Watson AIOps

Proactive Incident Resolution

1

IBM
Cloud & Cognitive Software

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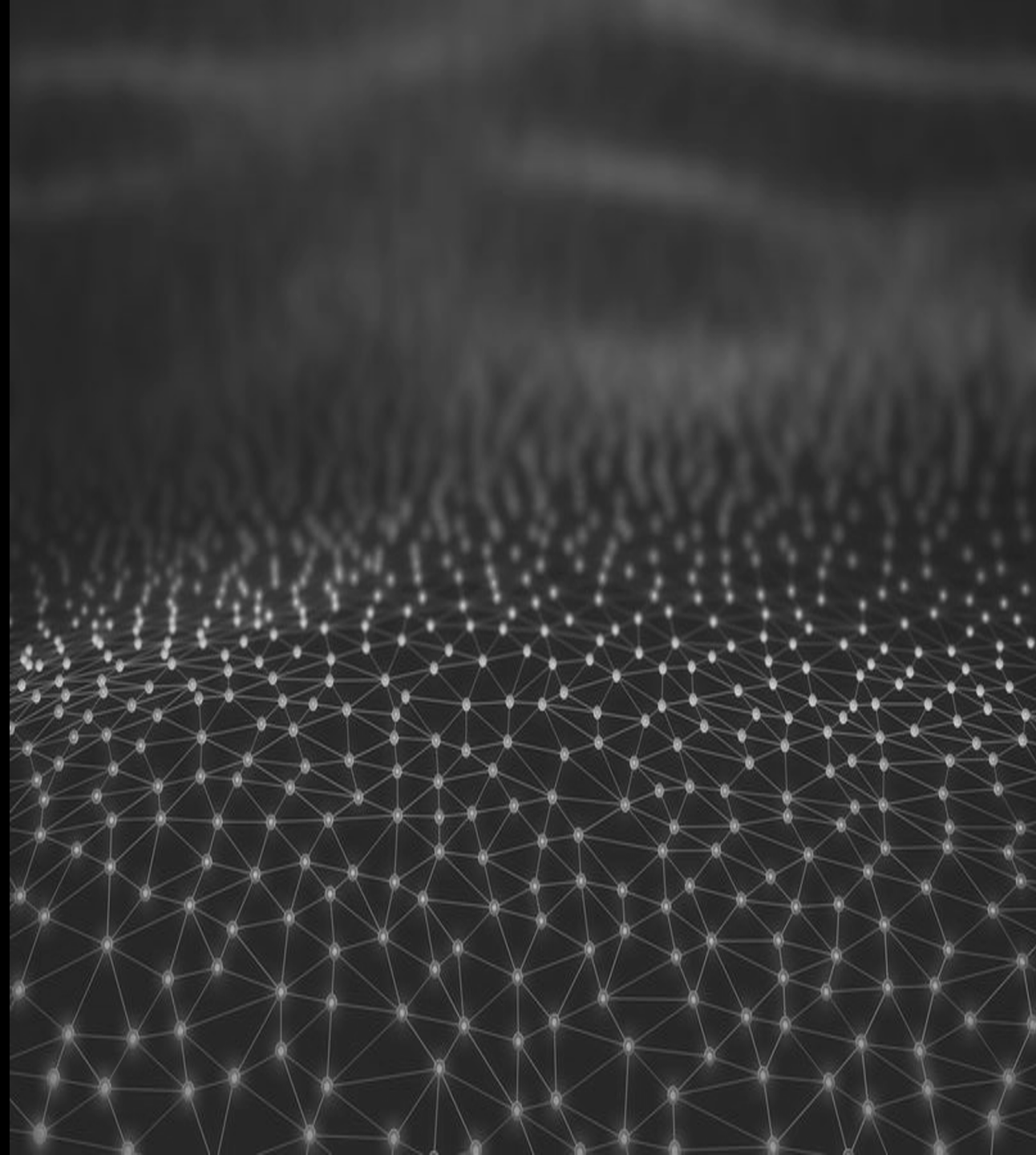
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Thousands of IT incidents per month
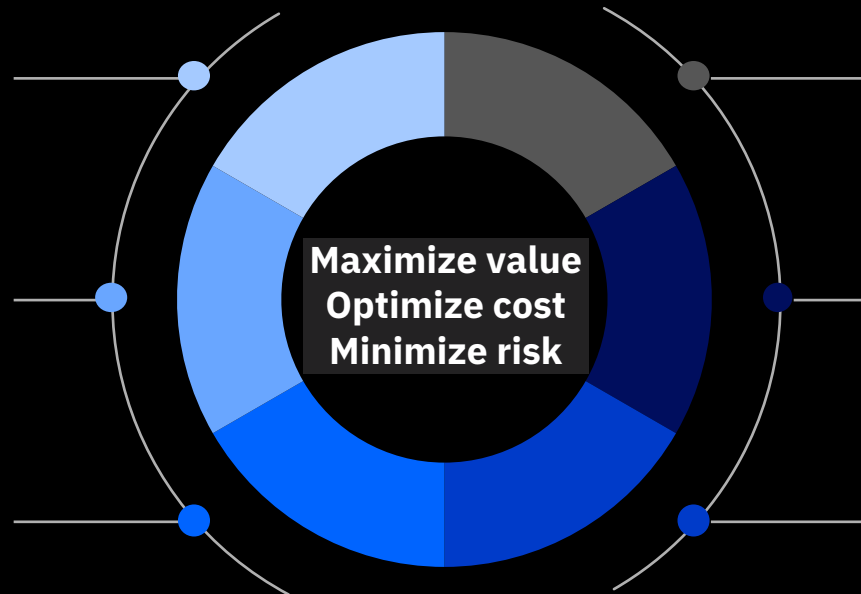
100x increases in IT data

Less than 1% of your alerts are critical but cost $420K per hour in downtime if not detected

As Development, Security and Operations converge, we need an intelligent and integrated approach to IT Operations

AI for IT core principles

Multi-Cloud Management
Cloud-native & VMs
Private Cloud & On-premises

Application-centric IT operations
Collaboration on single platform
Holistic view x-application stack

Security & compliance by design
Policy-driven deployments and
application monitoring

ChatOps & Dashboard
Bring insights where people work
Transform your operating model

Open ecosystem
Integrates with best-of-breed tools
Built with Open Source

AI at the core
Consistent AI to simplify,
automate & prioritize work

Maximize value
Optimize cost
Minimize risk

IT Grappling With New Challenges

IBM surveyed senior IT leaders and teams to understand the need for AI in IT.

CIOs

IT Ops Teams

Innovation v. Stability

Negotiating Complexity & Scale

Overwhelmed by disparate tools

Burnout & Skills

Thousands of IT incidents per month

9 incidents will be critical, costing **$139k each** on average

Impacts compound with regulator penalties, SLA penalties, and reduced customer LTV

Days to detect and diagnose a complex issue

Major outages can cost up to **$420k per hour**

Struggling with inconsistent alerts, interruptions across sources

Flood reduction tools are **not transparent**
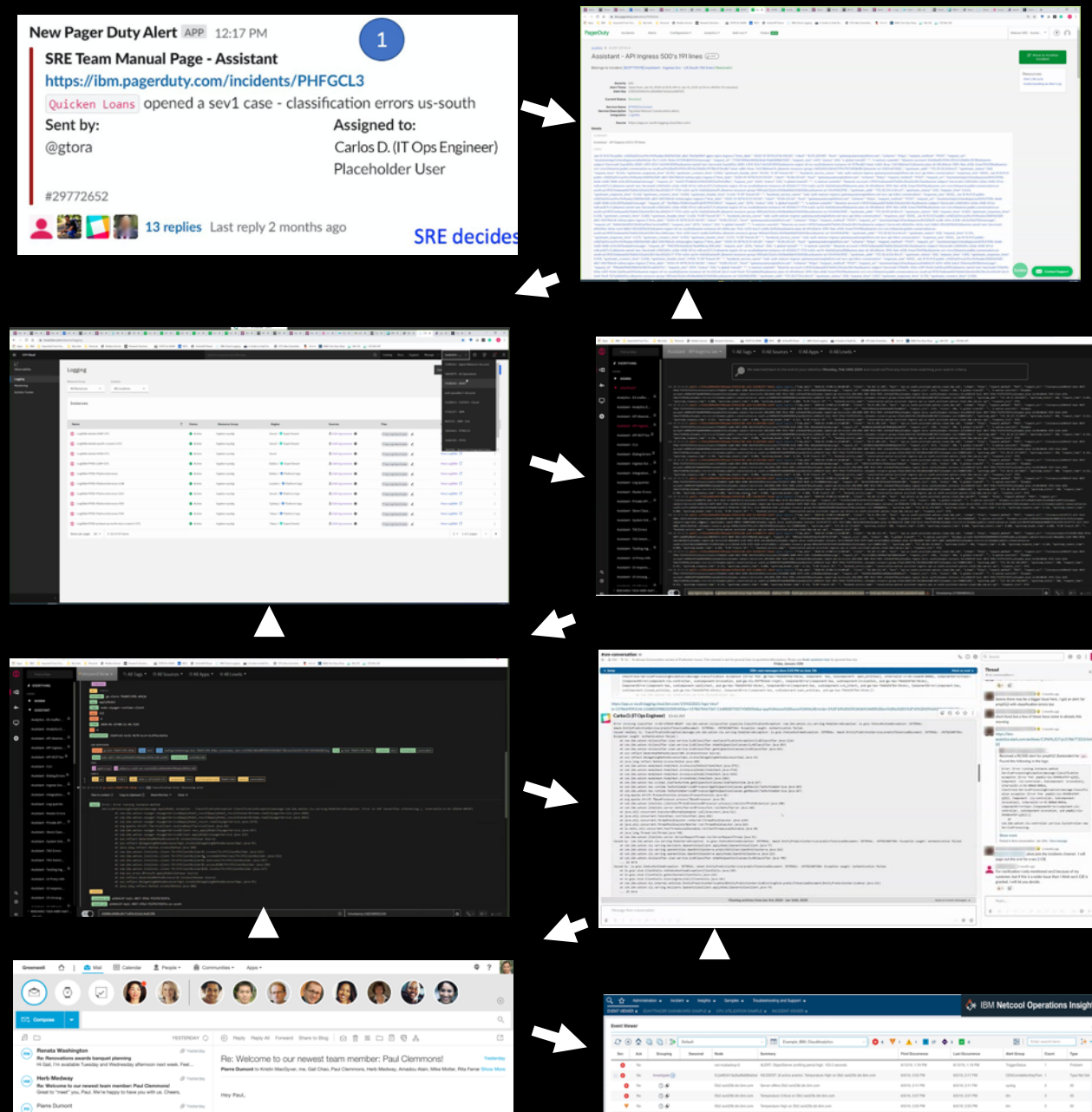
Workflow interrupted to swap between incomplete tools

Only 10% percent of FTEs **have 90% of critical expertise**

Teams & CIOs struggle with talent risk

$1.2M spend per service in highly skilled FTEs to meet SLA and resiliency demands

Today?

Today   **4hr 53min**   **17**   **10**   **$135K**
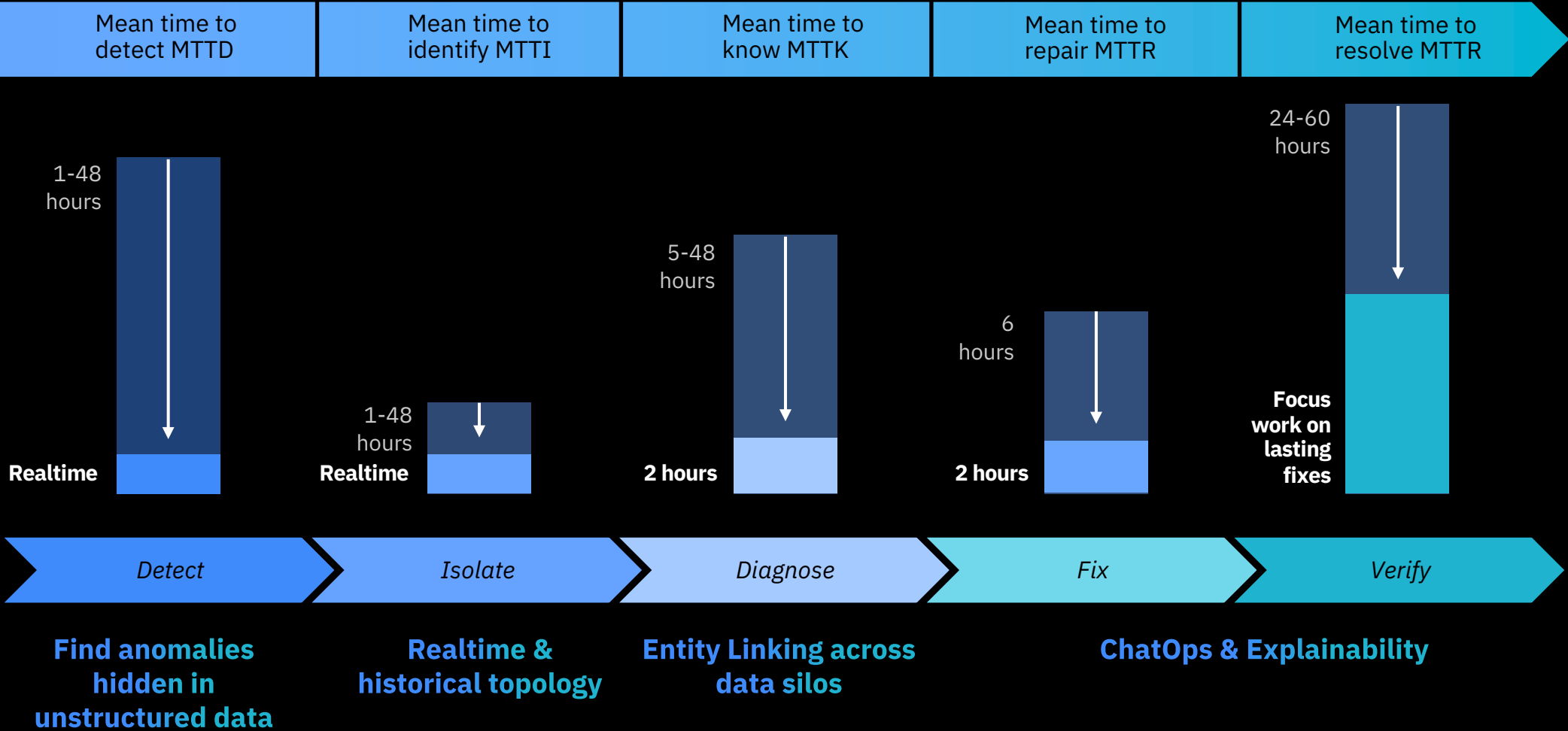
Time   # of Steps   # of Responders   Cost per incident

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The world with AIOps:
Challenges in incident management & resolution

Mean time to detect MTTD	Mean time to identify MTTI	Mean time to know MTTK	Mean time to repair MTTR	Mean time to resolve MTTR

1-48 hours

Realtime

1-48 hours

Realtime

5-48 hours

2 hours

6 hours

2 hours

24-60 hours

Focus work on lasting fixes

Detect	*Isolate*	*Diagnose*	*Fix*	*Verify*

Find anomalies hidden in unstructured data

Realtime & historical topology

Entity Linking across data silos

ChatOps & Explainability

*Potential impact

Watson AIOps

Leveraging unstructured data and real-time analysis, Watson AIOps rapidly brings new insights where people work

DISCOVER HIDDEN INSIGHTS

- Effective log anomaly detection
  leveraging OpenSource DRAIN log parsing augmented with proprietary Watson AI technology

- Extract entities for reconciliation

- Identifying similar incidents
  using NLP techniques to extract action phrases delivers a more effective next-best action and accelerates time to resolution.

CONNECT THE DOTS

- Combine multiple signals across different data channels

- NLP entity extraction methods that go beyond patterns or time-series analysis

- Recognize similar incidents with a historic issue context graph.

- Filter and prioritize what requires attention

SURFACE ADVICE WHERE PEOPLE WORK

- Bring insights into existing workflows or ChatOps

- Offer clear reports for effective decision making

- Explainability for trusted recommendations

- Learn from user interactions

- Automate with confidence

More than 120 patents applied

Watson AIOps – Solution Overview

Understand your environment

IBM AIOps

Improved Incident Resolution

Unstructured Data
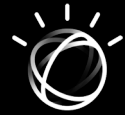- Logs
- Tickets
- *Future: chats, collaboration*

Structured Data
- Topology
- Metrics
- Events
- Alerts

Input Data

to AIOps

- Combine signals across data channels

- Unstructured data analysis to detect hidden anomalies and identify similar incidents

- Filter and triage to support and streamline efforts
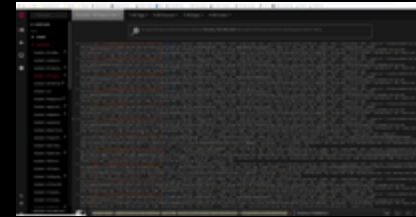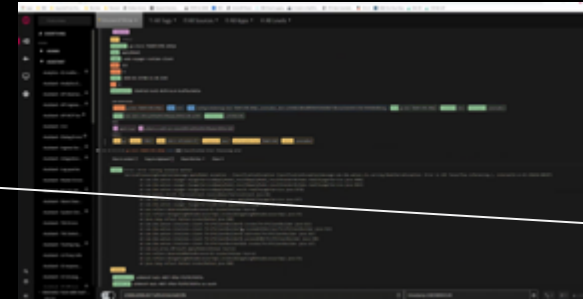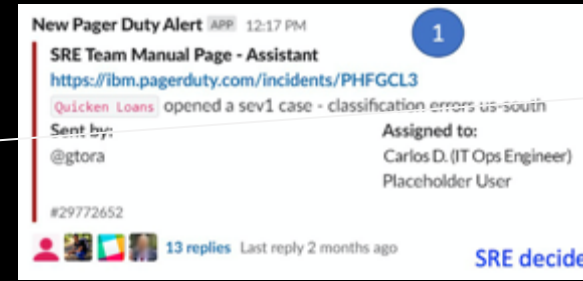
Send Insights

to SREs

- ✓ Insights, advice and next-best-actions to accelerate workflow

- ✓ Delivered in ChatOps for teams to act on in real-time

- ✓ Integration to external tools & dashboards for stakeholders and reporting

Today with AIOps

- Accelerate / skip diagnosis steps
- Assist engineers to become more effective
- Automate response to events & incidents
- Remove subjective decision making in favor of evidence-based machine learning guidance
- Organize and simplify the tools and data presented to an operator

	Time	# of Steps	# of Responders	Cost per incident
Yesterday	**4hr 53min**	**17**	**10**	**$135K**
Today	**14min**	**4**	**1**	**$6K**

IBM

Watson AIOps
High level architecture

Watson AIOps Intelligence Layer

- Slack
- MatterMost
- Microsoft Teams
- Others

← Client IT Ops / SRE teams

← Deliver Analytics via ChatOps

Client Operational Data

IBM & Strategic Partners:

IBM Netcool   IBM Monitoring

Sysdig   humio

hazelcast   turbonomic

... and more

Other Integrations:

logdna   dynatrace

pagerduty   APPDYNAMICS

DATADOG   Prometheus

New Relic.   servicenow

Watson AIOps Intelligence Layer

Incident Resolution (reactive)
- Intelligent alerting & alert grouping
- Triaging
- Incident similarity
- Topology & blast status

Incident Analysis (predictive)
- Anomaly detection
- Root cause analysis
- Next best action recommendations

Incident avoidance (proactive)
- Change & version management
- Automated runbooks for next best action recommendations
- Code vulnerability analysis
- Explanation fort trust

Cloud Pak for Data

Red Hat Open Shift Container Platform

IBM Cloud   amazon web services   Azure   openstack™   Google Cloud

IBM applying Watson AIOps
Watson AIOps in use with scaled IBM SaaS offerings

IBM

DB2

Summary

- Using Watson AIOps on Db2 on Cloud offerings

- Further improving uptime and resiliency on scaled, SaaS product, with 1000's of clients

- Applying IBM's best of breed tools for internal-use

Benefit

Before:

- Anomaly detected after the fact, but no clarity on actual cause of issue.

- 2 hours to manually uncover incident cause

After:

- Irregularities discovered 47 minutes before incident occurrence

- Easily able to traceback to original error in logs, helping quickly identify cause

Impact of AI on IT Operations

Efficiency, cost savings and a foundation built in DevSecOps to gain meaningful business value from IT operations

$420k
saved*
by reducing outage costs by 1 hour

50%
less cost
in labor by up-skilling IT operators with AI-powered insights

25%
more initiatives
Get job done faster and focus on new initiatives.

"...we've gotten much better at understanding some of the issues buried within our data. Being able to draw insight from within our logs and other unstructured data has helped us to progress in addressing anomalies quickly. It also has addressed a challenge our engineers have had with the task of combining and working with data and chatter across different tools. Watson AIOps brings it all together, allowing our engineers to respond faster and much more effectively."

- David Almendros, Artificial Intelligence Director at CaixaBank

Your Next Steps

Summary

The scale and complexity of today's IT environments creates extraordinary opportunities for CIOs. With application portfolios doubling in size every five years, the quantity of IT data has grown exponentially.

With AIOps, CIOs managing the tension between innovation and stability can finally use AI to harness the power of their data, simplifying labor-intensive activities and giving teams the actionable insights needed **to proactively resolve outages, confidently automate, and build an integrated DevSecOps operating model.**

IBM AIOps Clients Can:

- $420k saved by reducing outage costs by 1 hour
- $139k per incident avoided
- 50% less cost in labor by up-skilling IT operators with AI-powered insights
- 25% more initiatives
- Improvement to MTTD, MTTI, MMTK and MTTR

Learn More:

Link: AIOps from IBM

Link: Watson AIOps Overview Page

Thank you

The journey with AIOps:
AI provides long-term value & ROI via continuous learning

Mean time to detect MTTD	Mean time to identify MTTI	Mean time to know MTTK	Mean time to repair MTTR	Mean time to resolve MTTR

Detect	Isolate	Diagnose	Fix	Verify

- Use AI to accelerate shift to greater automation, more sophisticated ITOM practices

- Compounding value of AI with each new learning, new data source, and each element unstructured data leveraged

Continuous AI Learning

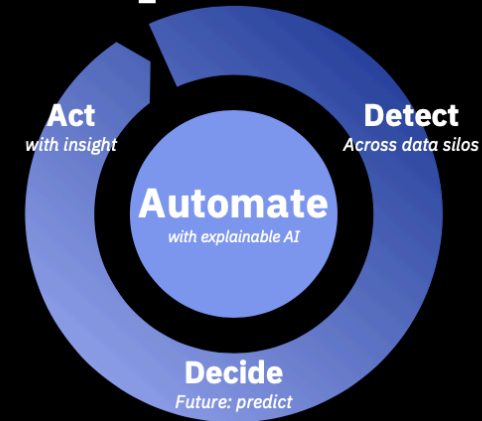# Infused AI for Intelligent IT Operations

AI at the core of IT workflows

Harness the power IT data to reduce toil and free skills and resources for innovation that matters

Act
with insight

Detect
Across data silos

Automate
with explainable AI

Decide
Future: predict

Deliver insights where teams work

Insights delivered to a converged DevSecOps team's preferred user experience

Understand your Applications

Open management platform to maximize impact across business workflows

Proactive Incident Resolution

Automated Application Scaling and Deployment

Intelligent Governance, Risk, Compliance

Extend existing investments

Ecosystem of best in class tools

AppDynamics   dynatrace   servicenow   slack   humio   turbonomic   sysdig

Unique Approach to AIOps

Leveraging 120 IBM patents in AI and ITOM

Capabilities & Algorithms	Summary	Impact
Linking signals in structured & unstructured data	• Connect the dots across log, metric, ticket, and other data sources • Natural language understanding and holistic problem context	• Reduce toil by saving SREs workflow steps and improving signal:noise with synthesized insights. • Faster resolution via more prescriptive, higher confidence recommendations
Fault Localization & Blast Radius	• Pinpoint the problem in your application topology • Visibility into 2nd order impacts and dependencies	• Accelerate location of root cause • Get ahead of outage spread, accelerating overall resolution time
Log Anomaly Detection	• Leverage IBM's leadership and proprietary technologies in ML for unstructured data and natural language to detect anomalies	• Faster detection and resolution • Detection of "dark debt" and hidden anomalies
Similar Incidents & Action Recommendations	• Mine past tickets and institutional knowledge to find similar past incidents and resolution actions	• Accelerate diagnosis and resolution with AI-powered advice at SRE's fingertips.
ChatOps Integration	• Insights & recommendations made available in collaboration tools	• Insights where collaboration happens keeps workflows focused and accelerates time to resolution.

Underlying Platform

Open	• Any cloud, via IBM's Cloud Pak for Data • Any collaboration platform (Slack, Teams, etc.) • Integration with variety of IT Ops tools	• Greater flexibility to meet environment, users, and workflow requirements • Extend the value of your current toolchain with AI
AI Model Management	• AI life cycle management capabilities via integration with IBM's best in class toolchain for Enterprise AI	• Transparency into and management of AI (ex: continuous learning, fairness, drift, data lineage)
Real-time Data	• Streaming real-time data from existing ITOM investments	• No duplicate data lake, avoidance of cost and complexity