SRE from scratch: an enterprise journey

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DEVOPS ENTERPRISE SUMMIT

AN IT REVOLUTION EVENT

Monika Gupta

- **18+ YEARS IN IT, PLAYED MANY ROLES IN SOFTWARE DEVELOPMENT & MANAGEMENT**
- **PRACTITIONER OF AGILE, DEVOPS AND SRE**
- ***Personal Goal - "Keep learning and improving!"***

Favourite Book ***"Eat that Frog"*** *by Brian Tracy*

"Eat that frog!" means **to start your day with the biggest, most important, and most dreaded task**.


DevOps INSTITUTE
ADVANCING THE HUMANS OF DEVOPS

Certificate ID
21602754

This is to certify that

Monika Gupta

Has achieved the

Site Reliability Engineering (SRE) Foundation℠ Certification

SKILLS KNOWLEDGE IDEAS LEARNING

Jayne Groll, CEO, DevOps Institute

November 12, 2020
Date

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Avinash Rao

- **VP OF PRODUCTS AT DIGITE, 22 YEARS IN THE INDUSTRY**
- **DEVOPS INSTITUTE AMBASSADOR**
- **DASA CERTIFIED DEVOPS COACH**
- **KANBAN UNIVERSITY KMP-2 CERTIFIED**

- *“I think that what fear fears is that we’ll actually take the step.”*
  — Craig D. Lounsbrough

BT’s Purpose and Strategy

Our three-pillar strategy is how we’ll realise our ambition, growing value for all stakeholders

BT's Purpose and Strategy

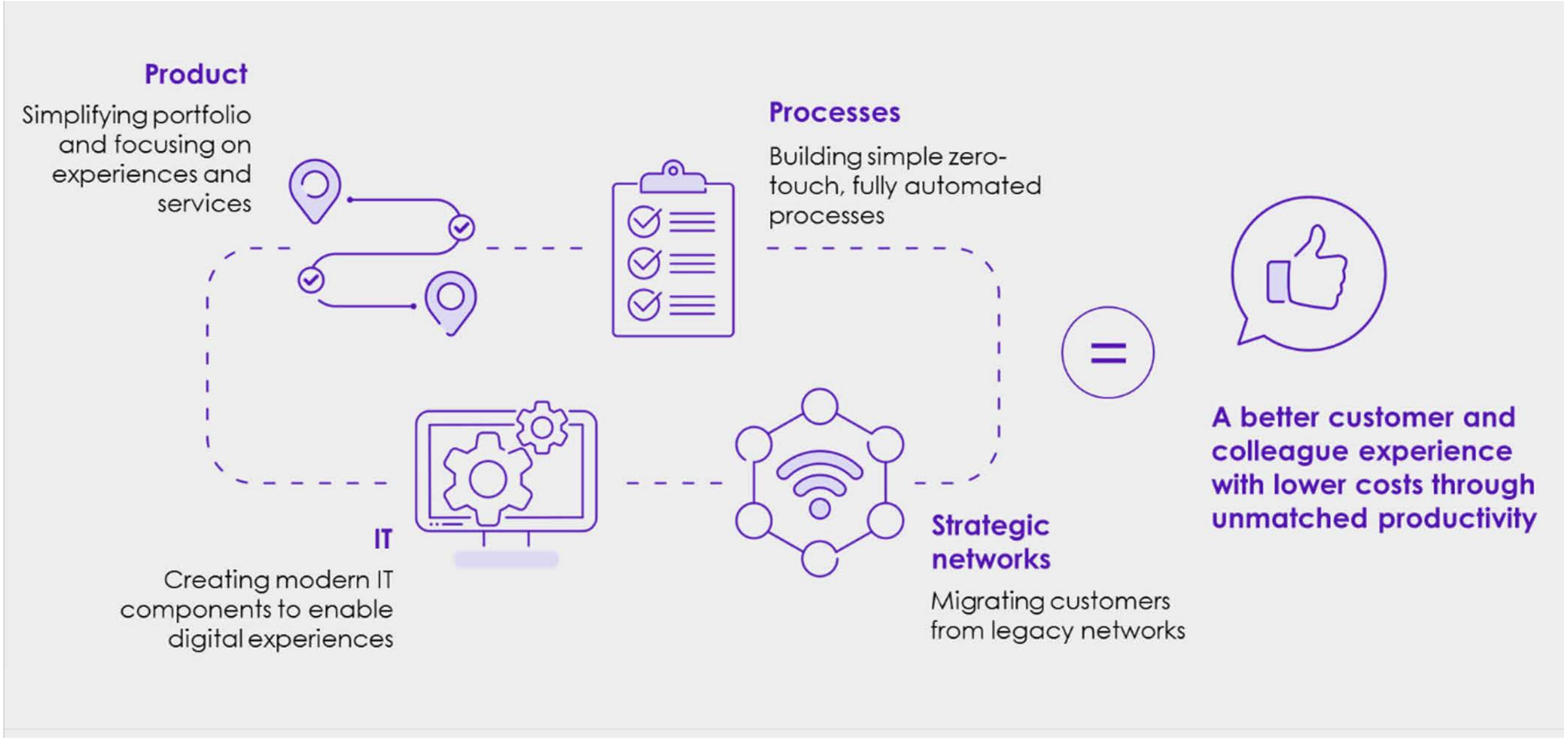
Strategic pillar 1 - Build the strongest foundations

Our ambition is only as strong as the foundations we're built on. That's why we'll continue to strengthen them.

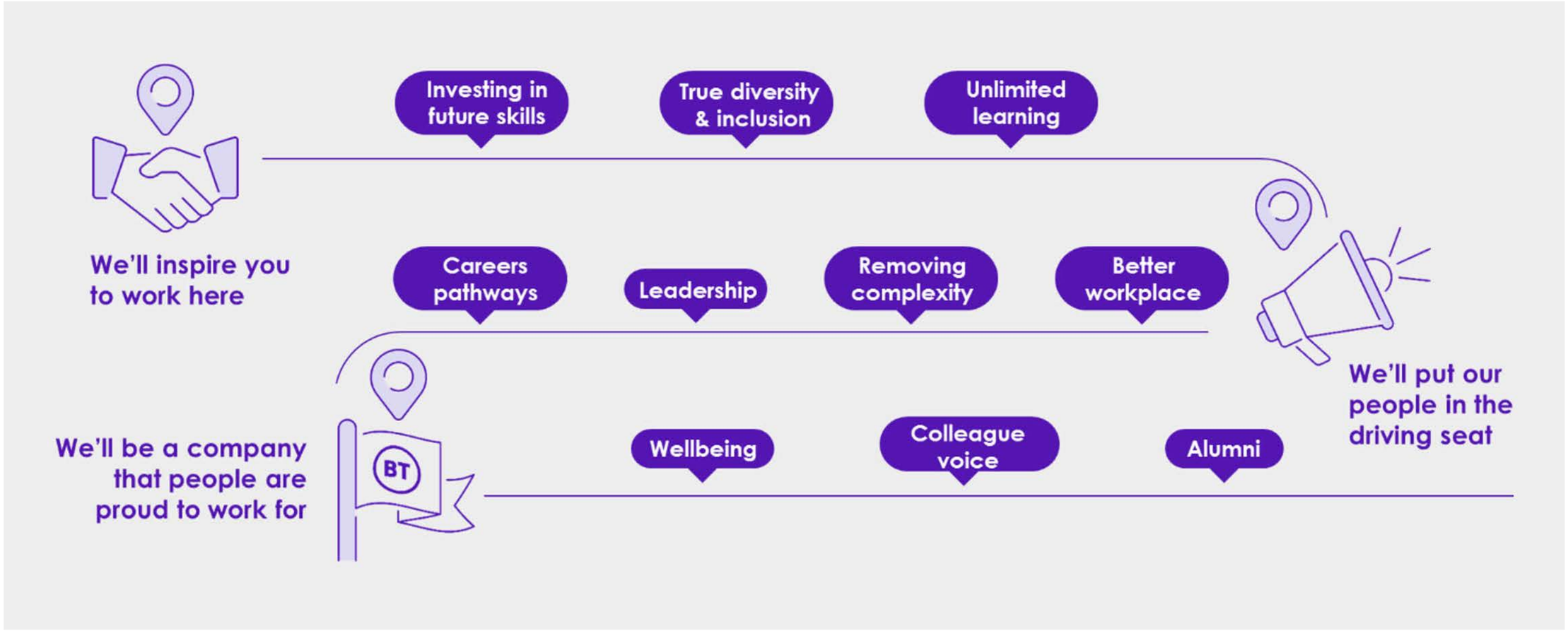
- Technologically, we'll build the best converged networks.
- Operationally, we'll build a simpler, more dynamic BT.
- And culturally, we'll build a culture where our people can be their best.

By taking these actions, we'll build a foundation that our stakeholders can count on to deliver.

Simpler, more Dynamic BT



A culture where people can be their best



Goal posts at the start of MOBIUS Program

DevOps & CI-CD

- Component Level adoption of CI-CD practices
- BT wide common definition of DevOps not in place
- No Structured visibility on various DevOps capabilities and its adoption

Continuous Testing

- Test automation capability enabled through testing CoE .
- Shift Left testing and In sprint test automation capabilities to be created
- Pipeline based Test automation not in place

Release Management

- Release wait time for most of the components, due to overlap between Org wide Release plans.
- Build for traditional Release management practices needs to be redefined for New Ways of Working

Agile Process

- New environment creation process is Manual takes 15 days for creation and 1 day for enablement of virtual servers
- Unit testing is manual
- KM Process are defined at component level with partial compliance

Cloud Adoption

- Structures Cloud adoption strategy in place and driven through CoE
- Templatized migration and application refactoring in being defined

Automation

- Unit testing is mostly manual. Manual intervention across software lifecycle.
- Many activities of the SDLC is manually triggered of lack any significant automation.
- Reusable automation scripts are not available pan BT
- Automation First mindset not enforced with Engineering community

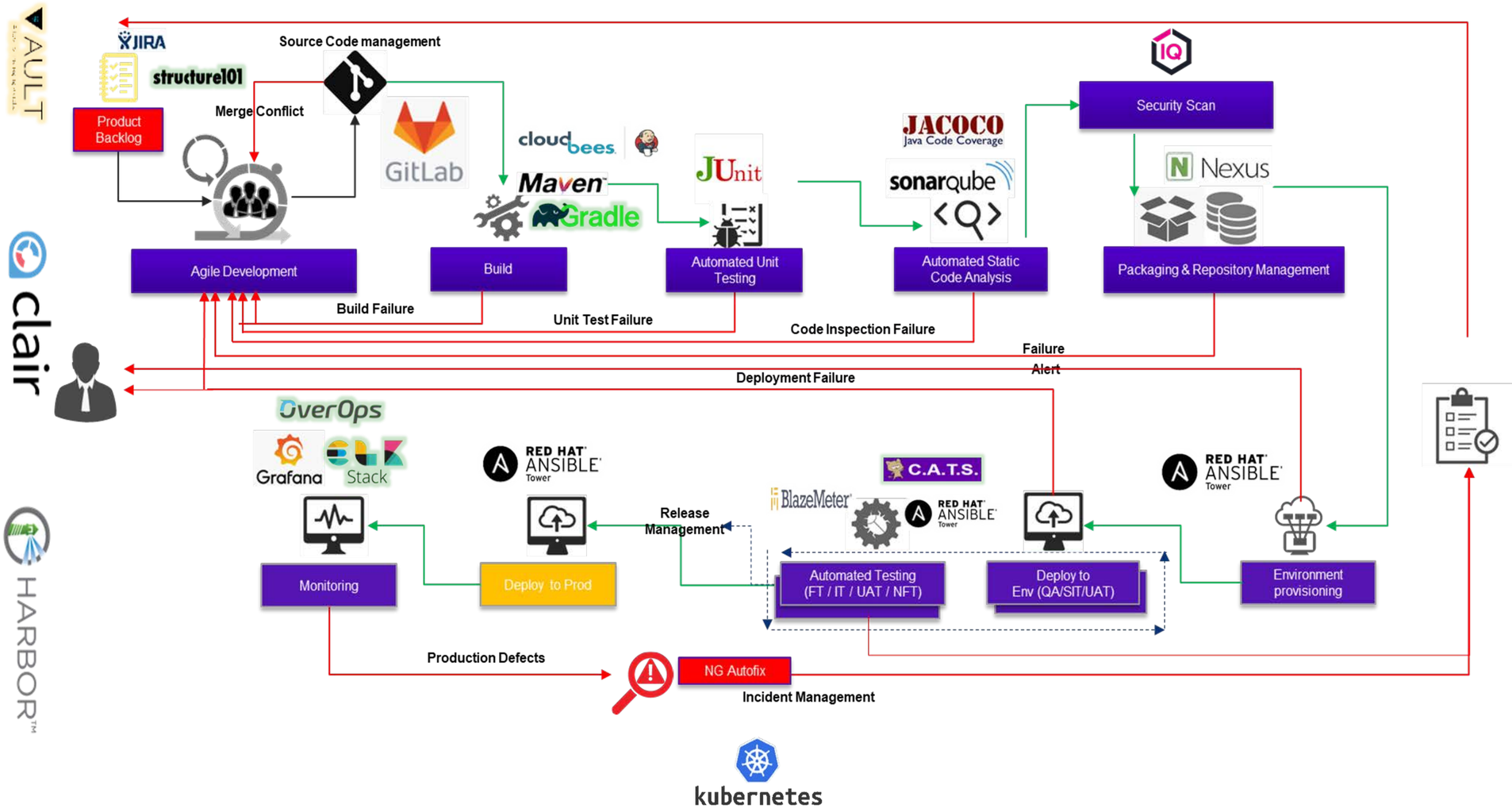
Visibility

- Lack of Single source of truth for all Engineering reporting needs
- Loss of Significant amount of time in building dashboards and updating reports
- No Enterprise-wide reusable Dashboards for all engineering functions
- Component level KPIs are measured. Reporting is mostly manual with various source of information.

Challenges

- Lack of measurements
- Lack of tooling governance
- Localized Optimization
- Automation silos and lack of reusability

The Toolset for MOBIUS

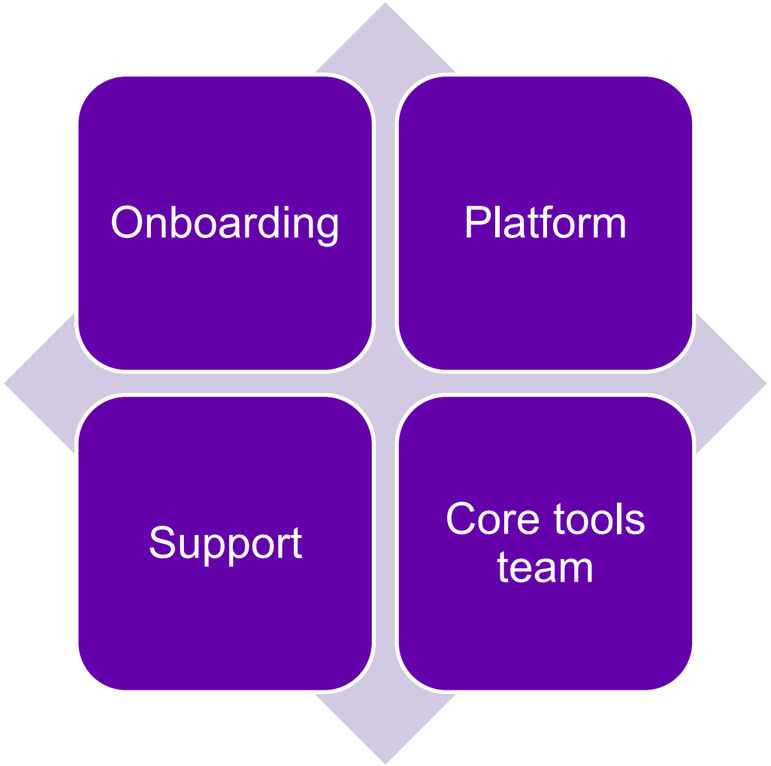


This should be the slide for results, right?

But we started seeing complaints about the stability of the MOBIUS platform from initial customers

The original structure was not conducive to SRE –

Who owns the platform, really? - customer feedback
Support tickets started piling up – but needed Platform help



This led us to SRE

1/ Understanding SRE

2/ Moving from Reactive to Proactive Operating Model

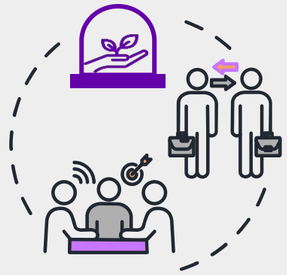
3/ Implementation via Tools

SRE @ BT

Adoption Phases

Assess
Map the current State of ITSM Practices

Define
Determine the future state and the Milestones



Incubate
Bootstrap the SRE Model and Coach the teams

ADOPT
Scale the practice across the Unit

OUTCOME DRIVEN CAPABILITY MODEL

PERFORMANCE METRICS

SPEED
LEAD TIME
RELEASE CADENCE

STABILITY/ RELIABILITY
TIME TO DETECT
TIME TO ENGAGE
TIME TO RESTORE
CHANGE FAILURE RATE

CULTURE
AGILE & LEAN VALUE
CUSTOMER CENTRIC
AGILE SERVICE MANAGEMENT
DATA DRIVEN
LEARNING ORGANIZATION
SAFE ENVIORNMENT
TRUST & TRANSPARENCY

CLOUD PLATFORM
ON-DEMAND SELF-SERVICE
BROAD NETWORK ACCESS
RESOURCE POOLING
RAPID ELASTICITY
MEASURED SERVICE

RELIABILITY ENGINEERING
SERVICE LEVEL MANAGEMENT
MONITORING & OBSERVABILITY
INCIDENCE RESPONSE
TOIL MANAGEMENT
CONTINUOUS DELIVERY
DEVSECOPS
NON-FUNCTIONAL TEST AUTOMATION
EVERYTHING AS CODE
RISK & COMPLIANCE
CAPACITY MANAGEMENT
CHAOS/RESILIENCE ENGINEERING

TRANSFORMATION LEADERSHIP
VISION
PERSONAL RECOGNITION
SUPPORTIVE LEADERSHIP
INTELLECTUAL STIMULATION
INSPIRATIONAL COMMUNICATION

PRODUCT
VALUE STREAM MANAGEMENT
RELIABILITY AS A FEATURE
CONTINUOUS FEEDBACK
MAKE FLOW OF WORK VISIBLE
LIMIT WORK IN PROGRESS
LIGHT WEIGHT CHANGE APPROVAL
TEAM EXPERIMENTATION
INNERSOURCING

Subset of DevOn Enterprise DevOps Capability Model

The ask from the SRE team

Reactive > Proactive > Preventive

Reliability Engineering Model

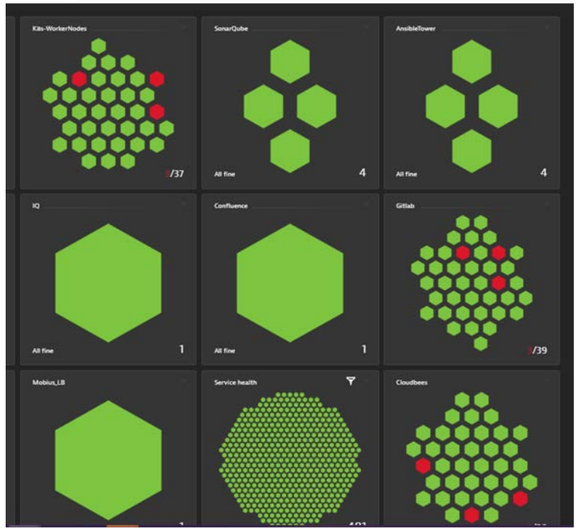
FROM REACTIVE TO PROACTIVE RELIABILITY MONITORING

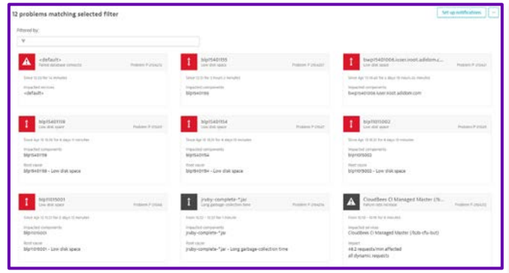
10
TOOL

289
MOBIUS & TOOLS INFRASTRUCTURE

40
K8 CLUSTER

40 › 120
MOBIUS PLATFORM





Alerts Triggers
Problem Management
Manual Incident Trigger

23500+
END USER ▲ 60%

Toil Identification

Real Time Incident Response Tools Integration
(Pager Duty)

Availability Metrics Dashboard

Learning: We have unearthed more problems in our digital estate than we initially expected!

Extending monitoring in uncharted areas like Certificate Monitoring

ISSUE TYPE	Category	Issues
MEMORY	Memory saturation	81
MEMORY	Group of alerts, Memory saturation	16
MEMORY	The total available space on disk C:\ is lower than 35 %	14
CPU	CPU saturation	14
NETWORK	Request timeout from Derby	13
MEMORY	Disk slow on blp15401041	5
MEMORY	Disk slow on blp15401392	3
REPONSE	Response status code rules violated, 503: Service unavailable,Unknown host from 2 locations	2
MEMORY	The total available space on disk /var is lower than 35 %	2
MEMORY	Group of alerts, The total available space on disk C:\ is lower than 35 %	2
MEMORY	The total available space on disk C:\ is lower than 20 %	2
MEMORY	Disk slow on blp15401074	1
REPONSE	Response status code rules violated, 403: Forbidden from 2 locations	1
REPONSE	Response status code rules violated, 401: Unauthorized from 2 locations	1

… Next Steps?

FROM REACTIVE TO PROACTIVE RELIABILITY MONITORING

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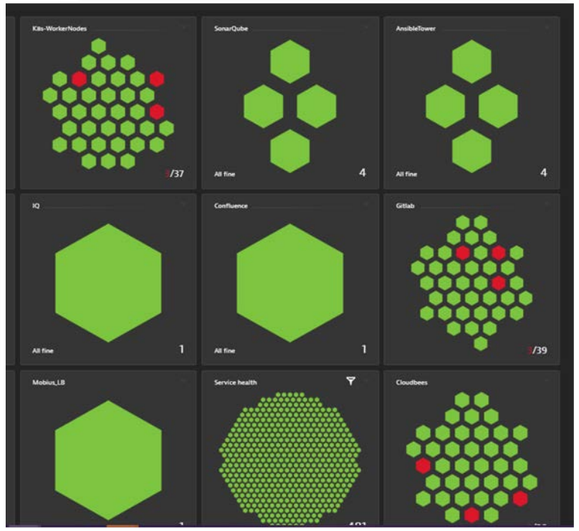

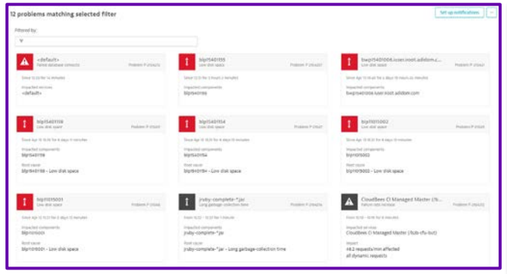

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SLO Driven

Observability & Self Healing based Monitoring

Capacity Prediction and Planning

 9/2021