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Transforming Cloud-Native Applications:

GenAI-Enhanced Observability for Performance, Insights, and Resilience

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Workshop Overview

- Understanding the Pillars of Observability
- Using observability to optimize performance
- Generating actionable insights with GenAI
- Building resilience and minimizing downtime
- Automating observability processes for efficiency
- Demo of Observability with GenAI plus Q&A

People Tech Group – Brief introduction

Technology Focus

- Data Analytics
- Enterprise Application
- Cloud modernization

Industry focus

- Automotive
- Healthcare
- Higher Education
- Federal and State Government

Alliances

Microsoft, UKG, UiPath, Cisco, Oracle, aws, salesforce

Acquisitions

codeSMART, fyrSOFT, rampGROUP, LAURELGROUP EXECUTIVE LEADERSHIP DELIVERED, URGENCI, aegis

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FLORIDA STATE UNIVERSITY 1851								

About the Speakers

Suresh Venkatraman

A-VP Product Engineering

"A technology expert with 25 years of experience in software and product development, most recently serving as CTO at a SaaS-focused FinTech startup and previously in leadership positions at AT&T and Microsoft."

Adrian Wilson

VP Solutions, Growth Sales & Business Development

"27 years Microsoft Veteran, Seasoned leader in product and solutions development, enterprise sales, business and partnership development."

Attendees for the Workshop

Mr. Anoop Venkataramana
Senior Site Reliability Engineer
Optum

Mr. Aj Gomez
IT Manager
Edward Don & Company

Mr. Zaid Quaisar
Staff DevSecOps Engineer
Suki

Ms. Sneha Malshetti
Cloud Security Engineer 3
credit karma

Mr. Brad Teed
Director of IT
C-TRAN

Mr. Narendra Kumar
Security Engineer
Southwest

Customer expressed interest to attend this workshop

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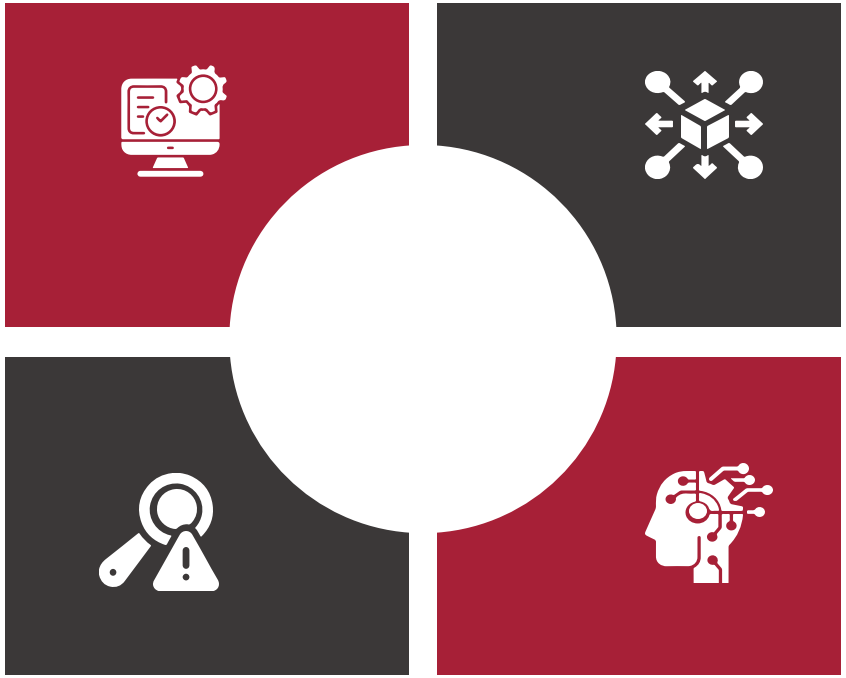
What is Observability?

Observability delivers the insights necessary to manage and optimize modern cloud-native systems. By analyzing telemetry data from distributed services, it enables real-time monitoring, simplifies troubleshooting, and drives informed decision-making to ensure high performance and availability.

System State Visibility: Real-time understanding of application health and performance.

Troubleshooting Complex Issues: Quickly identifying root causes of failures.



Handling Distributed Systems: Managing the challenges of interconnected services.

GenAI Enhancements: Using AI to streamline observability workflows.

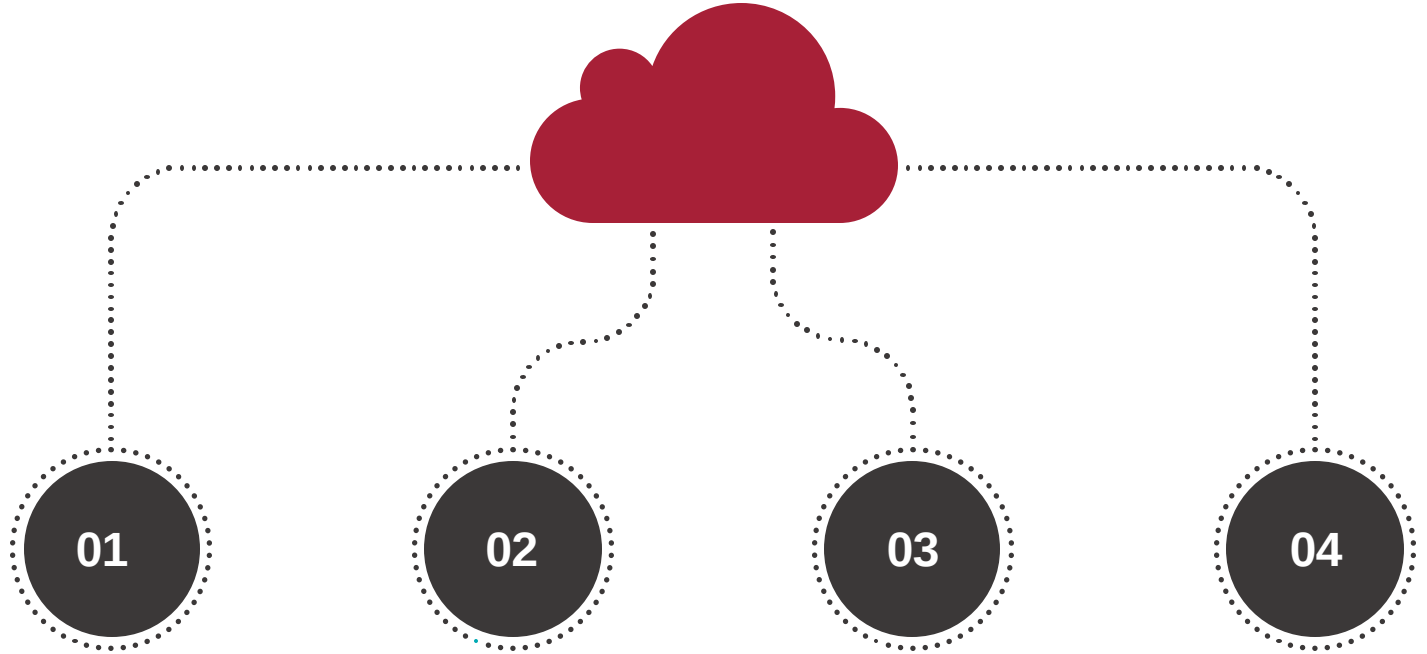
Three Pillars of Observability

Metrics, logs, and traces are the building blocks of observability, each contributing unique insights to understand and optimize system behavior. Together, these pillars provide a complete picture of how applications perform and interact across distributed environments.

- **Metrics**:
  Quantifies health through latency, throughput, and resource usage.
- **Logging**:
  Captures granular events and errors for root cause analysis.
- **Traces**:
  Tracks end-to-end requests across distributed systems.

Why Observability Matters for Cloud-Native Applications

Observability is essential for managing the complexities of cloud-native systems. It enables teams to identify inefficiencies, ensure reliability, and maintain performance in dynamic, distributed environments.



Enhanced Monitoring

Provides real-time feedback on system health.

Proactive Issue Resolution

Anticipates and resolves problems before they escalate.

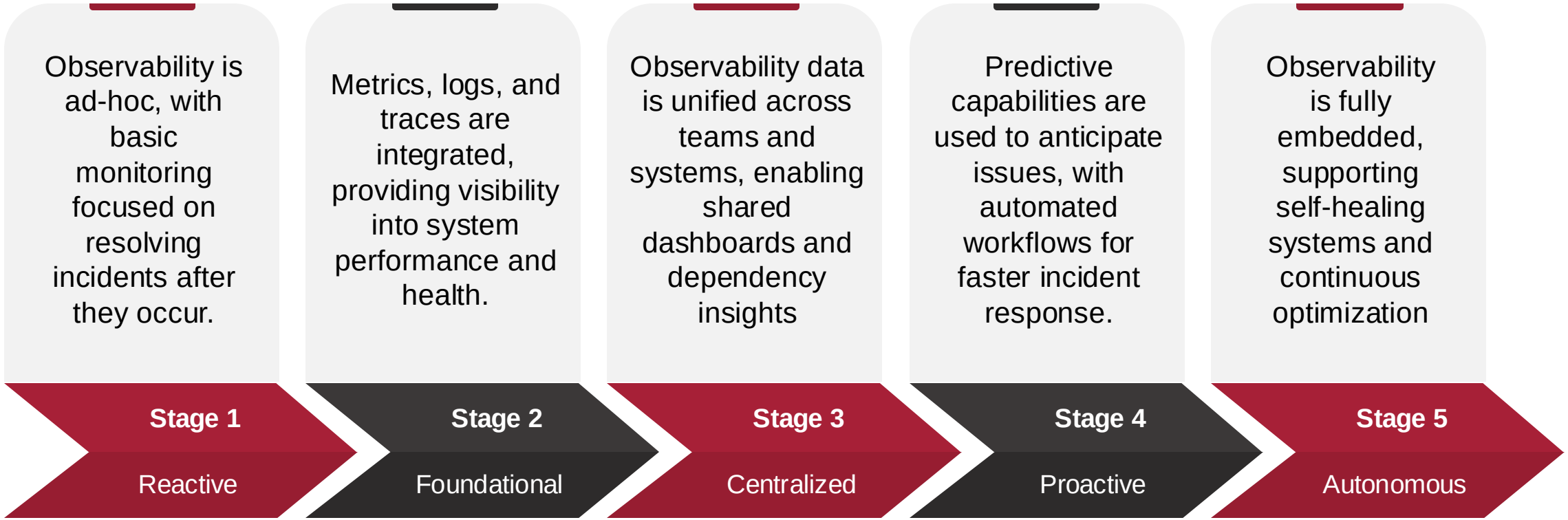
Scalability

Adapts to the growing complexity of distributed architectures.

Enhanced System Reliability

Provides continuous assurance of application availability and stability.

Observability Maturity Model



Transforming Cloud-Native Applications

Observability, powered by GenAI, empowers teams to overcome performance challenges, improve system resilience, and turn data into actionable insights that enhance operational efficiency.

Performance Bottlenecks:
Detect inefficiencies within distributed systems.

Actionable Insights:
Use data-driven recommendations to optimize operations.

Automation Benefits:
Reduce manual effort with GenAI-enhanced diagnostics.

Resilience Building:
Implement strategies to mitigate failures and improve uptime.

Optimizing Cloud-Native Performance

Performance optimization starts with effective monitoring and analysis. Observability tools provide the data necessary to detect bottlenecks, maintain efficiency, and implement continuous improvement strategies.

Bottleneck Detection

Identifies services or resources causing slowdowns.

Continuous Monitoring

Tracks key metrics to maintain performance standards.

Optimization Strategies

Uses observability insights to refine system architecture.

Performance Tools

Leverages monitoring tools for comprehensive tracking.

Generating Actionable Insights

Observability data is most valuable when transformed into clear, actionable insights. By automating analysis with GenAI, teams can quickly identify trends, prioritize fixes, and make informed decisions to improve performance and reliability.

- **Data Interpretation**: Identifies patterns and trends from large datasets
- **AI-Powered Insights:** Automates analysis for quicker, actionable results
- **Problem Prioritization**: Identifies and addresses the most impactful issues
- **Operational Benefits:** Streamlines decision-making for improved system health

Building Resilience Through Observability

Resilience ensures systems can withstand and recover from unexpected failures. Observability provides the data and strategies needed to predict risks, mitigate downtime, and maintain operational continuity.

01

Failure Anticipation

Predicts and addresses risks before they disrupt services.

02

Rapid Recovery

Reduces downtime with fast, informed responses.

03

Resilience Planning

Implements redundancy and fault-tolerant designs.

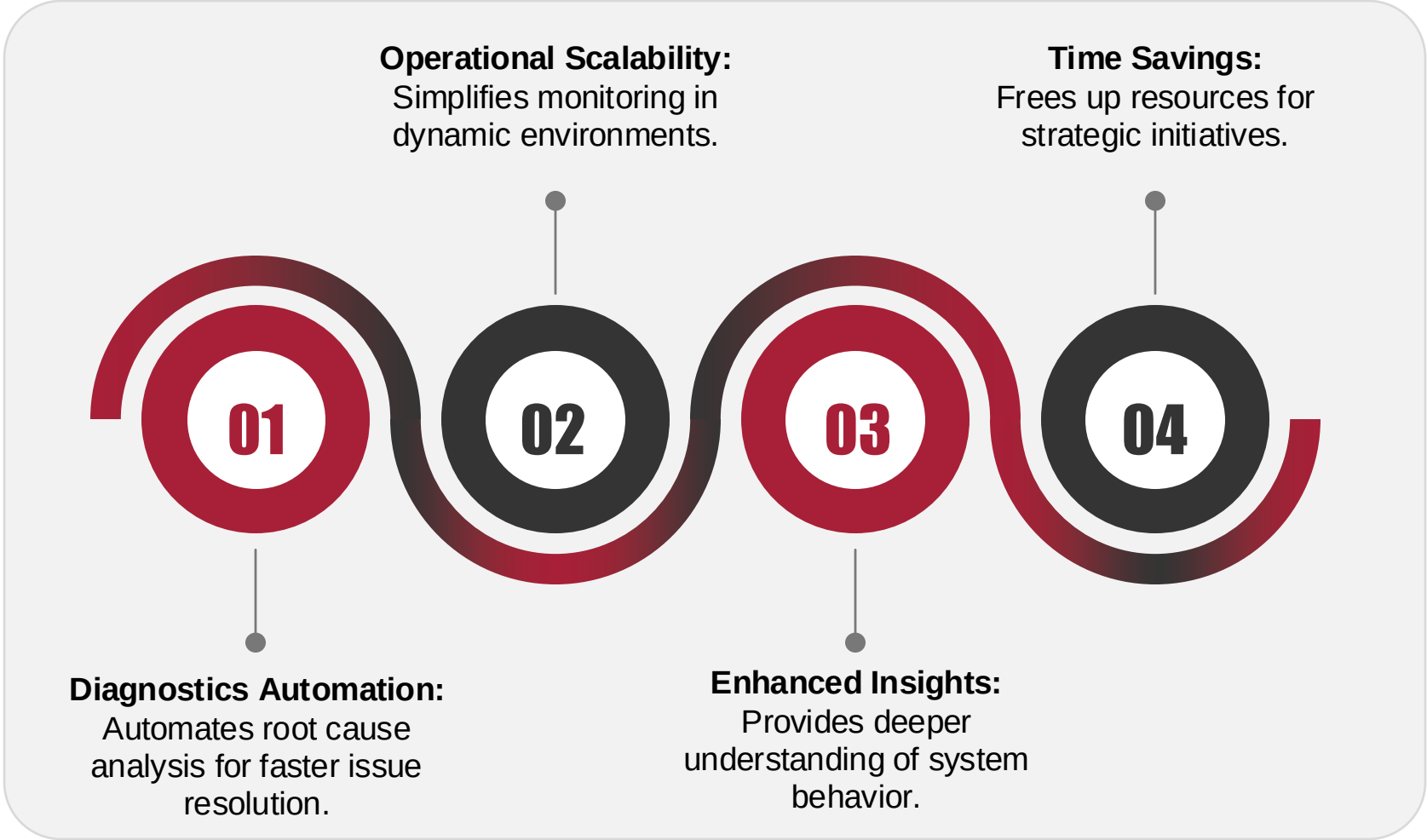
04

System Reliability

Maintains consistent service for end-users.

Automating Observability with GenAI

Automation reduces the complexity of managing observability by eliminating manual tasks and enhancing diagnostic capabilities. GenAI drives efficiency, enabling teams to focus on higher-value activities.



Monitoring Complex Dependencies in Cloud-Native Systems

Distributed systems are built on complex interdependencies that can impact performance and reliability. Observability helps map these relationships, identify bottlenecks, and maintain seamless service interactions.

Service Mapping:
Visualizes dependencies across microservices.

Performance Bottlenecks:
Identifies slowdowns caused by interdependent services.

Diagnostic Tools:
Uses observability to simplify dependency management.

Optimized Communication:
Enhances the performance of interdependent services.

Predicting Failures with GenAI

Predictive observability with GenAI analyzes historical data to foresee potential system failures. This proactive approach enables teams to prevent disruptions and maintain reliability.

Data Analysis:
Uses historical data to predict future issues.

Early Warning Systems:
Generates alerts for potential failures.

Continuous Improvement:
Refines prediction accuracy through machine learning.

Failure Mitigation:
Implements actions to prevent downtime proactively.

Leveraging Observability for Cost Optimization

Observability uncovers inefficiencies in resource usage, enabling teams to optimize costs while maintaining high performance. GenAI accelerates cost-saving decisions by automating analysis.

01

Resource Utilization
Identifies overuse or underuse of resources.

02

Cost-Saving Opportunities
Highlights areas for expense reduction.

03

Automated Insights
Uses GenAI to deliver fast, actionable recommendations.

04

Operational Balance:
Aligns cost savings with performance needs.

Compliance and Governance with Observability

Observability supports compliance and governance by providing detailed visibility into system operations. It helps organizations track key metrics, ensure adherence to regulatory standards, and prepare for audits with confidence. By integrating GenAI, teams can automate compliance monitoring and simplify governance processes.

Compliance Metrics: Tracks key indicators like data access, system availability, and audit trails to meet regulatory requirements.

Audit Readiness: Prepares for inspections by ensuring complete and accurate records of system activity.

AI-Assisted Governance: Automates compliance checks and identifies potential gaps using GenAI tools.

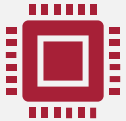
Operational Transparency: Enhances visibility across teams, ensuring alignment with governance policies.

Demo User Story

Problem Statement: Managing infrastructure performance and technical debt is challenging, requiring an automated solution for monitoring, anomaly detection, and resolution to improve application stability before cloud migration.

Monitor System Performance

Provides a visual overview of system performance, highlighting potential bottlenecks and areas needing attention to prevent issues.



Real-Time Alerts

Provides immediate awareness of performance issues, enabling quick responses to minimize downtime and maintain system uptime.

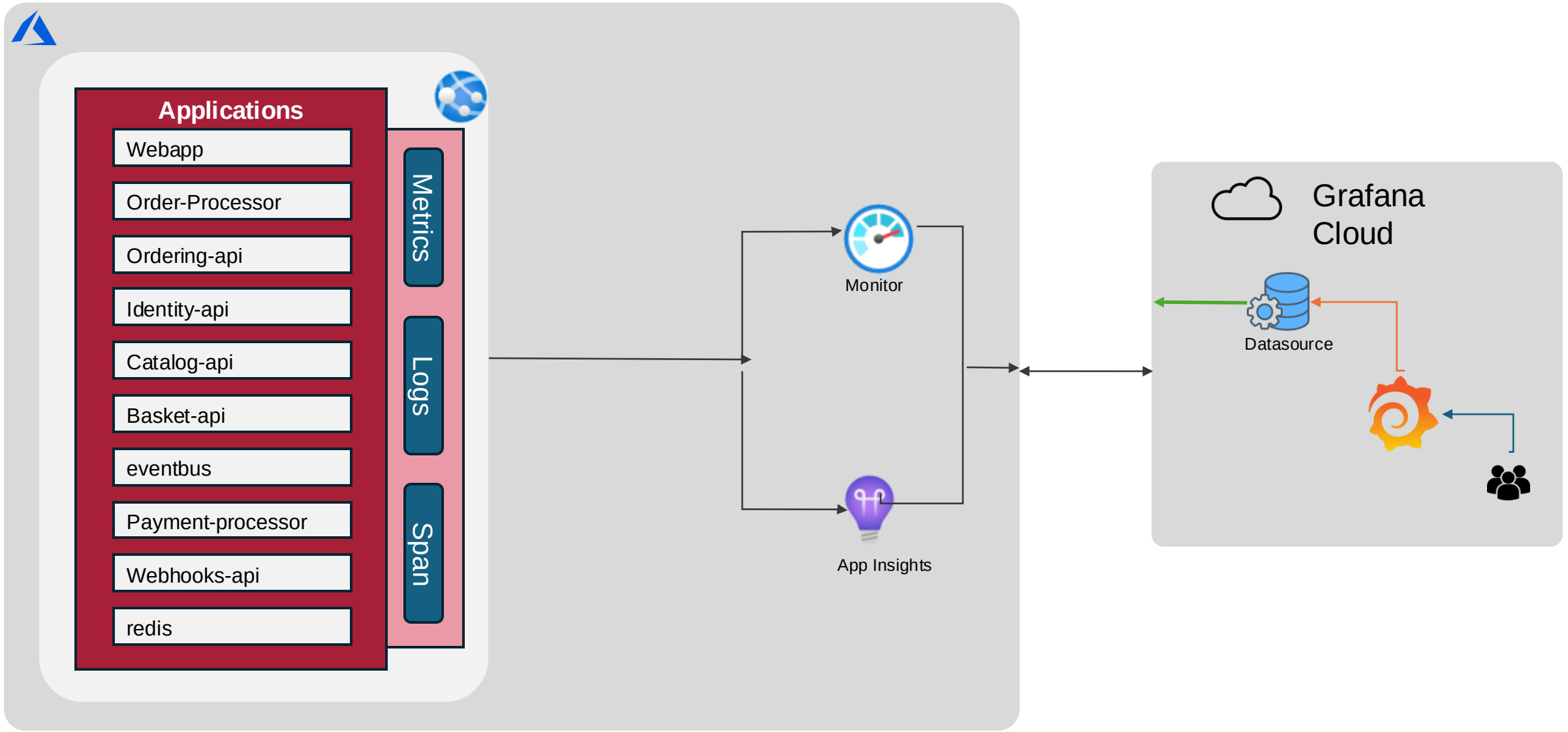
Root Cause Analysis

Quickly identifies the problem's origin, saving time and eliminating the need for manual investigation, allowing for faster issue resolution and clearer understanding of contributing factors.

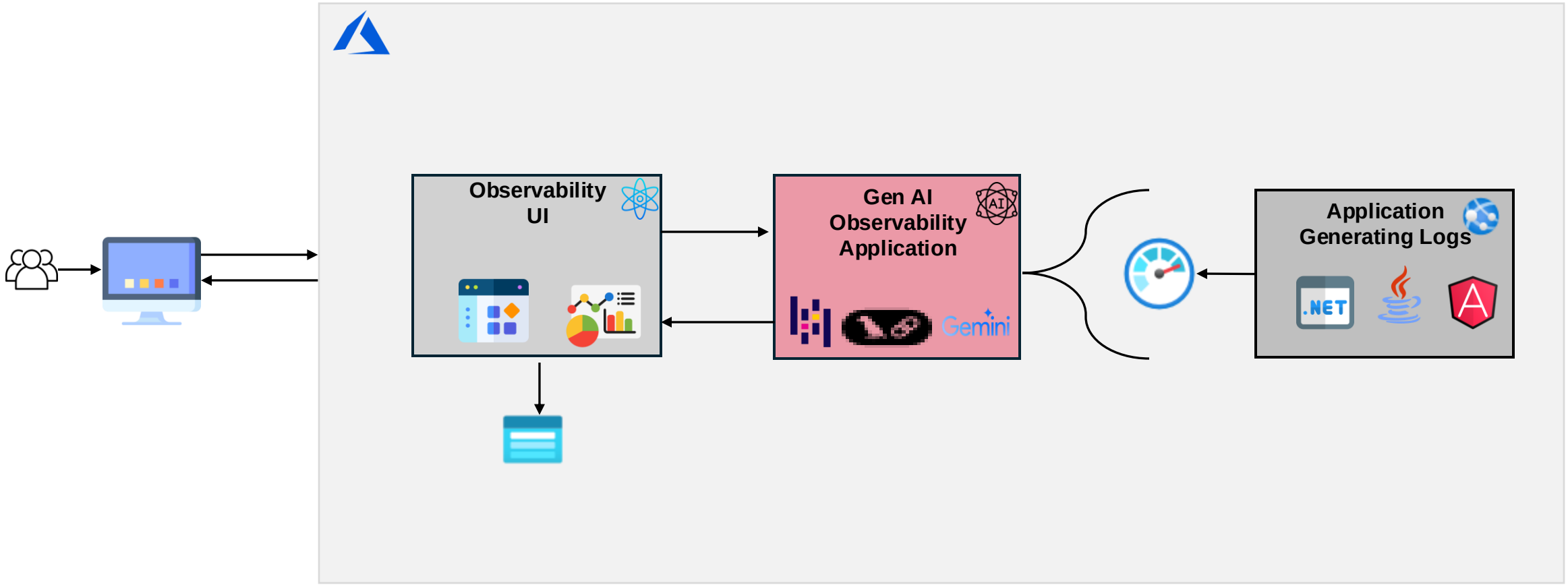
Issue Resolution

Delivers prioritized, actionable solutions for a faster and more effective response, focusing on the most critical fixes to prevent further complications.

Observability Architecture – Azure Cloud with Grafana Cloud



Observability Architecture – GenAI Solution Overview



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Q&A

Thank You !

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