13% year-over-year increase in customer-facing incidents

State of Digital Operations study, 2024

58% of enterprises see anomaly detection as a key AIOps benefit

OpsRamp AIOps Study

AIOps in AWS

Choosing the Best Approach for Predictive Maintenance

Indika Wimalasuriya

Incident Management - 2024

Agenda

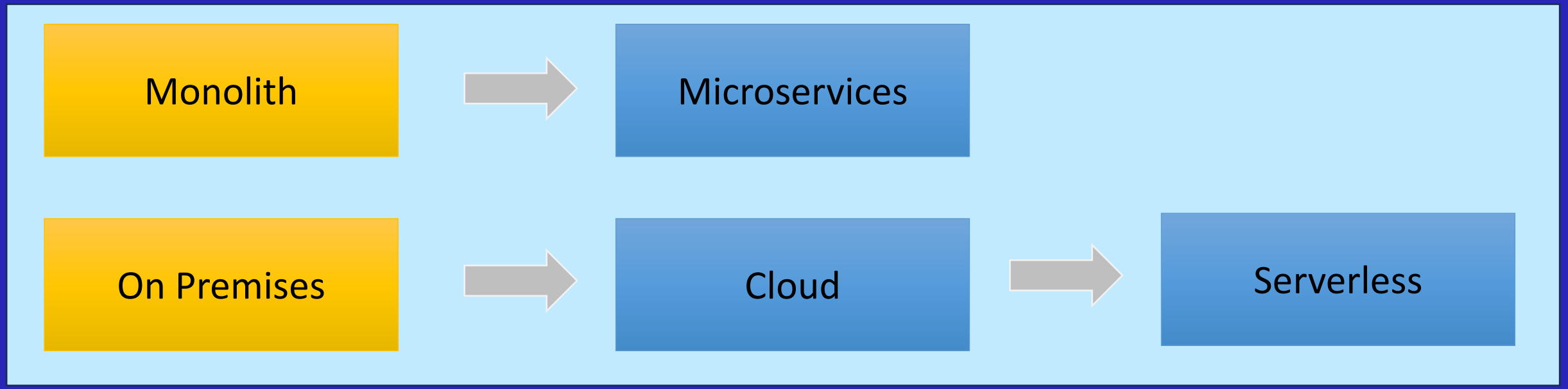
- Introduction to AIOps and Predictive Maintenance
- Observability-Based Approach
- Data Lake-Based Approach
- AIOps Tool-Based Approach
- Effective strategies for AIOps success

Quick Intro about myself

- Resides in Colombo, Sri Lanka, with my daughter and wife.
- Reliability Engineering Advocate, Solution Architect (specializing in SRE, Observability, AIOps, & GenAI).
- Employed at Virtusa, overseeing technical delivery and capability development.
- Passionate Technical Trainer.
- Energetic Technical Blogger.
- AWS Community Builder - Cloud Operations.
- Ambassador at DevOps Institute (PeopleCert).

Introduction to AIOps and Predictive Maintenance

The Challenge of Incident Management in Complex Distributed Systems

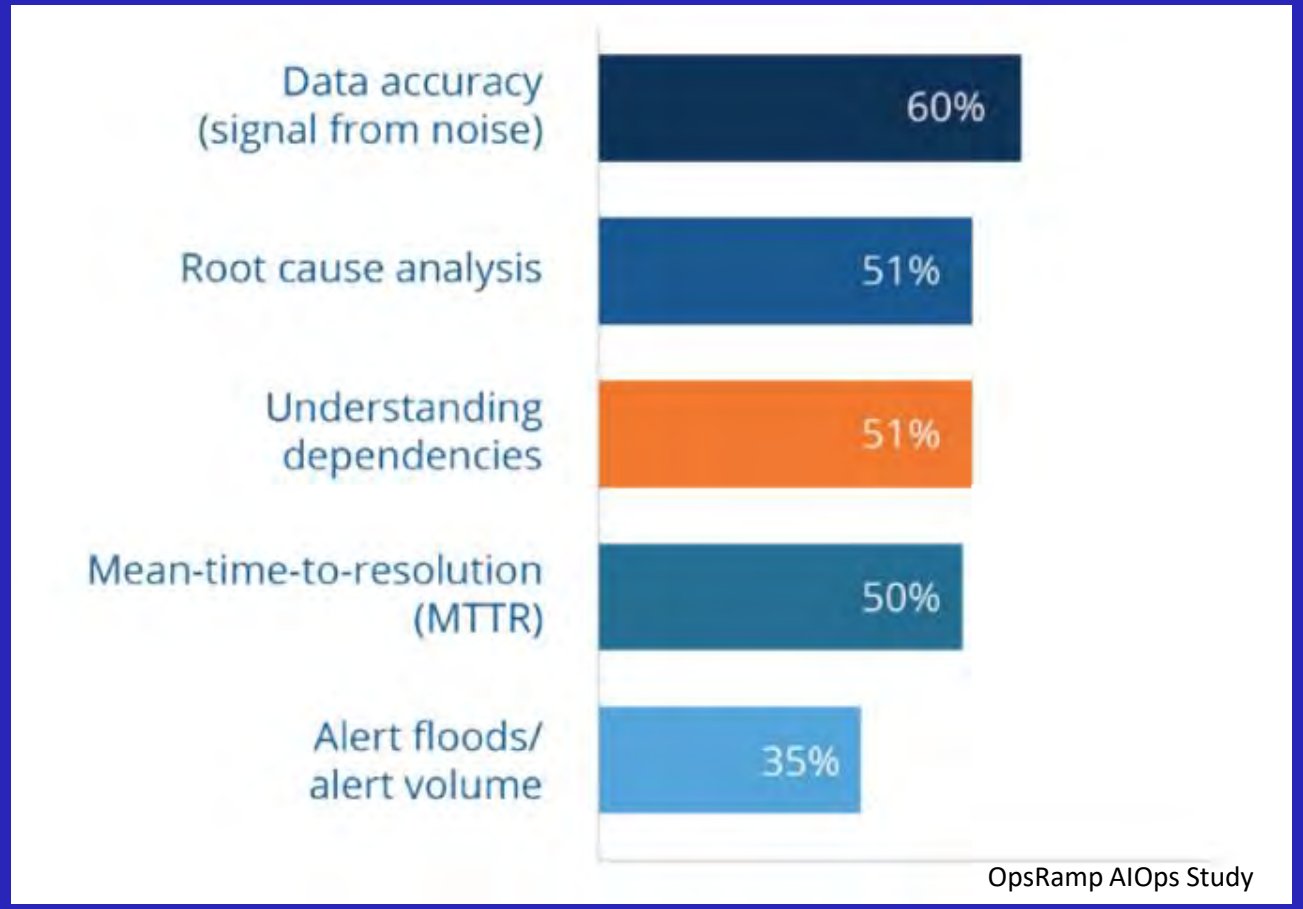


Expansion of Data Sources

Surge in Data Volume

Exponential Rise in Failure Scenarios (dependencies)

Top Incident Management Challenges in Enterprises



OpsRamp AIOps Study

Amplifying reliability with AIOps Implementation

Customers

Observability

- Intelligent Alerting (Anomaly detection /Forecasting)
- Noise Reduction

Service Operations

- Chat-Bots
- Intelligent Knowledge bases
- Intelligent Business Impacts
- Intelligent Root causes

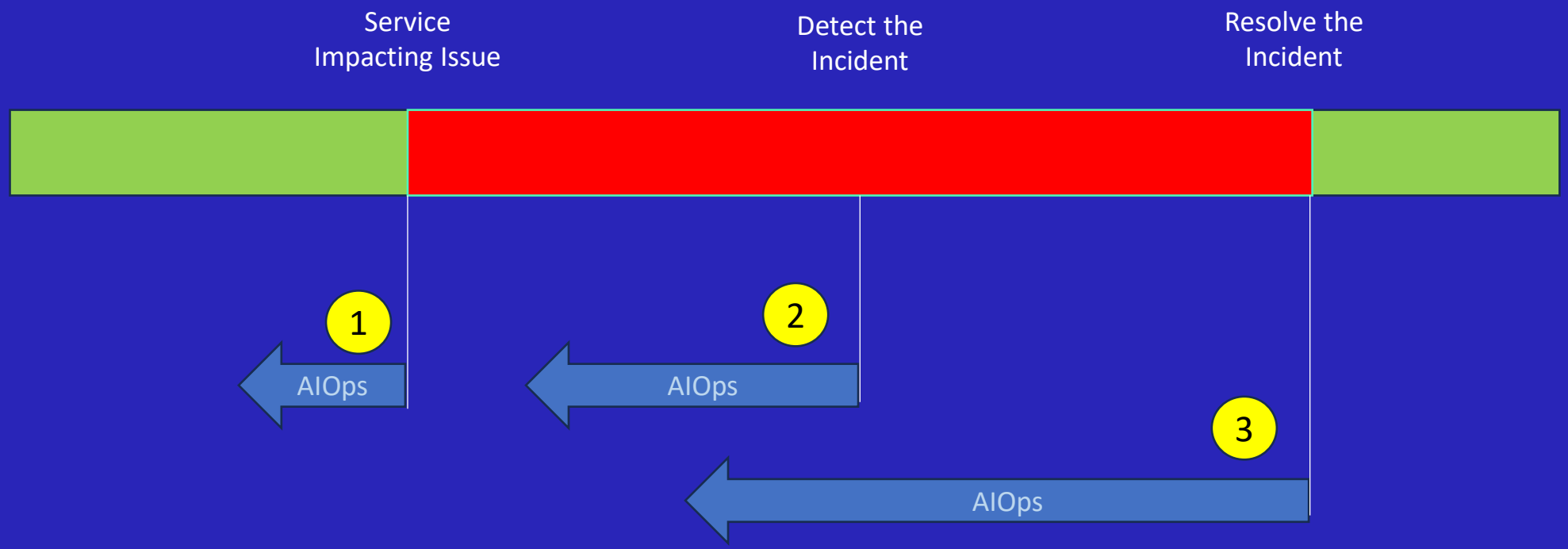
DevOps

- Intelligent release pipelines
- Intelligent guard rails

Distributed System

- Self Healing Bots
- Intelligent compliance
- Intelligent Capacity
- Predictive Maintenance
- Intelligent threat detections

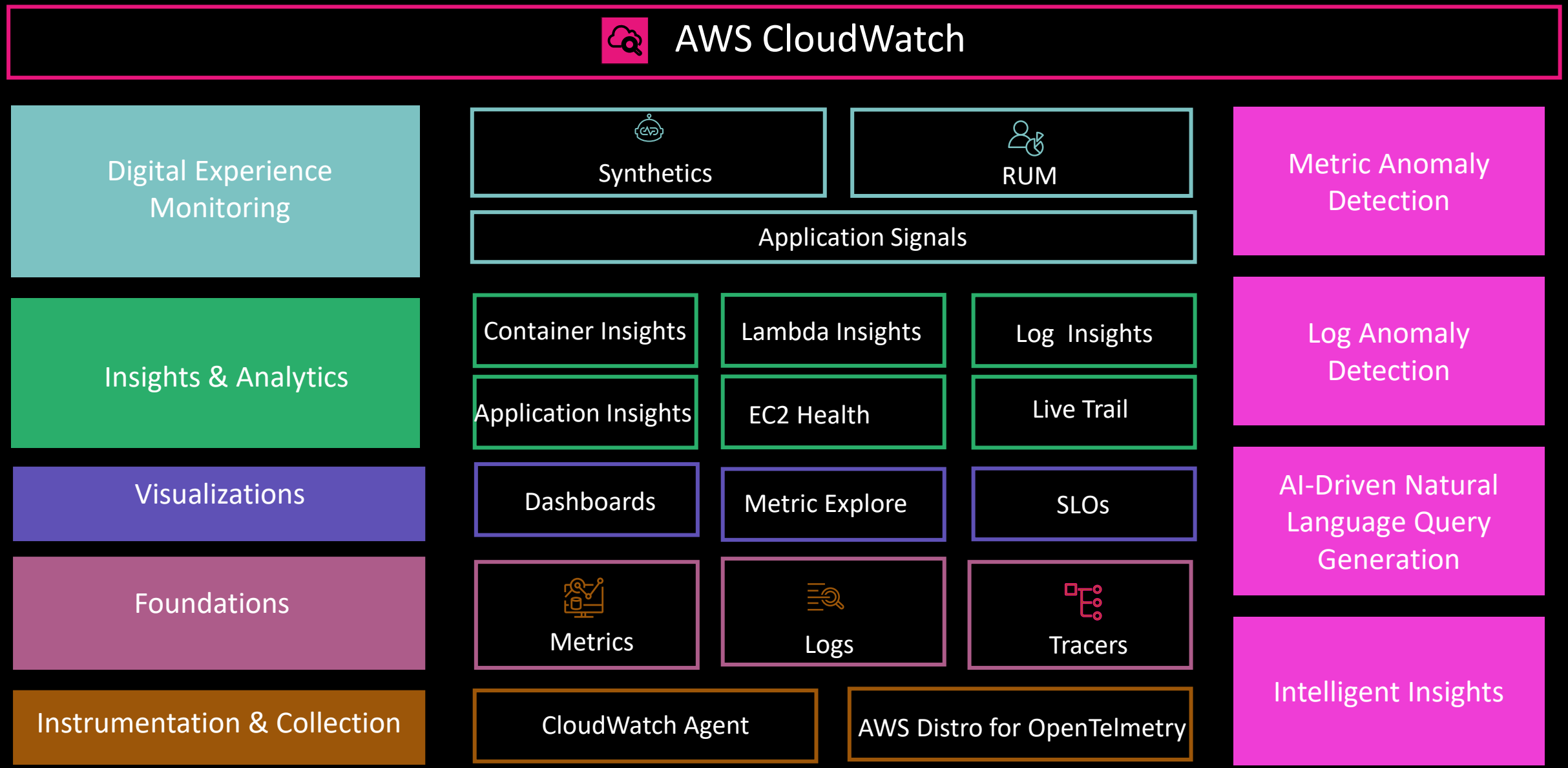
AIOps: Supercharging System Reliability



1. Eliminate incidents with predictive maintenance.
2. Detect incidents rapidly with intelligent alerting.
3. Resolve issues swiftly using self-healing systems.

Observability-Based Approach

AIOps: Supercharging System Reliability



Key Observability-Driven AIOps Offerings from AWS

Anomaly Detection: Detects unusual patterns in metrics using machine learning.

Application Insights: Diagnoses application issues with ML analysis.

Container Insights: Analyzes container metrics and logs for automatic insights.

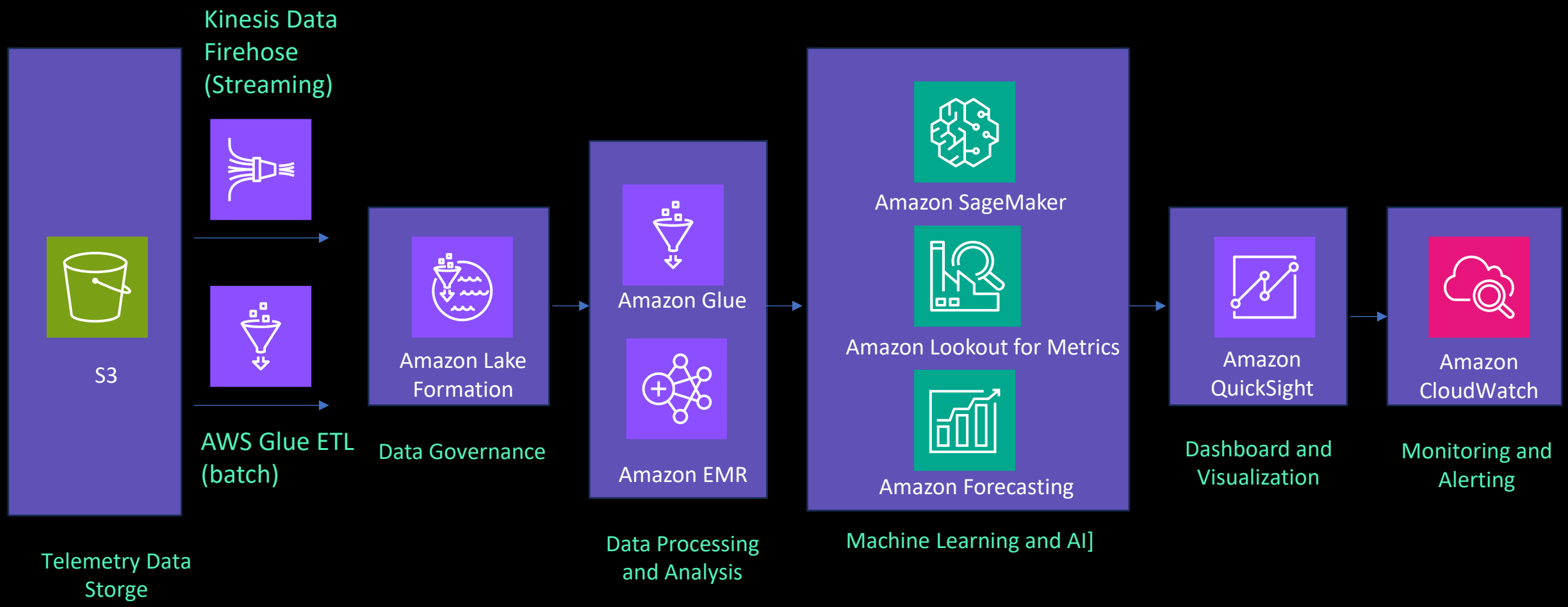
Contributor Insights: Identifies top performance contributors through AI analysis.

Log Anomaly Detection: Analyzes log data to find unusual events in real-time.

AI-Powered Query Generation: Generates queries for Logs and Metrics Insights using plain language.

Data Lake-Based Approach

End-to-End Data Lake-Based AIOps Framework powered by AWS



AIOps Tool-Based Approach

Amazon DevOps Guru : ML-powered cloud operations service to improve application availability

Key Capabilities of AWS DevOps Guru

Anomaly Detection: Automatically detects unusual patterns in metrics, logs, and events using machine learning.

Root Cause Analysis: Identifies the root cause of operational issues by correlating data from multiple sources, reducing resolution time.

Proactive Insights: Offers recommendations to prevent potential issues based on best practices and historical data.

Resource Optimization: Suggests ways to optimize resource utilization to lower costs and improve performance.

Database Monitoring: Provides performance insights for both relational (e.g., RDS, Redshift) and non-relational databases (e.g., DynamoDB, ElastiCache).

Capacity Planning: Forecasts future resource needs based on traffic patterns and usage trends.

Key Capabilities of AWS DevOps Guru (Cont.)

Cross-Service Correlation: Analyzes relationships between AWS services for holistic insights.

Integration with AWS Services: Seamlessly works with AWS services like CloudWatch, CloudFormation, and CodeGuru Profiler.

Security and Compliance: Supports encryption with customer-managed keys to meet compliance requirements.

Automated Remediation Suggestions: Provides step-by-step guidance for resolving detected issues.

Effective Strategies for AIOps sucess

Effective Strategies for AIOps sucess

- 🎯 **Clear Goals**: Define objectives like reducing MTTR or improving reliability.
- 📊 **Data Integration**: Ingest data from IT and DevOps sources.
- 🤝 **Team Collaboration**: Foster teamwork across ITIL, DevOps, and data teams.
- 📈 **Real-time Monitoring**: Detect anomalies and optimize performance.
- 🤖 **Task Automation**: Automate for efficiency and consistency.
- 🔧 **Tool Integration**: Seamlessly integrate ITSM and DevOps tools.
- 🧠 **ML Model Management**: Manage ML models for accuracy.
- 🔒 **Security & Compliance**: Address security and compliance.
- 🎓 **Training**: Train teams in AIOps tools.
- 📉 **Performance Metrics**: Track KPIs aligned with business goals.

Aligning AIOps implementation with business goals

Measure Progress with Business Outcomes

- 📈 Net Promoter Score (NPS)
- ⚙️ System Availability and Reliability
- ⏱️ MTTD (Mean Time to Detect)
- ⏳ MTTR (Mean Time to Recover)
- 🛠️ MTBF of customer impacting incidents
- 🛡️ % of Incidents self-healed
- 🔄 Change Frequency
- ⏰ Lead time for change
- ❌ Change failure rate

Thank you.