Beyond Monitoring: Achieving Predictive IT with AIOps

With use cases!

Webinar: Thursday, June 19, 11am ET

ITSM Academy

...educate & inspire

Agenda

- Introduction to AIOps
- AIOps Principles and Practices
- Practical Implementation Strategies
- Case Studies and Best Practices
- Certification
- Q&A

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TaUB Solutions

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Suresh GP

| Managing Director
| Global Ambassador DevOps Institute
| BRM Regional Leader Asia Pacific
| International Speaker & Author

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Special Thanks to our Contributors

DevOps Institute would like to acknowledge and thank the subject matter experts and thought leaders who contributed their valuable input, knowledge and expertise to the development of the **SRE Practitioner** course and certification.

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Introduction to AIOps

Challenges for Every Digital First Enterprises

- Application and System Availability
- Application Request Failures
- Application Request Latency

What's Different & Why Now

- Application Architecture has been evolving
- Lots of Interconnected Systems
- Public, Private and Hybrid Clouds

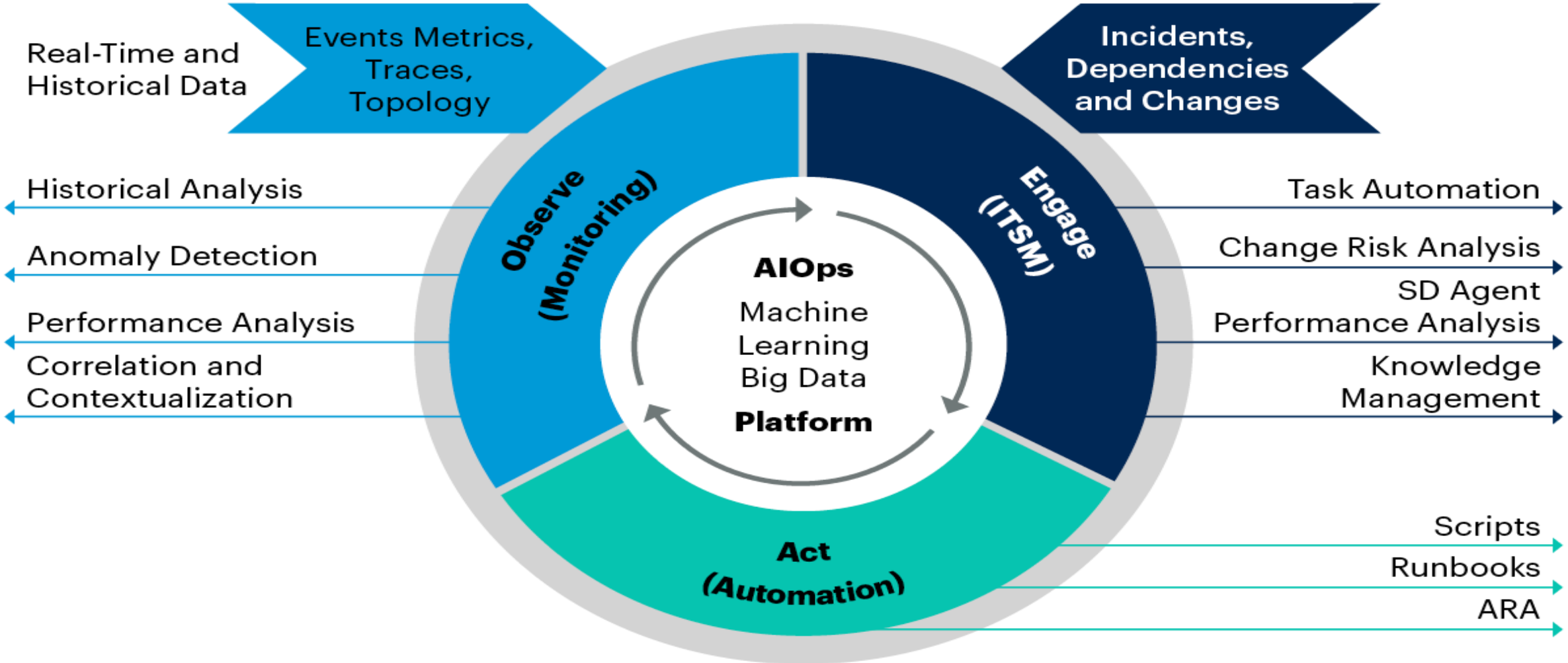
Impact of these challenges

- Bad User Experience
- Impacts Top and Bottom Line
- Brand Hit & User Churn

Expectations from the solution

- Proactive and Faster issue identification/Detection
- Provide Root Cause Analysis
- Auto Remediation

AIOps Platform Enabling Continuous Insights Across IT Operations Management (ITOM)



Source: Gartner

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Gartner

What is AIOPs

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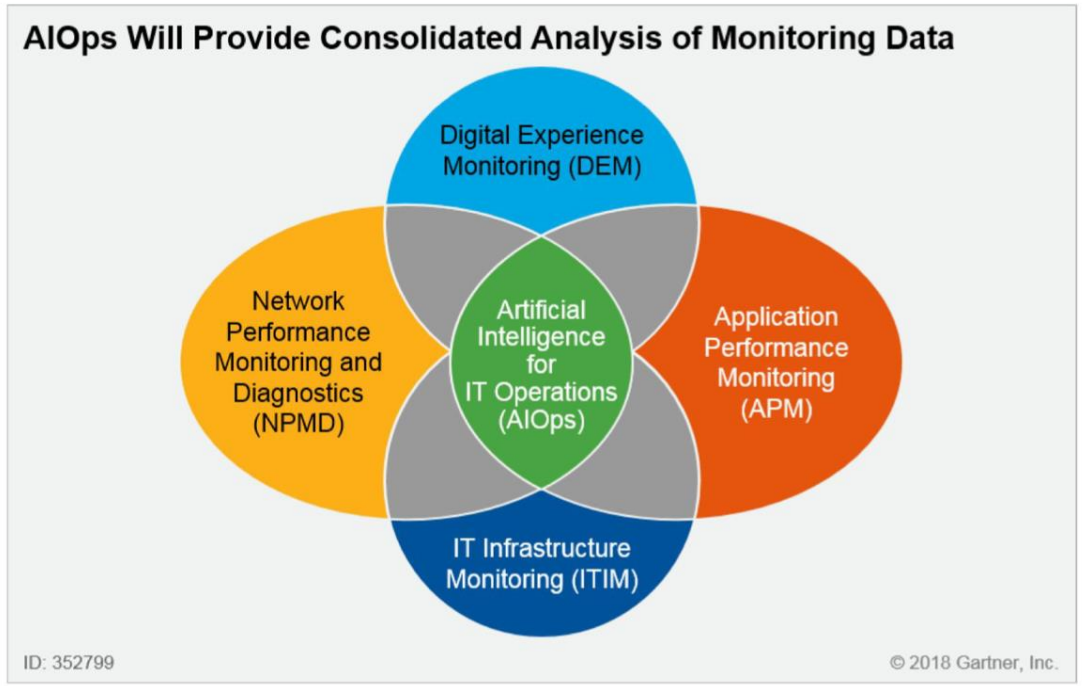
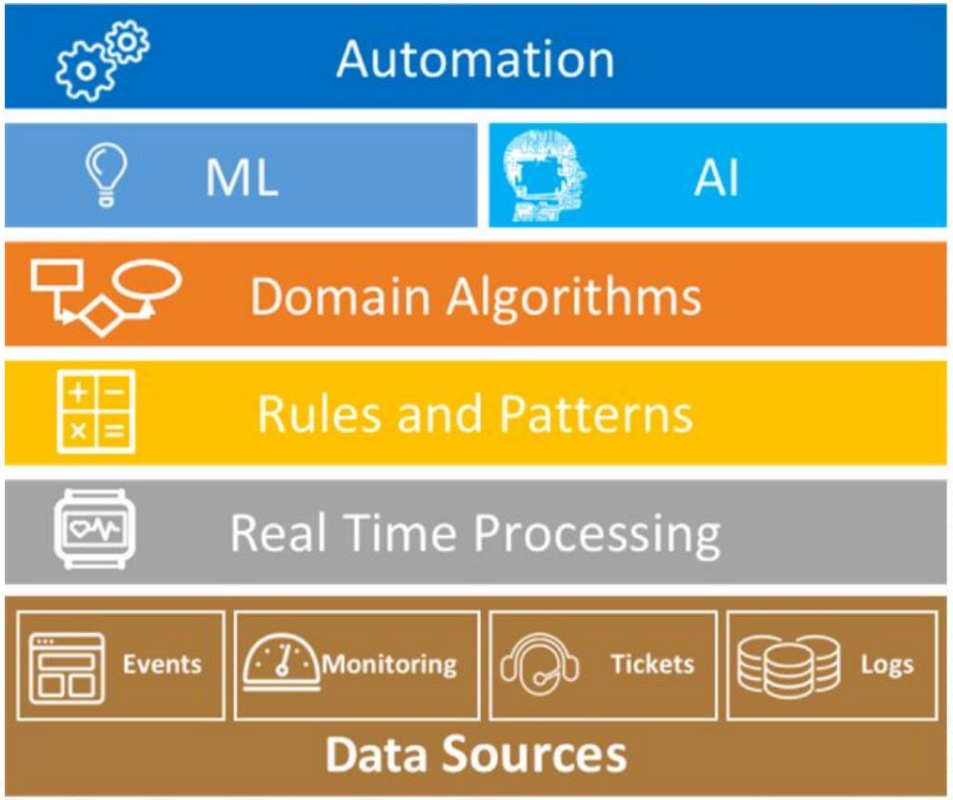


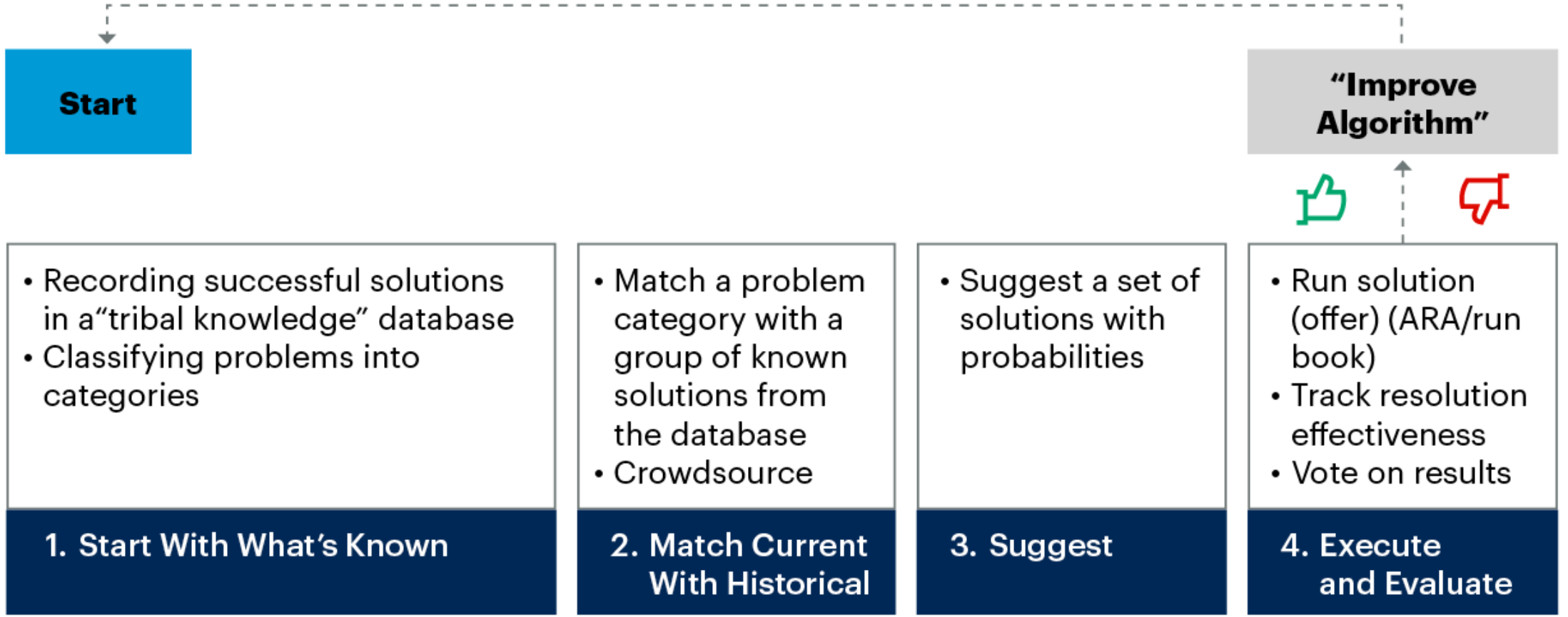
Source: Gartner (July 2018)



AIOps is the recognition that in our new accelerated, hyper-scaled digital environments, there must be a new approach that leverages advances in big data and machine learning to overcome legacy, silo-ed tool and human limitations

- Gartner

The Future of AI-Assisted Automation: Triage and Remediation of Problems



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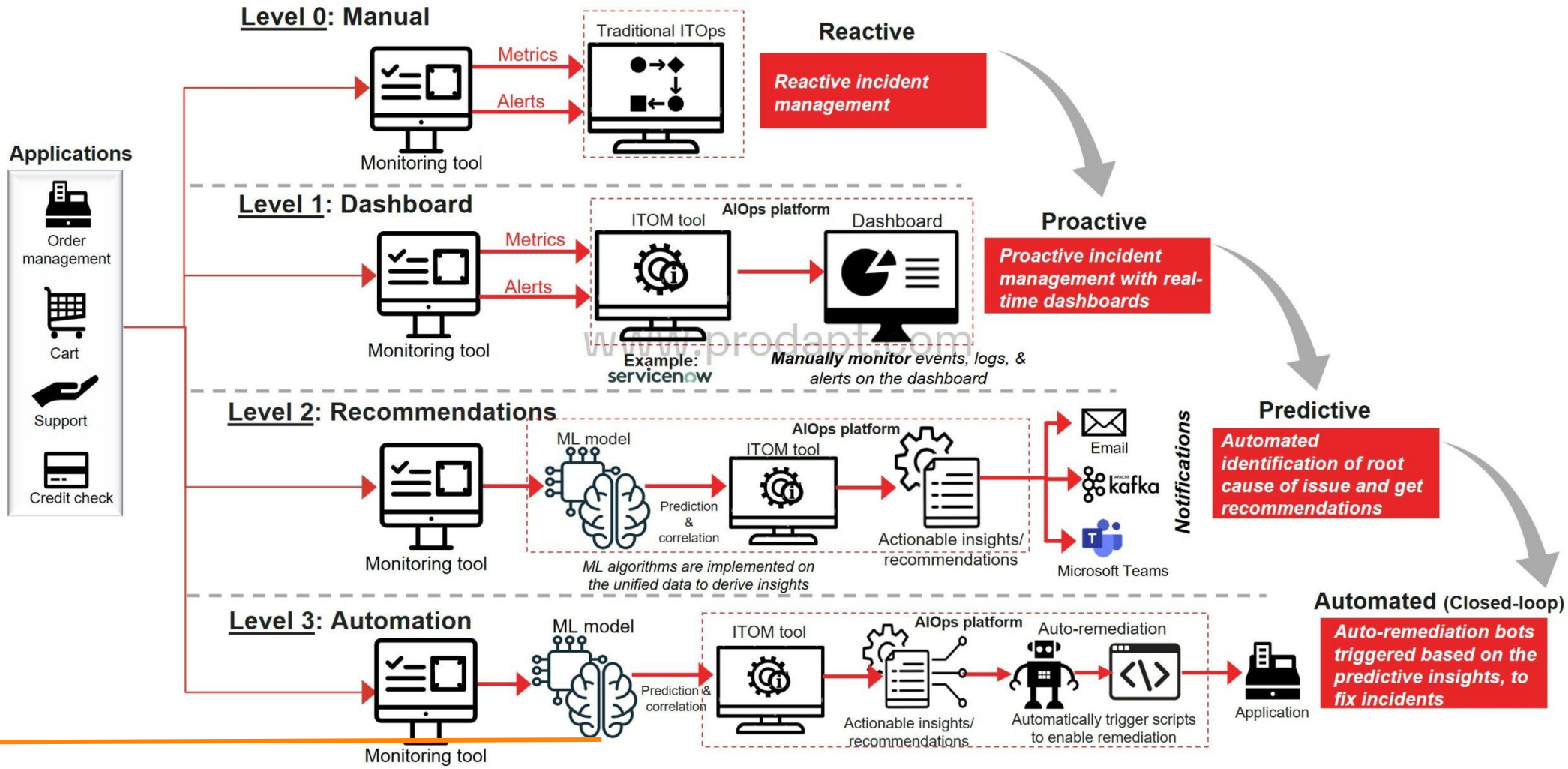
AIOps Maturity Model



Use Cases - AIOPs

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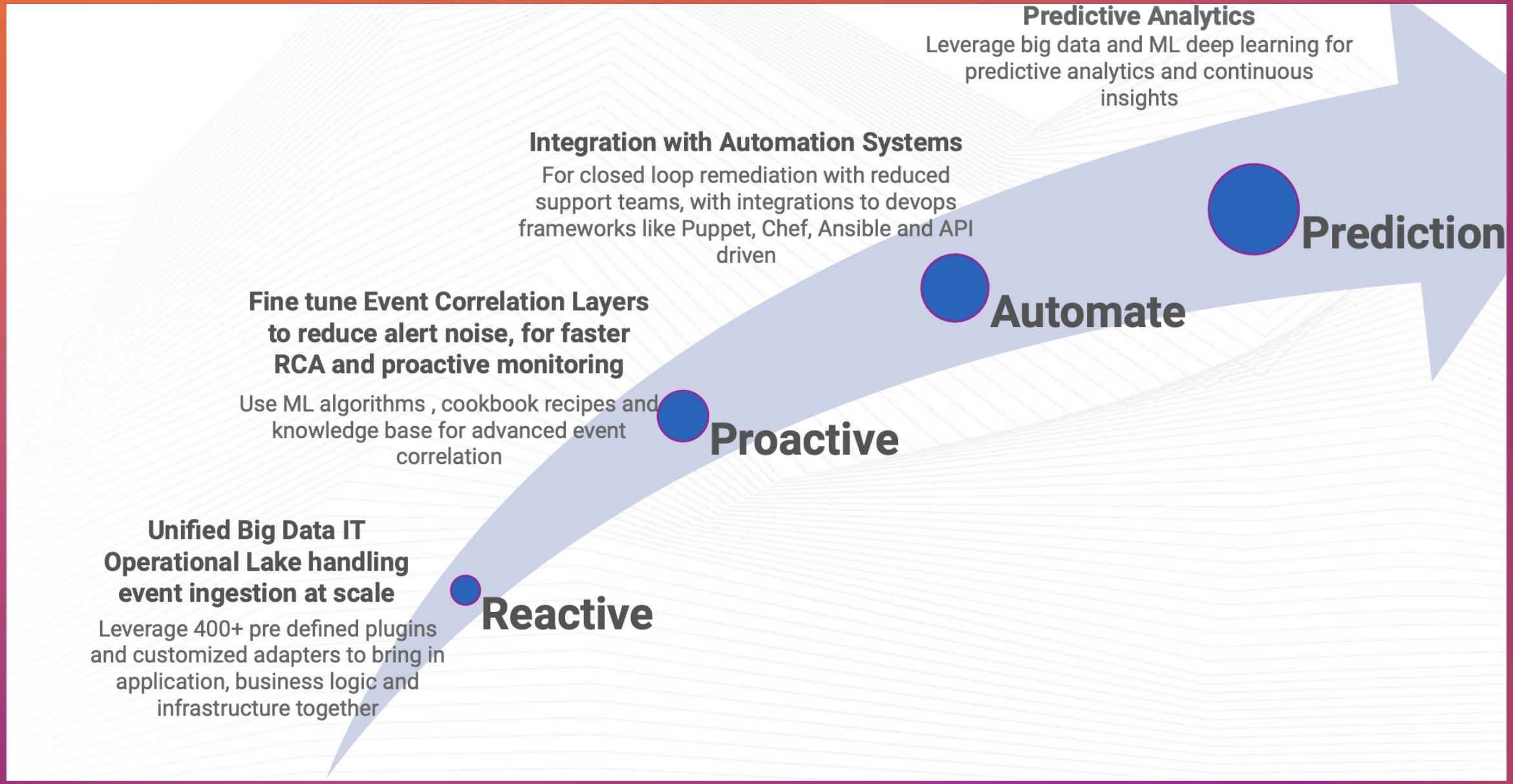
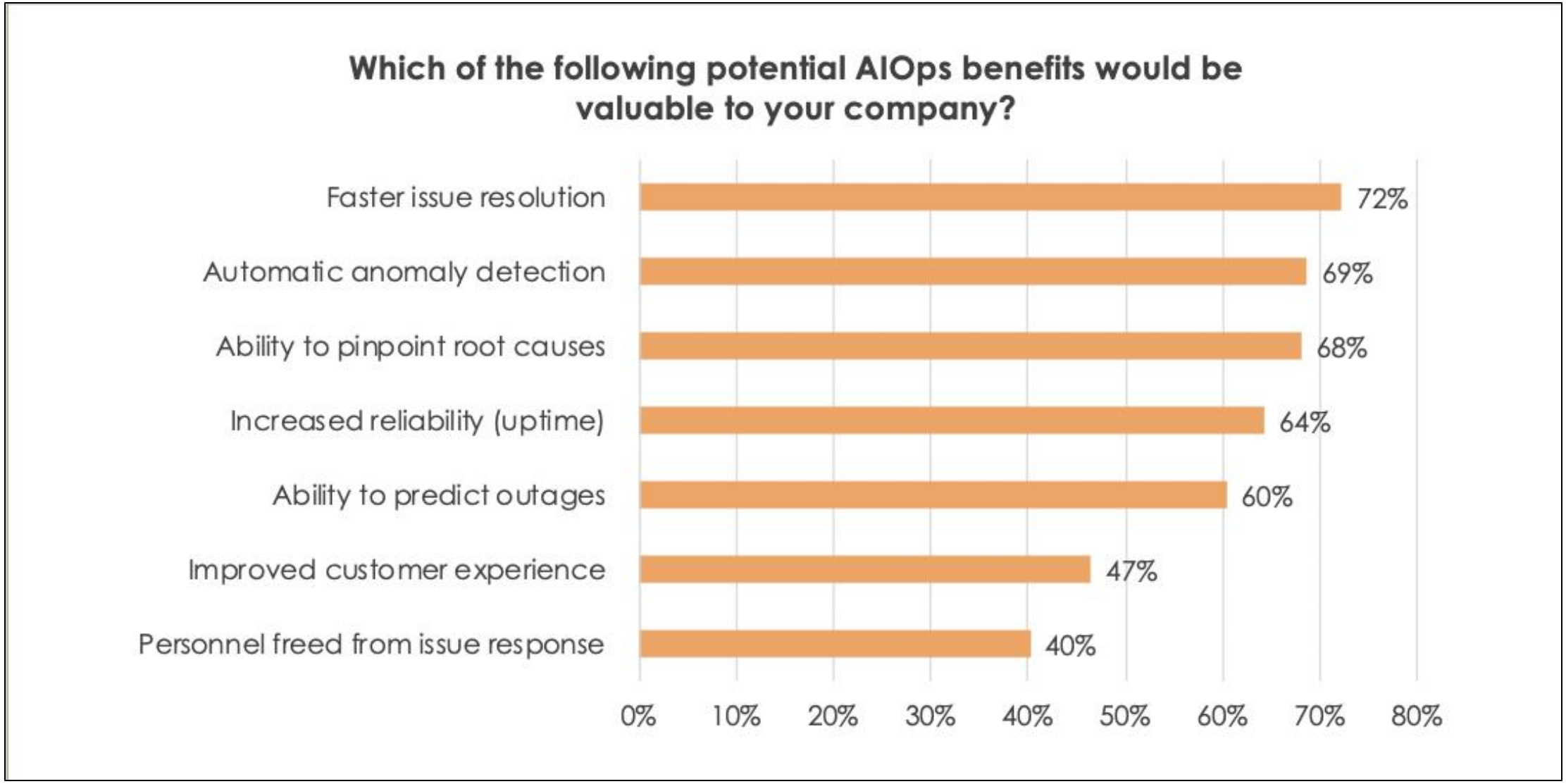
- Proactive Intelligent Alerts
- Root Cause Analysis
- Event Correlation
- Auto Remediation
- Predictive Operations

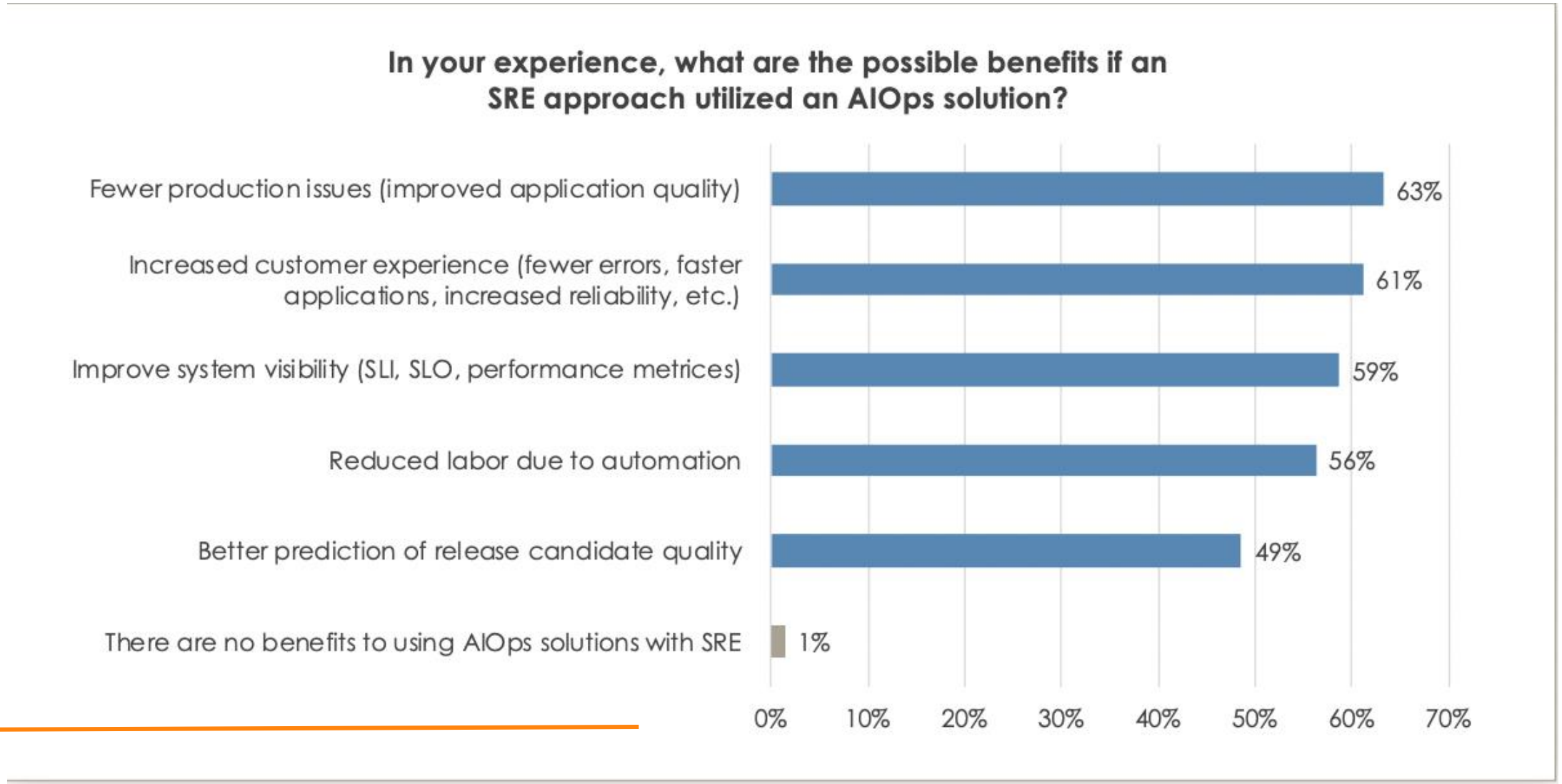
AIOps Trends 2024


Predictive Analytics
Leverage big data and ML deep learning for predictive analytics and continuous insights
Integration with Automation Systems
For closed loop remediation with reduced support teams, with integrations to devops frameworks like Puppet, Chef, Ansible and API driven
Prediction
Automate
Fine tune Event Correlation Layers to reduce alert noise, for faster RCA and proactive monitoring
Use ML algorithms , cookbook recipes and knowledge base for advanced event correlation
Proactive
Unified Big Data IT Operational Lake handling event ingestion at scale
Leverage 400+ pre defined plugins and customized adapters to bring in application, business logic and infrastructure together
Reactive

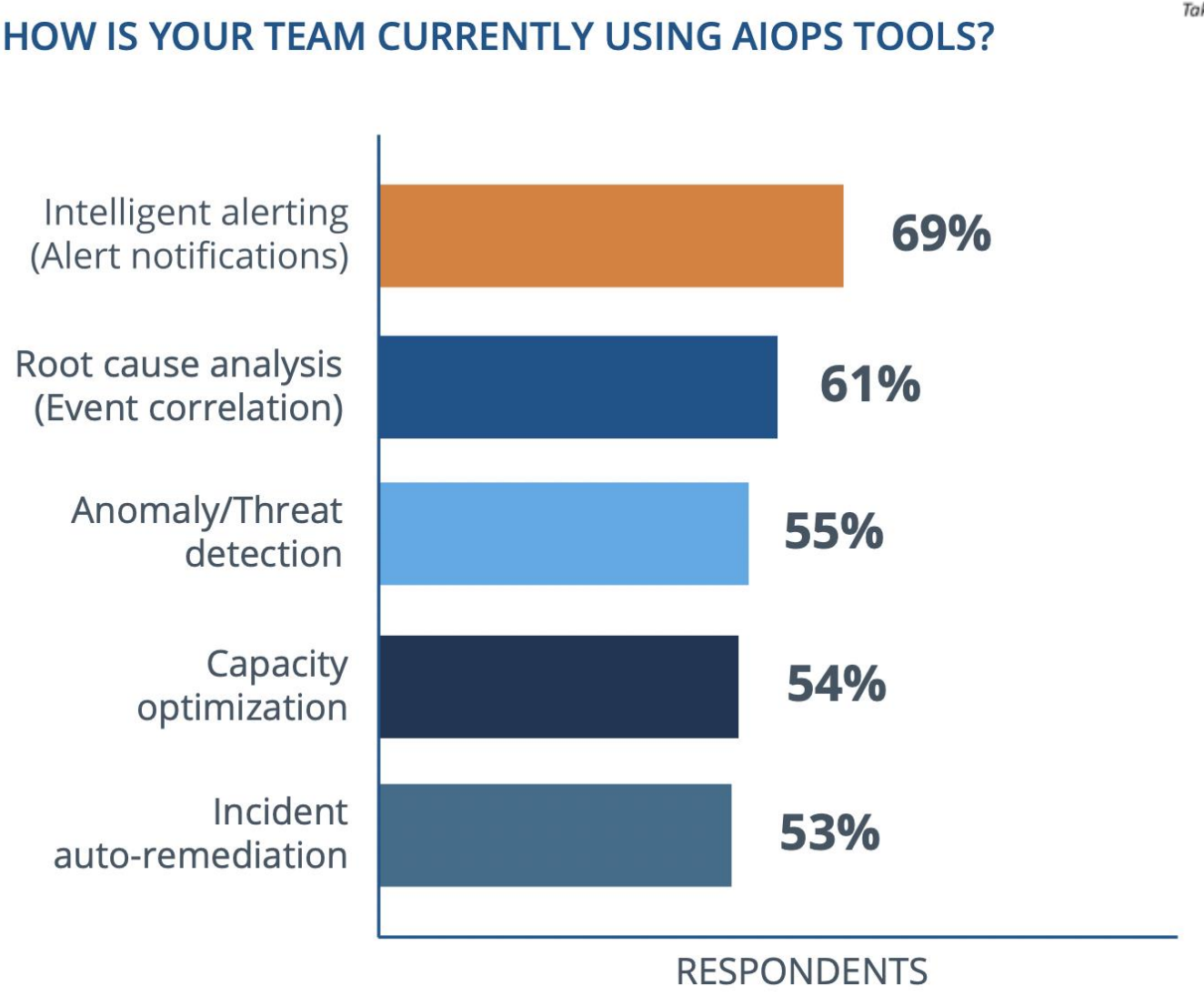
Potential AIOPs Benefits



SRE using AIOPs Solution

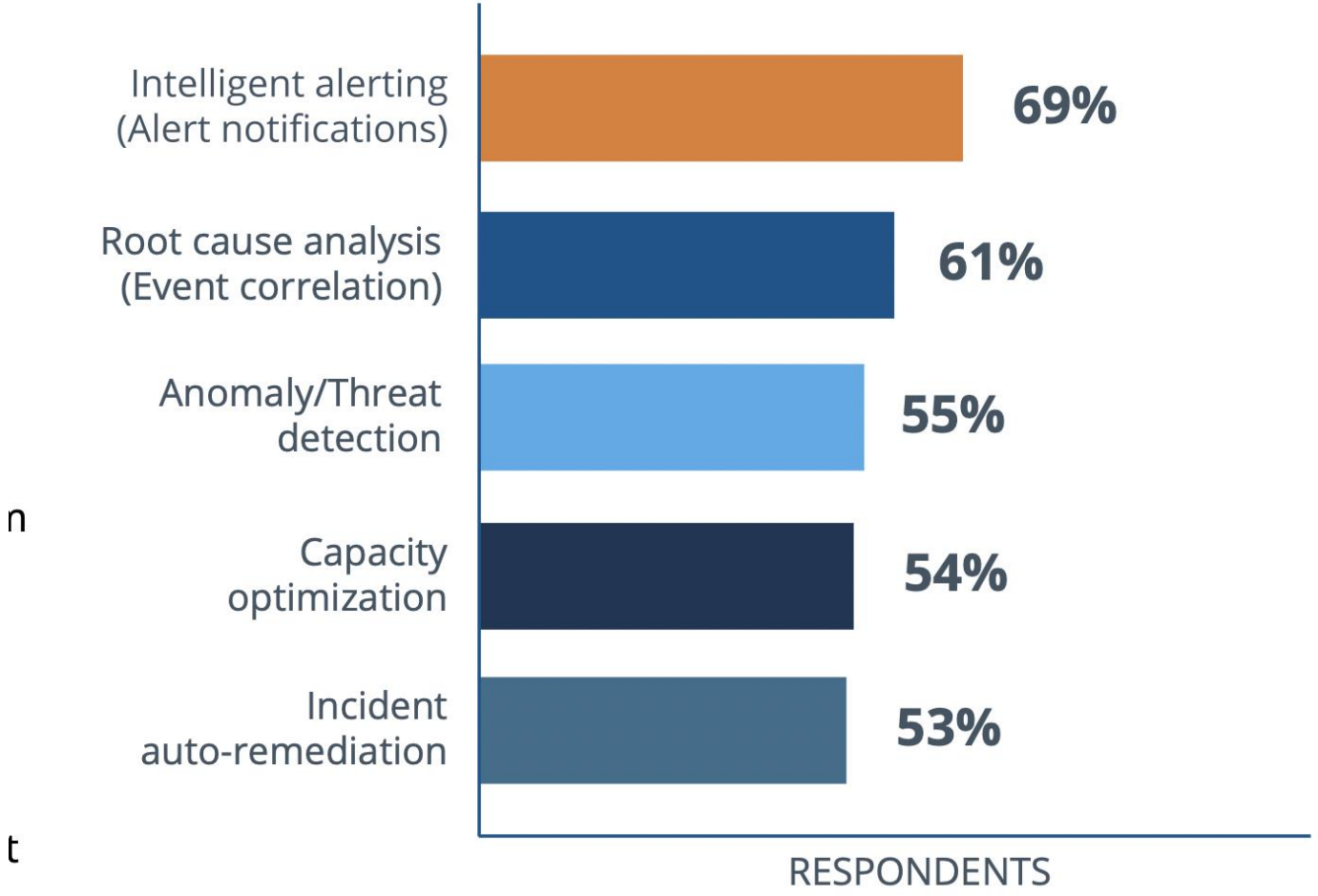


How is your team currently using AIOps Tools?

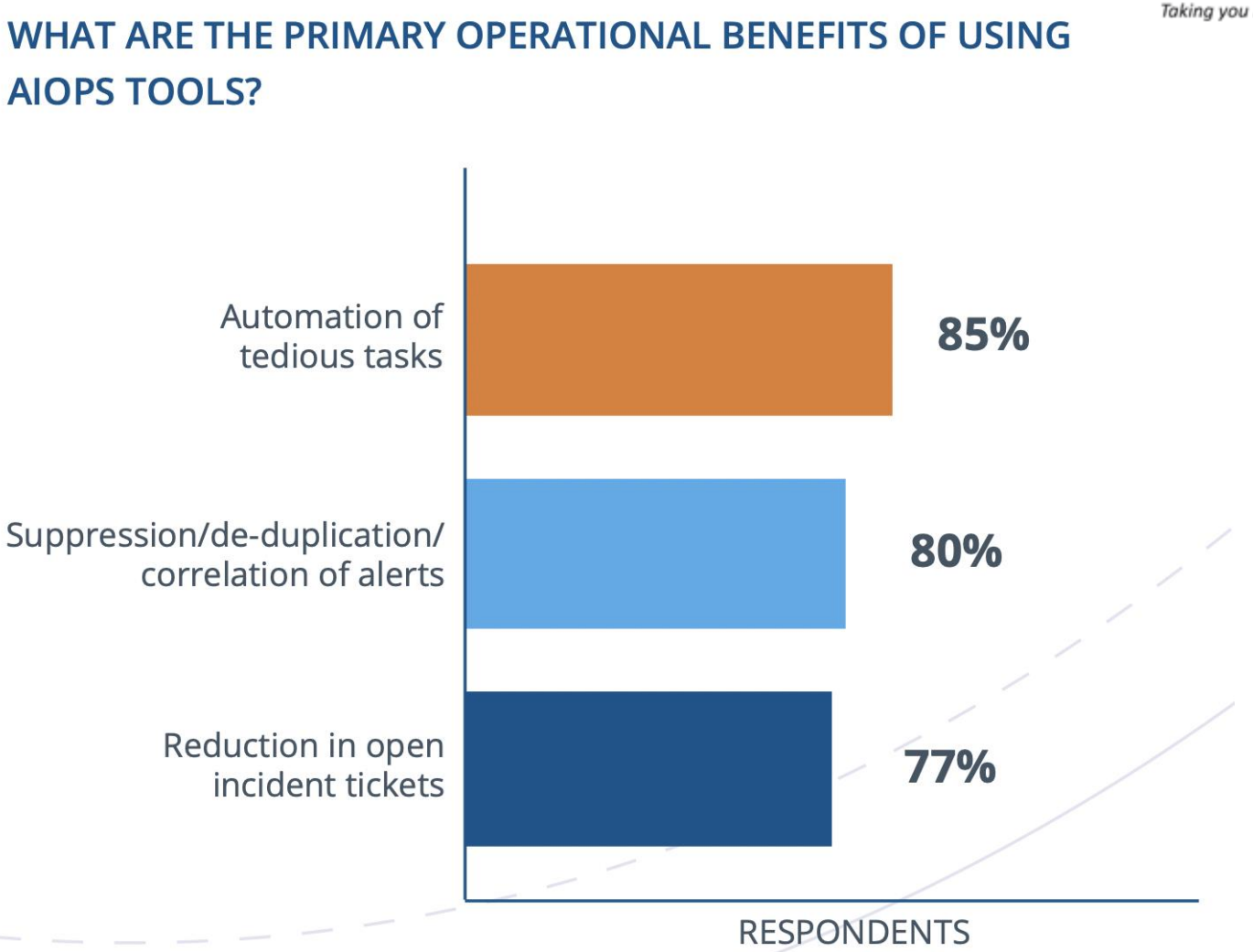


How is your team currently using AIOps Tools?

HOW IS YOUR TEAM CURRENTLY USING AIOPS TOOLS?



Primary Operational Benefits of Using AIOps Tools



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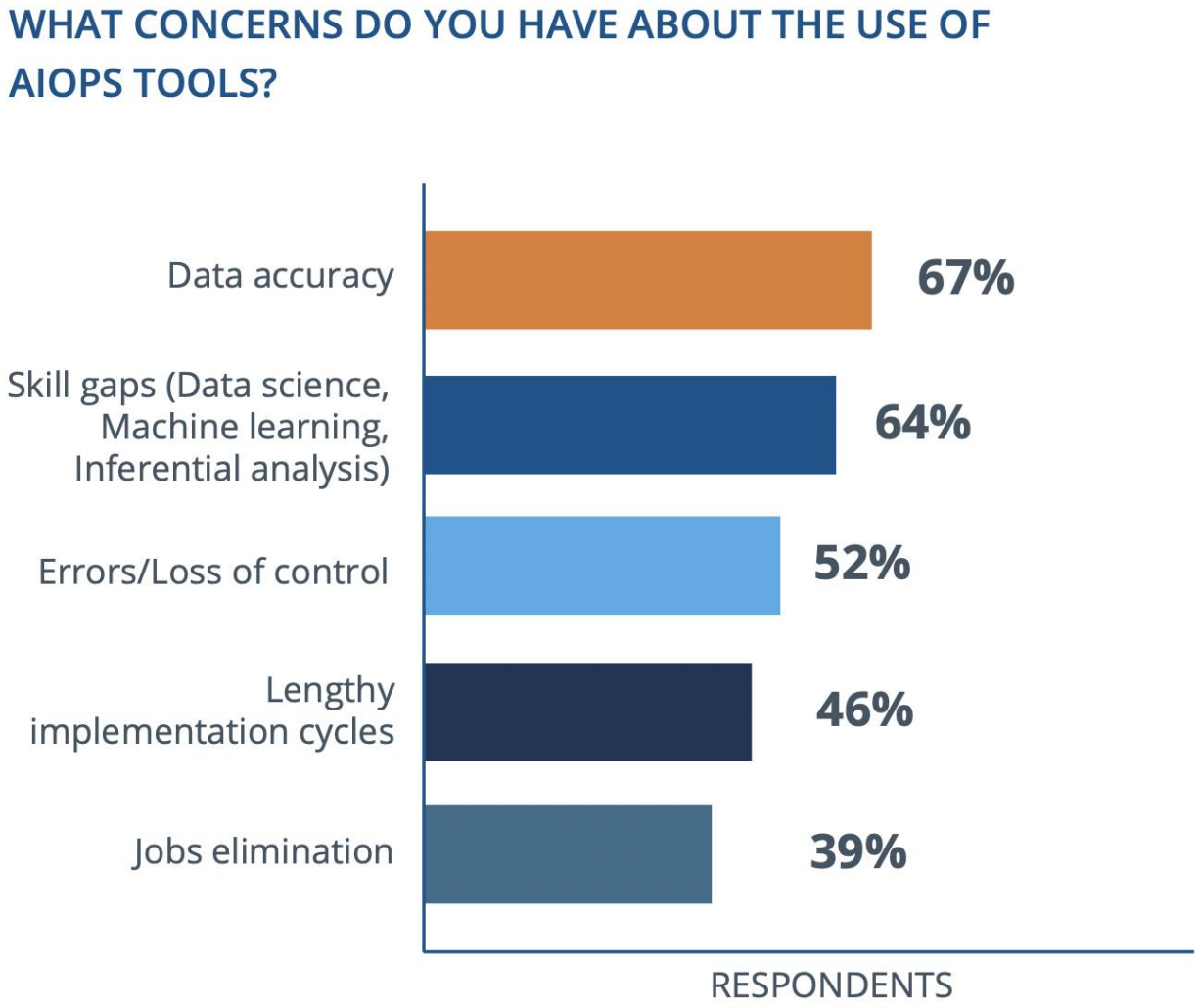
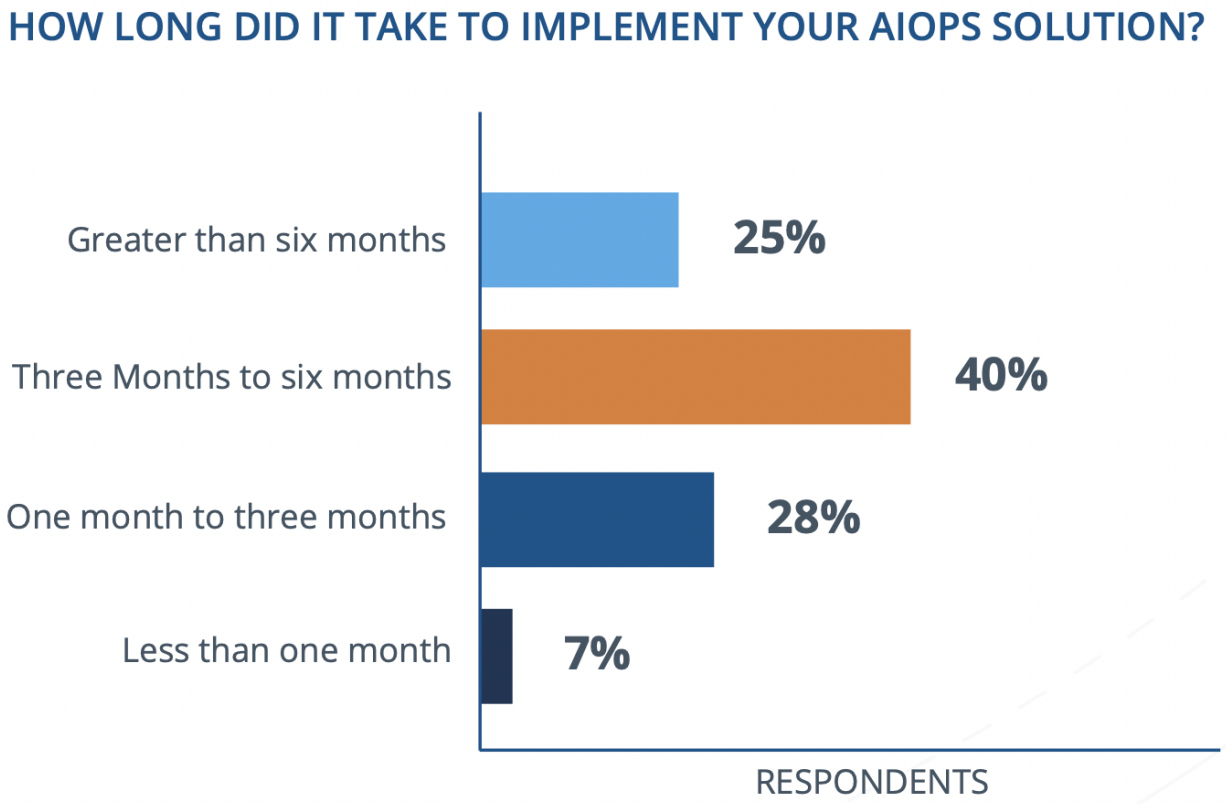
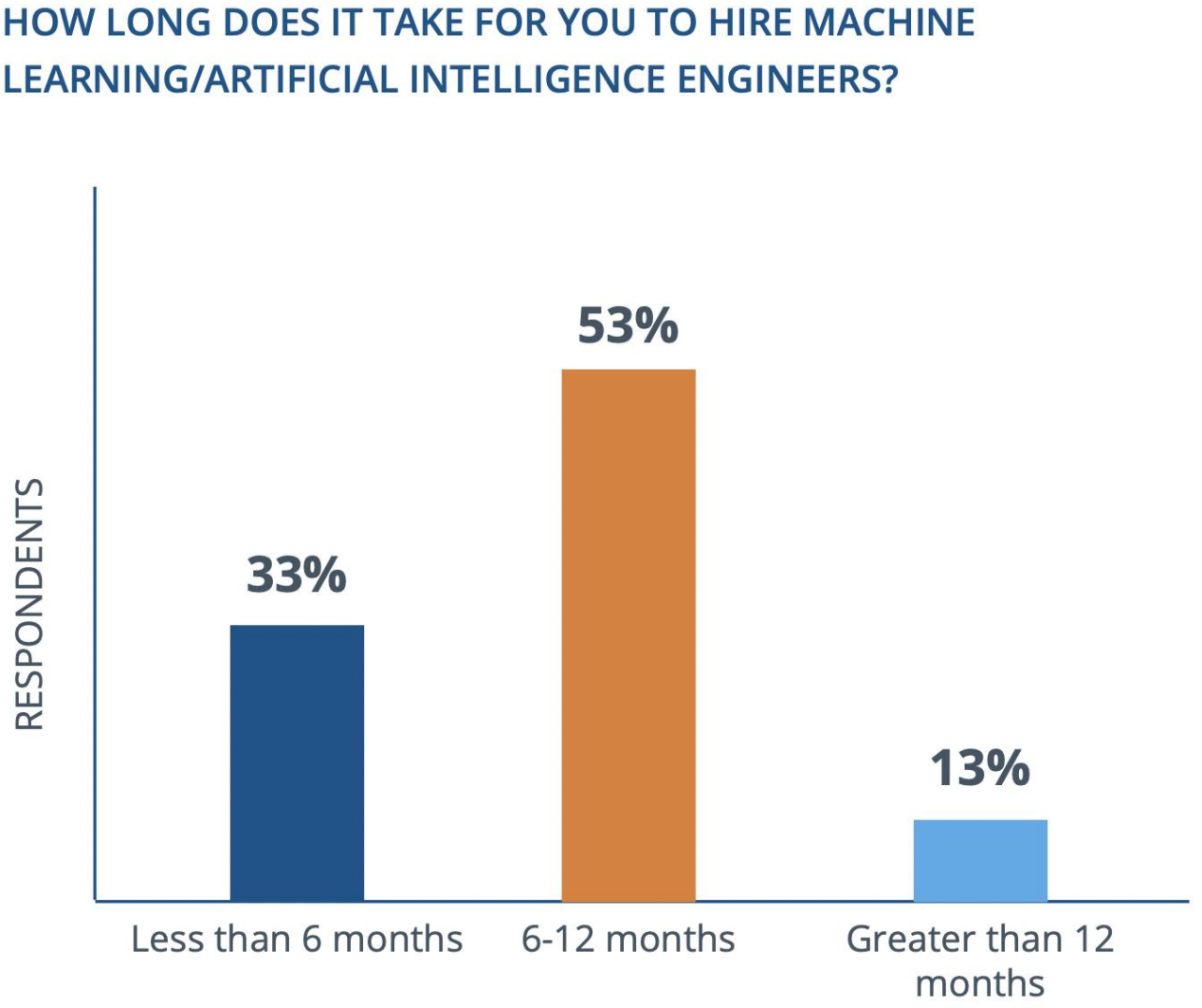
What concerns do you have about AIOps Tools



How long did it take to implement AIOps Solution



How long does it take you to hire?



Practical Implementation Strategies

Use case - Auto Remediation

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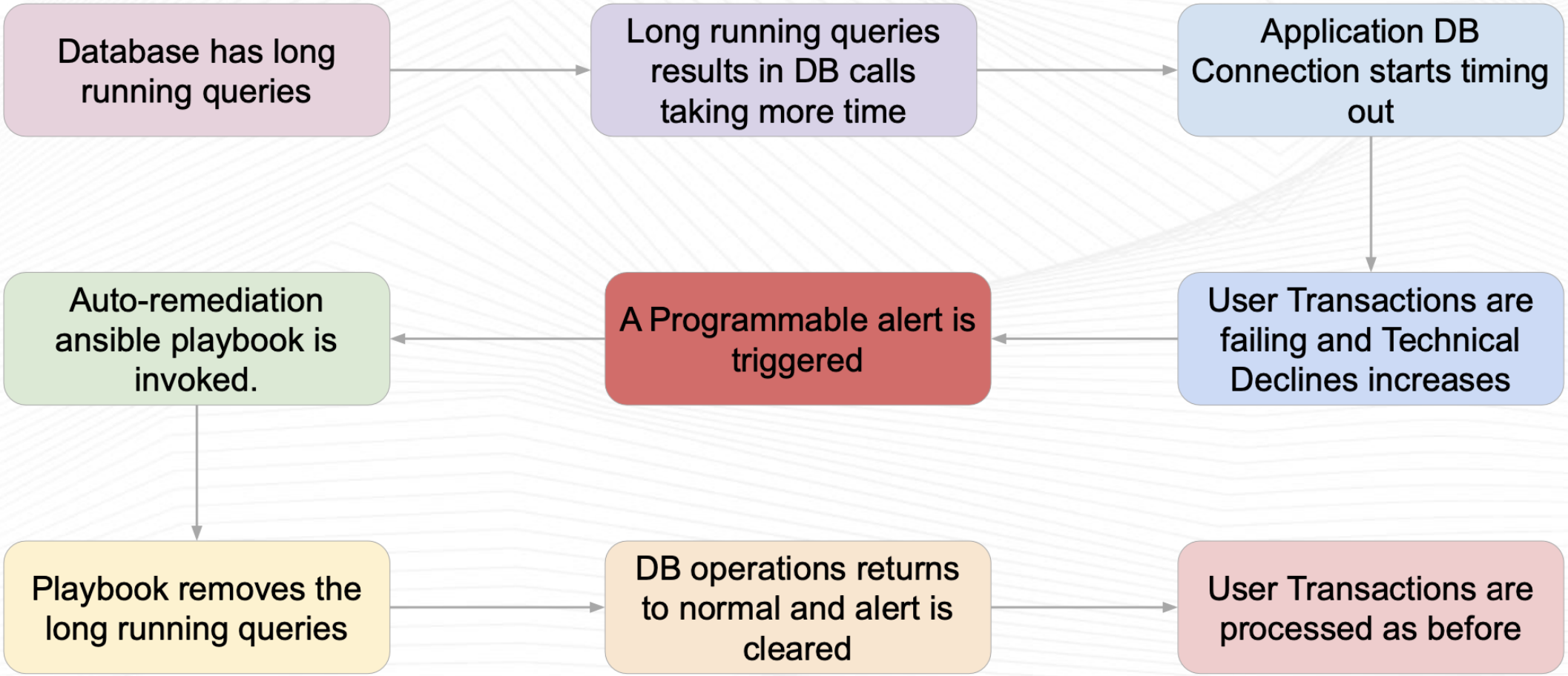
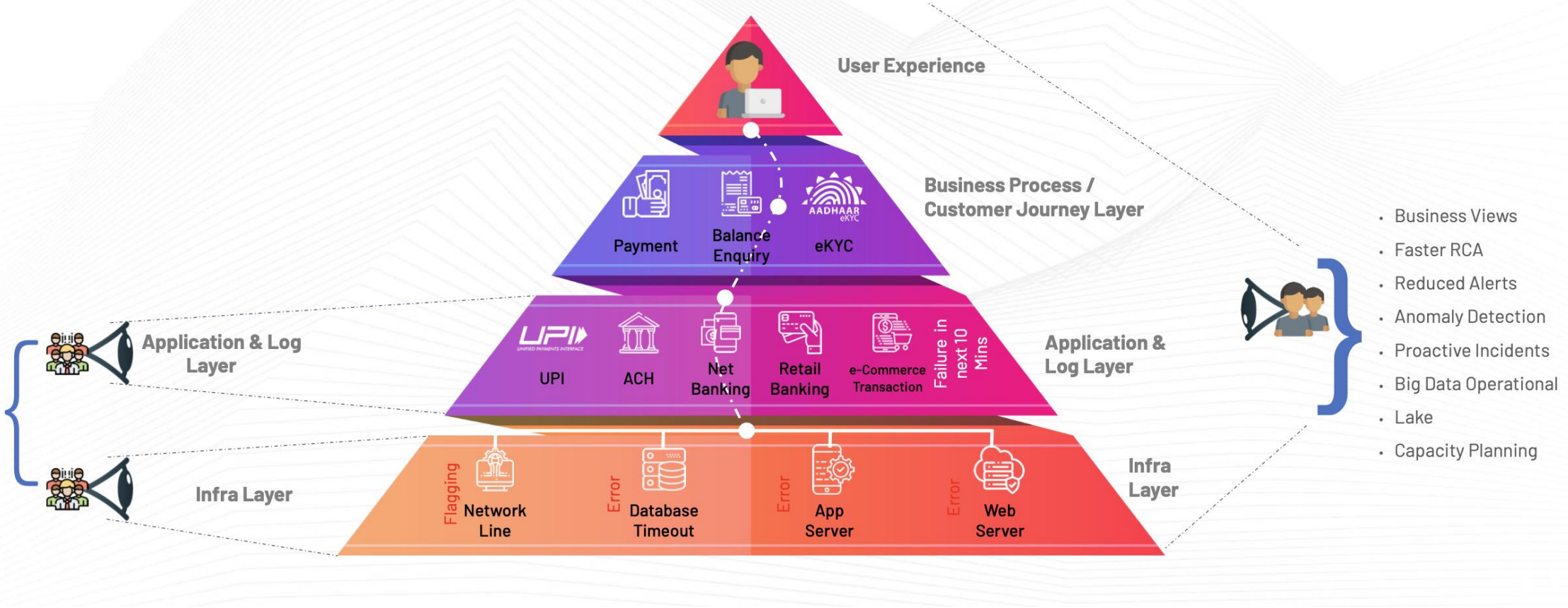
- Lead Indicators (Volume, Failures and TAT) are collected from the application
- Golden signals (Metrics that matters) are collected from all dependent infrastructure components - Server, App Server, Web Server, Database, Network, Storage etc.
- Programmable Alerts with Auto-remediations are configured for various lead indicator and golden signals

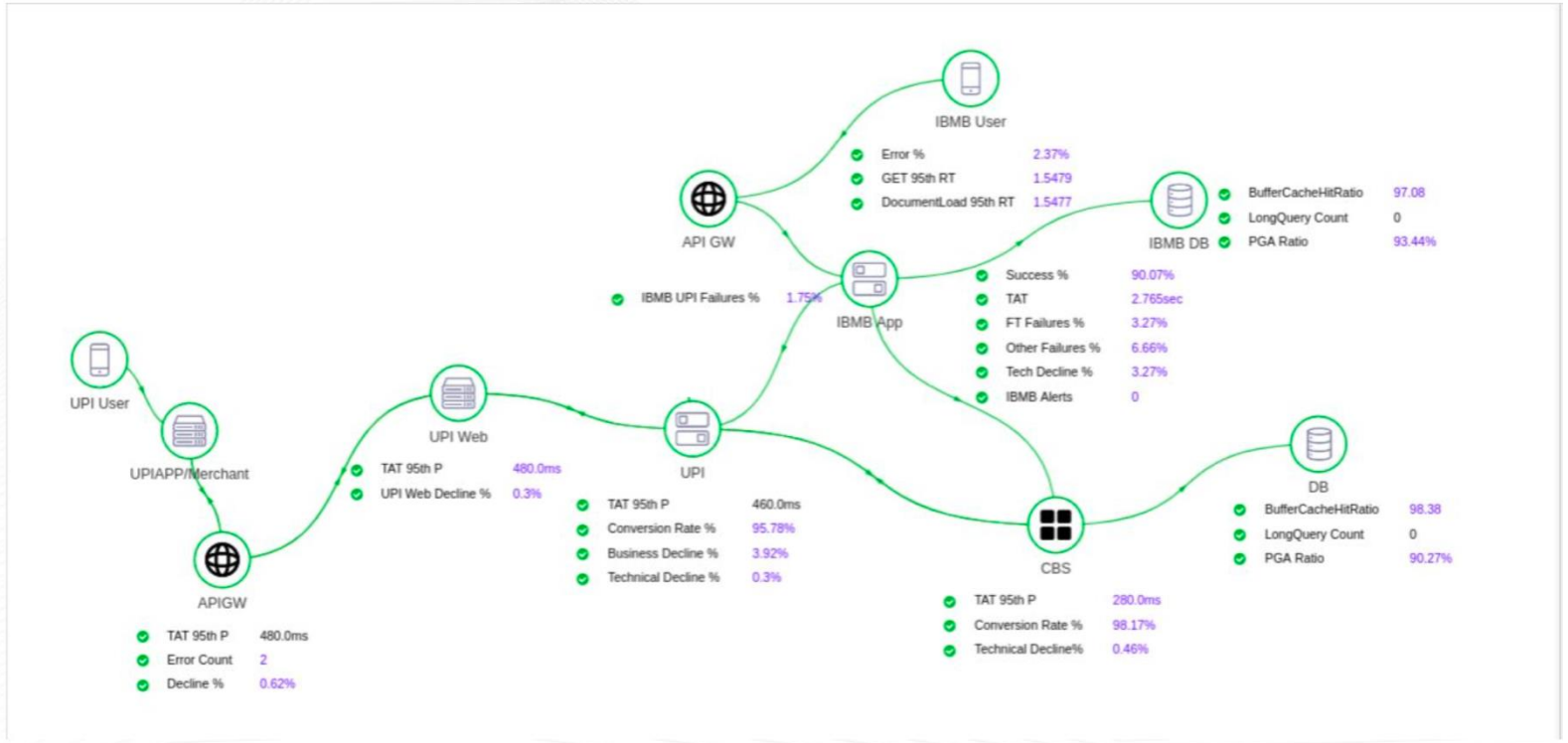


Overall Understanding of the Layers



Real Time Use Case

IBMB Application Delivery Infrastructure



Observability Maturity

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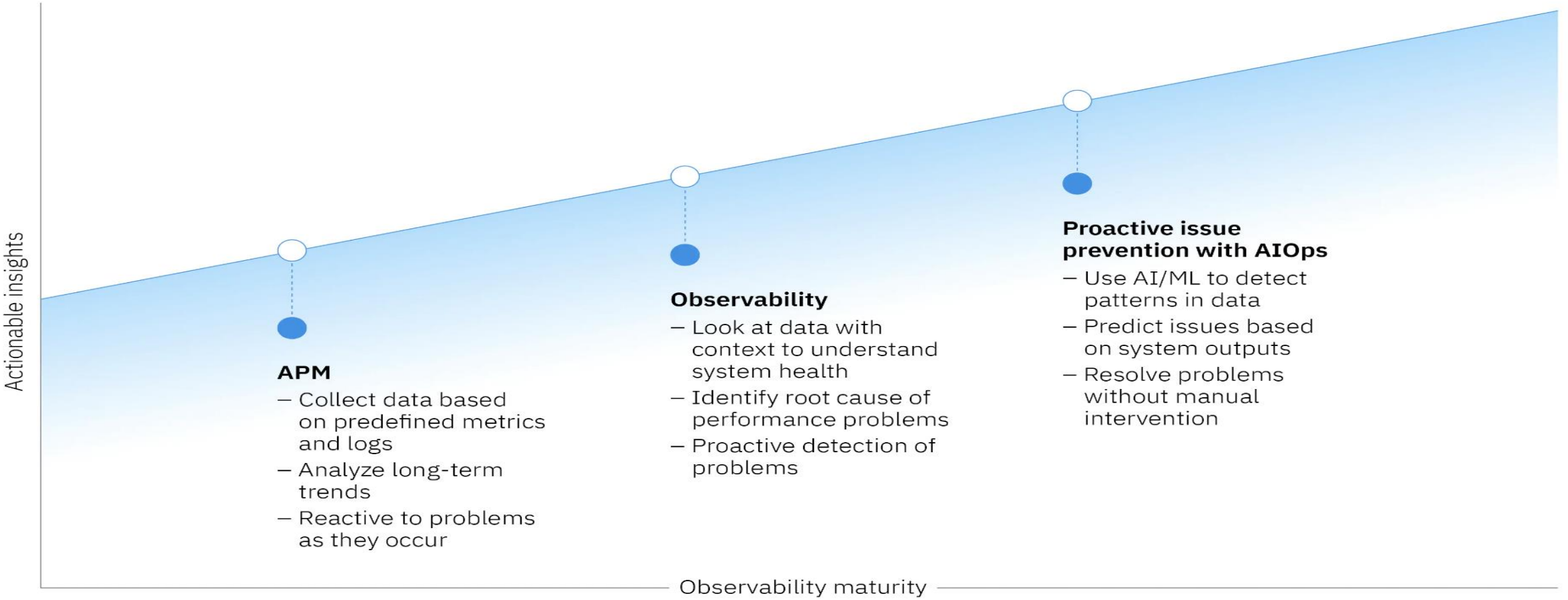

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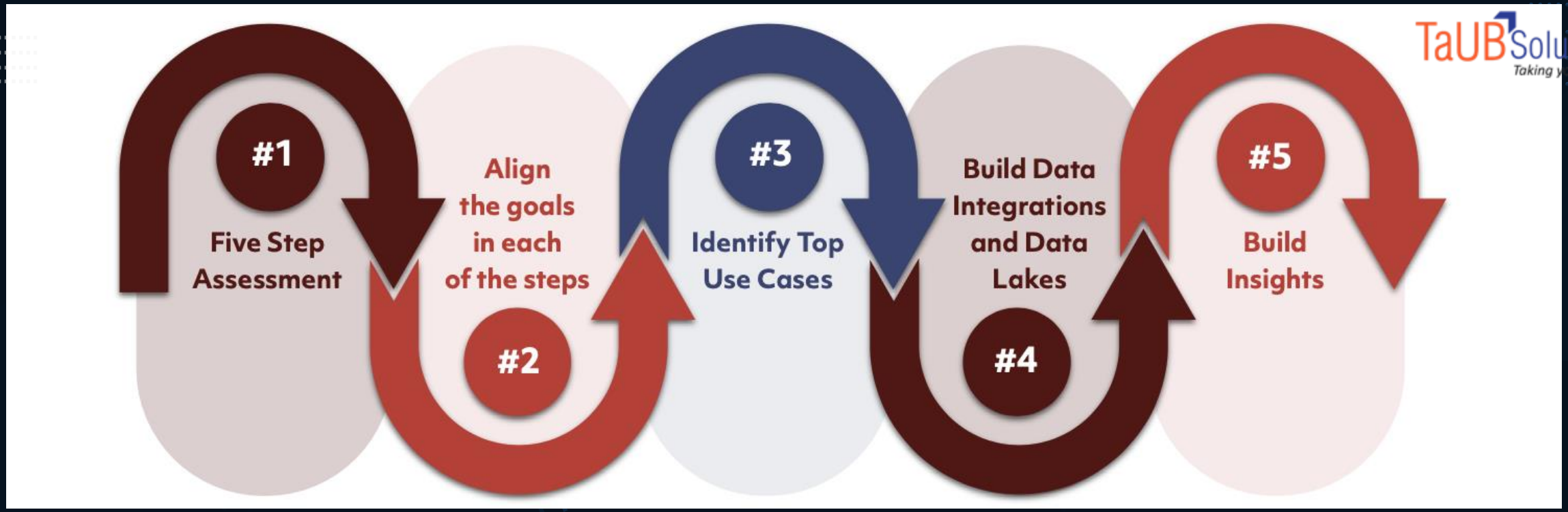
Key Challenges in Implementing AIOps

Case Studies and Best Practices



AIOps Roadmap

Assessment

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Descriptive: Descriptive assessments can be used to identify problem behaviors, to track progress over time, and to evaluate the effectiveness of interventions

Diagnostic: A diagnostic assessment is a type of assessment that is used to identify strengths and weaknesses in a particular area

Predictive: A predictive assessment is a type of assessment that is used to predict future outcomes.

Prescriptive: Prescriptive assessment is a type of assessment that is used to prescribe specific interventions or instruction.

Automation: Automation is the process of using AI and ML algorithms to automate tasks and interventions deciphered in the above steps.

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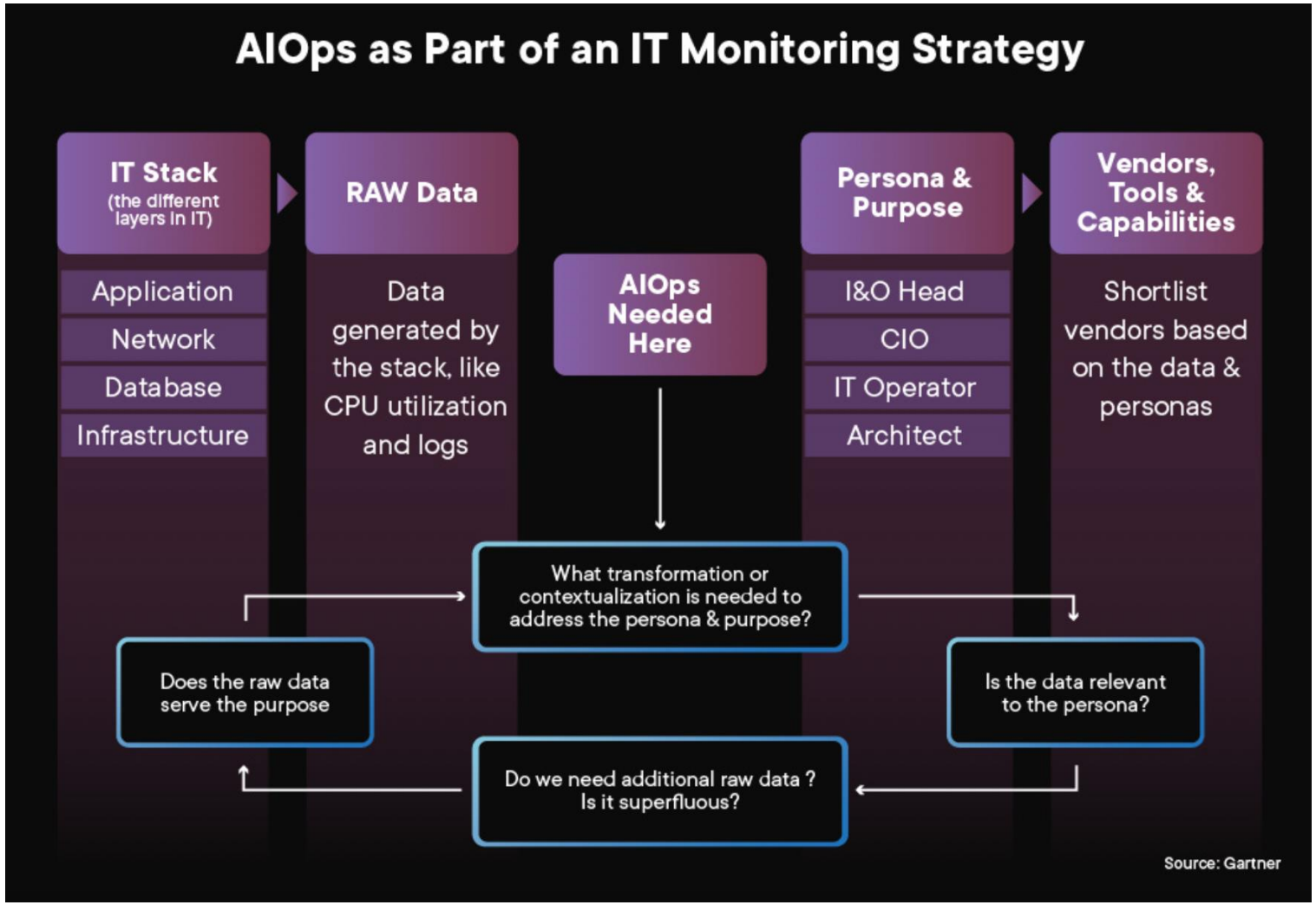
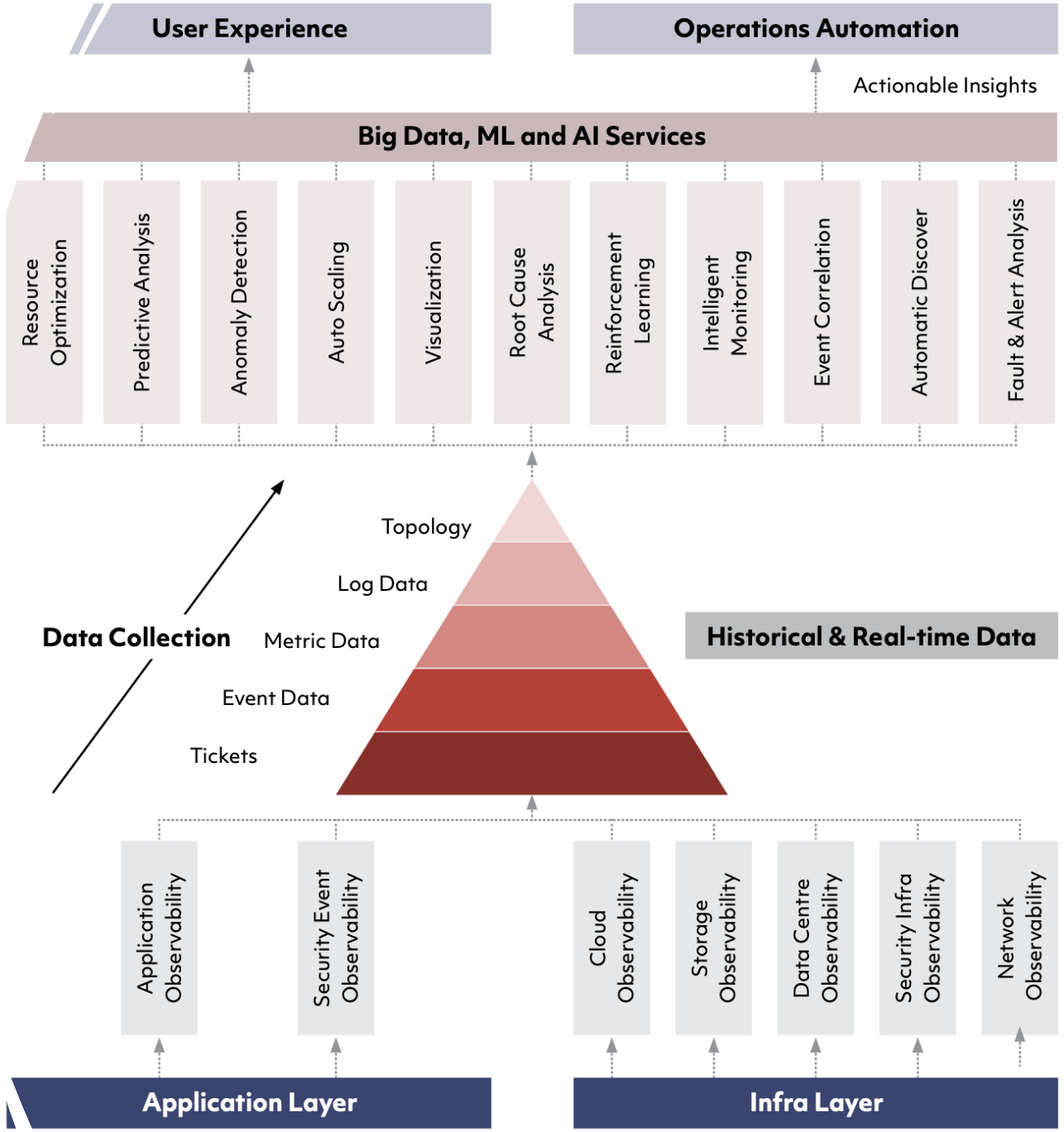
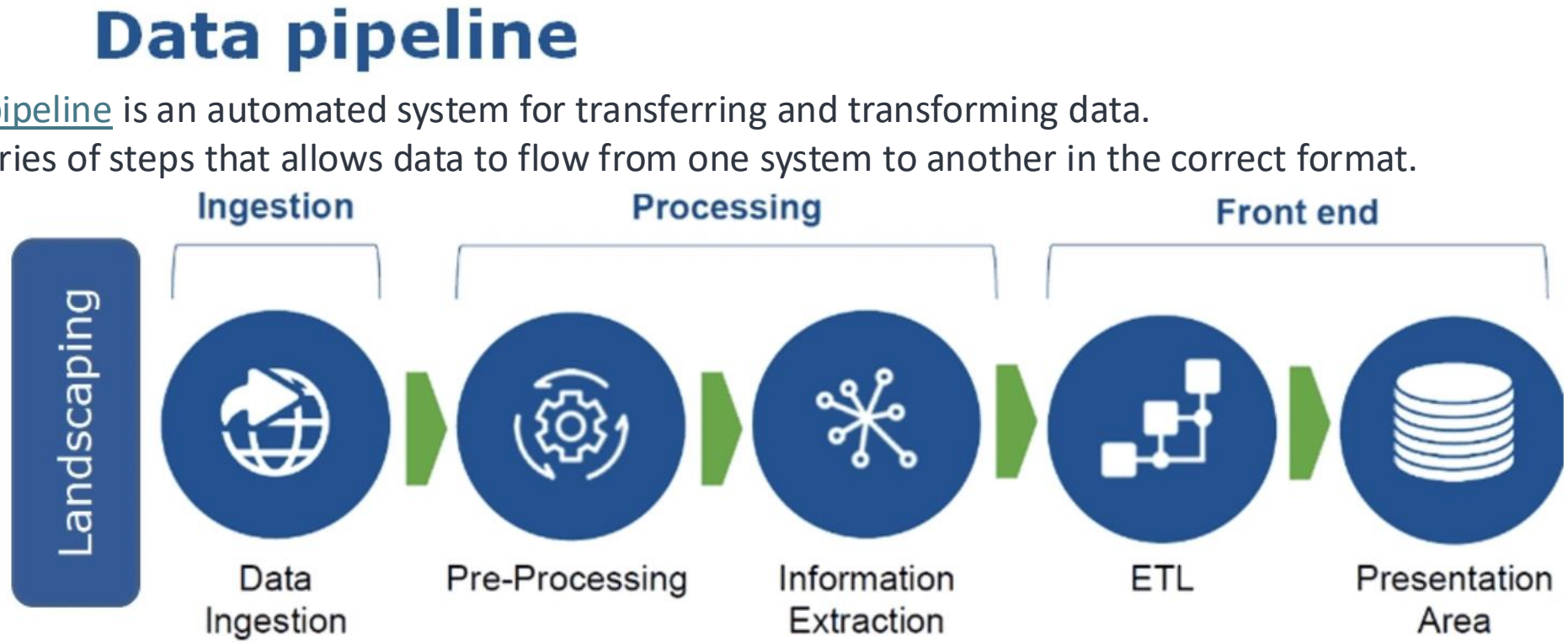
How do you Perform?



End to End Tech Stack Framework



Data Pipeline Architecture



A data pipeline is an automated system for transferring and transforming data.
It is a series of steps that allows data to flow from one system to another in the correct format.

A data pipeline architecture is the design and implementation of the code and systems that copy, cleanse, transform, and route data from data source systems to destination systems.

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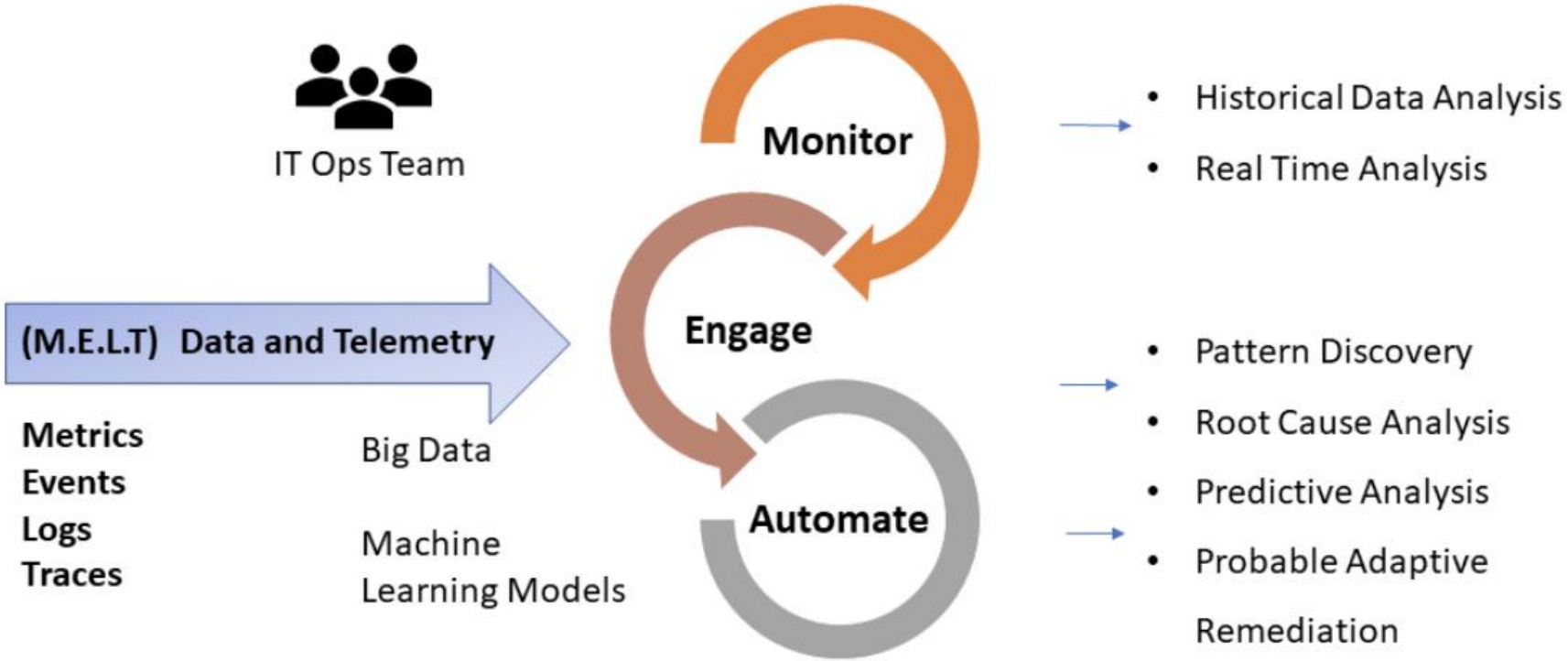
AIOps – Artificial Intelligence for IT Operations



Functions of AIOps

Data Ingestion → **Topology** → **Correlation** → **Recognition** → **Remediation**

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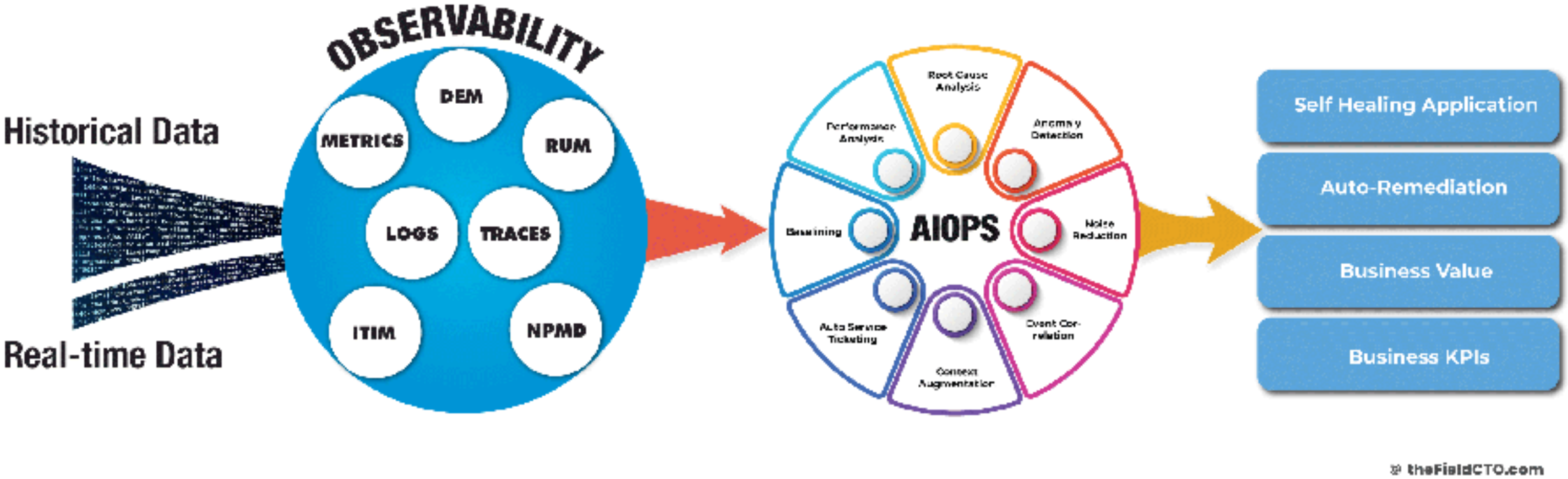
Enhancing Observability with AIOPS



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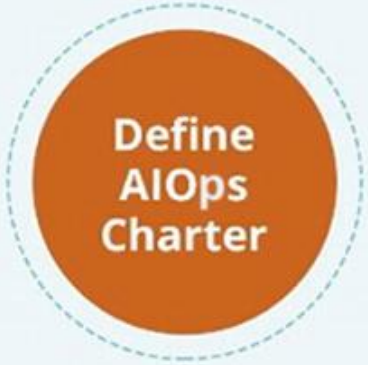
Use Cases and Challenges

Step 1



- Define AIOps objective.
- Funding and approval from leadership

Step 2

- Align Project Manager and SMEs from tools & process.
- Establish Governance Mechanism.

Step 3

- Define AIOps implementation scope.
- Define AIOps Use cases and KPIs.

Step 4

- Define data sources for AIOps Use Cases and Scope.
- Define integration method and techniques.

Step 5

- Define AIOps system.
- Validate Data Source and test integrations.

Step 6

- Configure ML Algorithms and

Step 7

- Integrate observe layer with service

Step 8

- Phase implementation

Step 9

- Measure defined KPIs

Step 10

- Share success with team

How to Evaluate an AIOps Tool

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The following evaluation criteria can be used to select an AIOps tool:

Criteria to Evaluate an AIOps Tool	Low	Moderate	High
1. Core Functionality: a. Monitoring b. Anomaly Detection c. Root Cause Analysis d. Automated Remediation e. Predictive Analytics f. Integration With Existing Infrastructure	✗	✗	✓
2. Performance at Scale: a. Ability to analyse large volumes of data in Real-Time	✗	✓	✗
3. Ease of Deployment and Use: a. UI/IX, Workflow b. Ease of Integration with Existing Infrastructure, Systems and Processes c. Ability to Support Cloud-Native Environments, Containerized Applications, and Hybrid Infrastructure	✗	✗	✓

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IT Service Analytics Insights

Roles/ Personas

- Operation Managers
- Support Teams
- End Users

Use Cases

- SLA Analytics
- Change Analytics

Challenges

- Identifying high risk changes
- Tracking SLA scores
- Correlating Operations Data & Process Data

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Applications and Infrastructure Insights

Roles/ Personas

- Administrators
- Architects
- Procurement Team
- App Users
- CIOs
- CFOs

Use Cases

- Anomaly Detection
- Log Insights
- Capacity Insights
- Smart Alerts

Challenges

- Cost Optimization
- Root Cause Identification
- Correlation between Components
- Multiple Analytics Tools
- Lack of Unified View

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Digital Experience Analytics Insights

Roles/ Personas

- End Users
- CFOs, CIOs
- Procurement Manager
- Vendor Managers
- IT Business Analyst

Use Cases

- Business Insights
- User Experience Enrichment
- CIO Initiatives
- Observability
- IT Vendor Management

Challenges

- Adverse changes
- Lack of End-user Experience
- Siloed teams
- Centralized User Experience
- Software currency
- Vendor performance

Certification

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AIOps Foundation℠

BLUEPRINT

AIOps Practitioners deliver business value to customers through applying artificial intelligence to operations, enabling DevOps and engineering teams to deliver reliable, secure application environments and software systems.

AIOps Foundation

AIOps became relevant in today's IT landscape because of rapid growth in the industry with core technologies including big data and machine learning to collect and aggregate large amounts of data quickly and effectively.

AIOps in the Organization

Embarking on an AIOps journey in an organization allows AIOps to interact and enable other practices and technical domains together in an enterprise IT landscape.

Core Technologies: Data

AIOps relies on core technologies to replace manual processes. AIOps will implement AI to leverage data using numerous sources such as Big Data, Analytics and Machine Learning to create an AIOps solution.

Core Technologies: Machine Learning (ML)

AIOps relies on two core technologies: Big Data to generate important data and Machine Learning for inference, classification and prediction.

BENEFITS

Organization:
Automation, increased reliability, reduced downtime, enhanced abilities, cost effective and minimizes waste for more effective production.

Individuals:
It increases reliability and reduces noise allowing for better collaboration and improved operational capabilities.

AIOps and Operations Metrics

Being able to quantify the reliability, maintainability and performance of a system into absolute metrics is critical to effectively understanding it and improving it.

AIOps Use Cases and Organizational Mindset

AIOps has evolved from conditions such as the maturity of ML and AI, massive increases in data volumes and the ever-growing complexity of today's systems. Adopting AIOps works to solve these issues but imposes a need for shifts as to how teams approach operations.

Evaluating AIOps Impact

Understanding and tracking the performance of an AIOps solution is critical for the solution to produce the desired outcomes, as well as towards continuously improving its value to the organization.

Implementing AIOps in the Organization

Ensure that this strategy is well-documented and is shared and accepted by the various stakeholders that will be involved. Without a clear strategy, with clarity on the desired outcome, is perhaps the number one reason why an AIOps initiative may fail.

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