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Defining the journey to AIOps

While AIOps can bring tremendous insight and value to the IT organization, strong emphasis on people and processes is essential for successful adoption

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Introduction to AI and AIOps

The terms AI (artificial intelligence) and AIOps are used more and more often, but what do they really mean? AI can be defined as the use of computers, machines, and data sets for tasks such as solving problems, extracting insights, or making predictions and decisions. AIOps (artificial intelligence operations) combines data and machine learning (ML) to automate operations actions. Typical AIOps tasks include performance monitoring, anomaly detection, or event correlation.

Are we discussing true artificial intelligence or is it in fact intelligent augmentation, an enabler for our existing teams and engineers to be able to work smarter and faster? As we move to an increasingly complex and functional artificial intelligence that, we hope, will help us provide answers and decisions, are we also ready to receive and incorporate AIOps into the organization? Have the changes which are required in process and culture been considered?

In this whitepaper we argue that AIOps is a combination of technology with people and processes, and we present recommendations for successful AIOps adoption.

What is AIOps and why is it important?

As organizations expand and evolve from on-premises to single and hybrid multi-cloud approaches, they operate in increasingly complex environments. The volume and frequency of changes needed to keep pace with market pressures overwhelms already loaded IT operations and DevOps teams which struggle with inconsistency, lack of context, and disparate tools.

This makes diagnosis and recovery a complex activity, leading to issues such as service level agreement breaches, regulatory penalties, reputational damage, and customer dissatisfaction.

AIOps is an umbrella term for solutions that can enhance IT Ops through data aggregation from multiple sources, automation, advanced analytics, and AI to surface hidden insights. This approach infuses artificial intelligence across your applications to analyze data and recognize correlations, patterns, trends. and potential risks, displaying those findings alongside raw data in one interface.

An AIOps platform combines big data and ML functionalities. To present insights to users in a useful manner alongside raw data in one interface, the AIOps platform must be scalable to ingest, process and analyze increasing data volume, variety, and velocity – such as logs and monitoring data. The system adapts as data volumes, types, and sources change, thereby automatically adjusting response and informing administrators as needed. As AIOps evolves, other relevant data sources such as social media sentiments, changes, and even budget and cost factors may be integrated.

Figure 1 shows how AIOps changes the way we track, measure, and improve IT systems. Specifically, AIOps:

– Processes data generated by IT and presents it in real-time

– Reduces complexity of large numbers of events and surfaces the most important ones

– Indicates probable root-cause for triage to drive efficiencies and cost reduction

– Defines and adjusts dynamic IT performance thresholds based on actual data inputs, instead of manually maintained static thresholds

– Provides anomaly detection and predictive alert capabilities

– Remediates incidents and possible issues in an automated way

Connect, observe and ingest

Correlate, reduce noise and incidents

Comprehensive context, identify anomalies

Collaborate

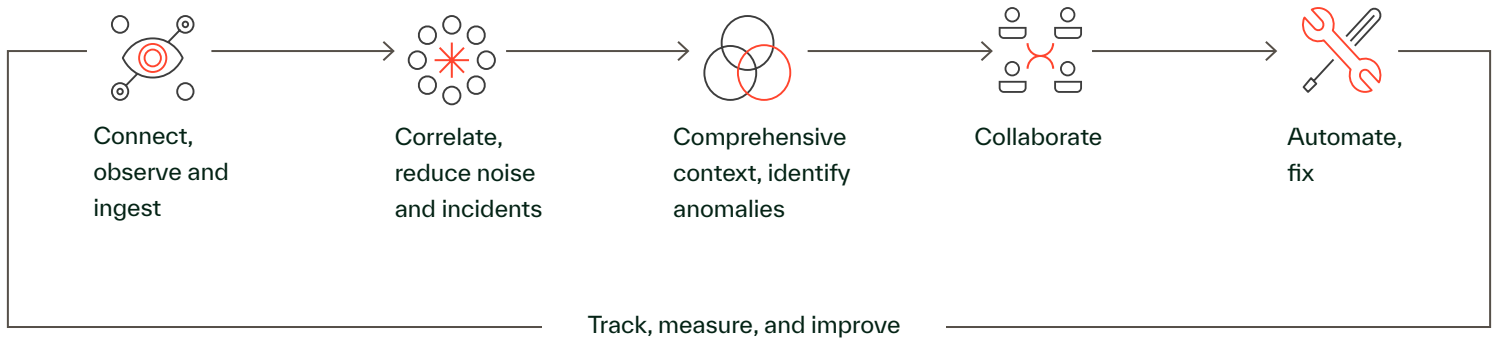Automate, fix

Track, measure, and improve

Figure 1: AIOps Process

AIOps is an umbrella term for solutions that can enhance IT Ops through data aggregation from multiple sources, automation, advanced analytics, and AI to surface hidden insights.

Monitoring and observability capabilities deliver an understanding of dependencies, topologies, and issues in the environment, and AIOps uses these new data sources for self-training. Organizations armed with monitoring, observability, and AIOps are enabled to take swift action and can easily automate responses—critical for teams aiming to exceed expectations with fewer resources and shorter timelines.

As depicted in Figure 2, AIOps drives a reduction in the mean times to detect, identify, diagnose, repair, and resolve incidents. This results in repeatable solutions and continuous improvements to resolve problems, IT workflows being improved by learning from past behaviors, and anomalies being detected using predictive algorithms. From a business perspective, the outcome is fewer issues impacting quality of services delivered to end-users.
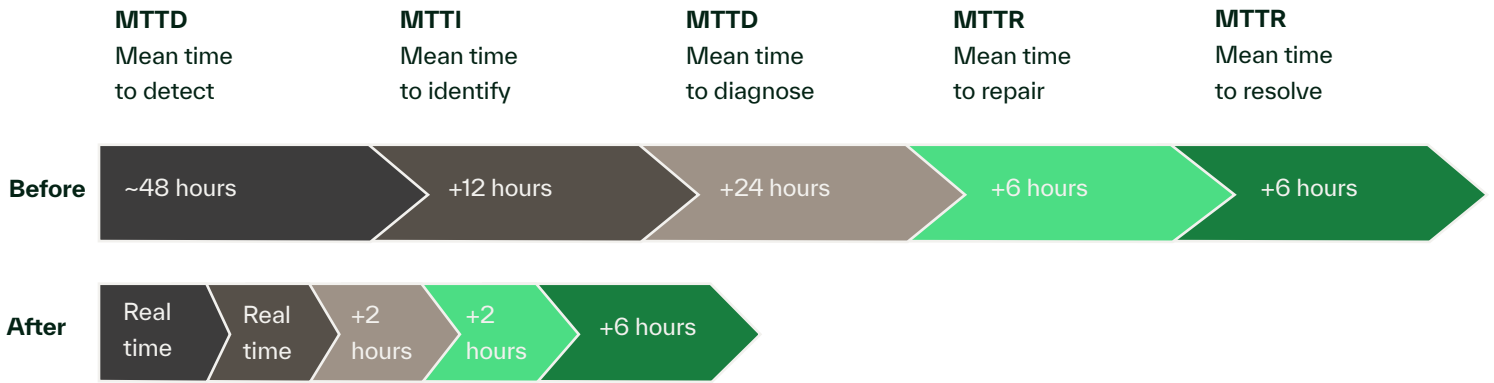
	MTTD Mean time to detect	**MTTI** Mean time to identify	**MTTD** Mean time to diagnose	**MTTR** Mean time to repair	**MTTR** Mean time to resolve
Before	~48 hours	+12 hours	+24 hours	+6 hours	+6 hours
After	Real time	Real time	+2 hours	+2 hours	+6 hours

Figure 2. AIOps shifts resolution of incidents to the left

AIOps adoption is more than technology

As discussed in the previous section, AIOps is considered disruptive technology as it significantly alters the way we operate. Yet while AIOps technology has rapidly advanced in recent years, we observe that adoption has plateaued in many organizations. Although potential gains from AIOps have been demonstrated through various proof of values or minimum value products, full deployment and integration into business as usual have not been as successful for many organizations. The result may be fatigue and distrust in the technology among the adopters.

The hype and marketing from software providers around AIOps has led organizations to focus mainly on technological features and small-scale proof of concepts. Organizations expect benefits and outcomes without considering the question of full adoption and utilization. To reap more benefits from AIOps, organizations need to adapt new ways of working and transform their culture and processes, such as to:

– Trust and rely on data for decision-making

– Proactively leverage data insights and predictions

– Work across technology silos to become more customer-centric

Trust and rely on data for decision-making
Adoption requires embracing cultural change in the organization that focuses on trust of data and machine learning to augment existing specialists and experts. Without a solid and trusted data foundation, then AIOps success is at risk. Data-gathering must be automated first before enabling other tools, like anomaly detection in the environment. If there are manual steps in the alignment of the data, inaccuracies get introduced, leading to a lack of trust. Eventually extensive rework becomes necessary because the system foundation is built on inaccurate data.

Second, it is imperative that an organization equips and empowers its people to act on the insights provided by the tools and processes. If change is implemented correctly, it enables teams to support agility and collaboration across developers, operations, and security. The combination of augmented intelligence of the teams can be capitalized on as AIOps handle the massive amounts of data.

Proactively leverage data insights and predictions
Simply generating insights and predictions from IT data is not enough to gain the benefits from AIOps technology. It is also key to provide the ability to automate corrections and adjustments based on these insights. That implies the need for an overarching system capable of taking insights and turning them into actions which will proactively resolve issues before they arise, instead of relying on human intervention after the fact. Reacting to a situation after an issue has happened does not drive positive outcomes. To get the most out of data and fix issues before they become problems, we recommend a predictive model.

Work across technology silos to become more customer-centric
For AIOps to drive realization of a smarter organization, then management, philosophy, mindset, and behavioral change are required. The goal is to drive both AIOps implementation and integration into the day-to-day operations. This success will be supported with the introduction of corresponding roles, processes, and data strategies that move away from traditional silos such as systems, networks, or applications to reflect the new customer-centric ways of working. AIOps becomes in this sense complementary to DevOps and DevSecOps initiatives where a careful change of technologies, operations, and people are considered.

How to start your journey to AIOps

Recommendations for success include both people and processes

Organizations invest significant time and energy in setting up new technology but often fail to build the necessary awareness, desire, knowledge, and ability for successful adoption. They also may not reinforce the change within the organization. This section outlines eight concrete recommendations which apply to AIOps and could be extended to other technology adoption scenarios.

1   Include both people and processes
Our main recommendation for successful AIOps adoption is to focus not only on technology but also include both people and processes. It is necessary to communicate the change effectively and to celebrate success so that it leads to enterprise-wide dissemination.

2   Define success and business value
Define and agree on common committed goals with key stakeholders, so that the success criteria are clear from the outset. Examples of success criteria include improved operation quality, reduced business outages, and removing the "firefighting" culture. There will be tangible and intangible benefits from a successful AIOps implementation in terms of cost savings, service quality, and risk mitigation.

– Cost savings can be achieved based on reduced overtime, increased automation, and fewer people required for incident handling.

– AIOps will help improve service quality by cutting through the noise, finding root causes faster, reducing mean time to repair (MTTR), and pre-emptively fixing issues before they become problems. This helps keep service-level agreements (SLAs) stringent and translates into productivity gains, as IT can in turn focus on higher-value pursuits that support evolution into an autonomous digital enterprise.

– AIOPs will help minimize risks of reputational damage or potential regulatory scrutiny.

3   Ensure executive level sponsorship
CIOs, CTOs, and leaders involved in bringing AIOps technology should articulate the vision and strategy to help engage and prepare practitioners to adopt the new ways of working. It is essential that all executives understand and communicate the vision to minimize later resistance. These high-level sponsors are responsible for ensuring that the articulated goals and value are aligned with the organization's strategy. They also provide ongoing high-level direction during adoption, gathering support, communicating goals, and overcoming resistance from affected teams.

4   Communicate the change at management, supervisory and staff levels
If the reasons for adopting AIOps are unclear, subjective, or debatable, then staff may question its relevance and might be more likely to resist, creating an immediate adoption barrier. Clear communication of the business value, improvement drivers and perceived opportunities that led to the decision to adopt AIOps should be addressed. Highlighting why this is now a priority puts the journey in perspective for the adopters. Communication from different levels of the organization can help reinforce the message and its content.

This helps empower the technical personnel to make a change and invest their time. Employees expect messages from senior management about why the change is being made and why it is aligned with the business and IT strategies. They also expect messages from their immediate supervisors about how the change will personally impact them.

5   Identify strong personas
Identify strong personas who will be acting as a driving force. With management sponsorship in place, it is important to allocate skilled employees for daily activities. Assign responsibility for deriving the value and embracing the new ways of working. The role of the individuals will impact the group and drive change. Three roles are particularly important:

– The site reliability engineer (SRE) provides the right mix of knowledge and skills in software and systems, and is a central persona for successful AIOps adoption. With understanding and responsibility for analyzing business needs, the SRE will be poised to lead and bring the necessary skills to a team to adopt AIOps.

– The operations leader ensures the commitment of the team to adopt AIOps

– The AIOps data engineer builds a flexible and scalable AIOps architecture

6 Start small and take incremental steps

Organizations can start with a focused approach on a single use case delivering a minimum viable product before applying AIOps more widely. This allows IT leaders to demonstrate the value and showcase the power of AIOps, and to establish the data-driven mindset the team needs. Organizations should take incremental steps to increase the commitment and usage, and gradually build up environments and data sources.

This phased introduction encourages a higher degree of adoption before moving to the next and more complex phases. Keep in mind that there is no perfect data source, and data should be selected based on the potential for broad acceptance, rather than initial perceived perfection.

7 Adopt listening and feedback culture

Organizations should incorporate feedback mechanisms to foster long term adoption in the organization. Continuous reinforcement of the required new processes and methods of working will sustain progress. This can include activities such as listening to comments and questions from the users, diagnosing and swiftly remediating any post-implementation gaps and issues—as well as celebrating successes and team engagements.

8 Measure and reward

The behaviors of employees during change are strongly driven by how they are measured and rewarded. The project team, the organizational change team, and the executive sponsors must all be active in equipping, preparing, and inspiring managers to lead. If there is an incentive program already in place to reward employees, consider how it could be re-aligned to support the new desired behaviors. Measure post-implementation adoption success daily as part of business-as-usual workflows.

Reference adoption: Kyndryl Advanced Delivery model

Kyndryl is one of the largest IT outsourcers in the world as well as a successful adopter of AIOps. Our global delivery approach model is named Advanced Delivery. Advanced Delivery is led by artificial intelligence and supported by a world-leading open automation platform, providing continuous improvement through agile service integration and digital enablement of infrastructure services. The Advanced Delivery model is designed to deliver high-value IT services to our customers. The key objectives are to help:

– Manage and control multi-vendor and technology service complexity.

– Improve service availability, reliability, security, and uptime performance.

– Save time for cross-functional support teams (squads), led by SREs, to partner with customers to innovate and transform for the future.

The Advanced Delivery model is based on four pillars depicted in Figure 3. While two of these pillars—actionable insights and automation are technology centric and rely on state-of-the-art AI capabilities, the other two pillars, process and governance and people and culture, are focused on the ability of the organization to leverage this technology. This confirms the key finding from our analysis: successful AIOps projects within the organization rely equally on the technology and the quality of adoption by the organization. Both deploying a solution and embedding its usage are key factors for the success of AIOps in your organization.
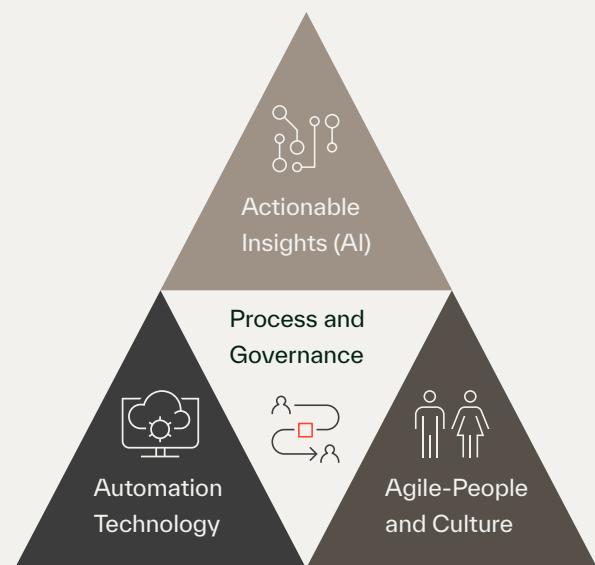

Figure 3. Components of Kyndryl Advanced Delivery Model

Key takeaways for successful AIOps adoption

– Secure an executive sponsor to define the business 'why'—and strongly articulate and promote this through all layers of the organization.

– Agree on the path to achieve transformation from traditional ways of working to business and AI management ways of working.

– Start small with incremental improvements and change—avoid a big bang.

– Allocate adopters and change promoters such as an SRE or similar committed persona and teams.

– Focus on resources to execute–assign and define responsibility.

– Measure to prove results–report on and reward progress.

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Kyndryl has deep expertise in designing, running, and managing the most modern, efficient, and reliable technology infrastructure that the world depends on every day. We are deeply committed to advancing the critical infrastructure that powers human progress. We're building on our foundation of excellence by creating systems in new ways: bringing in the right partners, investing in our business, and working side-by-side with our customers to unlock potential.

For more information
To learn more about AIOps services from Kyndryl, please contact your Kyndryl representative or Kyndryl Business Partner, or visit kyndryl.com

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