement Tools/reports established to support ongoing operational management of benefits realization

Figure 5. A summary of the benefits that can be realized from the IBM-defined maturity matrix

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