

NEAT EVALUATION FOR INFOSYS:

Cognitive & Self-Healing IT Infrastructure Management

Market Segment: Overall

Introduction

This is a custom report for Infosys presenting the findings of the NelsonHall NEAT vendor evaluation for *Cognitive & Self-Healing IT Infrastructure Management* in the *Overall* market segment. It contains the NEAT graph of vendor performance, a summary vendor analysis of Infosys, and the latest market analysis summary for cognitive & self-healing IT infrastructure management.

This NelsonHall Vendor Evaluation & Assessment Tool (NEAT) analyzes the performance of vendors offering cognitive & self-healing IT infrastructure management services. The NEAT tool allows strategic sourcing managers to assess the capability of vendors across a range of criteria and business situations and identify the best performing vendors overall, and with specific capability in cognitive service desk and server-centric services.

Evaluating vendors on both their 'ability to deliver immediate benefit' and their 'ability to meet client future requirements', vendors are identified in one of four categories: Leaders, High Achievers, Innovators, and Major Players.

Vendors evaluated for this NEAT are Atos, CGI, Cognizant, CSS Corp, DXC Technology, Getronics, IBM, Infosys, Mphasis, NTT Data, TCS, Wipro, and Zensar Technologies.

Further explanation of the NEAT methodology is included at the end of the report.



NEAT Evaluation: Cognitive & Self-Healing IT Infrastructure Management (Overall)



NelsonHall has identified Infosys as a Leader in the *Overall* market segment, as shown in the NEAT graph. This market segment reflects Infosys’ overall ability to meet future client requirements as well as delivering immediate benefits to cognitive & self-healing IT infrastructure management clients.

Leaders are vendors that exhibit both a high ability relative to their peers to deliver immediate benefit and a high capability relative to their peers to meet client future requirements.

Buy-side organizations can access the Cognitive & Self-Healing IT Infrastructure Management NEAT tool (Overall) [here](#).



Vendor Analysis Summary for Infosys

Overview

Infosys provides cognitive and self-healing IT infrastructure management services through its hybrid IT management framework and automation platform, which includes IP (Infosys Infrastructure Management Solution Suite (IIMS), NIA, Polycloud, AssistEdge, and ESM Café), and third-party ecosystem partners in a technology-agnostic approach. Infosys will seek to use its IP, platforms, and enablers in its approach to large transformational projects, and will also adopt a plug and play approach and utilize partner tooling through the ecosystem where required. Where clients have made significant investments in certain toolsets, Infosys will act as an SI where they will come in and provide services.

IIMS is a combination of multiple open source technologies supported by NIA's cognitive and machine learning algorithms and AI technology. The suite is available both in managed on-premise and as-a-service (SaaS) models, providing a single pane of glass for both IT ops and DevOps users. IIMS services offerings for hybrid IT includes:

- Autonomics toolkit: platforms to create and launch self-healing micro services able to auto-trigger based on detected events or auto-resolve based on user-raised incidents
- Ops analytics workbench: AI-enabled analytics workbench for data analytics, pattern detection, root-cause analysis and model development
- Digital command center: AI-enabled digital command center and business assurance platforms providing a 360-degree view of operational insights and device visibility
- Hybrid cloud management: includes management and governance of on-premise cloud resources, or third-party cloud providers (IaaS, PaaS, or SaaS).

Sample IIMS use cases include:

- Job failure management: analyzes the root cause of historical job failures and configures automated resolution of future job failures
- Ticket enrichment: will find similar tickets to enable faster ticket resolution
- Ticket routing: auto-routes incoming tickets in ITSM tool to assignment groups
- Ticket resolution verification: improving quality of ticket closure comments
- Feeds management: monitor and self-heal issues in internal and external data feeds
- Health check: health check of critical IT components including servers, databases and restart unhealthy components
- Adaptive thresholds: dynamic threshold for various health parameters based on historical behavior of load versus compute availability
- Workdriver reduction, L1 & L2 application support automation, hybrid IT management, operations modernization.

Infosys is executing its Live Enterprise vision through this framework, including by ensuring it is hybrid cloud-ready (AWS, Azure, Google CP). Infosys is also collecting telemetry data from multiple sources, using monitoring tools and log analytics tools, and is building an IT ops data lake where it is capturing everything and using data science techniques to detect correlation patterns and anomalies. Another key focus is to integrate everything together in a framework



of integration adapters to ensure the full IT ops stack is integrated together through the framework.

It has also built ready IT services catalogs for end-users to consume via self-service. Additionally, it has a framework of automation: a repository of automation across infrastructure, storage, middleware and networks, up to the application level. These are bots that take into account typical ITSM processes while simulating how an engineer would diagnose, derive insights, and take responsive action.

Through its automation-first, integrated operating model, Infosys aims to automate as much as possible before it goes to an engineer. Any end-user requests or events streamed from monitoring systems (infra, apps, and log monitoring) is in the first instance filtered through the automation layer. It then uses its AI Ops engine to aggregate all this information, and uses this framework to resolve a potential incident, or incidents, through resolver bots (typically L0, L1, L5 functions). As it goes to L2 and L3, it uses a diagnostics engine to derive further insights from associated correlated events. If not resolved by a bot, it ensures rich ticket information is passed to L2 and L3 resolver teams. Infosys claims it has been able to reduce the operational effort of L1 teams by ~75%, and L2 teams reducing MTTR by ~65-70%.

Infosys is focused on four key transformation levers:

- Elevated end-user experience: how Infosys can improve service quality
- Enhanced monitoring & visibility: capturing enterprise telemetry and being able to present in a way that will improve visibility and transferability within the enterprise, and mine data for future use
- Self-healing ecosystems: constructs around deriving insights from the data, and then using the insights to drive autonomous operations across the entire IT operations stack
- Faster time to market: a cloud-agnostic brokerage engine abstracting the underlying cloud services or cloud provider, or infrastructure provider, relying on a layer of intelligence for enterprise IT or business users to build out their entire application stacks through a single-click.

Financials

Infosys' CY 2018 revenues were \$11.5bn. NelsonHall estimates that ~10% of this is associated with IT infrastructure management services.

Strengths

- Infosys IP (IIMS, AssistEdge, NIA and ESM Café)
- Developing Polycloud platform to accelerate time to market and meet the demand of cloud-native environment
- Comprehensive partner ecosystem in support of hybrid IT management and automation framework
- Automation factory approach for large deal transformation, enabling rapid innovation and development of use cases
- Partnerships with academic institutions to seed skilled workforce
- Significant investment in the training of personnel.



Challenges

- Significant reliance on North American market
- Increasing its onshore presence in EMEA
- Accelerating product development of industry-specific use cases
- Scaling consulting & advisory capabilities.

Strategic Direction

Infosys is looking to grow its cognitive and self-healing IT infrastructure management services capabilities over the next 18-24 months through the following initiatives:

IP and accelerators

Infosys is continuing to invest in developing IP and accelerators, including:

- Polycloud: expanding Polycloud platform and supporting ecosystem to drive faster time to market initiatives
- DevSecOps: investing in capabilities in support of cloud-native environments; which also includes investments in site reliability engineering (SRE) capabilities
- Data Science: significant investments in building data science capabilities, and a dedicated analytics CoE in support of its hybrid IT management framework
- Increasing use cases in support of Infosys Infrastructure Management Suite (IIMS)
- Expanding ecosystem partnerships in support of self-healing and monitoring capabilities
- Developing industry-specific solutions utilizing NIA and AssistEdge
- Investing in more complex use cases for cognitive chatbot, including in NLP and ML, and Infosys NIA-based chatbot for anomaly root cause and resolution
- Expanding automation factory approach in large deal transformation
- Enhancing industrialized approach through activity catalog-based automation to identify the right fit automation methodology based on client needs.

Investment in Expand Localization initiative in support of cognitive and AI services

- Enhancing consulting, advisory and design thinking capabilities through utilization of WONGDOODY and Brilliant Basics acquisitions to support IT transformation initiatives
- Expanding digital studios and innovation hubs globally (to provide localized support), and investing in digital skills and partnerships with academia to better enable clients' IT infrastructure transformation roadmaps and initiatives
- Expanding AI and automation CoEs.



Digital reskilling initiatives

Infosys is investing in digital skills training to enhance automation capabilities, with initiatives including:

- Expanding partnerships with individual universities to curate curricula for Infosys employees in areas such as ML, autonomous technologies, blockchain, design thinking (the latter, e.g., at Rhode Island School of Design)
- Investing in training programs focusing on competencies including UX, cloud, big data, digital offerings, and core technology and computer science skills.

Outlook

As Infosys undergoes its internal transformation to what it calls Live Enterprise, the expanded use of data and automation to support an evolving workforce is a key component of this.

In support of cognitive & AI operations, Infosys continues to evolve its hybrid IT management framework and automation capabilities through a mix of IP (IIMS, NIA, AssistEdge, and ESM Café). It also utilizes an extensive third-party partner ecosystem in a technology-agnostic approach. We expect Infosys will continue to expand its ecosystem partnerships in particular across open source, and with digital start-ups and ISVs in support of its hybrid IT management framework.

Infosys is placing more focus on cognitive, predictive, self-healing, and self-learning capabilities as it seeks to drive autonomous operations through its AI ops engine across the entire IT ops stack. Here, we expect Infosys will increase its use cases across IIMS and in support of AI-based learning virtual agents and expanding its NIA chatbot framework as it seeks to further enhance UX.

A key investment for Infosys includes increasing data science and analytics SME capabilities to support data insights for self-healing ecosystems. Infosys will need to expedite the ramping of SMEs in this area to support this initiative and in supplementing its command center capabilities to enhance monitoring capabilities.

Infosys is also investing in its Polycloud platform, a cloud-agnostic brokerage engine, to accelerate time to market, enabling end-users to build out their entire application stacks through a single click. It is currently piloting this with a few clients. This is an area in which Infosys will also need to ramp its existing client base from current pilots and POCs to production environments.

It is also looking to further develop its DevSecOps capabilities in support of cloud-native environments. It is also building further site reliability engineering (SRE) capabilities, which is an area it will also need to expedite to establish the necessary resources.

As Infosys places more focus on its automation factory approach to drive innovation and use case development, it has an opportunity to leverage its digital studios and innovation hubs to further enhance a design thinking approach. We expect Infosys will continue to ramp consulting and advisory personnel in support of this initiative and in support of large deal transformation engagements.

Finally, we expect Infosys will continue to build and invest in IP and accelerators to increase its opportunities both within IT infrastructure and the digital workplace and has a large installed client base to target. We also expect Infosys to further develop its ESM Café offerings as it seeks to further drive proactive self-serve capabilities and expand the use of AI and vertical industry solutions within its workplace services portfolio, to enhance UX.



Cognitive & Self-Healing IT Infrastructure Management

Market Summary

Buy-Side Dynamics

The key decision factors in selecting a vendor to deliver cognitive and self-healing IT infrastructure management services are:

- Ability to utilize multiple data sources including structured, unstructured, semi-structured and sensor data; and applying AI algorithms on top of this to extract the intelligence from the data
- The use of ML and predictive analytics models to anticipate failures on an ongoing basis, and allowing faster resolution through assisted or unassisted support; including pattern recognition and anomaly detection to enable predictive maintenance by anticipating possible failures before they occur
- Using platforms to create and launch self-healing micro services able to auto-trigger based on detected events or auto-resolve based on user-raised incidents; and using automation bots across IT infrastructure to self-heal
- Ability to manage hybrid cloud environment, including the management and governance of on-premise cloud resources, or third-party cloud providers (IaaS, PaaS, or SaaS)
- Providing DevSecOps in support of hybrid IT ecosystem (legacy and bare metal datacenter, public cloud and private cloud)
- Using end-user analytics tools (e.g., Nexthink and Systrack) and processes to monitor end-user consumption and better understand behaviour, based on personas to drive deeper personalization and improved UX
- Improving infrastructure and application performance and availability
- Creating an 'always on' IT environment
- Reducing cost from IT operations
- Making IT future-ready to support digital (enabling a hybrid environment)
- Ability to manage the increasing complexity of the IT environment (where clients are working with multiple vendors, based on different levels of adoption, and multiple destinations of cloud, such as private cloud for regulatory reasons, or public cloud)
- Orchestration of services and seamless management of IT to enable workload agility
- Delivering business services and improving the end-user experience
- Integration of cognitive and self-heal tools with ITSM
- Expanding use cases in support of IT infrastructure remediation and self-healing of assets
- Ensuring greater adherence to compliance
- Role of CIO invariably now aligned to business outcomes, and how they can provide value and agility for the LOBs for clients to accelerate their digitization



- Enabling AI-based operations to identify early signs of system downtime through analytics, cognitive and automation capabilities and predict future behaviour to increase operational efficiency
- Deploying automation to take actions based on analytics, AI and ML capabilities, including:
 - Dynamic automation: includes correlation, automated remediation, measurement and analysis of events; to ensure IT environment is kept healthy by autonomously handling requests and resolving server issues
 - IT event automation: unified monitoring through single pane of glass
 - IT process automation: service provisioning (server, service, product and stack), ticket automation, and orchestration of multiple IT processes
 - IT operations: including disk-clean up, server restart, scheduling, back-up, diagnostics remediation
 - Conversation automation: NLP/NLU-based chatbots and virtual assistants
 - KB automation: library of automated capabilities enabling self-heal, how-to KBs with guided resolution, and automated resolution of incidents through a virtual assistant
- Provision of business-aligned XLAs, focused more on experience-level agreement (XLAs), including user journey quality time including zero-time to fix, user hours saved, and marginal gain methodology.

Market Size & Growth

The global cognitive and self-healing IT infrastructure management services market is estimated by NelsonHall as ~\$22,450m in 2018. It is expected to grow at 15.3% CAGR to reach ~\$45,680m by 2023.

Success Factors

The key success factors for cognitive and self-healing IT infrastructure management services vendors include:

- Consulting and advisory capabilities: offer onshore advisory and consulting services, supported by AI, analytics, and automation SMEs, providing a design thinking and collaborative approach, to enable automation maturity assessments. Post assessment outcomes include automation tools strategy and platform design, automation use cases identified, and strategic automation roadmap developed with managed services
- Increasing skill-sets: invest in new roles and skills, including automation architects, machine coaches, automation developer and tester, and bot trainers. Enhance existing digital skills for cloud (e.g., Lambda), data science, agile, DevOps and site reliability engineers (SRE) to train the machine layer, and developing KB articles and algorithms
- Advanced analytics: deploy advanced data analytics, NLP and ML tools, applying deep insights to trigger automation, and pre-emptively improve service quality, and enable use case deployment. Examples include predictive analytics (e.g., server incident reduction), and proactive analytics in capacity planning to detect issues before they become outages. Using data lakes to train ML models, and using analytics for experience monitoring



- Industry-specific capabilities: industrializing automation for industry verticals through the development of industry-specific offerings targeted at E&U (using AI, automation, analytics and ML for smart asset grid and management), BFSI (cognitive operations), manufacturing (monitoring and self-heal) healthcare and transport
- Focus on innovation: develop dedicated digital transformation centers, and CoEs in areas including AI, ML, automation, data science, cognitive virtual agents, NLP bots/chatbots. Create joint R&D capabilities and joint go-to-market initiatives for automation with key ecosystem partners. In addition, the introduction of dedicated digital leads within accounts to drive innovation at the C-level suite
- AI operations: deploy AI-platform integrating AI, analytics, ML, and automation, with modularity via APIs and micro-services, integrated with IP and third-party open source tools. Expand resolver bots, including self-heal bots for auto detecting and healing IT issues, prediction bots, and assess bots analyzing ticket data to identify automation opportunities. In addition, deploying self-heal frameworks and training ML algorithms based on self-heal success rates
- Monitoring: enhancing monitoring toolsets, CoEs and command centers to provide real-time health of IT infrastructure and triggering orchestration to take remedial action where required. Further invest in fluid IT, enabling a single pane of glass view across legacy, VMs, Hypervisors on premise, cloud and SaaS, providing a single view to CXOs on spend, consumption and business requirements
- AI-led service desk: deploying analytics and AI-enabled self-service to drive automation, including AI-based virtual assistants using advanced NLP, NLU, and ML algorithms to apply intelligent automation to look for solutions. Integrating common AI interfaces into VAs, including Siri, Cortana and Skype for Business to improve UX. Expanding self-heal scripts and self-help (one-click automated solutions, knowledge base articles)
- Business outcome-focused XLAs: place greater focus on experience-level XLA agreements (including metrics to address proactive remediation, including zero-time-to-fix where incidents are avoided)
- Cloud management and automation: developing integrated hybrid cloud platforms for automated cloud provisioning and support services. Providing a catalog and automation to provision full-stack environments, with the ability to provision application agnostic environment, enabling clients to benefit from automation with no cloud provider lock-in.

Outlook

The future direction for cognitive and self-healing IT infrastructure management services will include:

- Clients will have a greater focus on AI-enabled virtual agents utilizing ML and semantic analytics, and enhancing use cases to deal with more complex support issues (L3 and above); expanding VA capability across the enterprise (e.g. HR), and driving 'zero-touch' service desk
- Vendors moving beyond self-healing and remediation to more self-assurance, with 'zero avoidable errors' enabling systems to operate in a resilient manner in relation to incidents, service requests, and capacity management
- Greater development of industry-specific AI-based automation use cases; and expansion of automation, data science, and AI CoEs, innovation labs and digital transformation centers



- AI ops platforms will be deployed at scale, enabling autonomous operations across entire IT operations stack; and greater investment in resolver, self-heal, predictive and automation assess bots to drive autonomous remediation and self-healing ecosystems
- Vendors will enhance talent up-skilling in areas including automation architects and consultants, automation developer and specialist, digital quality engineers, and machine coaches
- XLAs will focus on digital metrics (e.g., number of automation artefacts created, time to introduce new capabilities, zero-time to fix incidents), end-user experience and business outcomes
- Development of proactive mass healing (L2/3) with super users within service desk resolving data corrections or data validation errors and site reliability engineers (SRE) approving solutions offered by self-healing
- Greater utilization of data from sensors and beacons in the field to drive automation in support of IT support structure across networks and data center
- Amazon and Google will become key disruptors in the cognitive and self-healing IT infrastructure market
- Embedding automation innovation leads in major accounts to drive transformation at C-suite
- Developing capability in the management and integration of IT/OT
- Vendors expanding joint-automation pursuits with strategic ecosystem partners.



NEAT Methodology for Cognitive & Self-Healing IT Infrastructure Management

NelsonHall's (vendor) Evaluation & Assessment Tool (NEAT) is a method by which strategic sourcing managers can evaluate outsourcing vendors and is part of NelsonHall's *Speed-to-Source* initiative. The NEAT tool sits at the front-end of the vendor screening process and consists of a two-axis model: assessing vendors against their 'ability to deliver immediate benefit' to buy-side organizations and their 'ability to meet client future requirements'. The latter axis is a pragmatic assessment of the vendor's ability to take clients on an innovation journey over the lifetime of their next contract.

The 'ability to deliver immediate benefit' assessment is based on the criteria shown in Exhibit 1, typically reflecting the current maturity of the vendor's offerings, delivery capability, benefits achievement on behalf of clients, and customer presence.

The 'ability to meet client future requirements' assessment is based on the criteria shown in Exhibit 2, and provides a measure of the extent to which the supplier is well-positioned to support the customer journey over the life of a contract. This includes criteria such as the level of partnership established with clients, the mechanisms in place to drive innovation, the level of investment in the service, and the financial stability of the vendor.

The vendors covered in NelsonHall NEAT projects are typically the leaders in their fields. However, within this context, the categorization of vendors within NelsonHall NEAT projects is as follows:

- **Leaders:** vendors that exhibit both a high ability relative to their peers to deliver immediate benefit and a high capability relative to their peers to meet client future requirements
- **High Achievers:** vendors that exhibit a high ability relative to their peers to deliver immediate benefit but have scope to enhance their ability to meet client future requirements
- **Innovators:** vendors that exhibit a high capability relative to their peers to meet client future requirements but have scope to enhance their ability to deliver immediate benefit
- **Major Players:** other significant vendors for this service type.

The scoring of the vendors is based on a combination of analyst assessment, principally around measurements of the ability to deliver immediate benefit; and feedback from interviewing of vendor clients, principally in support of measurements of levels of partnership and ability to meet future client requirements.

Note that, to ensure maximum value to buy-side users (typically strategic sourcing managers), vendor participation in NelsonHall NEAT evaluations is free of charge and all key vendors are invited to participate at the outset of the project.



Exhibit 1

‘Ability to deliver immediate benefit’: Assessment criteria

Assessment Category	Assessment Criteria
Offerings	Cognitive and self-healing IT infrastructure management capability Cognitive and self-healing IT infrastructure integration capability Cognitive and self-healing IT infrastructure server management capability Cognitive and Self-healing IT infrastructure remediation capability Automated Provisioning capability Cognitive IT service desk capability Advanced analytics capability
Delivery	Cognitive and self-healing IT Infra North America delivery capabilities Cognitive and self-healing IT Infra EMEA delivery capabilities Cognitive and self-healing IT Infra APAC delivery capabilities Cognitive and self-healing IT Infra LatAm delivery capabilities Dedicated CoEs/labs/innovation centers Dedicated DevOps, SRE and Agile capabilities Ability to provide proprietary cognitive and AI platforms and toolsets Extent of partner and third-party cognitive and AI capabilities - Ability to enact AI-enabled service desk through AI, automation and cognitive virtual agents Access to ISV's and startups for cognitive and self-healing IT infrastructure management services
Presence	Scale of Ops - Overall Scale of Ops - NA Scale of Ops - EMEA Scale of Ops - APAC Scale of Ops -LatAm Number of clients overall for cognitive and self-healing IT infrastructure
Benefits Achieved	Reduced service outages Increased end user satisfaction Improved speed of problem resolution Improved Server capability Reduced costs



Exhibit 2

‘Ability to meet client future requirements’: Assessment criteria

Assessment Category	Assessment Criteria
Overall Future Commitment to Cognitive & Self-Healing IT Infrastructure Management	Financial rating Commitment to cognitive and self-healing IT infrastructure management services Commitment to innovation in cognitive and self-healing IT infrastructure management services
Investments in Cognitive & Self-Healing IT Infrastructure Management	In IP and platforms in support of cognitive and self-healing IT infrastructure management In support of cognitive and self-healing IT infrastructure integration In support of cognitive and self-healing IT infrastructure server management In support of cognitive and self-healing IT infrastructure remediation In automated provisioning capabilities In support of cognitive IT service desk In support of cognitive and advanced analytics
Ability to Partner & Evolve Services	Key partner Ability to evolve services

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Sales Enquiries

NelsonHall will be pleased to discuss how we can bring benefit to your organization. You can contact us via the following relationship manager:
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