



Quality Orchestration: QA in the Digital Era

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Orchestration as the Future of QA

“Quality orchestration refers to a QA delivery model that can orchestrate people, process, and technologies across an ecosystem of diverse entities to deliver business process assurance in an aaS model”

With the advent of the digital era, traditional models of Quality Assurance (QA) are being disrupted in more ways than one. Our survey with global QA leaders indicate that opportunities and challenges abound in equal measure:

- 86% of large enterprises¹ are likely to increase QA budgets
- Automation emerges as the most important technology investment priority with 77% of large enterprises exploring investments in advanced automation techniques for QA

At the same time, QA is challenged in delivering measurable business impact. Rapid technology adoption also raises challenges around integration, talent, and speed-to-value.

- 69% of large enterprises mention technology orchestration as a critical capability for successful execution of the QA strategy
- 84% mention the lack of digital or industry-specific QA talent as a challenge

As digital business processes start encompassing enterprise ecosystems with technology as the glue, the future QA model must follow. The shift from a linear structure to a QA ecosystem needs to embrace the following aspects:

- **Technology:** The new QA model must be able to orchestrate an ecosystem of tools and technologies at speed
- **People:** The talent model is built on the composite knowledge of digital technology, automation assets, and vertical business processes, and can be drawn from internal IT, service providers, as well as ecosystem partners such as crowd-sourced talent, industry associations, and technology consortia
- **Process:** The new QA model is responsible for assuring business outcomes against a digital business process
- **as-a-service:** The new QA model can be consumed in units that are more closely linked to business metrics than traditional measures like headcount, lines of code, or functional size metrics such as story-points

This report is based on an Everest Group survey with 100 QA leaders, CIOs, CTOs, and CDOs across large global enterprises. The focus of the report is to:

- Evaluate the current state of enterprise QA maturity
- Determine the direction and extent of disruption within the QA industry
- Create a vision for the future-ready enterprise QA function, and evaluate enterprise readiness for such a vision

¹Annual revenues greater than USD 1 bn

The Four Forces of QA Disruption

Everest Group take:

Digitalization, technology proliferation, DevOps, and automation are fundamental forces that are reshaping the enterprise QA function.

To successfully navigate these disruptive forces, the QA function must necessarily evolve its organizational, talent, and consumption models, and how it measures success.

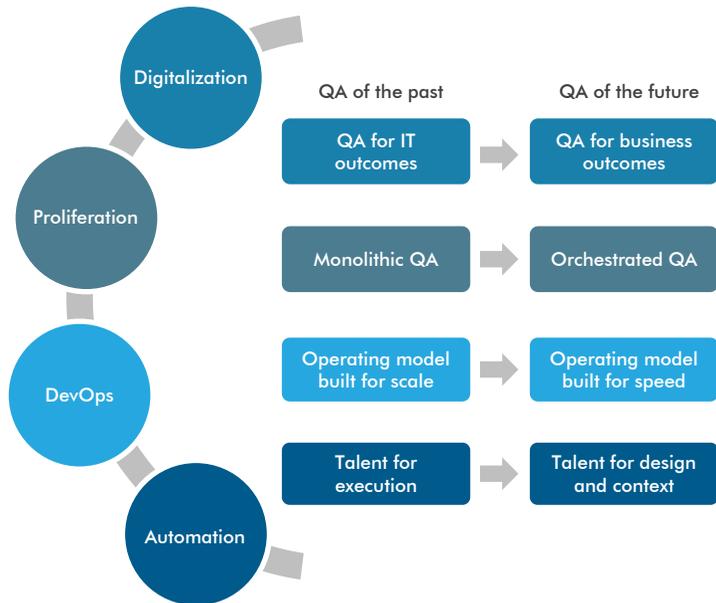
The traditional enterprise QA function has been characterized by a set of value drivers based on scaled delivery models and a tightly bound technology stack.

The traditional QA model needs to necessarily evolve for a new set of value drivers based on speed-to-value and rapid technology adoption. Four forces of disruption are exercising a profound effect on the future of QA.

EXHIBIT 1

The four forces of QA disruption

Source: Everest Group



- **Digitalization:** As enterprises spawn digital business models, the role of QA is evolving from assuring IT to assuring the business. In a world where the business is synonymous with the app QA has to be accountable for end-to-end business process performance rather than parts of the stack
- **Technology proliferation:** 79% of large enterprises use open source tools for QA activities. 31% of large enterprises have already experienced successful projects with containers such as Docker. The QA function needs to integrate and assure technology by orchestrating an ecosystem of traditional tools, SaaS, and open source tools
- **DevOps:** Traditional QA models have been built on the independence between development and testing, leading to an industry structure characterized by large horizontal shared services (Testing Centers of Excellence, or TCoEs). 57% of large enterprises are investing in DevOps, or already driving DevOps projects in parts of the organization. The integration between development, QA, and IT operations has the potential to change how enterprise QA organizations are structured, with profound downstream ramifications for people, technology, and processes
- **Automation:** 24% of large enterprises are using Robotic Process Automation (RPA) tools for QA activities across the enterprise, 21% are using Machine Language (ML) techniques for QA, and 26% are using Natural Language Programming (NLP)-based algorithms. Enterprises are using automation to enable rapid and continuous QA, mitigate talent constraints, and fund new projects. However, advanced automation requires significant pre- and post-deployment efforts to integrate existing tools and processes, and underscores the need to focus the QA model on orchestration and contextual understanding of business processes

The State of Enterprise QA: Priorities and Investment Outlook

Everest Group take:

The QA function has evolved from arbitrage-led strategies to being a critical enabler of enterprise digitalization. Supporting the digital QA agenda will require significant investments to keep up with the pace of technology disruption and rapid product development cycles.

By adopting as-a-service strategies, enterprises will be able to support agile technology adoption, and ensure sustained investments for the long-term QA agenda.

38% of enterprise QA leaders mentioned the need to support their organization's digital agenda as the most important strategic priority

Only 2% mentioned TCO reduction as the most important priority

Digital value is in, cost arbitrage is out, investments on upswing

Supporting the enterprise digital agenda is the most important priority for the enterprise QA function. In order to do this effectively, the QA function is:

- Evolving as a custodian of critical business processes, beyond typical IT metrics such as code quality and uptime
- Focusing on the need to onboard and assure new technologies
- Viewing speed of application development and release as an important value driver

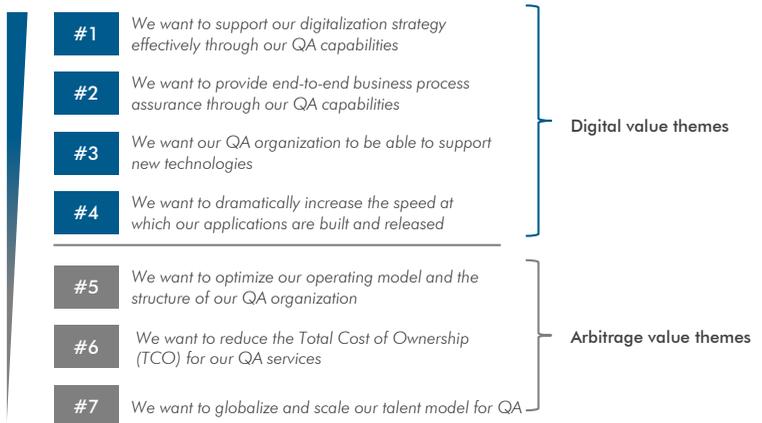
Interestingly, traditional value drivers such as operating model optimization, cost reduction, and globalization of the talent force are lower priorities, indicating that the QA industry is maturing to deliver on a set of revenue-enabling value themes. This is in stark contrast to the traditional arbitrage-based QA models that were built for cost reduction at scale.

EXHIBIT 2

Enterprise QA strategic priorities

Source: Everest Group

What are the key priorities for your organization's QA services strategy?



The “value over cost” mindset is borne out by enterprise QA budget projections. 86% of surveyed enterprises anticipate an expansion in their organization’s QA budgets, with 53% projecting an increase in excess of 5%.

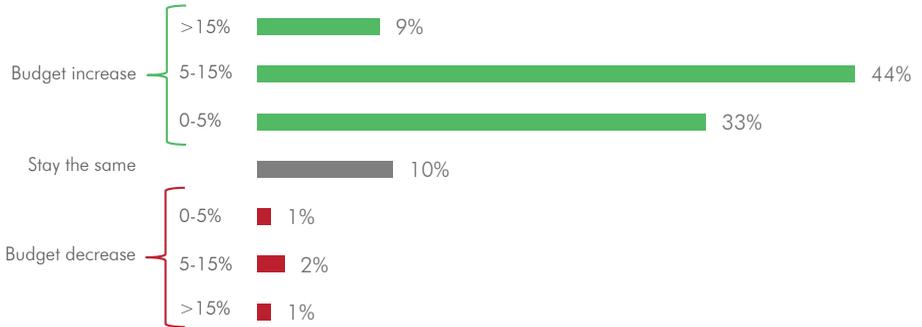
EXHIBIT 3

Enterprise QA budget outlook (12-24 months)

Source: Everest Group

What is your organization’s budget outlook for QA services over the next 12-24 months?

- Percentage respondents

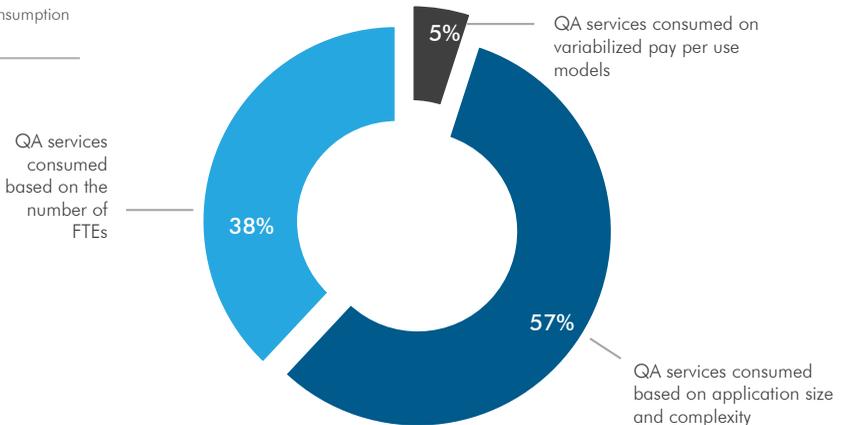


However, only 5% of enterprises have been able to move to flexible as-a-service consumption models, indicating significant opportunity for cost optimization, without sacrificing investments in new QA capabilities.

EXHIBIT 4

Enterprise QA consumption model

Source: Everest Group



The State of Enterprise QA: Adoption and Challenges

Everest Group take:

Thanks to open source and SaaS models, QA technology is easily available; putting it to effective use in an enterprise context remains a challenge.

Beyond technology adoption, enterprises will need to think of a service-led QA strategy focused on rapid integration. As many enterprises successfully digitalize, the focus will shift from technology adoption to resiliency of digital business processes. This, in turn, will depend on industry knowledge, and the ability to link QA and business process metrics

Adoption is set to peak, delivering on business outcomes will be a challenge

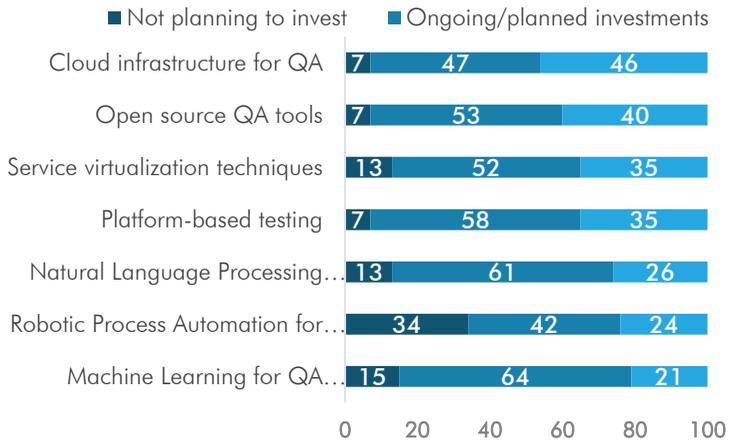
- Enterprises display a high degree of sophistication in their current and planned investments for QA-related tools and technology assets.
- Use of cloud-based infrastructure for Dev-Test workloads is a relatively common phenomenon, as is the use of open source QA tools
- Automation clearly emerges as the most significant adoption theme of the future, with enterprises looking to invest in advanced machine learning and NLP capabilities
- As the technology landscape becomes increasingly diverse, enterprises are going to focus on “platform thinking” to plug-and-play tools and assets

EXHIBIT 5

Enterprise QA technology adoption (% enterprises)

Source: Everest Group

34% of enterprises have scaled up their DevOps programs
57% have planned and ongoing DevOps initiatives
24% believe that DevOps will be the de facto application delivery model of the future



Enterprises are also driving a fundamental change in development methodologies. DevOps is increasingly the model of choice for enterprises. We expect the growth of DevOps to further accelerate open source adoption, cloud infrastructure, and automation in QA.

However, rapid technology adoption brings its own set of challenges.

- With increasing automation, it is critical for the QA talent base to have contextual understanding of vertical-specific business processes
- There is a shortage of specific technical QA skills as a result of technology proliferation
- The cost of technology acquisition is not viewed as a significant barrier to adoption because of the abundance of open source and SaaS tools

EXHIBIT 6

Challenges in meeting strategic QA objectives

Source: Everest Group

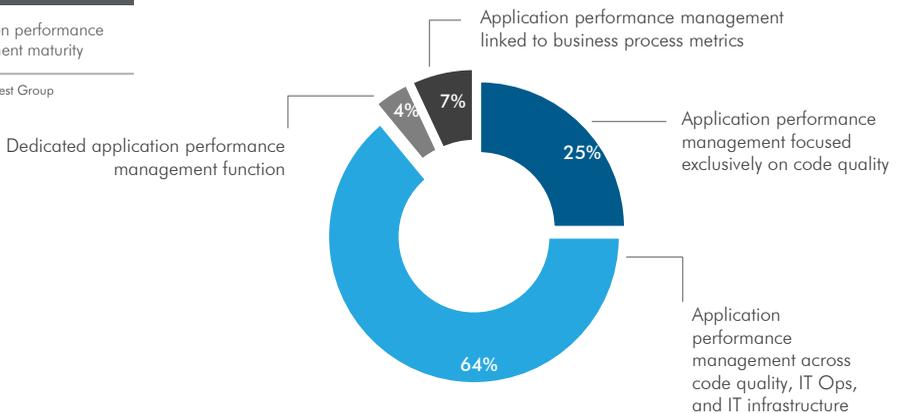


Importantly, enterprise QA functions face a significant challenge in achieving their vision of being digital business process custodians because of the gap between technology adoption and business outcomes. Only 7% of enterprises are able to link application performance to business outcomes, and only 4% have a dedicated performance management function. 25% of enterprises' focus on application performance is limited to code quality improvement.

EXHIBIT 7

Application performance management maturity

Source: Everest Group



Quality Orchestration: A Vision for Enterprise QA

Everest Group take:

To support the digital enablement mandate, the QA function will need to orchestrate an ecosystem of technology, talent, and business process expertise in a rapid, agnostic, and flexible model

QA strategies will need to govern a broader set of expertise networks beyond traditional “within the firewall” staff and one-on-one managed services constructs.

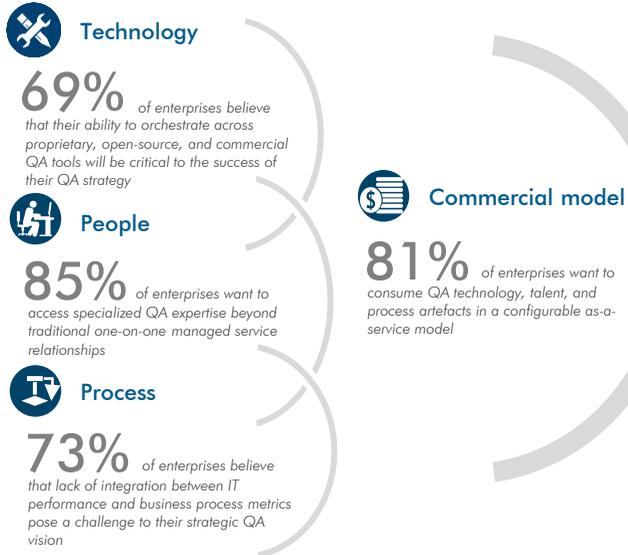
Enterprise QA ecosystems will include open source communities, security & automation experts, government & industry consortia, and special interest groups that will collectively enable a sharing economy for QA technology, process expertise, and global talent.

The end-state of such disruption may well turn out to be a set of networked QA communities that participate as prosumers through a digital marketplace, governed by intellectual property and security partitions.

EXHIBIT 8

Enterprise QA vision for the future

Source: Everest Group



Clearly, the enterprise QA function must evolve from its traditional closed-loop delivery role to embrace a broader technology, talent, and stakeholder ecosystem.

We believe the QA transformation end-state will be increasingly federated and as-a-service. As part of this transformation, enterprise consumption models will progress along different stages of maturity:

Quality orchestration center

QA services will be delivered through a well-knit, agnostic set of tools, accelerators, and automation suites. Users will be able to stitch together best-of-breed tools and QA assets using enterprise API libraries on dedicated or cloud-hosted models. These will be integrated with end-to-end managed services for QA activities. Users will be able to access a certified, crowdsourced community of QA professionals for expert knowledge, as well as extended delivery support for peak volumes

Industry QA as-a-platform

Extending beyond the QA orchestration solutions, the QA industry platform model will also provide access to QA technology assets and expertise for industry platforms (e.g., insurance claims, healthcare care management, and telecom billing). QA outcomes will be designed to measure improvements in business process metrics using operational and third-party data sources

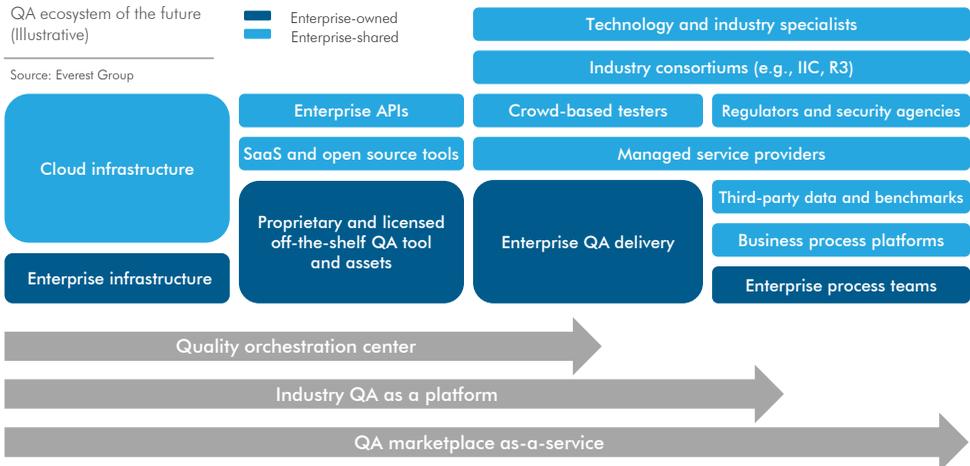
QA marketplace-as-a-service

In the final stage, enterprises will participate in a federated marketplace for all things QA. Customers can purchase any technology artefact available in this marketplace through a standard menu, and pay-per-use. Enterprises and the broader ecosystem participate as prosumers in a digital marketplace governed by intellectual property and security considerations

EXHIBIT 9

QA ecosystem of the future (Illustrative)

Source: Everest Group



The QA transformation end-states are not as futuristic as they sound. We are already witnessing enterprises adopting quality orchestration solutions in different formats.

EXHIBIT 10

Quality orchestration adoption preferences and concerns

Source: Everest Group

41%

Enterprises believe they can adopt quality orchestration center solutions at their current maturity state

54%

Enterprises believe they can adopt QA industry platform solutions with some improvement in the maturity of their current state

80%

Enterprises believe they will need to improve their current state before they are ready to adopt marketplace-as-a-service solutions

55%

Enterprises believe they will need assurances about the quality of crowdsourced delivery before adopting QA orchestration solutions

46%

Enterprises believe that cloud security concerns may inhibit adoption of QA marketplace-as-a-service solutions

Conclusion

Supporting digital innovation is at the heart of the enterprise QA agenda today. In order to deliver value beyond the initial labor arbitrage and the incremental process improvement, enterprise QA needs to innovate at a pace that keeps up with rapid technology disruption and changing business models.

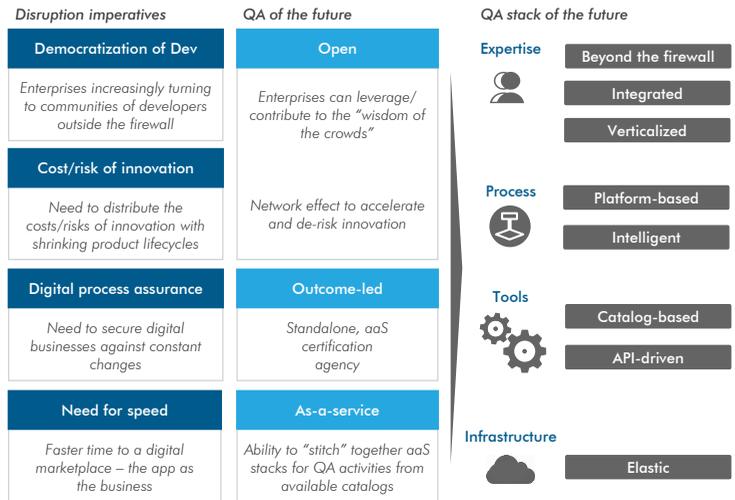
This, in turn, requires enterprise QA to:

- Orchestrate across firewalled and open ecosystems spanning traditional vendors, and a host of non-traditional industry stakeholders. By embracing a wider ecosystem, enterprises are also able to distribute the risks of digital innovation
- Design QA services for end-to-end business process assurance. By benchmarking operational metrics against IT performance metrics, QA functions can pivot to stronger outcome-based models
- Evolve to an as-a-service construct as speed-to-value becomes critical and enterprises seek to contain the costs of technology proliferation

EXHIBIT 11

QA stack of the future

Source: Everest Group



Elements of the new orchestrator model are already in play in the market. QA infrastructure is heavily cloud-based, tool integration is increasingly driven through API libraries, and digital business processes are increasingly being run off standard platforms. What is needed is a vision to orchestrate these disparate elements into coherent stacks that enterprises can assemble and disassemble at will, and link QA metrics to improvements in digital processes.

Appendix: Survey Demographics

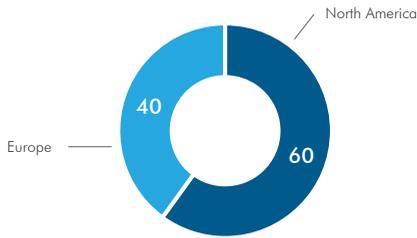
The findings of this survey were based, in part, on a survey conducted with 100 enterprise QA leaders. Details of the surveyed population are shared below.

EXHIBIT 12

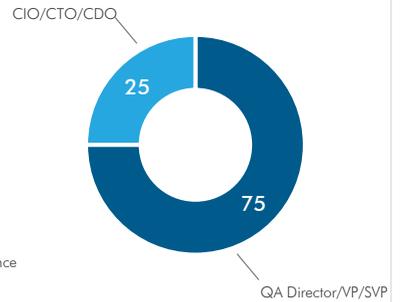
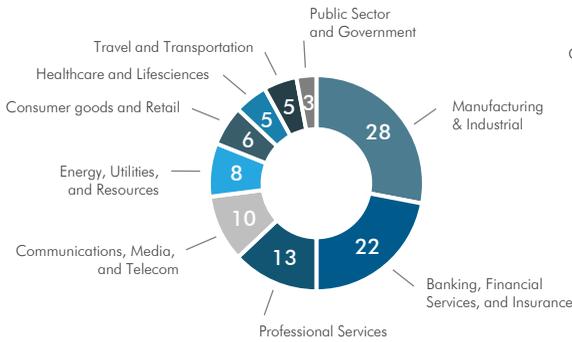
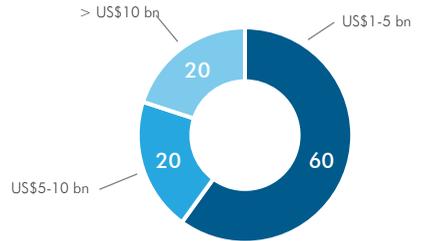
Survey demographics

Source: Everest Group

Geography (% respondents)



Enterprise revenue class (% respondents)



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