Collaborative Automation for IT Operations
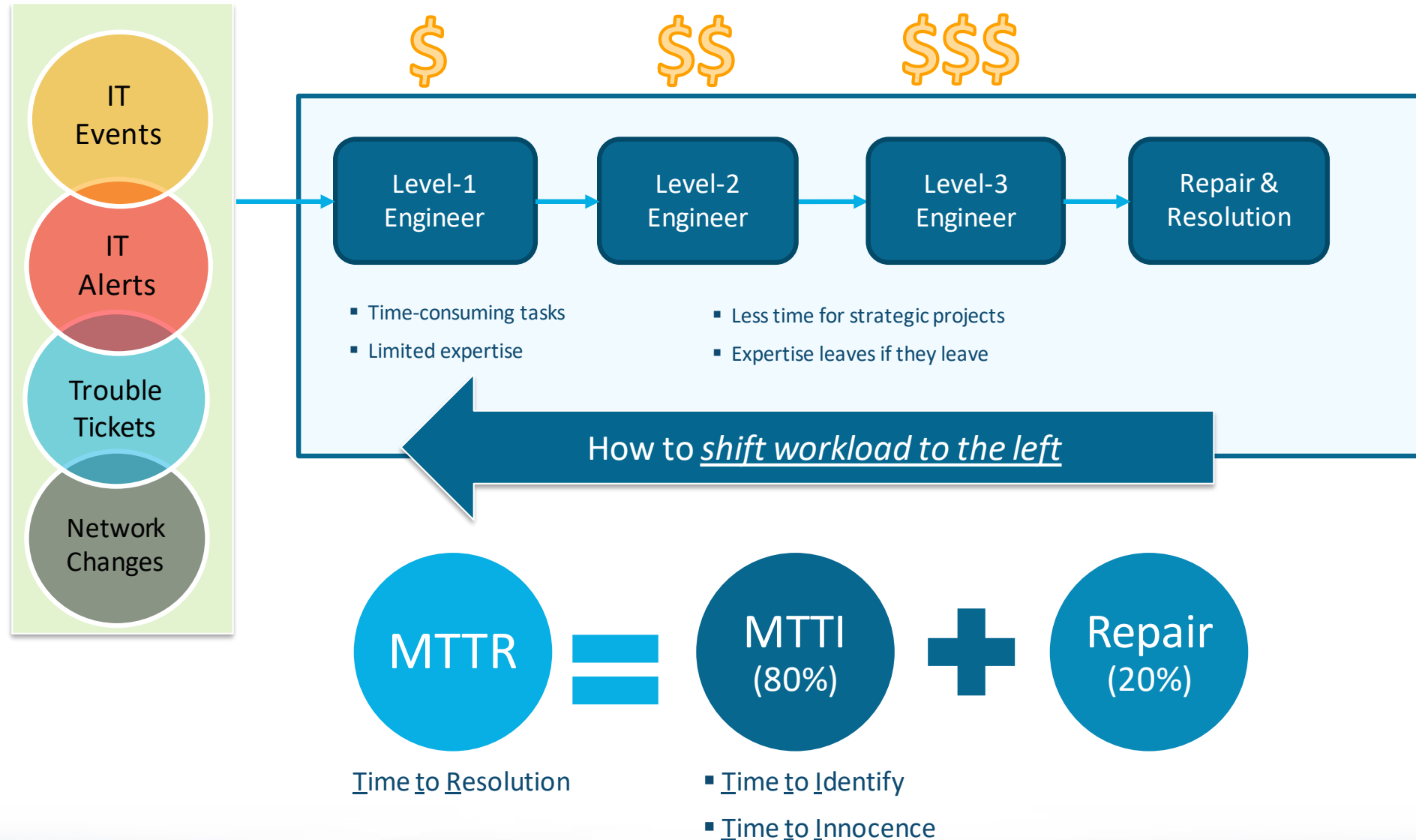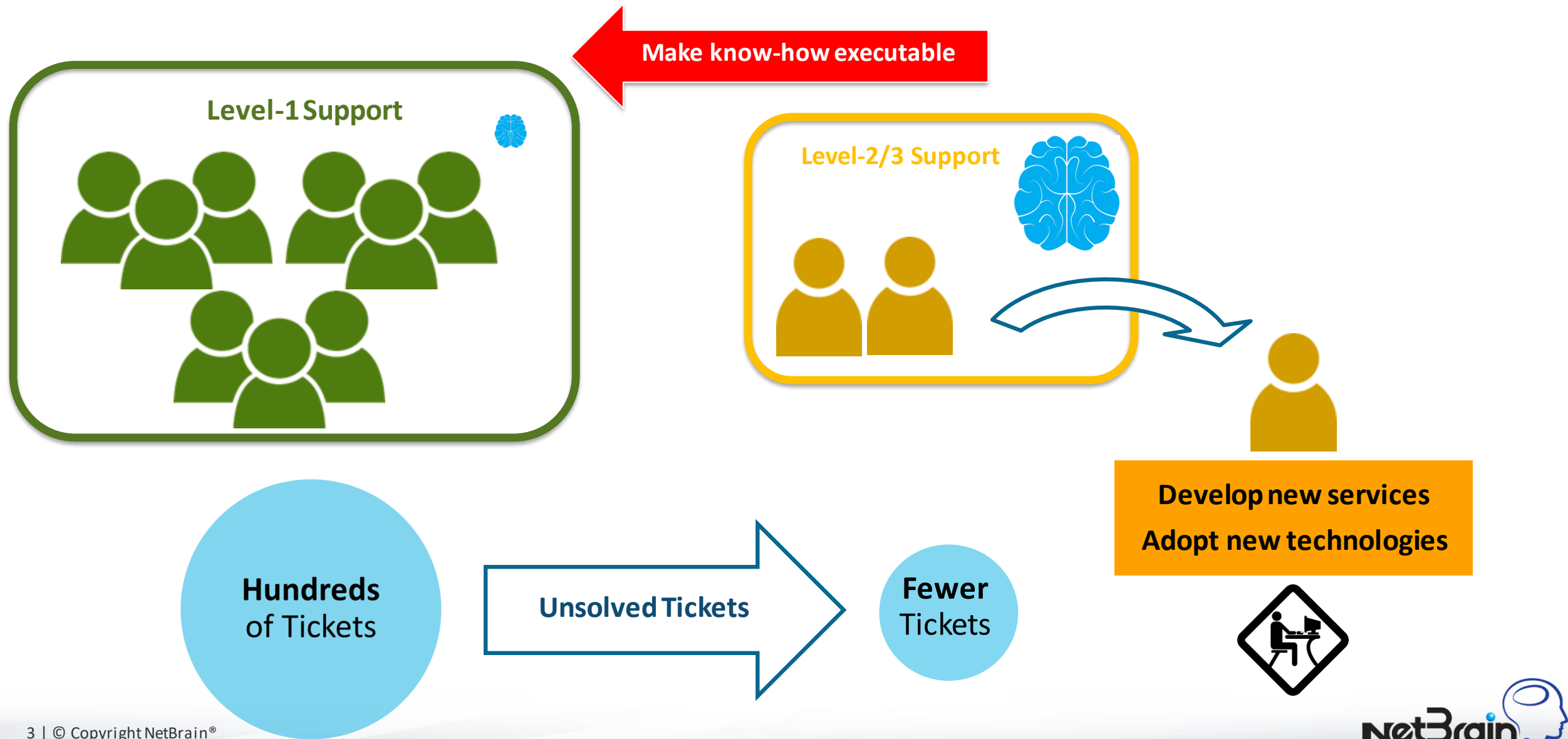
What's New in NetBrain 8.0
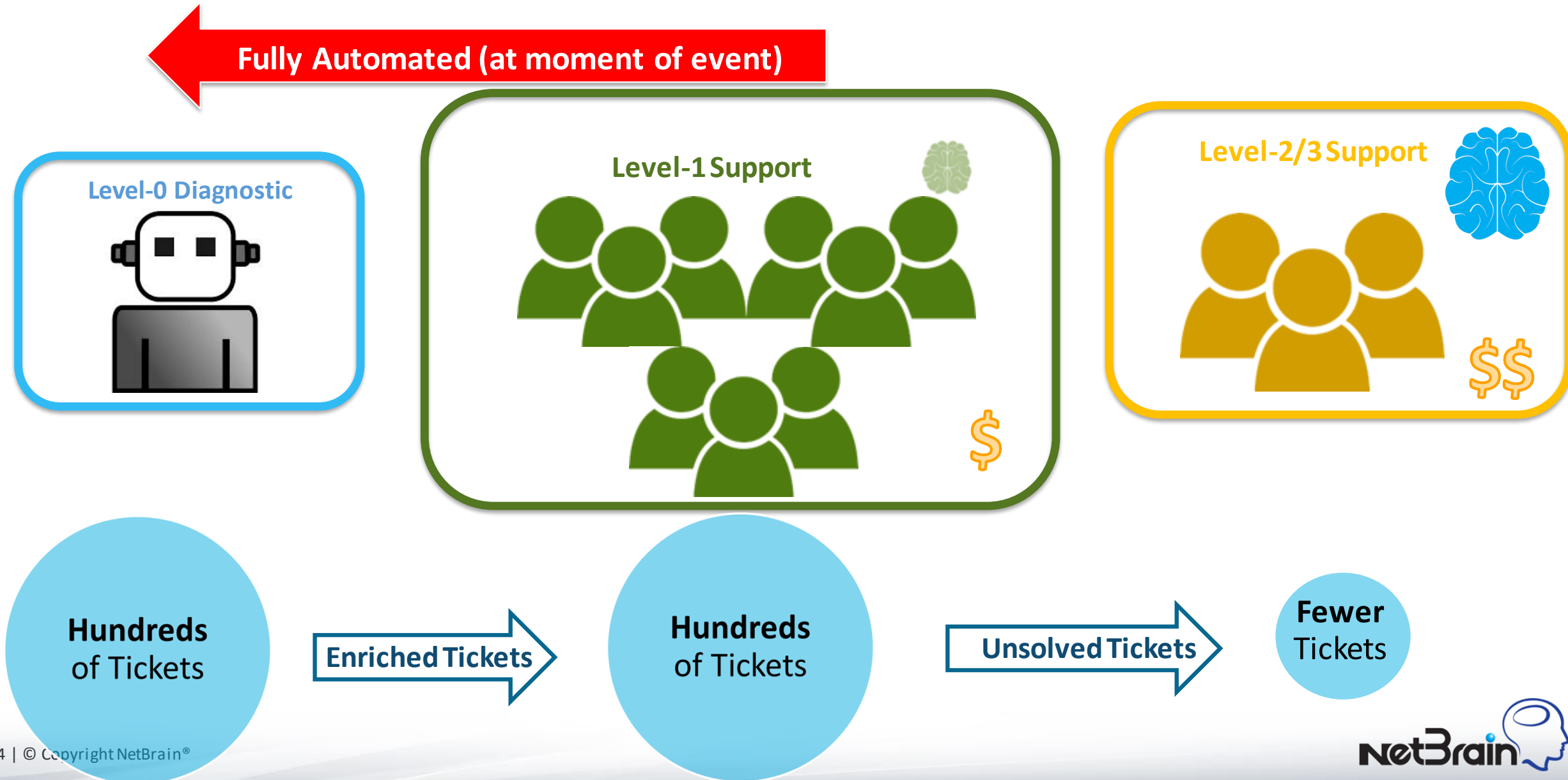
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A Typical IT Workflow

Shift-Left – Empower First Level Engineers

Make know-how executable

Level-1 Support

Level-2/3 Support

Hundreds of Tickets

Unsolved Tickets

Fewer Tickets

Develop new services
Adopt new technologies

NetBrain

Shift Left – Enrich Every Ticket with Automated Diagnostics

Fully Automated (at moment of event)

Level-0 Diagnostic

Level-1 Support

Level-2/3 Support

$

$$

Hundreds of Tickets

Enriched Tickets

Hundreds of Tickets

Unsolved Tickets
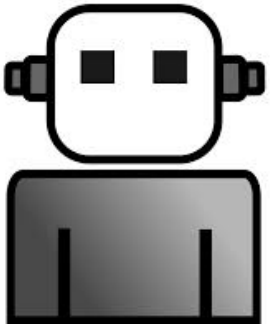
Fewer Tickets

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Benefits of "Shift-Left"

Automate Common Diagnostics

Make know-how executable

Level-0 Triggered Diagnostic
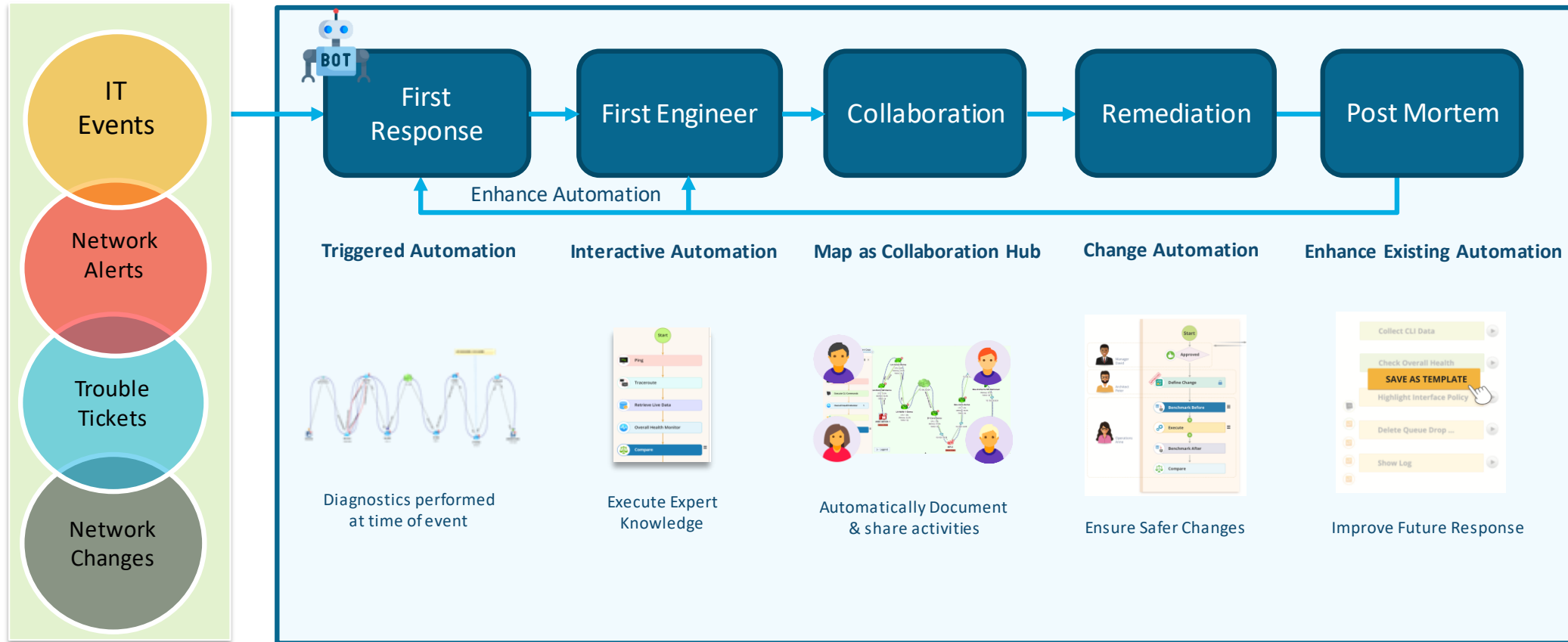
Level-1 Support

Level-2/3 Support

o   Reduce MTTR, increase customer satisfaction

o   Free-up technical resources for high-value projects

o   Streamline operations and improve productivity

NetBrain

Sample Workflow of Just-in-Time Automation

IT Events

Network Alerts

Trouble Tickets

Network Changes

BOT

First Response → First Engineer → Collaboration → Remediation → Post Mortem

Enhance Automation

Triggered Automation	Interactive Automation	Map as Collaboration Hub	Change Automation	Enhance Existing Automation
Diagnostics performed at time of event	Execute Expert Knowledge	Automatically Document & share activities	Ensure Safer Changes	Improve Future Response

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How NetBrain 8.0 Moves This Forward

How automation helps teams work more collaboratively

What's New in NetBrain 8.0

Collaborative Automation

| 1 | Dynamic Map 2.0 |
Now, Dynamic Map is an even more powerful UI to the network... helping teams share know-how and real-time insights during troubleshooting.

| 2 | Golden Baseline |
AI-powered Golden Baseline discovers, records, and analyzes up to 12,000 data points per device, to document the network's *nominal* conditions

| 3 | Knowledge Cloud |
Continuous delivery of platform capabilities for today's evolving networks

| 4 | Smart CLI |
Troubleshoot collaboratively with recorded, sharable device diagnostics

Platform Improvements

| 5 | Topology Enhancements |
More intelligence, more technologies, and more actionable insights within Topology analysis and A/B Path Mapping

| 6 | Ansible Integration |
Scale Ansible across your entire network infrastructure

Application-Centric Networks

| 7 | Enhanced SDN Support |
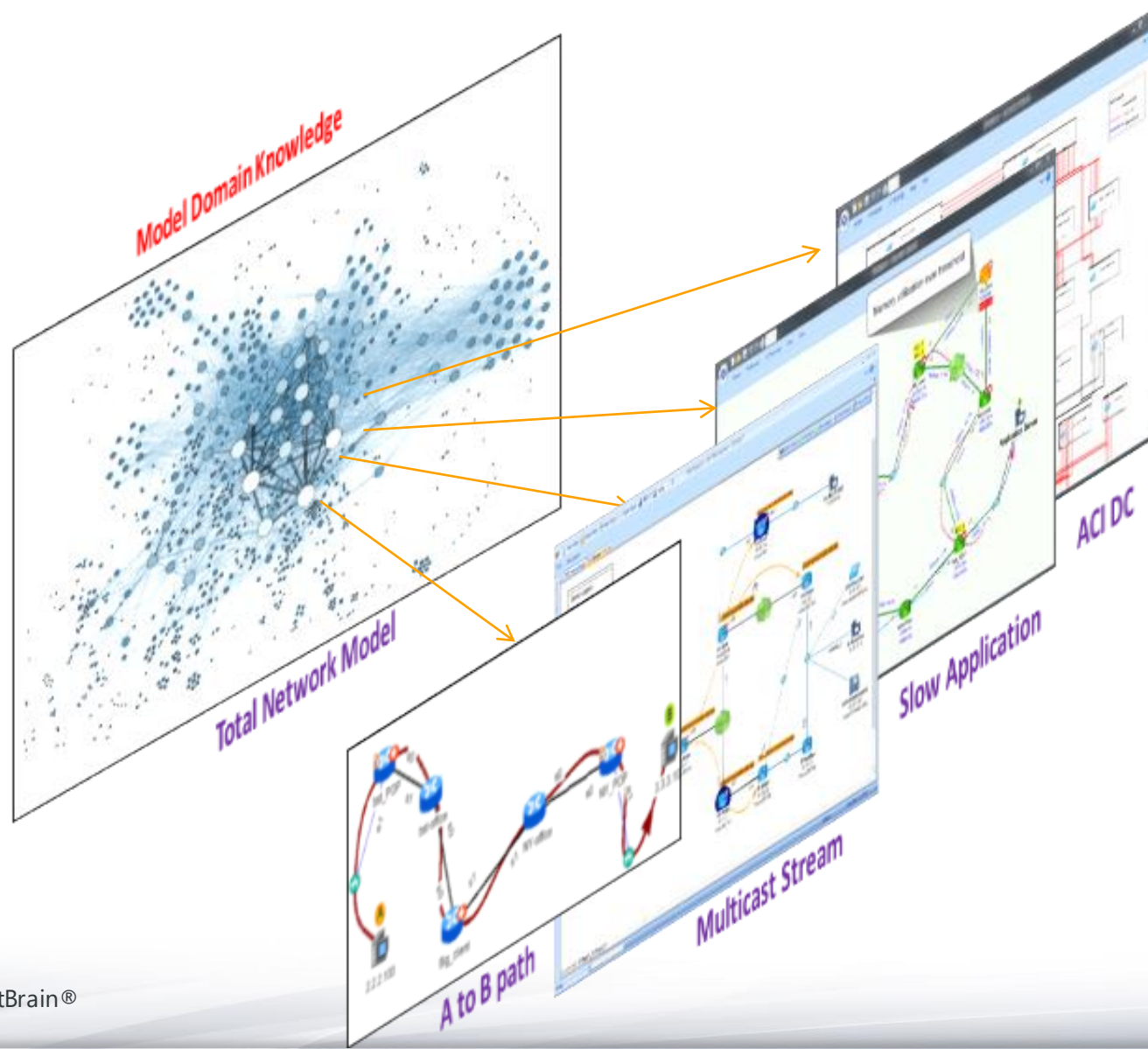Reduce the friction migrating to SDN

| 8 | Application Assurance |
Monitor and verify critical multi-tier application dependencies

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Collaborative Automation

Share know-how and make it executable

Dynamic Map: The User Interface to the Network

Model Domain Knowledge

Total Network Model

A to B path

Multicast Stream

Slow Application

ACI DC

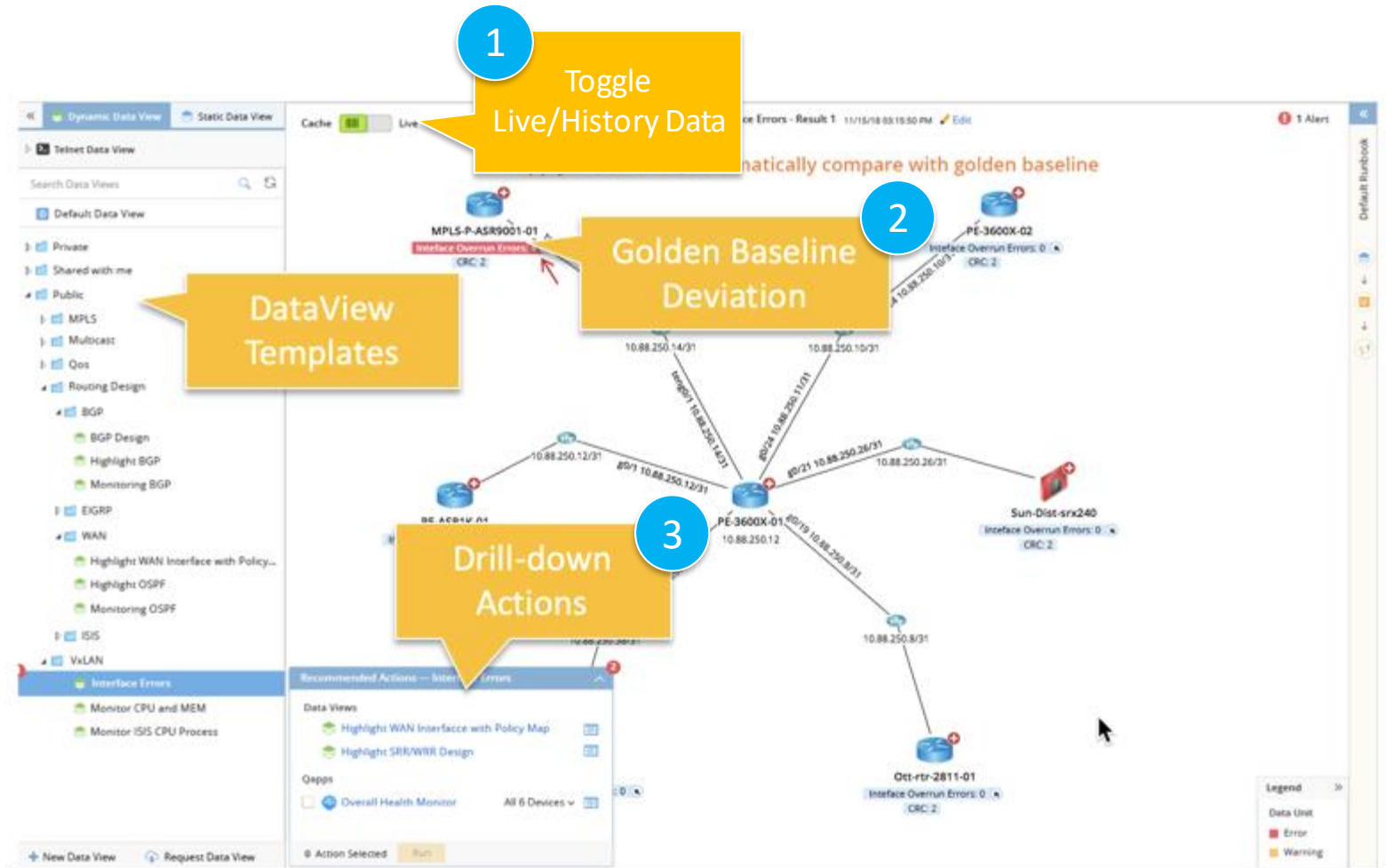Define Tasks | Intent

I/O for Automation

Collaboration Media

Dynamic Map 2.0

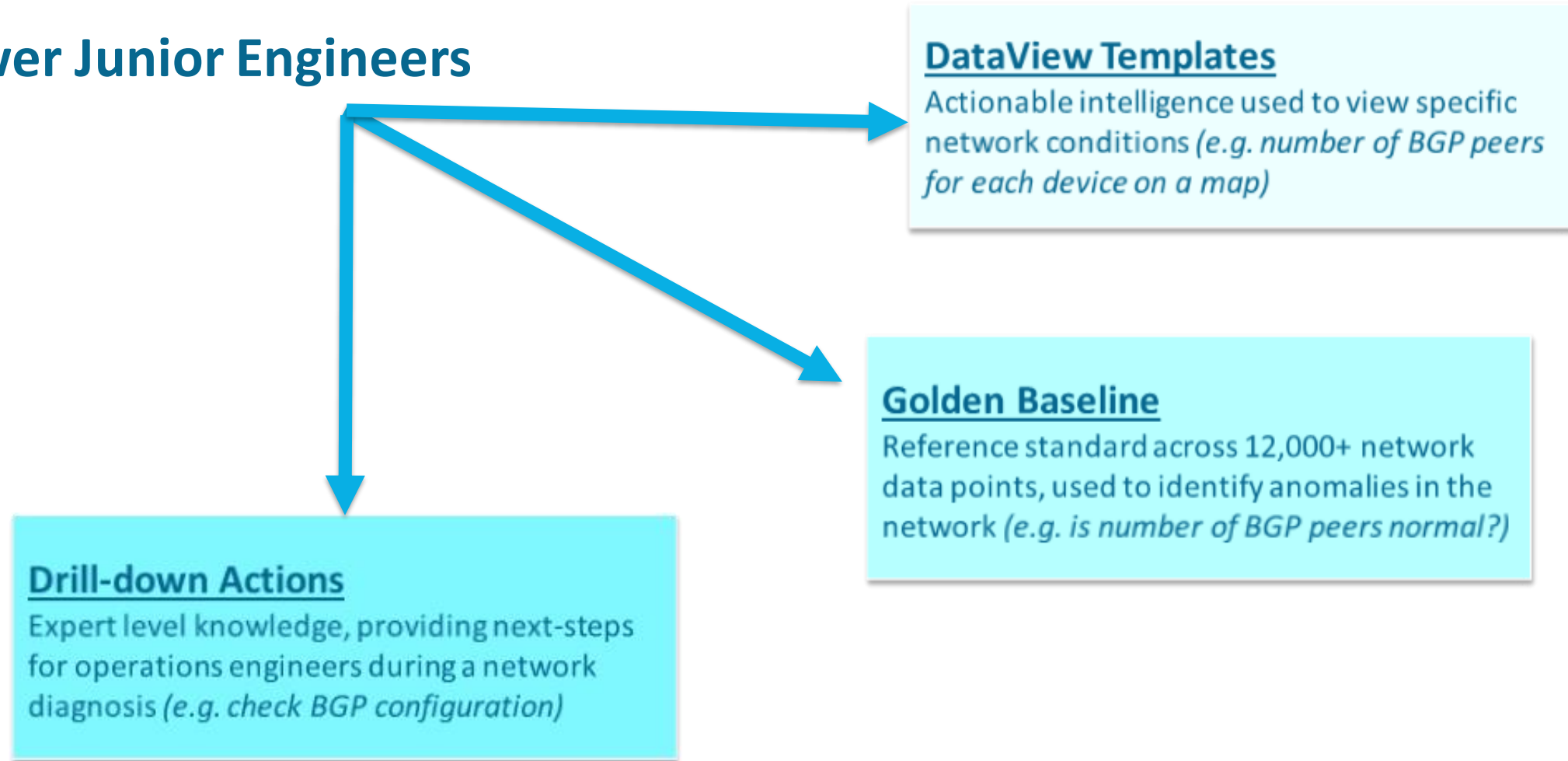**Three questions an *advanced* engineer will (eventually) answer:**

1 Has something CHANGED?

2 Is the network in a "NORMAL" state?

3 WHAT SHOULD I DO NEXT to continue my diagnosis?

Dynamic Map 2.0 addresses all three, enabling junior engineers with advanced diagnostic and automation capabilities.

1 Toggle Live/History Data

2 Golden Baseline Deviation

DataView Templates

3 Drill-down Actions

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What's New with Dynamic Map 2.0

Empower Junior Engineers

DataView Templates
Actionable intelligence used to view specific network conditions *(e.g. number of BGP peers for each device on a map)*

Golden Baseline
Reference standard across 12,000+ network data points, used to identify anomalies in the network *(e.g. is number of BGP peers normal?)*

Drill-down Actions
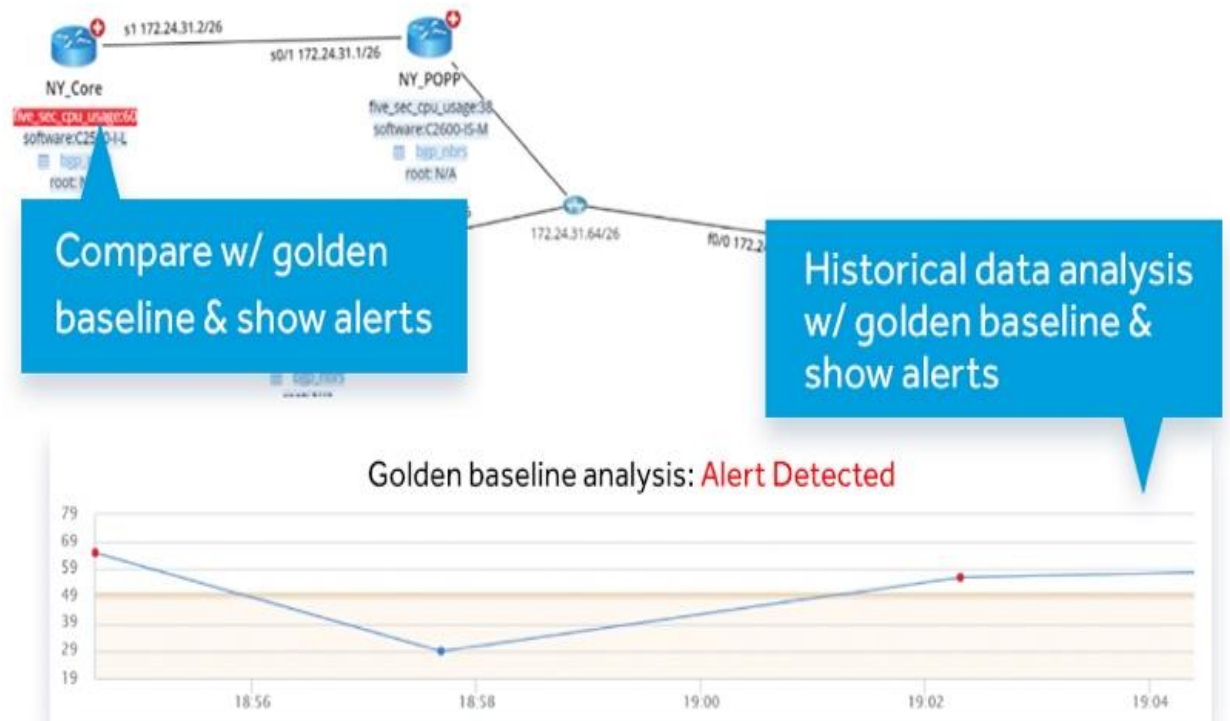Expert level knowledge, providing next-steps for operations engineers during a network diagnosis *(e.g. check BGP configuration)*
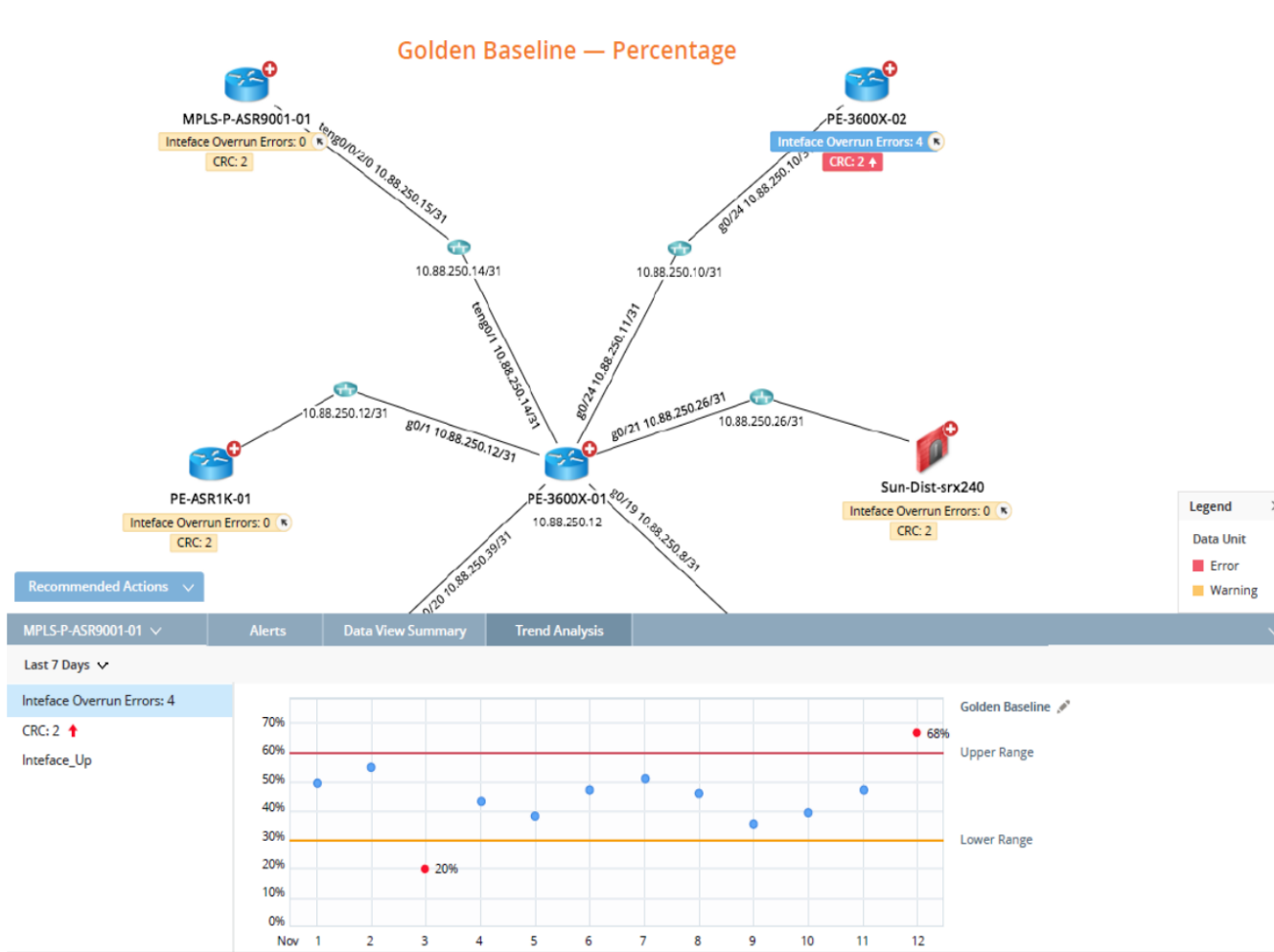
Golden Baseline

What's your network's **normal state**?
Discover with **Golden Baseline**

o **Discover, document, and analyze** up to 12,000 data points per network device

o **Build a reference standard** of your network's nominal status

o **Automatically calculate Golden Baseline** based on Artificial Intelligence applied to benchmark data

o **Automatically compare** live data with Golden Baseline

Compare w/ golden baseline & show alerts

Historical data analysis w/ golden baseline & show alerts

Golden baseline analysis: Alert Detected

Golden Baseline

Golden Baseline — Percentage

- **Golden Baseline** defines key characteristics of a "normally performing" network, for example:
  - Device CPU range (e.g. 30 - 60%)
  - Interface errors (e.g. CRC should not increase)
  - Neighbor relationships (e.g. R1 has 3 BGP neighbors)
  - Standard secure configurations
- The system can automatically recommend golden baseline values by observing network behaviors (via Artificial Intelligence)
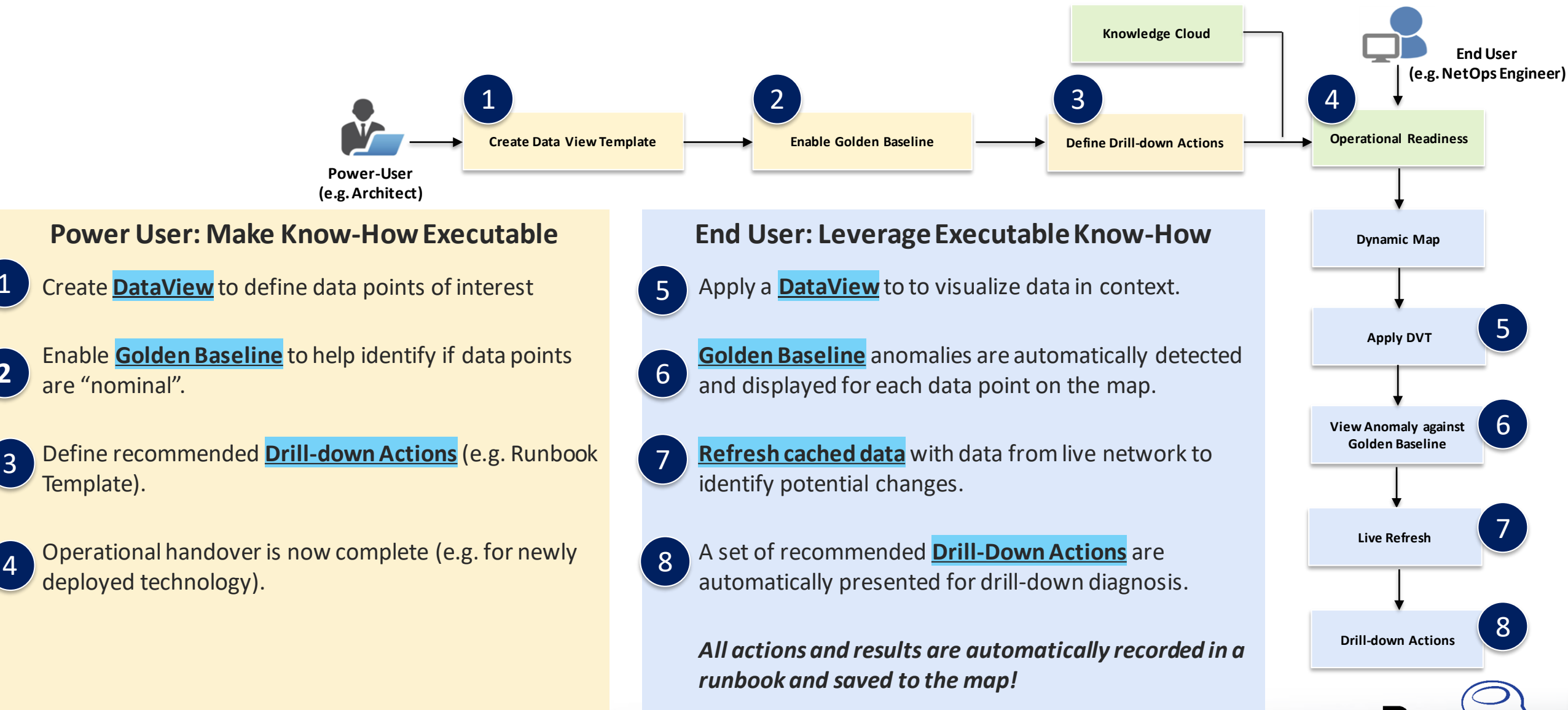- Baseline can also be manually defined and tuned.

DataView Template Drill-down Actions

**Utilize 14 types of Drill-down Actions within DVTs
to operationalize your expert knowledge!**

- Runbook template

- Qapp/Gapp

- Overall Health Monitor

- CLI Commands

- A/B Path

- Compare with historical data

- …

Recommended Actions (4) ✕

📒 Troubleshooting

🔄 Collect MQC QoS Offered and Drop Rate - v3 [Cisco IOS]

v Infrastructure View

v PRTG Monitor View

Share Know-How with Dynamic Map 2.0

Knowledge Cloud

End User
(e.g. NetOps Engineer)

Power-User
(e.g. Architect)

1 Create Data View Template

2 Enable Golden Baseline

3 Define Drill-down Actions

4 Operational Readiness

Dynamic Map

Apply DVT **5**

View Anomaly against Golden Baseline **6**

Live Refresh **7**

Drill-down Actions **8**

Power User: Make Know-How Executable

1 Create **DataView** to define data points of interest

2 Enable **Golden Baseline** to help identify if data points are "nominal".

3 Define recommended **Drill-down Actions** (e.g. Runbook Template).

4 Operational handover is now complete (e.g. for newly deployed technology).

End User: Leverage Executable Know-How

5 Apply a **DataView** to to visualize data in context.

6 **Golden Baseline** anomalies are automatically detected and displayed for each data point on the map.

7 **Refresh cached data** with data from live network to identify potential changes.

8 A set of recommended **Drill-Down Actions** are automatically presented for drill-down diagnosis.

All actions and results are automatically recorded in a runbook and saved to the map!

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NetBrain's Team is Adding New DataViews All the Time

NetBrain's <u>Network Engineering & Automation Team</u> is codifying their own know-how, and making it available to customers:

- Customers don't need to build their own DVTs to empower junior engineers on the team

- Each new DataView is a potential "Killer App" of NetBrain

- New DataViews added all the time!

Knowledge Cloud

Knowledge Cloud is a new cloud repository enabling instantaneous delivery of NetBrain platform assets, including **DataView Templates, Executable Runbooks, drivers for new vendors, A/B path support, etc.**
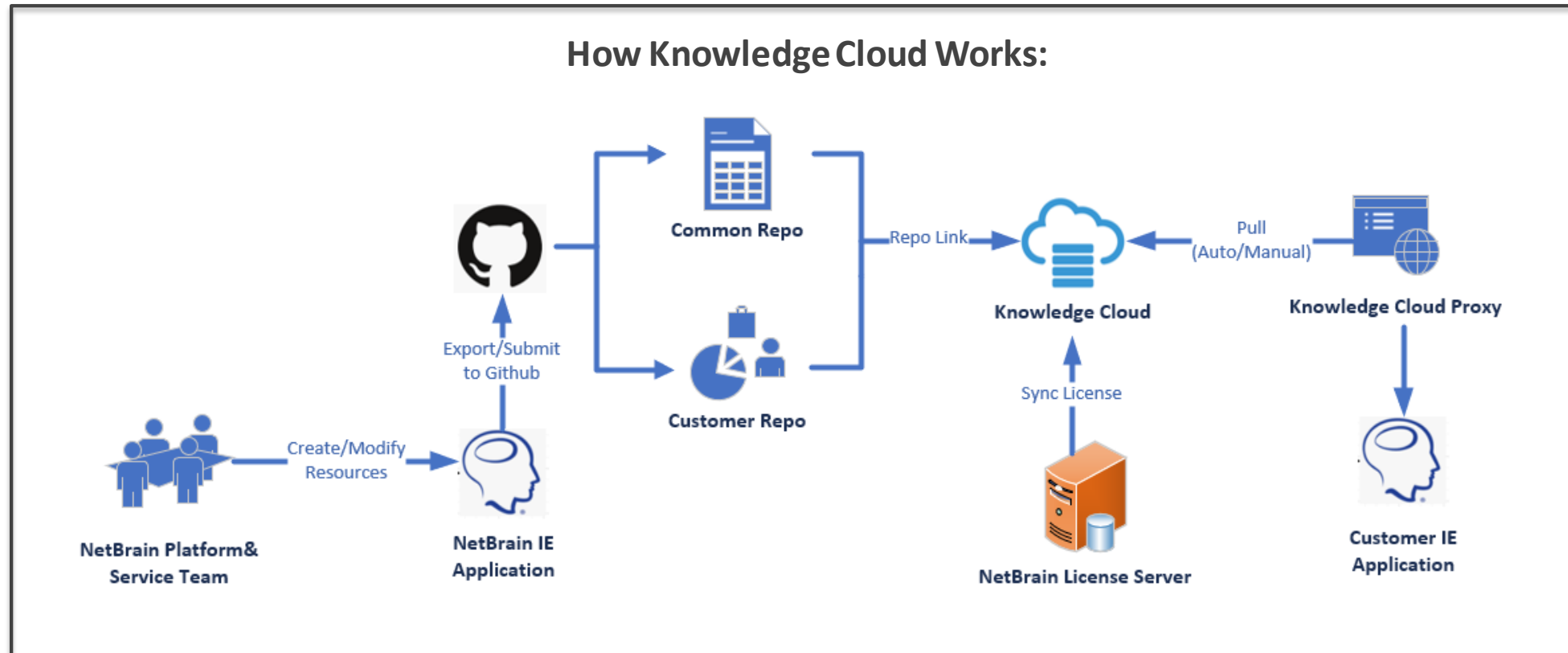
Smart CLI: Document & Share CLI Data

o Easier access to CLI (still a must-have tool) – directly from map, with auto-login

o Record CLI output (e.g. show command) to NetBrain runbook with one click

o Turn static CLI output (text) into "smart variables" for automation (e.g. monitor every device in map)

1 Click Document Button

2 CLI output documented in runbook

3 Raw text converted to "smart variables"

4 Instant Automation

Platform Improvements

More Network Intelligence Discovered

NetBrain™

Topology Enhancements

Today's networks are driving innovation through technology investments

- At the core of NetBrain is the **network discovery** and the building of the network data model

- With NetBrain 8.0's Topology Discovery Enhancements, you gain **more visibility**

  » Improved wireless support

  » Improved A/B pathing algorithms

  » Support for the latest technologies
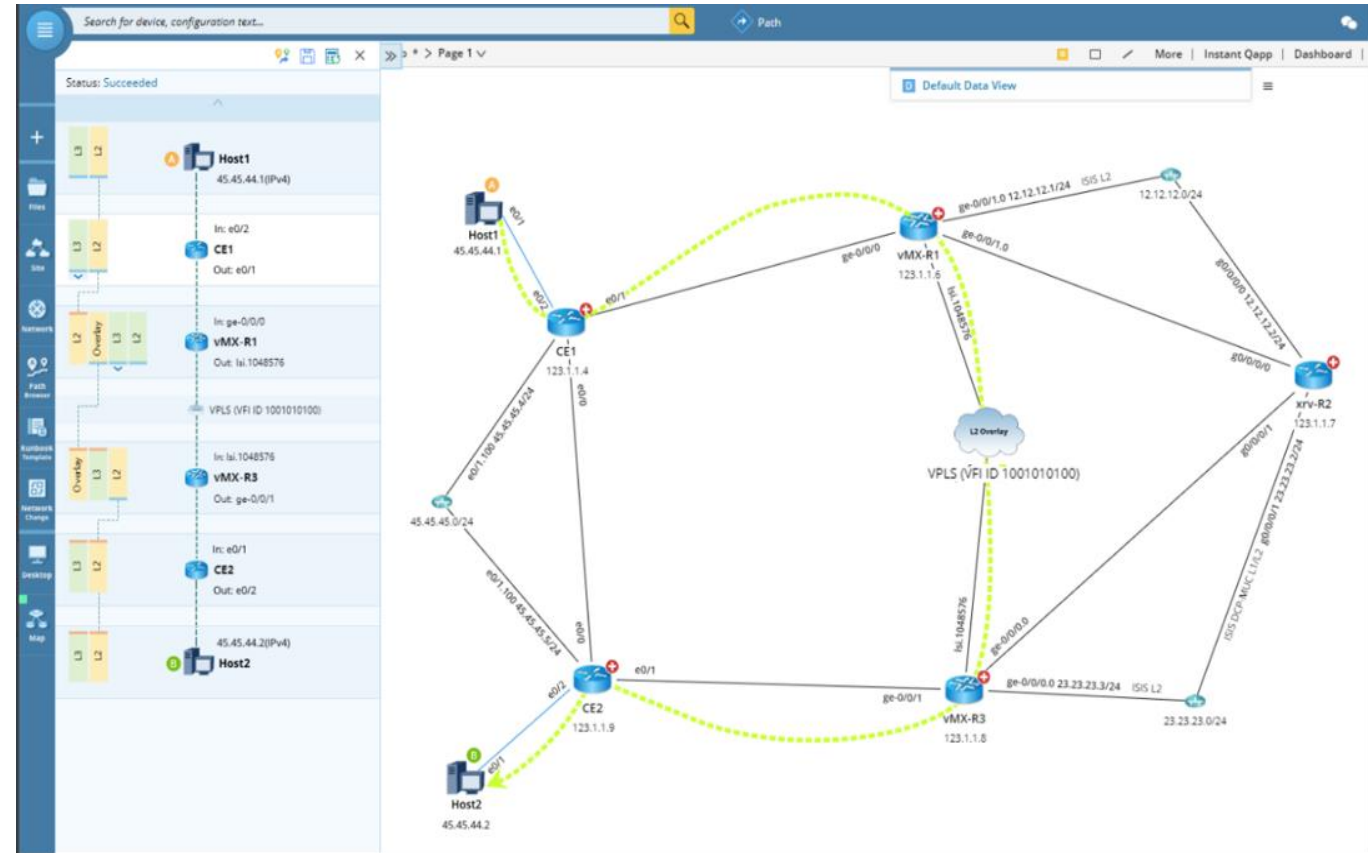
A/B Path across a VPLS Overlay Network

Topology Enhancements

Technology Name	Data Model Support	Topology Support	Path Support	Supported Device Type
VXLAN	√	L2 overlay	√	• Cisco Nexus Switch
OTV	√	L2 overlay	√	• Cisco Nexus Switch • Cisco Router (CSR)
VPLS	√	L2 overlay	√	• Cisco IOS XR • Juniper Router
HA/Cluster	√	L3	√	• Cisco ASA Firewall • Cisco Router • Juniper SRX • Palo Alto Firewall
Transparent Device	√	L2	√	• Riverbed WAN Optimizer • Cisco ASA Firewall • Palo Alto Firewall (Virtual Wire)

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Topology Enhancements

Technology Name	Data Model Support	Topology Support	Path Support	Supported Device Type
MC-LAG	√	L2	√	• Cisco Nexus Switch • Arista Switch • Dell Force10 Switch • Checkpoint Firewall • Cisco ASA Firewall
FEX Dual-Homed	√	L2	-	• Cisco Nexus Switch
Port-Channel	√	L2	√	-
End System	√	L3	√	• Ubuntu Server • Windows Server • Mac Server • Printer
Wireless	√	L2	√	• Cisco LWAP • Cisco WLC

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Topology Enhancements

Technology Name	Data Model Support	Topology Support	Path Support	Supported Device Type
Management Route	√	-	√	• Dell Force 10 • F5 Load Balancer
SPB (Shortest Path Bridging)	√	-	√	• Avaya Switch • Avaya VSP
HSRP	√	L3	√	• Cisco Nexus Switch

Ansible Integration with NetBrain's Change Management Module

Improved **Audit**, **Control**, and **Scale** of network changes

o **Securely deploy and track** all your Ansible changes (who configured what, why, and when?)

o Deploy Ansible within NetBrain's **change approval workflow**

o More easily **scale Ansible** across environment
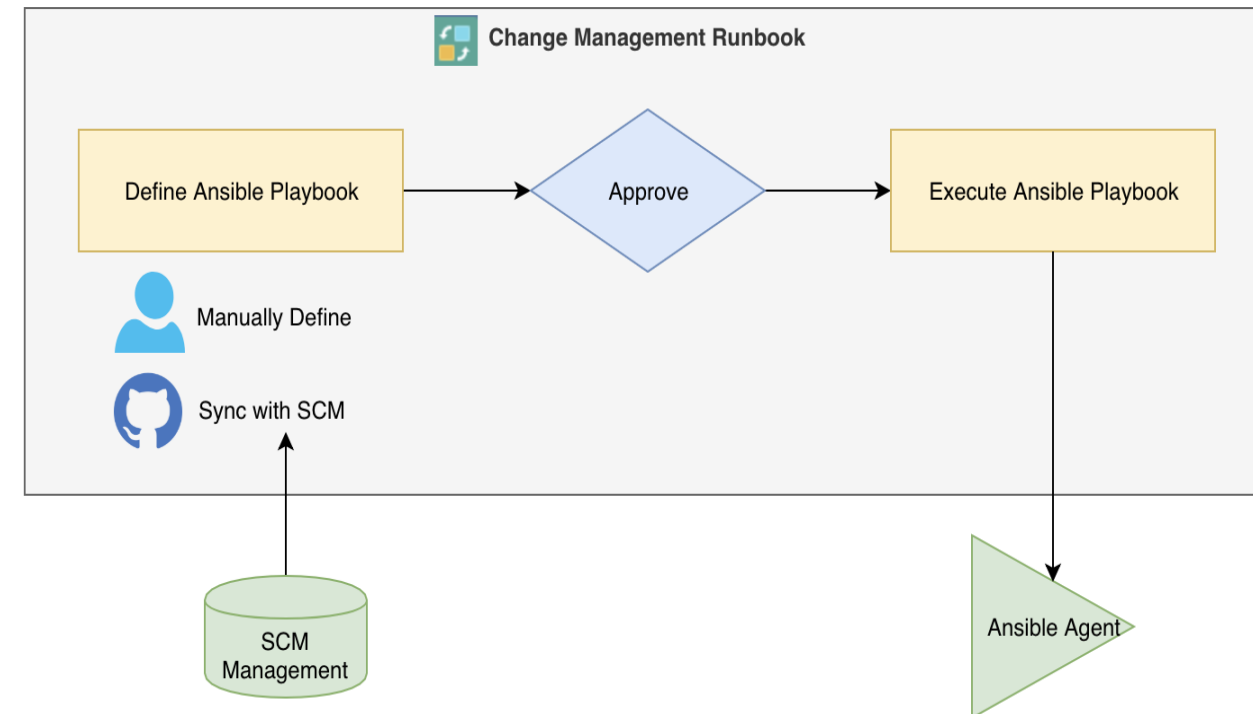
Application-Centric Networks

Enhanced Visibility for your Complex Applications

NetBrain™

Enhanced SDN Support

To manage SDN, customers need:

» End-to-end visibility

» A consistent set of tools

» A unified workspace for the heterogenous environment

NetBrain provides this, and more. Enhancements for ACI in 8.0:

» ACI Multi-POD Support

» ACI Contract Support in Path Calculations

» Anycast Gateway Support
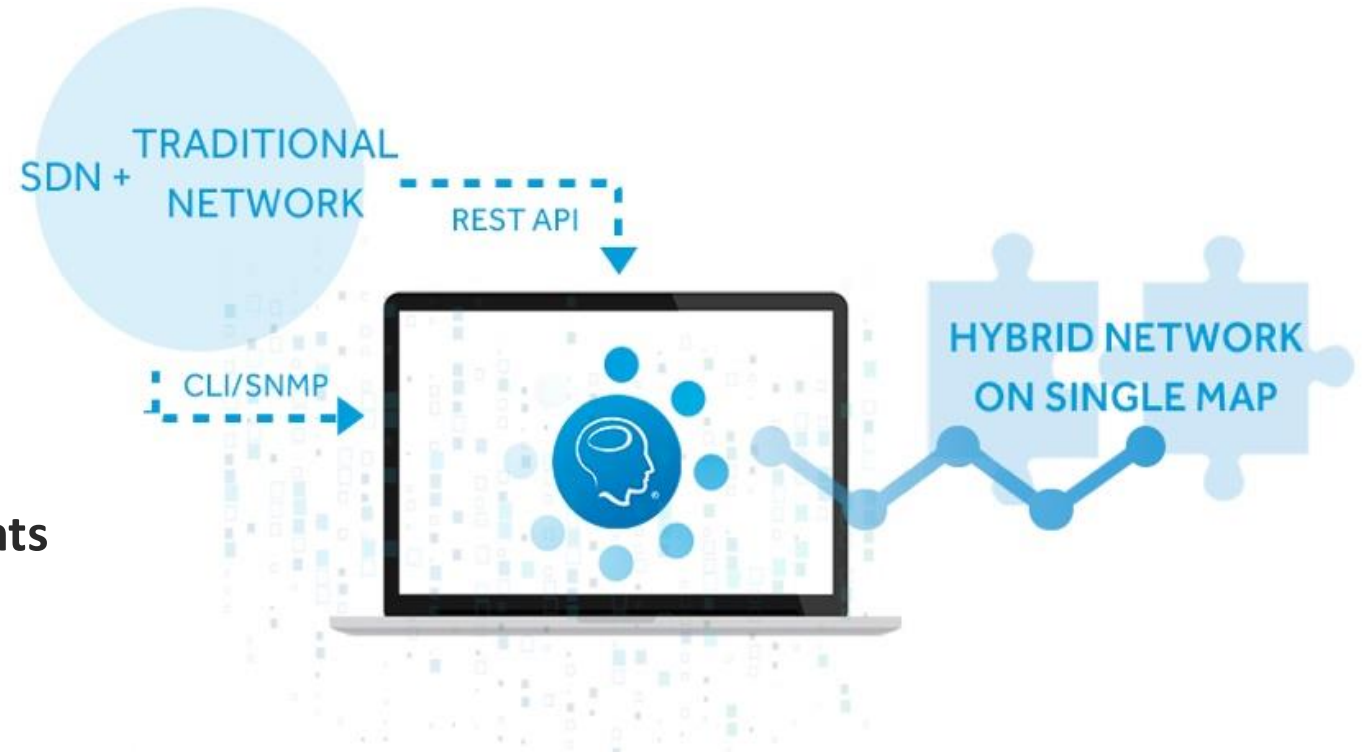
Application Assurance (New Add-On Module)

Large enterprises run *thousands* of multi-tier apps. The new AAM helps customers understand:

1. For a given <u>application</u>, what part of the network does it rely on? (e.g. a set of A/B paths)

2. For a given <u>network device</u>, what applications are impacted if it goes down?

3. Has a critical application path <u>failed over</u> to backup, without anyone knowing?

Draw and Set Golden Path

Manage and Verify Application Paths

Application Assurance and Incident Response

Use Application Assurance during all phases of incident response

1 **Monitor**

Monitor Application Paths

2 **Compare**

Compare Current and Golden Path

3 **Verify**

Verify Application Paths via Benchmark

Other Enhancements

- **Change Analysis** to proactively track changes in your configurations or network

- **Platform Plug-in** to enable platform expansion

- **Export Dynamic Map to Word Document** for more data export flexibility

- **End System Improvements** to enable more sub-types (Printer, Windows, Ubuntu, Mac, etc)

- **Customized Topology Link Styles and Device Icons** for more meaningful visualization of Maps

- **Platform Security Improvements** to harden the NetBrain installation

- **Enhanced Supportability** for Customer Service Ticketing

- … And More!

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Thank You!

NetBrain®