



HfS Blueprint Report

Application Testing Services Supporting Digital Transformation 2017

Excerpt for Infosys
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Executive Summary

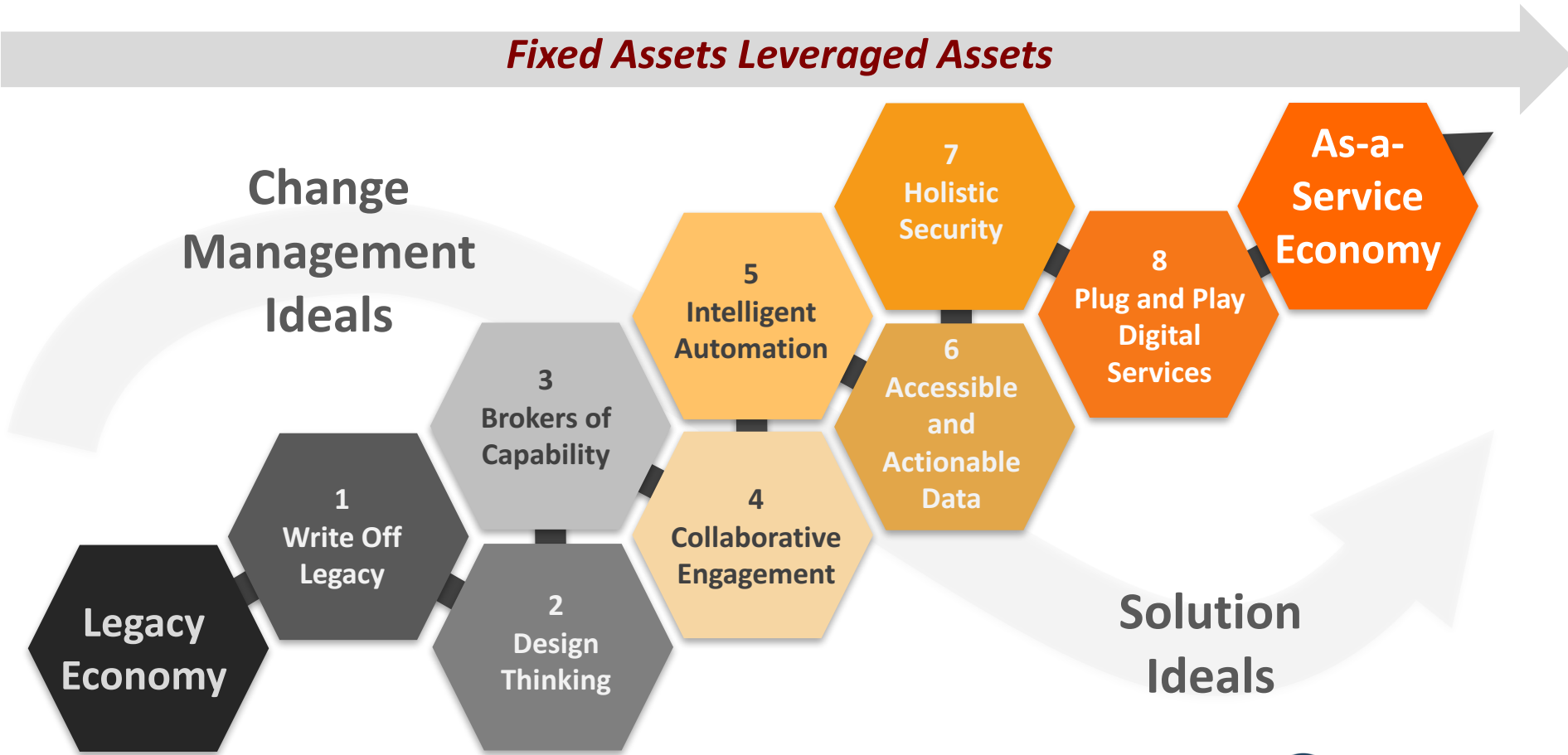


Application Testing Services: Background

- **Testing services span a huge and disparate set of capabilities and technologies.** For this Blueprint evaluation, however, the focus is exclusively on how service providers are supporting organizations' journeys toward the As-a-Service Economy or, more broadly, digital transformation. Slide 4 details both the solution and the change management ideals necessary to advance that transformation. Fundamentally, it is not about tools and technologies, but about approaches that help clients to mature and transform their testing functions. In a nutshell, it is about how service providers support this transformation journey.
- **Context MTS:** Please note that we only address managed testing services (MTS) and not projects around staff augmentation or testing within application management contracts. Critical criteria are that the supplier has the complete responsibility for the testing activities and that it is based on a long-term contract managed through SLAs and KPIs. Slide 12 provides an overview how testing services are evolving toward MTS and more outcome-based contractual models. In the following we provide some examples for the questions and topics that we discussed with both the supply and buy sides, but the discussions with the providers were by no means confined to these:
 - How do providers transform testing functions (e.g., centralization and globalization)?
 - Evolving MTS to comprehensive outsourcing with end-to-end responsibilities and managing TCoEs on behalf of clients
 - Adaptation of agile and DevOps within MTS
 - Expanding test automation toward predictive maintenance and leveraging of analytics
 - Leveraging new engagement models (e.g., TaaS, service catalogue, and on-demand)
 - Embedding MTS into business processes
 - Building out vertically specific offerings

How Is Application Testing Supporting the Journey Toward the As-a-Service Economy?

- “As-a-Service” is **about augmenting human performance** by re-thinking business model changes, *enabled* by digital technologies and Intelligent Automation.
- Application testing services have to support this transformation along all those ideals. Therefore, the emphasis is shifting toward end-to-end responsibility rather than managing discrete yet isolated projects.



The State of the Nation in Application Testing (1)

- **Digital is about a change in mindset:** Supporting the journey toward digital transformation is more than expanding coverage to a plethora of new devices and access points or including newer scenarios such as IoT, cognitive computing, and AI. It is (or should be) more about a change in mindset, culture, and approach to business. The pressing questions include: How are service providers supporting clients moving to a more experience-centric mindset through Design Thinking or co-innovation? How do methodologies like agile and DevOps have to be adapted to guarantee end-to-end responsibilities in testing? How do providers go about testing self-learning and self-remediating cognitive engines? And most importantly, what is the organizational model to support that journey?
- **Only a fraction of the market is embracing the journey toward digital transformation:** Large sections of the market are stuck in a commodity mindset, waterfall methodologies, and predominantly fixed-price and time-and-material contracts. Despite a lot of lip service, many organizations and buyers view testing only of secondary (or worse) strategic importance. Few have the maturity, or probably even more importantly, the mindset (yet) to fully embrace supporting digital transformation from a testing point of view.
- **Digital is about following and supporting experiences, not tools and technology:** In the words of an executive leading the testing function of a large telecommunications provider, digital transformation is about following the experiences of customers and partners, not following tools and technologies. Supporting digital experiences includes new ways of co-innovation and co-ideation such as Design Thinking. But in equal measure, organization and providers have to re-evaluate the organizational models underpinning those journeys. And lastly, we have to be cognizant how methodologies like agile and DevOps need to be adapted in an end-to-end or managed services context. What is changing in those scenarios are both the skill sets necessary and, equally, the organization of teams, both onsite and offshore. Consequently, organizations need to reevaluate how they are approaching organizational issues. Some buyers were also pointing more broadly to the suggestion that relationships are more important than digital capabilities.

The State of the Nation in Application Testing (2)

- **Large parts of the market are still stuck in waterfall:** Many buyers complain about the number of buzzwords like agile and DevOps being bandied about without clear guidance for what they mean for executives from the vantage point of the world of testing. In particular, it's not clear how methodologies such as agile and DevOps have to be adapted in an end-to-end context. Important questions include: Are virtual rooms and collaboration tools enough to manage co-innovation? Or are more onsite resources needed to foster deeper relationships? Similarly, should the focus be about platforms helping to manage those interactions or do organizations need more talent to facilitate change management? In the word of one buyer, pragmatism is needed: "Do sprints, but don't deliver on all sprints."
- **Digital is adding new complexities, particularly to organizational models:** Buyers don't want more tools to accelerate their journey toward digital, rather they want to overcome any fragmentation. Similarly, the expectation that organizational models would continue to evolve toward notions of centralization, just as we have seen it in application or infrastructure management, appear to have plateaued. Mature organizations are moving instead to federated models. Yet, there is scant guidance of what clients should keep in mind when moving to such models. Buyers continue to be evangelized about tools and technologies.
- **Governance has to come to the fore:** The more organizations move toward notions of high replicability, whether through platforms or automation, the more they have to embrace a federated model. The deeper clients embed testing into business functions, the more governance has to come to the fore. Yet, large parts of the industry remain stuck in a tool and technology-centric mindset.
- **Managing TCoEs is no longer the most critical benchmark for end-to-end responsibility:** Managing TCoEs on behalf of clients is starting to dissipate as benchmark for comprehensive outsourcing. The strategic importance of a TCoE is changing toward becoming curator and repository for architecture, governance, and tool sets. The missing link and the open question is: What should be the mainstream organizational model for supporting digital transformation?

The State of the Nation in Application Testing (3)

- **Traditional test automation has plateaued:** Clients need an end-to-end view of not only tools but also activities, which is presenting both the biggest challenge and opportunity. One can make many comparisons to the early days of managed testing services (MTS), when the industry was struggling with narratives and with describing the changing capabilities. Most providers are struggling to provide meaningful narratives for predictive maintenance or testing as well linking up test automation to broader initiatives around Intelligent Automation. Buyers want to see consistency of automation across business units, but they also want to see it be able to reverse should a provider change happen. Some buyers are also conscious of their lack in maturity around automation: "We were giving our provider an Excel sheet with our automation requirements".
- **Cognitive and AI are still largely supply-side focused:** There is a lot of lip service and marketing hype around the notion of predictive testing and maintenance. Most activity, however, is internal at service providers to enhance margins. On the buy side we see that it is very limited, with a view to move to a holistic data and automation strategy.
- **Testing has to become more intuitive for DevOps to work:** Counterintuitive, but also counterproductive to the notion of digital, testing services remain complex, technology driven, and broadly not yet conducive to supporting digital transformation. The testing community urgently needs cross-fertilization from the broader industry. Testing executives are amazingly passionate about their work, but many of the experiences come from the testing community as many chose to be career testers. Broader digital skill sets (but also sourcing experiences) urgently need to be instilled into the testing community. Buyers were clear about what needs to be done to advance end-to-end responsibility that both managed testing services and digital: testing has to become more intuitive for DevOps to work.
- **Most buyers don't measure testing against production costs:** The large majority of buyers don't measure testing against overall production costs. Without a more holistic approach to testing, the journey toward digital transformation will remain slow. Fundamentally, a digital mindset necessitates an end-to-end view where business alignment includes more holistic approaches to business cases and sourcing implications.

Application Testing Services in 2017

The Market and Service Provider View

- **A market of contradictions:** Application testing services have one of the highest margins across IT services, yet buyers largely don't view testing services as having a strategic importance and priority for organizations. There is a lot of lip service as to how important testing services are said to be. Most buyers have a commodity mindset and predominantly procure on price. The journey toward digital transformation appears to change little in that.
- **Despite DevOps and automation, offshore remains a focal point:** While service providers are still building out the narratives, client examples, and lessons learned from moving to DevOps and broader automation initiatives, the focus on offshore delivery continues unabated. If anything, the need for more collaboration around DevOps is being countered by emphasizing platform and technology rather than re-evaluating the ratios between offshore and onsite. Having said that, the turnover of onsite personnel where buyers have invested in training partner personnel is one of the biggest irritants of the buy side.
- **A fragmented service provider landscape:** There are more than 400 service providers offering different types of Application Testing Services. Most organizations have a multi-vendor environment, typically with the providers in the Winners Circle representing the prime contractor. Smaller providers can be positioned as challengers or as having specialist technical capabilities. However, for global requirements the challenges of building out a broad set of technical capabilities remain. Many service providers today fight for a clear competitive differentiation between the two poles of aggressive pricing and high quality.
- **The supply side has to find a nuanced vision and voice around digital:** The supply side is largely reactive to RFPs and requirements. Yet, buyers need guidance as to how they need to transform their testing functions on the digital journey. Suffice it to say, the commodity mindset of most buyers is curtailing the room for maneuvering.

Buyers Face Challenges in Testing Services Adoption

- **Despite marketing headlines, testing rarely has strategic priority:** Testing services, quality assurance, or other permutations typically have a lower priority on the CIO agenda. Reference points for the comparatively low maturity of testing services are the fragmentation of the supply side as well as organizational models that lack scale and efficiency.
- **There is a lack of business alignment:** Testing services remain largely technology centric. Testing executives don't tend to have a seat next to key decision makers. Embedding testing into business processes or broader business alignment is generally aspirational.
- **Digital technologies create more complexity:** While some buyers see digital merely as an expansion of sales channels, more mature buyers point to a shift in mindset as testing functions have to support experiences rather than technologies and products. Regardless of where buyers are between those polarized positions, all agree that digital is leading to significant new complexities due to more devices and applications that are supporting the digital journey.
- **Containing the cost of testing services:** Contractual models are largely time and material or fixed price. Aligning these models to increasing agility and complexity remains challenging. Migration to transaction, consumption, or even outcome-based models is hard work and yields only slow progress. If anything, the large majority of buyers is stuck in a resource based and offshore-centric mindset. Yet, they acknowledge that the journey toward agile and DevOps will shift the onshore-offshore ratio toward more local staff. Consequently, without modifying a commodity mindset, dissatisfaction with the quality of onshore resources will remain. Only very few buyers are willing to pay for more quality.

Understanding the Application Testing Ecosystem



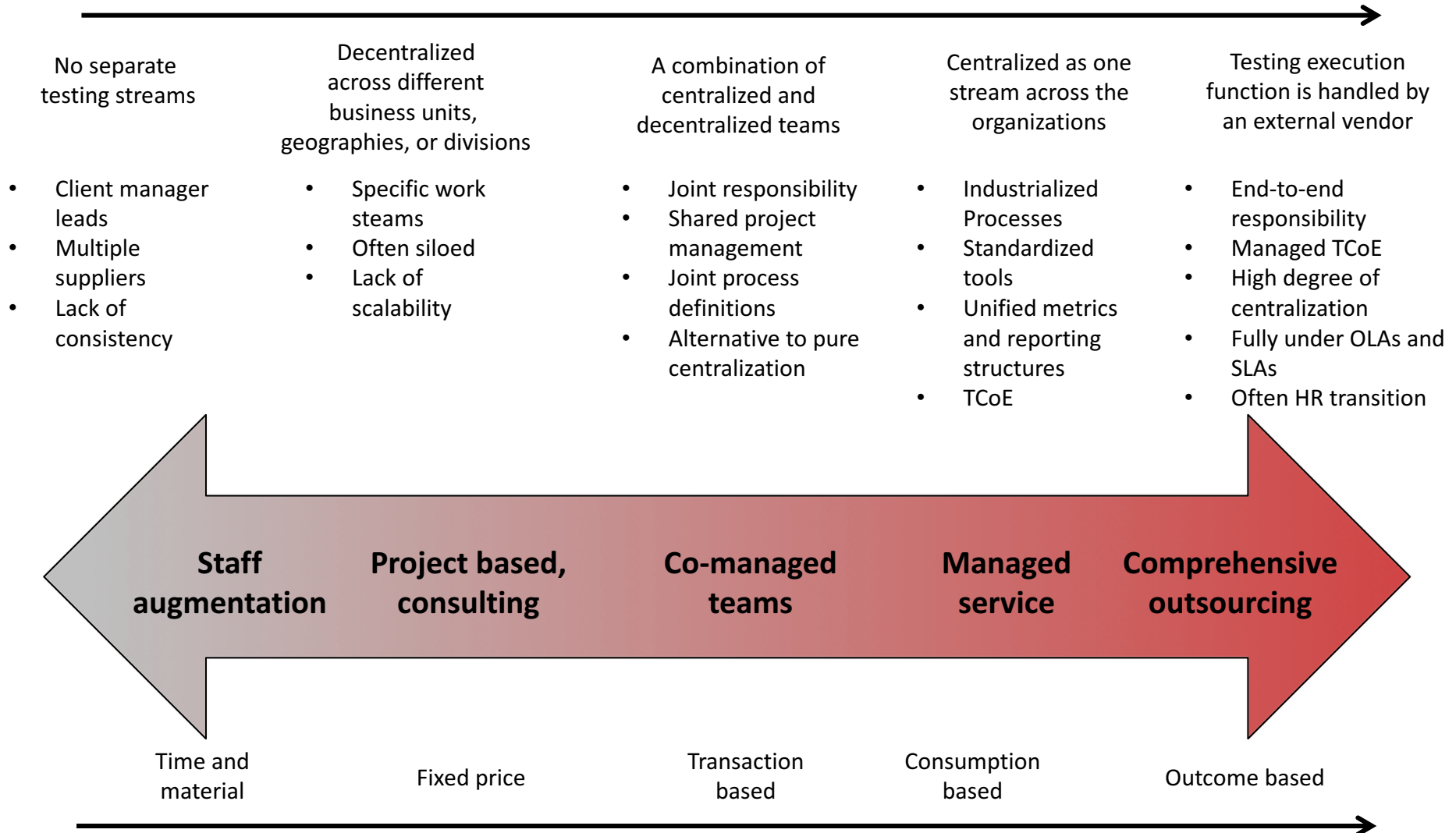
Application Testing Services in 2017:

Value Chain and Key Service Components

Design	Coverage	Methodologies	Build	Run
<ul style="list-style-type: none"> • QA advisory and transformation • Performance test strategy • Test case development • Tool and product evaluation • Business case development for testing services • Global sourcing strategy • Test automation consulting • Industry-specific benchmarks • Compliance and risk assessment • Governance model and structure • Assurance management office 	<ul style="list-style-type: none"> • Defect analysis • Test environment provisioning • Test value chain virtualization • Packaged application testing • Cloud testing • Mobility testing • Crowdsourcing testing • Domain specific testing • Functional testing • Non-functional testing • Regression testing • Business-process driven testing • Security testing • Specialized testing • Release and configuration management 	<ul style="list-style-type: none"> • Application testing lifecycle • Shift left • Agile • DevOps • Continuous integration • Integration of BPM capabilities • Frameworks 	<ul style="list-style-type: none"> • Automated generation of test scenarios and test cases • Test environment management • Test data management • Modelling and embedding of process flows • Governance assessment • Accelerators • Integration with industry frameworks • Knowledge repository 	<ul style="list-style-type: none"> • TCoE set up and management • SSC approach and blended approaches • Managed testing services • Comprehensive outsourcing • End-to-end QA ownership • TaaS and service catalogues

Evolution of Testing Services

Structure of testing function



Contractual model

Proprietary | Page 12

Research Methodology



Required Information and Model Weighting

EXECUTION

100%

How the service provider works with clients to provide end-to-end responsibility	17%
How the service provider benchmarks maturity and works with clients to transform their testing function	14%
Actual delivery of services	25%
Geographic footprint and scale of the service provider	10%
Flexibility of the service provider to deliver end-to-end and point solutions	10%
How the service provider works with clients to guarantee outcomes	14%
Service provider experience in delivering industry specific solutions	10%

INNOVATION

100%

Vision for and investments in the evolution of testing services	26%
How the service provider integrates and adapts Agile and DevOps into the delivery of testing services	15%
How the service provider proactively suggests innovation and provides innovation roadmap	12%
Solutions for leveraging data and cognitive capabilities in testing services	10%
Approach to the application of test automation and the broader notion of Intelligent Automation in testing services	12%
Availability of plug-and-play digital services (e.g., control tower, TaaS, service portal)	17%
Integration of transformation and process consulting capabilities	8%

Execution Definitions

Execution	How well does the service provider execute on its contractual agreement and how well does the provider manage the client/provider relationship?
<i>How the service provider works with clients to provide end-to-end responsibility</i>	How is the service provider progressing on the continuum of testing services (slide 12) toward MTS and comprehensive outsourcing?
<i>How the service provider benchmarks maturity and works with clients to transform their testing function</i>	How is the service provider assessing the maturity of clients' testing capabilities and helping them to transform their testing functions with clear definitions of responsibilities, within provider ecosystems or the advancement toward TCoEs?
<i>Actual delivery of services</i>	What are the clients' and market's overall impression of the quality of service across the value chain from this service provider? How are testing services helping clients to transform processes? What is the overall impact on client processes?
<i>Geographic footprint and scale of the service provider</i>	How is the service provider addressing scaling deployments across clients' processes? Is the service provider seeking to move to repeatability of testing solutions and projects?
<i>Flexibility to deliver end-to-end and point solutions</i>	When looking at a client's testing requirements, can the service provider offer various solutions (point and end to end) to create a flexible and configurable (or customized) response?
<i>How the service provider works with clients to guarantee outcomes</i>	Is the service provider able to migrate clients toward outcome-based models?
<i>Service provider experience in delivering industry-specific solutions</i>	How is the service provider offering and embedding industry-specific testing solutions into clients' business processes?

Innovation Definitions

Innovation	How well does the service provider innovate its offering(s) in response to market demand, client requirements, and its own vision for how testing services will evolve?
<i>Vision for and investments in the evolution of testing services</i>	What is the service provider's vision for the evolution of testing services? Is there a clear strategy for delivering broader As-a-Service capabilities, and are there identifiable investments in place to realize this strategy today? How are these new environments to be governed?
<i>How the service provider integrates and adapts Agile and DevOps into the delivery of testing services</i>	How is the service provider adapting its delivery strategies to leverage agile and DevOps capabilities as part of MTS?
<i>How the service provider proactively suggests innovation and provides innovation roadmaps</i>	How does the service provider work with clients proactively suggesting innovation and providing innovation roadmaps that are relevant to the specifics of testing functions?
<i>Solutions for leveraging data and cognitive capabilities in testing services</i>	How is the service provider addressing applying data and cognitive capabilities? What are the use cases?
<i>Application of test automation and the broader notion of Intelligent Automation in testing services</i>	How is the service provider leveraging test automation and elements of the broader notion of Intelligent Automation in delivering testing services?
<i>Availability of plug-and-play digital services (e.g., control tower, TaaS, and service portal)</i>	How is the service provider innovating and transforming engagement models? What are the most effective commercial models?
<i>Integration of transformation and process consulting capabilities</i>	How is the service provider integrating change and transformational consulting as part of the engagements?

Research Methodology

Data Summary

- The data for this Blueprint was collected in Q1/2 2017, covering services buyers, service providers, and advisors and influencers of Intelligent Automation.
- Invitations were sent to the top 20 service providers by revenue.
- This report builds on the research for the HfS Application Testing Services Blueprint 2015. However, the scope of the current project is focused on supporting Digital Transformation rather than the broad gamut of testing services.

This Report Is Based On:

- **Tales from the Trenches:** Interviews were conducted with buyers who have evaluated service providers and experienced their services. Some were supplied by service providers, but many interviews were conducted by HfS Executive Council members and participants in our extensive market research.
- **Sell-Side Executive Briefings:** Structured discussions with service providers were intended to collect data necessary to evaluate their innovation, execution, market share, and deal counts.
- **Publicly Available Information:** Financial data, website information, presentations given by senior executives, and other marketing collateral were evaluated.

Note: Hexaware and Luxoft have not been included in the HfS Blueprint Grid because of no client references. Profiles of these suppliers are included in the appendix

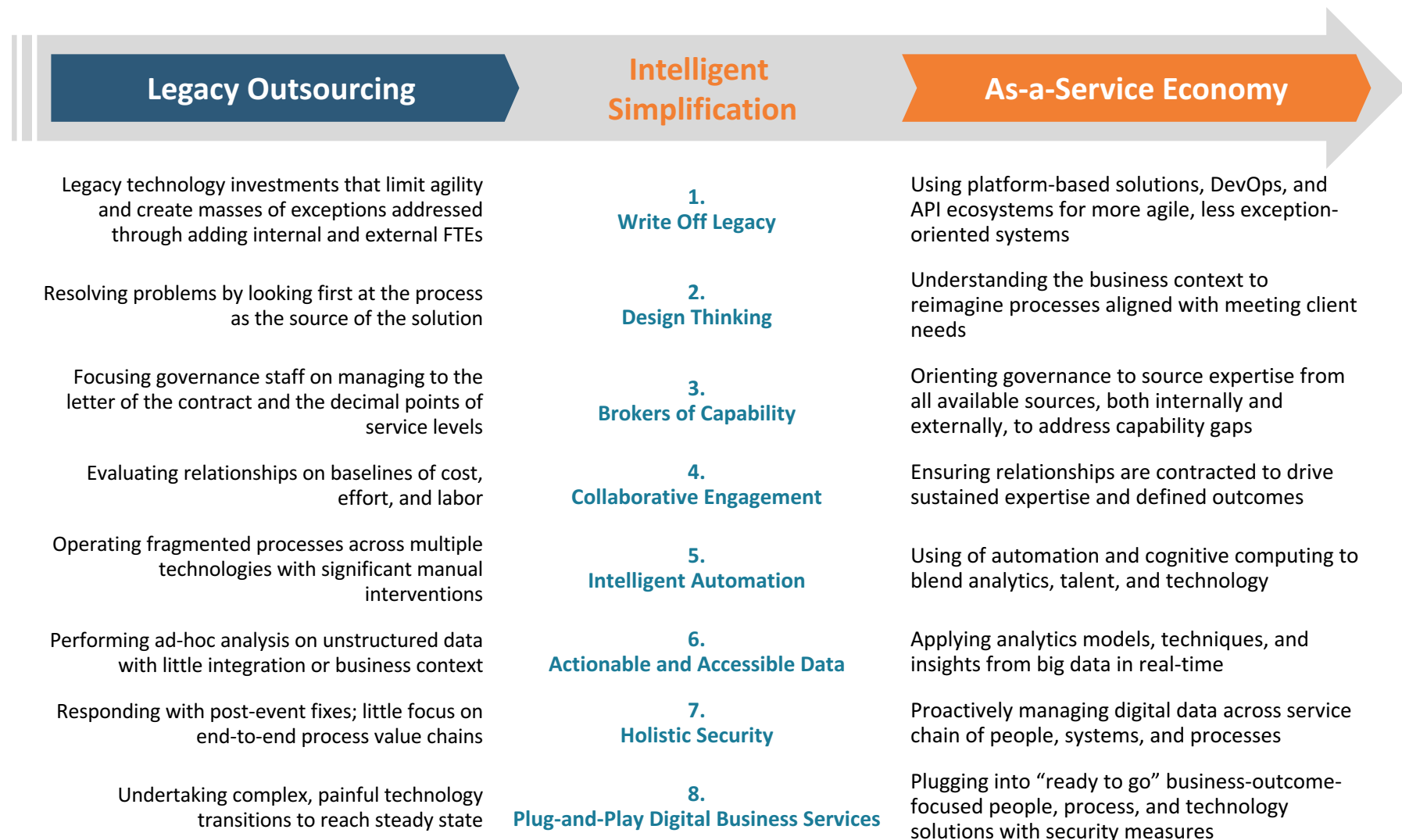
Participating Service Providers











Application Testing in the As-a-Service Economy



Application Testing Is Supporting Realizing the Eight Ideals of the As-a-Service Economy



Impact on the Ideals of the As-a-Service Economy

Ideal	As-a-Service Ideal Definition	Impact	Comments
Write Off Legacy	Using platform-based solutions, DevOps, and API ecosystems for more agile, less exception-oriented systems		Testing services are largely reactive. They support innovation but providers are not yet proactively pushing testing services to overcome legacy. A lack of business alignment is the biggest challenge.
Design Thinking	Understanding the business context to reimagine processes aligned with meeting client needs		Design Thinking offers the opportunity to reimagine processes. However, thus far we have seen very few examples of practical application. The more providers build out consulting capabilities, the more we expect that to change significantly.
Brokers of Capability	Orienting governance to source expertise from all available sources, both internally and externally, to address capability gaps		The broad set of platforms and frameworks support moving toward the notion of service orchestration; governance is still slow to move toward the experience-centric mindset essential for digital transformation.
Collaborative Engagement	Ensuring relationships are contracted to drive sustained expertise and defined outcomes		Collaboration has two key focal points: First and foremost, around supporting building DevOps capabilities; second, around crowdsourcing. Providers need to demonstrate proof-points.
Intelligent Automation	Using automation and cognitive computing to blend analytics, talent, and technology		Providers are slow in embracing a holistic automation approach. Most remain stuck and focused on test case design automation. Most providers talk about predictive maintenance, but it remains largely aspirational.
Accessible and Actionable Data	Applying analytics models, techniques, and insights from big data in real-time		Broad innovation around test case data, but slow journey toward expanding toward data-centric mindset and business model.
Holistic Security	Proactively managing digital data across the service chain of people, systems, and processes		Even though security is largely supported through specialist testing services, providers have put a strong emphasis on leveraging those capabilities on journey toward Digital Transformation.
Plug-and-Play Digital Business Services	Plugging into “ready to go” business-outcome-focused people, process, and technology solutions with security measures		Plug-and-play capabilities are largely confined to tools and environments. However, frameworks and platforms mitigate journey toward industrialization.



Strong



Proprietary | Page 20



Modest

Service Provider Grid

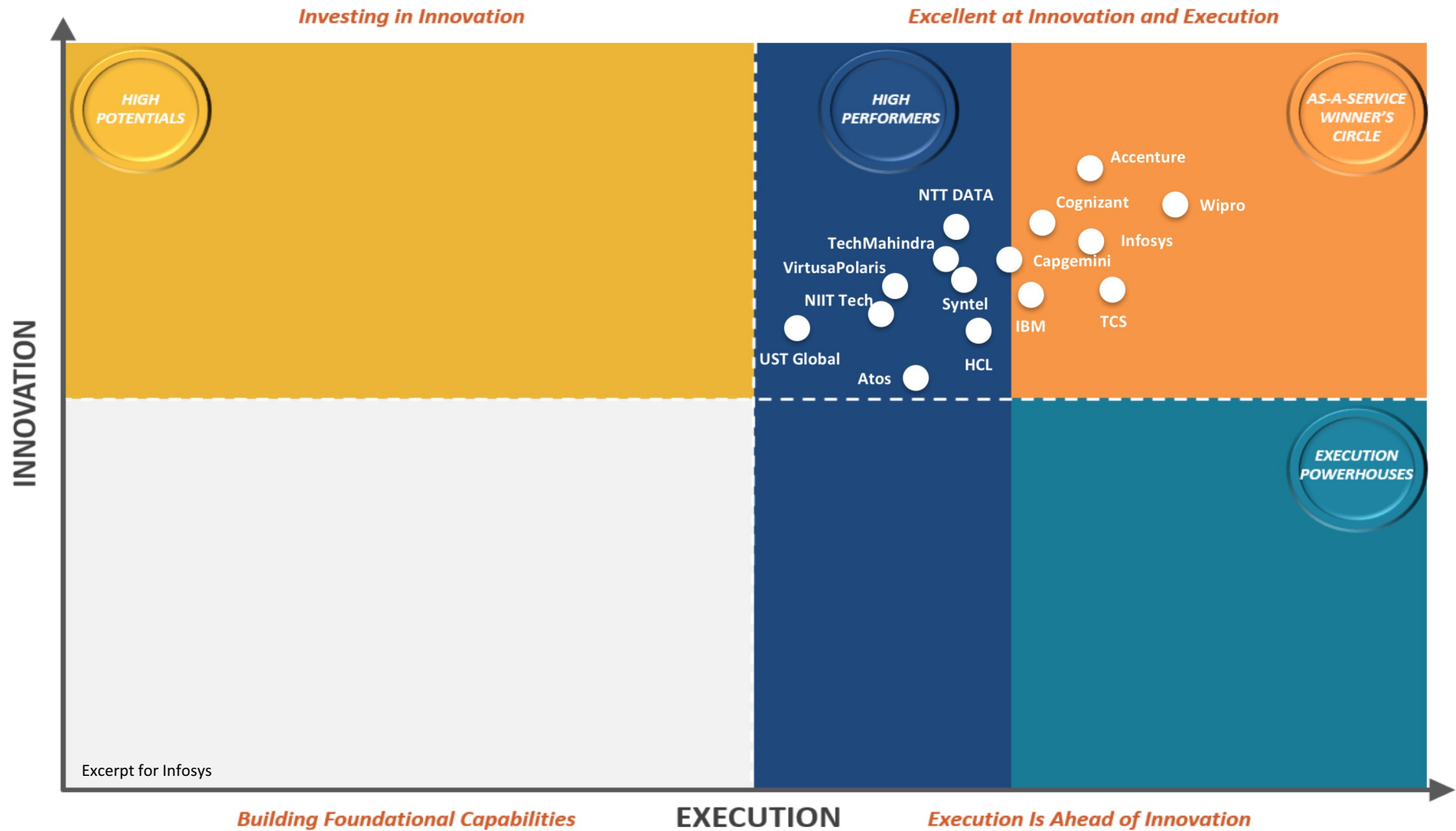


Guide to the Blueprint Grid

To distinguish service providers that show competitive differentiation in a particular line of delivery with progress in realizing the As-a-Service Economy of business-outcome-oriented, on-demand talent and technology services, HfS awards these providers the As-a-Service Winner's Circle designation.

	Execution	Innovation
<p>● As-a-Service Winner's Circle shows excellence recognized by clients in the Eight Ideals in execution and innovation</p>	Collaborative relationships with clients, services executed with a combination of talent and technology as appropriate, and flexible arrangements	Articulates vision and a "new way of thinking," has recognizable investments in future capabilities and strong client feedback, and is driving new insights and models
<p>● High Performers demonstrate strong capabilities but lack an innovative vision or momentum in execution against the vision</p>	Execute some of the following areas with excellence: worthwhile relationships with clients, services executed with "green lights," and flexibility when meeting clients' needs	Typically describe a vision and plans to invest in future capabilities and partnerships for As-a-Service and illustrate an ability to leverage digital technologies or develop new insights with clients
<p>● High Potentials demonstrate vision and strategy but have yet to gain momentum in executing the strategy and vision</p>	Early results and proof points from examples in new service areas or innovative service models but lack scale, broad impact, and momentum in the capability under review	Well-plotted strategy and thought leadership, showcased use of newer technologies or roadmap, and talent development plans
<p>● Execution Powerhouses demonstrate solid, reliable execution, but have yet to show significant innovation or vision</p>	Evidence of operational excellence; however, still more of a directive engagement between a service provider and its clients	Lack of evident vision and investment in future-oriented capability, such as skills development, "intelligent operations," or digital technologies

HfS Blueprint Grid: Application Testing



Service Provider Profile



HfS Application Testing Value Chain: Key to Profiles

- Value Chain coverage is indicated by blue shading.
- Grey shading indicates that the service provider does not offer these services.

For Example:

Full Value Chain offered

Design
Coverage
Methodologies
Build
Run

Build not offered

Design
Coverage
Methodologies
Build
Run

- Each profile also includes an “Operations” box where we list service provider statistics.
- “N/A” indicates that the service provider does not have this service today. In many cases, the service provider may have these certification applications in progress.

Major Service Provider Dynamics: Highlights

Execution

Wipro is the leading provider in execution as clients cite best-in-class transformation capabilities that get expanded by Design Thinking capabilities. Clients were equally positive about its willingness to take ownership and the way it is handling escalation management.

- **Actual Services:** Combines the support of clients' digital transformation and the impact on clients' processes. Clients interviewed for this Blueprint were especially positive about **Wipro, TCS, Infosys, Cognizant, and Accenture**.
- **Maturity benchmarks and transformation of testing functions**
This category is about transforming clients' testing functions with clear definitions of responsibilities within provider ecosystems or the advancement toward TCoEs. Clients referenced **Accenture, Wipro, Infosys, and TCS** in particular.
- **Guarantee of outcomes:** Outcome-based contracts and more broadly changing mindsets are central to the notion of becoming a digital enterprise. Clients called out specifically **Accenture, Cognizant, Wipro, and TechMahindra**.
- **Delivering industry-specific solutions:** How is the service provider offering and embedding industry specific testing solutions into clients business processes? Clients were pointing to **Cognizant, TCS, TechMahindra, and Atos** for having robust capabilities and in particular for fostering business alignment.

Innovation

Accenture is the leading provider in innovation. Its myWizard platform is a lighthouse for innovation. While many buyers are still steeped in waterfall, it has evolved from an early focus on virtual agents and industrialized DevOps buildings blocks to the platform sitting on data lakes, the leverage of neural networks

- **Vision for and investments in the evolution of IA:**
Across the board, clients were encouraging providers to be more proactive about innovation and help them to get a better sense of the "future state" of their processes. **Accenture, Wipro, Cognizant, NTT Data, and VirtusaPolaris** stand out for their vision for the evolution of testing services.
- **Integration and adaption of Agile and DevOps:**
Broadly speaking, the market is slow in demonstrating integrated models that adapt DevOps to the needs of managed services. However, **NTT Data, IBM, Syntel, and NIIT Tech** impressed in terms of vision and capabilities.
- **Approach to Intelligent Automation:** Only few providers have progressed from a focus test case automation to broader and holistic automation strategies. Those who have done include **Accenture, Wipro, and TechMahindra**.

Blueprint Leading Highlights	Strengths	Challenges
<ul style="list-style-type: none">Actual delivery of servicesSolutions for leveraging data and cognitive solutionsApproach to the application of test automation and the broader notion of Intelligent AutomationIntegration of process and business consulting	<ul style="list-style-type: none">Execution excellence: Clients appreciate the robustness and consistency of Infosys delivery. Only few client cited some issues on the journey toward distributed agile.Automation and AI as strategic corporate pillars: As strategic pillars attention is paid to and investment provided to accelerate customers journey to digital transformation. Consequently, machine learning is embedded throughout the testing practice and it is likely to see more acquisitions in the mould of Panaya and SkyTree.Expanding to AI-led framework leveraging data-centric mindset: Infosys is leveraging cognitive computing technologies like AI and ML with advanced algorithms and computing power to generate insights from huge quantities of testing related data. Its AI--led QA platform is looking at defects during coding as well as being leverage for log analytics.Enterprise Automation Consulting as part of transformation and process consulting offering: The robustness of execution is underpinned by comprehensive transformation and process consulting capabilities including Design Thinking. This is further enhanced by Infosys Test Automation CoE. is 8,500+ people strong. It focuses on alliances and tools, frameworks, reusable assets development and industrialization, and competency development. A dedicated CoE for Agile is offering support for customers journey toward Agile and DevOps.Open and transparent business culture: Clients welcome Infosys’ grounded approach to testing as they feel the provider is not overstretching and will deliver what was promised. Similarly, Infosys is being seen as responsive.	<ul style="list-style-type: none">Overcome tool and technology-centric mindset: Infosys has a wealth of IP and is leading in driving automation in testing. However, HfS would encourage to build out experience centric narratives in order to support clients on the journey toward digital transformation.Clearer vision: Some clients encourage Infosys to communicate its vision better and invest further into thought leadership by onsite resources. In clients perceptions this is masking, at least partially Infosys’ vast IP. Furthermore, clients would like Infosys to be more proactive in suggesting innovation.Expand stakeholder management beyond testing function: Some clients would like to see a stronger communication with stakeholders outside the testing function. This is curtailing aspects of moving toward agile and DevOps.
Plan		
Implement		
Manage		
Operate		
Optimize		

Relevant Acquisitions/Partnerships	Key Clients	Operations	Technology Tools and Platforms
<p>Acquisitions include:</p> <ul style="list-style-type: none">PanayaSkyTree <p>Partnerships include:</p> <ul style="list-style-type: none">HPIBMCATricentisDynatraceExperitestNeotysSkytapPerfecto MobileAtlassianInformatica	<p>Infosys works with clients across industry sectors:</p> <ul style="list-style-type: none">A large US-based electricity supply companyA large health care insurer in the Mid-Atlantic regionHealth insurance coverage provider in New JerseyLarge Europe-based automotive manufacturerAn American multinational confectionery, food, and beverage conglomerateAn Australian bank and financial-services providerA large financial institution in AustraliaLeading Dutch bankAn American bank holding companyAn American financial services company	<p>Geographic footprint and scale of the application testing practice:</p> <ul style="list-style-type: none">Testing professionals: 22,550Estimated testing revenues: \$1.2 billionSplit of resources:<ul style="list-style-type: none">India: 18,075North America: 2,800Australia: 730EMEA: 700APAC: 250Locations in India include: Bangalore, Bhubaneswar, Chandigarh, Chennai, Hyderabad, Jaipur, Mangalore, Mysore, Pune, Trivandrum	<ul style="list-style-type: none">AI-led QA: Powered by Infosys AI tools, helps deliver test suite optimization, QA event predictions, QA traceability, test scenario mining, defect analytics, and consumer social data analytics.Infosys Service Delivery Platform: A one-stop tool to set up, execute, and govern managed service engagements.Infosys ML based Compliance Data Validator to identify and flag compliance issues.Infosys Assurance Workbench: An AI-based modular assurance workbench built for the leading digital technologies. It enables lifecycle delivery management and orchestration, end-to-end functional and non-functional automation and leverages in-built data analytics capabilities for best-in-class testing.IDEAS (Infosys Data Extraction for Automation in SAP): Real time data mining on SAP Master Data.

Market Wrap-Up and Recommendations



Trends in Application Testing Services

- **Vendor consolidation will continue:** The current market fragmentation is an indicator of the comparatively low maturity of testing organizations. Increasing maturity will lead to organizational models similar to SSC or GBS, so scale and reach will become central issues. In turn, this will accelerate vendor consolidation. With less dependency on generic offshore capabilities, vertical capabilities will be crucial assets. The acquisition of Polaris by Virtusa is the most recent example.
- **Testing has to claim a seat at the business table:** The testing community has to overcome its focus on tools and technology. It has to speak to the language of C-level executives and work around the strategic business imperatives. More than anything else, this requires a deep cultural change that has to be managed. Vendors have started the narrative about embedding testing into business processes, but reference points are few and far between. Similarly, in the context of comprehensive outsourcing, sourcing issues such as business cases, transfer of assets and people—along with mitigating risks—have to come to the fore.
- **The journey into the As-a-Service Economy necessitates new engagement models:** The journey into the As-a-Service Economy is the direction of travel for many organizations. Unlike some more front office-led notions of “digital transformation,” it is not necessarily technology-led but encompasses cultural and behavioural issues in equal measure. So innovative engagement models have to go beyond leveraging SaaS tools and move toward service catalogues and supporting an experience-centric approach.
- **Crowdsourcing is coming to the fore:** As requirements get ever more complex, crowdsourcing is starting to mature. A new breed of technology vendors including Applause, Passbrains, and Qualitrix is enabling a more robust end-to-end experience. We expect a crossover with the broader notion of Intelligent Automation. Workforce optimization will complement automation strategies.

How Service Providers Can Differentiate in 2017 and Beyond

- **Move testing into mainstream sourcing discussion:** As organizations move more rapidly into the As-a-Service Economy, the testing community can no longer afford to discuss testing services only in a technology-led context. The direction of travel has to be embedding testing services into business processes and to support business model change.
- **Bring in talent from other IT disciplines:** While the testing community is extraordinarily passionate about their jobs, the fact that most people chose to become career testers comes at a cost: The cross fertilization with talent and ideas from other IT sectors is somewhat modest. Therefore, service providers should maintain the uniqueness and the passion but find ways to extend the value proposition to broader IT and operational innovation and best practices.
- **Transformation of organizational models:** The lack of maturity of organizational models is the main inhibitor for bringing testing services to the mainstream or even getting a seat at the business table. It has to align in a more meaningful way along the concepts such as SSC or GBS. Running testing services as a stand-alone parallel organizational model will be a roadblock on the journey into the As-a-Service Economy.
- **Develop meaningful narrative of embedding testing into business operations:** The leaders in the Winner's Circle have started to create a succinct narrative of embedding testing services into the delivery of business processes. But the industry needs reference points for both the obstacles in achieving this as well as clear guidelines how to embark on this journey.
- **Engagement models aligned with the journey into the As-a-Service Economy:** Most testing services contracts are based on time and material or fixed price. While providers evangelize the virtues of outcome-based contracts, there is little guidance on how to be successful on the journey toward this goal. Similarly, many discussions about Testing-as-a-Service are tool centric and thus lack broader sourcing implications

How Service Providers Can Differentiate in 2017 and Beyond (continued)

- **Use comprehensive outsourcing as a line of demarcation in a fragmented market:** In a fragmented market that is technology- and tools-led, it is difficult to stand out. By providing reference points for engagements around the emerging notion of comprehensive outsourcing, the difference in breadth and depth of both portfolio and scale of engagement will become clearer. The critical point is that in the context of comprehensive outsourcing contracts, the criteria in the decision-making process are shifting from tools and technologies toward the business case, transfer of assets, and people as well as the mitigation of risk.
- **Take agile methodologies to the next level:** The adoption of agile methodologies is finding broad adoption across the industry. However, in the context of comprehensive outsourcing and the journey toward the As-a-Service Economy, these methodologies have to be adapted to be scalable and industrialized. So the narrative should move from explaining the basic concept toward guiding customers on applying these innovations on a industrialized scale.
- **Rise and integration of cognitive computing:** While cognitive computing is still in a nascent state, its applicability on the notion of test automation is evident. So far, providers have only begun to talk about the general ways the technology could be applied to testing. To take testing services to the next level of industrialization, service providers should outline how they plan test automated environments around the notions of RPA and autonomics and how these innovations in automation can be adapted into mainstream testing services.

2017 Recommendations: Service Providers

- **Move beyond tool and technology mindset:** In order to support clients' journey toward Digital Transformation, providers should accelerate building out experience-centric narratives. Design Thinking and co-ideation can be conduits to not only to move toward business alignment but to enable cross-platform testing and train staff on a broad variety of applications.
- **Invest in transformation and process consulting:** To move toward a digital and experience-centric mindset requires broader transformation and process consulting capabilities beyond the narrow confines of testing. Otherwise projects will remain stuck in silos. At the same time this offers the opportunity to move toward holistic automation strategy, leveraging data across organizational boundaries.
- **Demonstrate the adaptation of DevOps:** Making DevOps work in a managed services context is hard work. Yet, aligning agile and DevOps methodologies is prerequisite for embracing digital. Be clear about the implications for your talent. Invest in training and knowledge management.
- **Be clear about the goals for automation:** Clients need help in imagining the end goal for automation initiatives. Devise communication strategies that go beyond generic test case automation thought leadership by providing specific use cases and processes. Support clients through playing back insights and lessons learned from early deployments.
- **Seek cross-fertilization from other IT disciplines:** The testing community has a passion that is rarely seen in the broader industry. Consequently many executives stay within the testing industry. By proactively fostering cross-fertilization with other IT disciplines business alignment could be foster and innovation enhanced.

2017 Recommendations: Buyers

- **Move beyond price and commodity mindset:** Re-evaluate your approach to testing services by adopting strategic sourcing framework. Define strategic activities that need to be supported by value-based services. Advance alignment to get stakeholders aligned.
- **Leverage Design Thinking and co-ideation to progress toward digital mindset:** Digital is about a change in mindset not about just deploying innovative technologies. Leverage innovative methodologies including Design Thinking to re-imagine your processes rather than your testing services. Business alignment is a necessity for a successful digital transformation.
- **Move toward holistic automation strategy:** Notions of cognitive computing and predictive testing are still in infancy. However, you should move toward a holistic automation strategy across the organization where data curation is the corner stone. Test case automation has plateaued and organizations need to explore new ways of industrializing delivery. The goal should be to leverage data and capabilities to support an experience-centric testing strategy. Similarly, develop specific strategies for testing RPA and cognitive computing.
- **Define and fund an innovation agenda:** Across the board, we heard that you were underwhelmed by the proactive guidance on innovation by your service providers. You should clarify, define, and fund innovation projects at the outset. Conversely, be realistic in your own expectations when negotiating with providers as the business case has to stack up.

About the Author



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Overview

- Tom Reuner is Senior Vice President, Intelligent Automation and IT Services at HfS. Tom is responsible for driving the HfS research agenda for Intelligent Automation and IT Services. Automation cuts across the whole gamut ranging from RPA to Autonomics to Cognitive Computing and Artificial Intelligence. This includes increasingly the intersections of unstructured data, analytics, and Cognitive Automation while mobilizing the HfS analysts to research Intelligent Automation dynamics across specific industries and business functions. Furthermore, he is supporting HfS' push to disrupt IT Services research by focusing on application services and testing. A central theme for all his research is the increasing linkages between technological evolution and evolution in the delivery of business processes.

Previous Experience

- Tom's deep understanding of the dynamics of this market comes from having held senior positions with Gartner, Ovum and KPMG Consulting in the UK and with IDC in Germany where his responsibilities ranged from research and consulting to business development. He has always been involved in advising clients on the formulation of strategies, guiding them through methodologies and analytical data and working with clients to develop impactful and actionable insights. Tom is frequently quoted in the leading business and national press, has appeared on TV, and is a regular presenter at conferences.

Education

- Tom has a PhD in History from the University of Göttingen in Germany.

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Infra & cloud, App. Development & Maintenance, Digital strategy & consulting

IT needs to create business value and be the leaders of technology change or they will become the custodians of IT products rather than innovators and change agents they could be. IT service providers need to offer solutions that enable IT departments act more like the brokers of capability they can be.

- Jamie Snowdon

Timeline	Horizon 1: Act now	Horizon 2: Watch out	Horizon 3: Investigate
Recent publications	<ul style="list-style-type: none"> Market Index Q1 2017 DXC – Changing the name alone won't halt the nose dive Market Index Q2 2017 POV: The 2017 High Value IT Services Top 25 BP: IT Infra Management and Enterprise Cloud Services 	POV: Defining the Digital OneOffice NASSCOM ILF: The Digital OneOffice - Getting Ahead of Today's Disruption IT infrastructure management services in the post-digital world Services In 2017 At 2.9% Growth, But Likely To Be Revised Down As Politics Trumps Economics A Talent War Is Looming, and IT Services May Just Be the Super Weapon	
Q3 2017	<ul style="list-style-type: none"> BP: Application Testing Services BP: Infrastructure and cloud services BP: Digital technology strategy & consulting services BP: ADM services IT Services Industry Snapshots: banking, insurance, health, government, manufacturing, energy & utilities Voice of the Customer on supplier innovation and execution capabilities (POV) Market Index Q3 2017 	<ul style="list-style-type: none"> SaaS Services success requires a different approach Make Your SAAS Partnerships More Strategic Or Get Dropped SaaS Service Providers Need To Align With As-a-service Ideals Future of IT services – convergence of ADM and Infrastructure (POV) Ecosystems for delivery of IT Services (POV) Enabling the digital workplace (POV) 	<ul style="list-style-type: none"> Does outcome based IT Services really exist (POV)
Q4 2017	<ul style="list-style-type: none"> BP: ServiceNow Services IT Services Industry Snapshots: Telecom, Travel, Energy, Utilities Market Index Q4 2017 Applications Services research: Heatmap (POV) 	<ul style="list-style-type: none"> Future of IT Services – who will win the cloud war? (POV) Automation Everywhere – how automation is changing IT and IT Services 	<ul style="list-style-type: none"> When will IT Outsourcing as we know it die? (POV) POV: The Future of IT Service Professionals

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- [The future is about services, not software](#)

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