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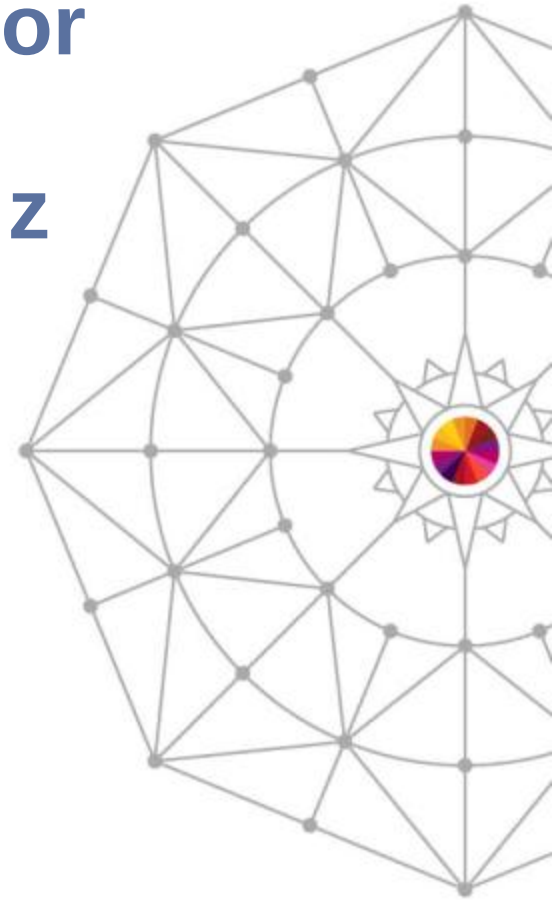
Exploit analytics to monitor and manage new technologies on System z



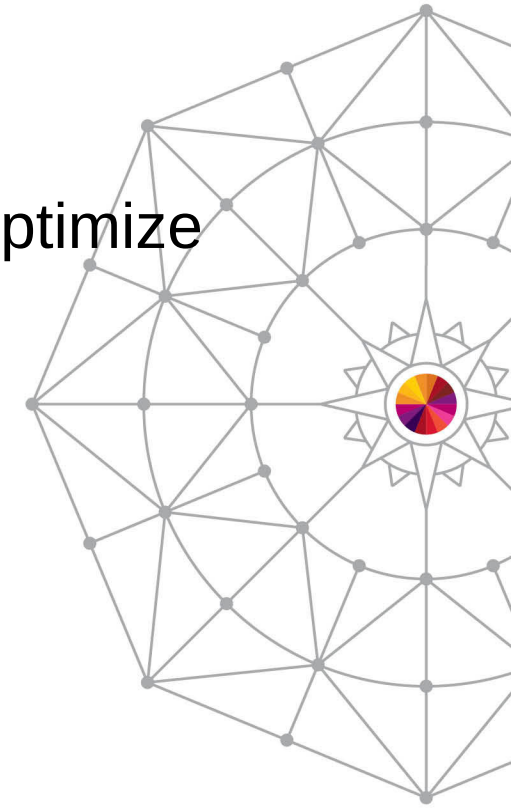
Paul Smith ('Smitty')
IBM Service Management Architect
Cloud and Smarter Infrastructure

Wednesday, March 12, 2014
Session # 15375

SHARE in Anaheim

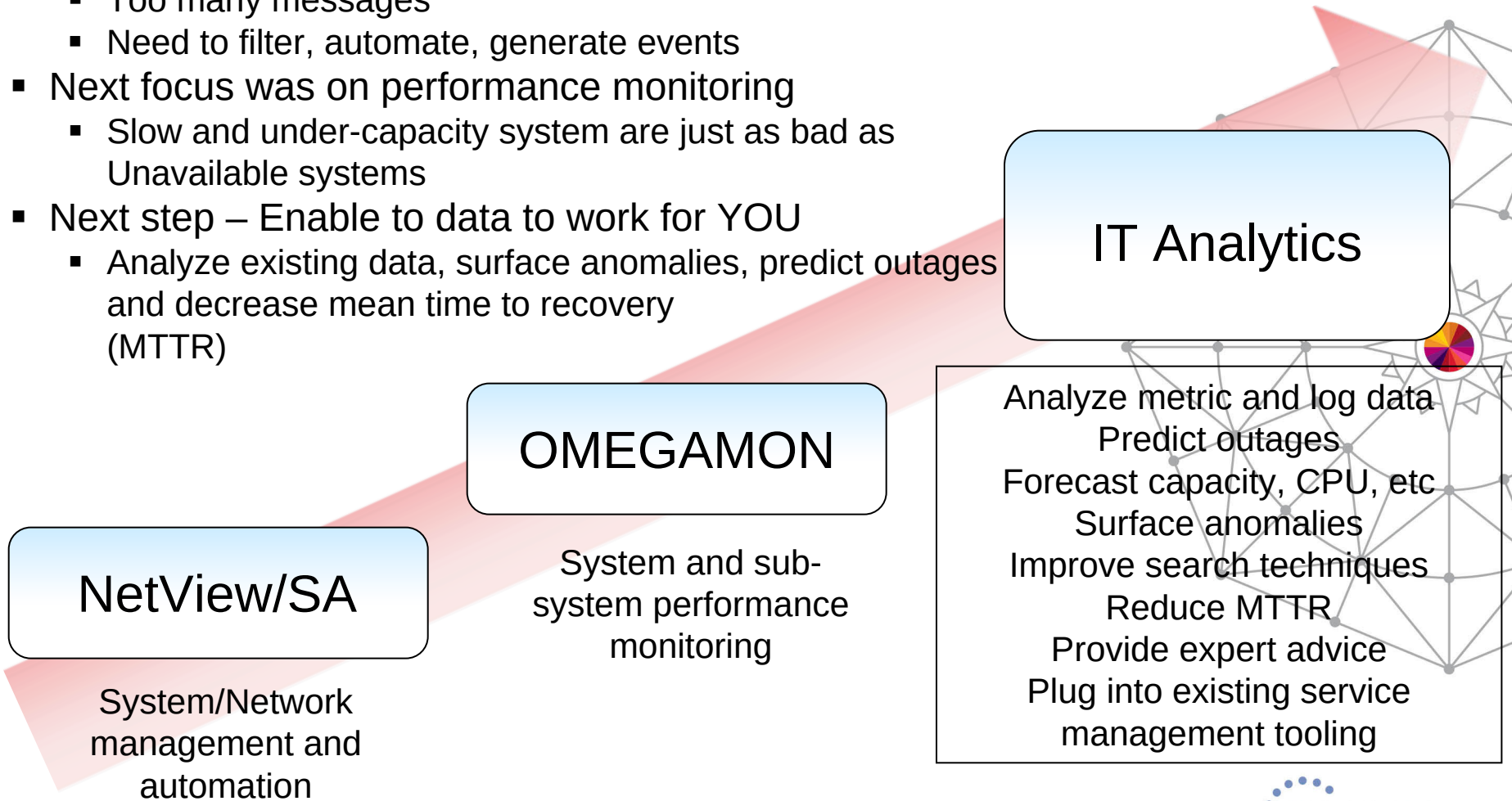
Agenda

- Stepping Stone to Analytics
- Customer Pain Points – Big Data
- IT Operations Analytics – Predict, Search, Optimize
- IBM Analytics Solutions
  - SmartCloud Analytics – Predictive Insights
  - SmartCloud Analytics – Log Analysis
  - zAware w/NetView and OMEGAMON
  - Capacity Management Analytics



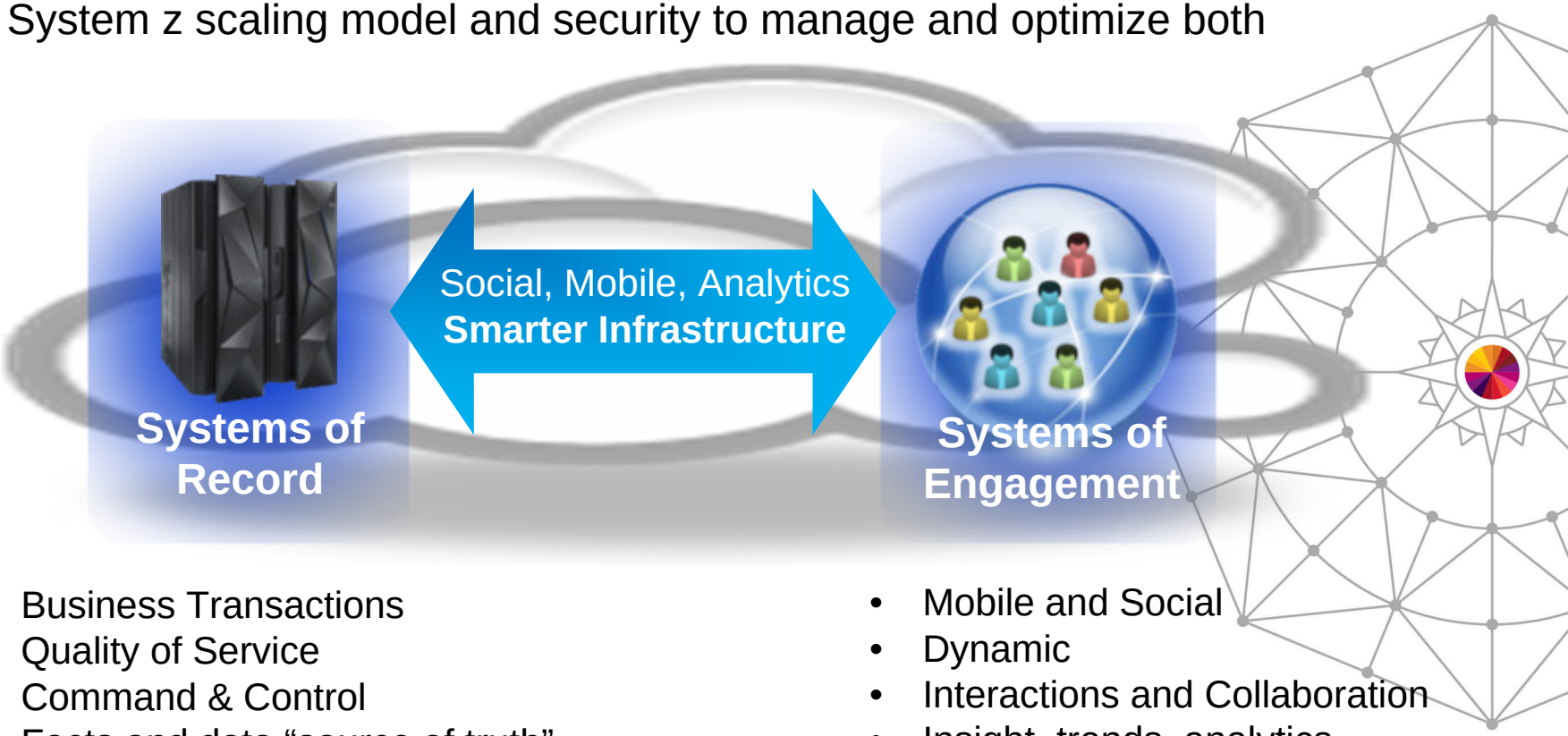
Analytics is the next step in IBM value add for zEnterprise performance and availability management

- This journey started with NetView/SA
  - Too many messages
  - Need to filter, automate, generate events
- Next focus was on performance monitoring
  - Slow and under-capacity system are just as bad as Unavailable systems
- Next step – Enable to data to work for YOU
  - Analyze existing data, surface anomalies, predict outages and decrease mean time to recovery (MTTR)



Rapid growth of data from next generation technologies can be supported seamlessly on System z

System z scaling model and security to manage and optimize both



- Business Transactions
- Quality of Service
- Command & Control
- Facts and data “source of truth”
- System z

- Mobile and Social
- Dynamic
- Interactions and Collaboration
- Insight, trends, analytics

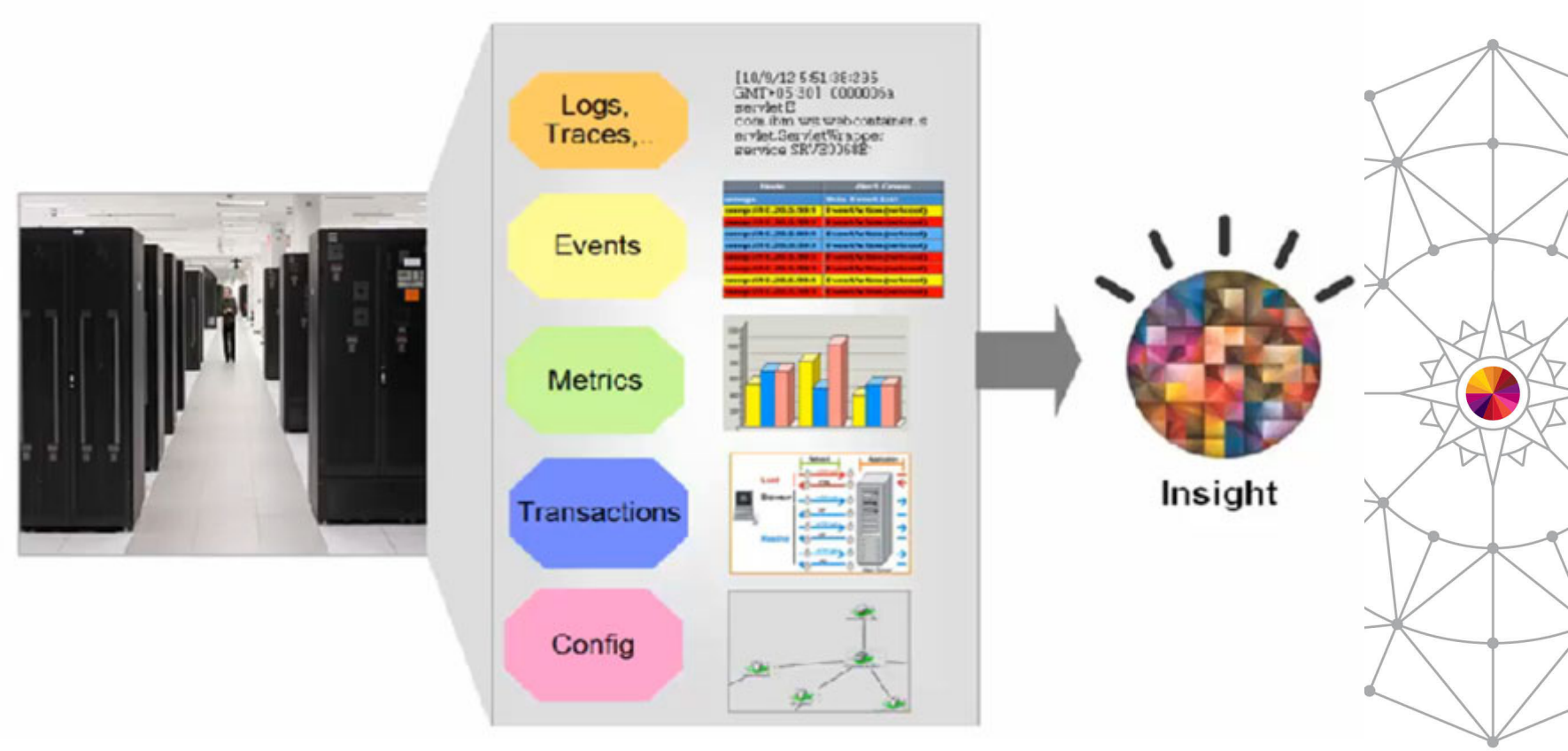
Customer pain points and challenges

- **Takes too long to isolate, diagnose problems in applications and infrastructure.**
  - Customer environments have become very complex. Application workloads span multiple platforms and include several different diagnostic capabilities.
  - Datacenters generate a large amount of data. (performance metrics, events, infrastructure logs, application logs, configuration files, traces). **Current management systems rely on a subset of this information (metrics & events).**
- **Existing tools becoming inappropriate for management of Systems of Engagement and mobile applications.**
  - 100x to 1000x explosion in users and data flooding existing tools. (terabytes)
  - New runtimes, programming languages needing complex instrumentation to use traditional tools.
- **Critical missed information leads to outages and/or poor customer experience. Most management of problems reactive.**
  - Analyzing all information is a better indicator for predicting problems.

Is managing your environment like sipping from a fire hose?

Application and Infrastructure Problem Diagnosis

Operators and subject matter experts are overwhelmed with **volumes of data** that they **manually process** to determine the cause, location and scope of a problem.



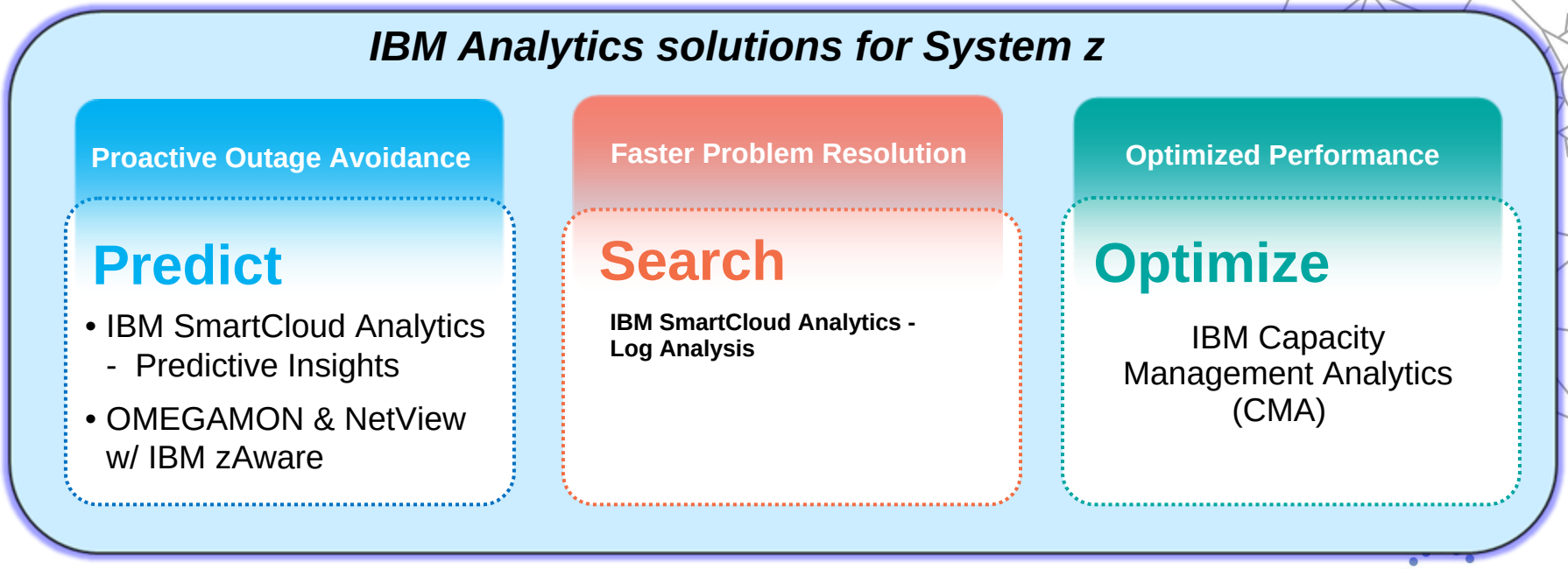
- Only 3% of the data generated is operations-oriented metric data
- 97% is unstructured/semi-structured data
- An enterprise with 5000 servers generates over 1.3 TB of data per day

IBM focused on managing end-to-end analytics for improved performance and workload management

Predict:
- Pro-Active Outage Avoidance
- Predict Problems before occurrence

Search:
- Quickly analysis large volume of log data
- Match Log-files with alerts and metrics

Optimize:
- Improve Performance across IT Infrastructure



SmartCloud Analytics: IBM's solution for IT Operational Analytics

Performance Data

Avoid Outages and service degradation through early detection of abnormalities

Improve insight though the analytical discover of metric relationships and trends

Reduce root cause analysis by reducing time to isolate faulty components in complex infrastructure

Unstructured Data

Identify problems quicker with insight to large unstructured repositories

Isolate problems quicker by bringing relevant unstructured data into problem investigations

Repair problems quicker with the right details quickly to hand.

Search for and rapidly analyze unstructured data to assist in and accelerate problem identification, isolation and repair

SmartCloud Analytics – Log Analysis

Differentiating Capabilities

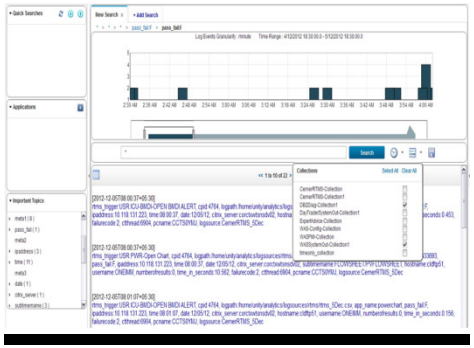
Locate **component error messages** from system, configuration, or software logs **via rapid indexed search**

Isolate issues across various domains including customer session, performance and system faults

Link support documentation and operations notes dynamically to log/warning messages or events to resolve problems quickly

Visualize search results with analytic tools to rapidly **perform root cause analysis**

Detect service issues in unstructured datasets with built-in expert knowledge on software components from IBM and/or ISVs



Delivering Business Results

Reduce mean time to repair by identifying and isolating service impacting issues quickly

Resolve problems more efficiently with faster access to all pertinent information

Improve service availability by leveraging expert knowledge of applications and infrastructure

Built on IBM's leading Big Data platform

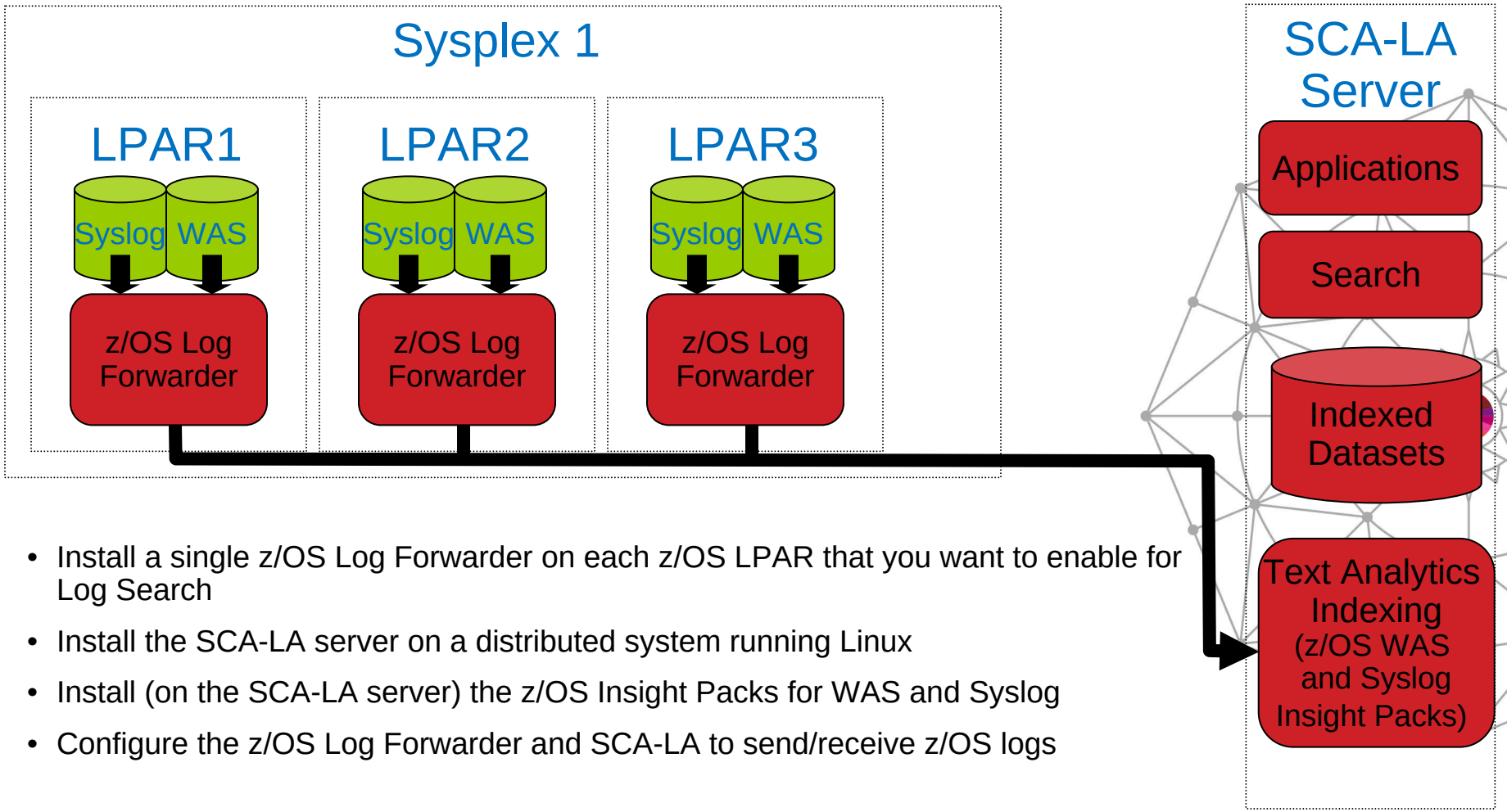
IBM expertise built-in

Download and install in minutes for quick time-to-value

SmartCloud Analytics – Log Analysis Capabilities

- Log Collection technology
- Search log files quickly
- Visualize data through reports and dashboards
- Expert guidance
- Ability to build insight packs for domain/application

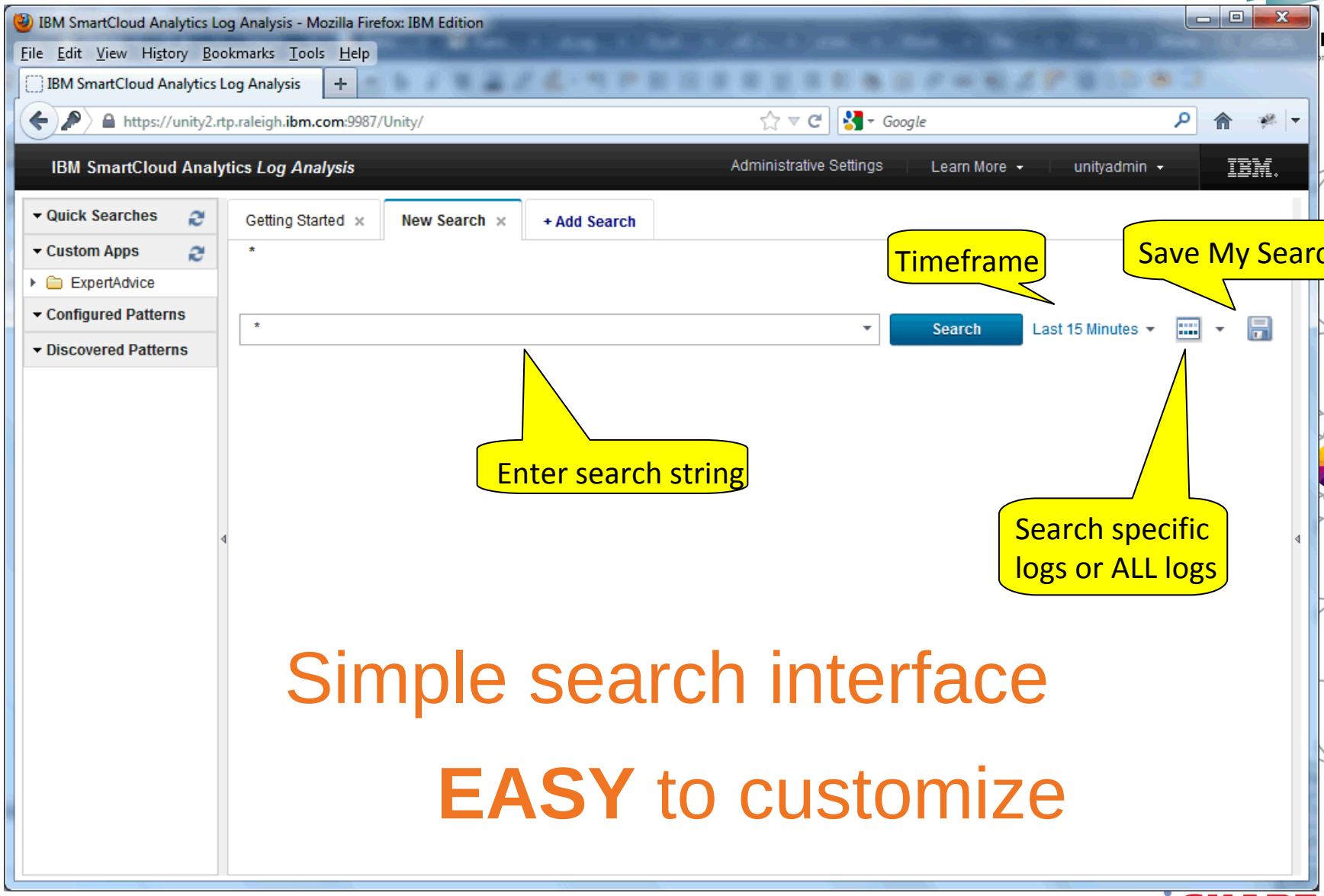
SCA-LA and z/OS components



- Install a single z/OS Log Forwarder on each z/OS LPAR that you want to enable for Log Search
- Install the SCA-LA server on a distributed system running Linux
- Install (on the SCA-LA server) the z/OS Insight Packs for WAS and Syslog
- Configure the z/OS Log Forwarder and SCA-LA to send/receive z/OS logs

* SCALA Server currently runs on xLinux.

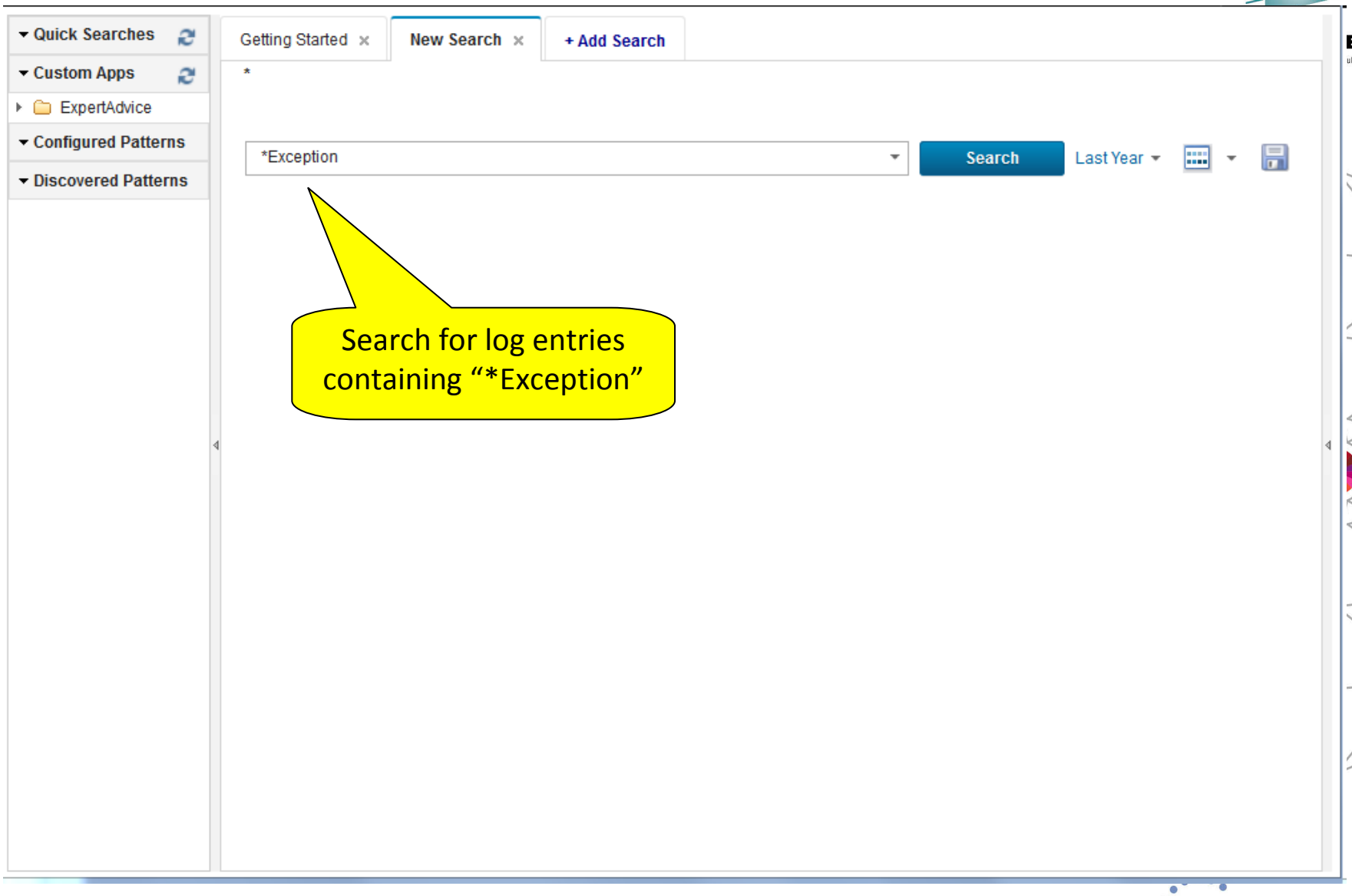
Search Workspace – Search, Navigate, Visualize



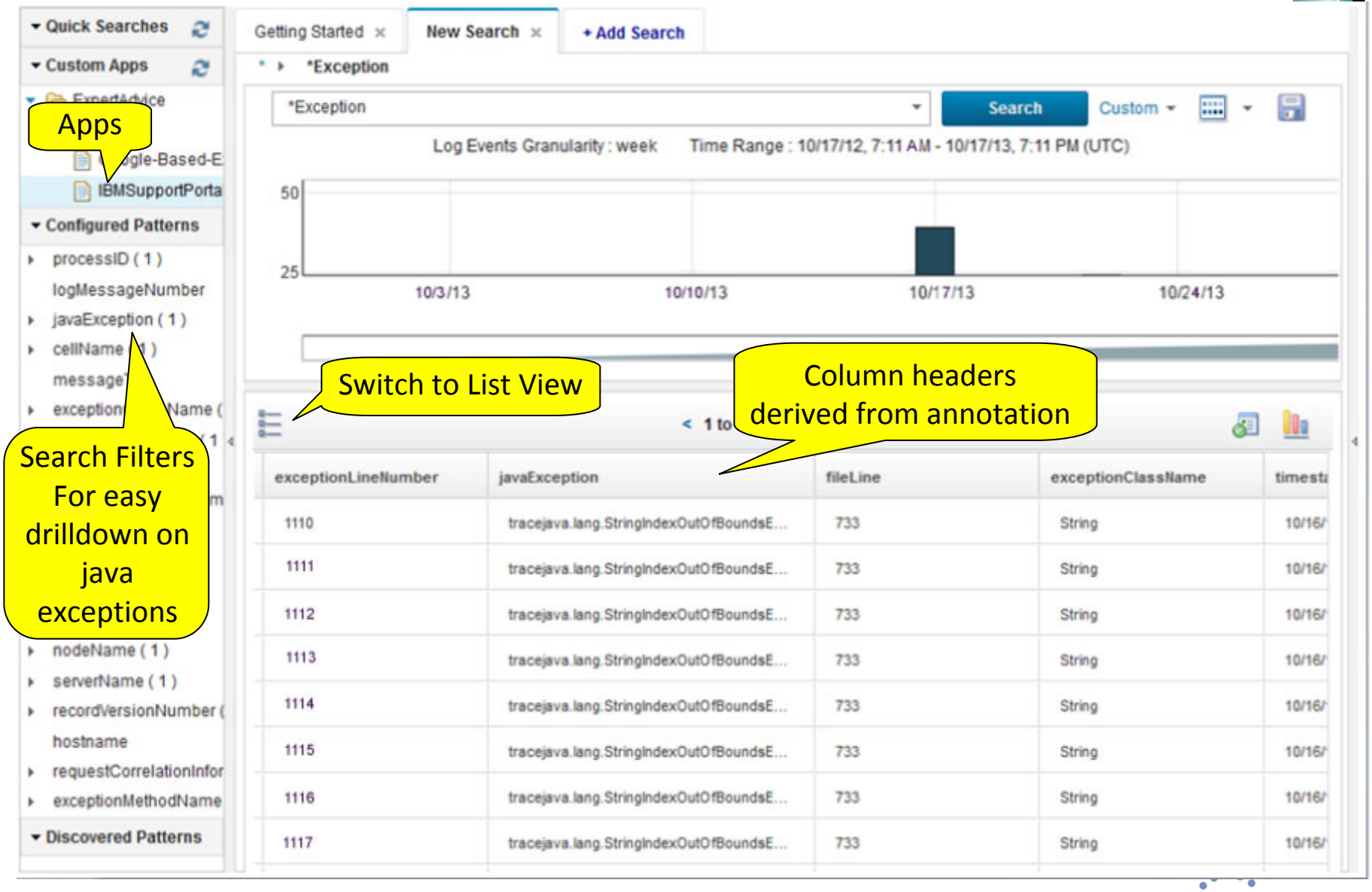
Simple search interface

EASY to customize

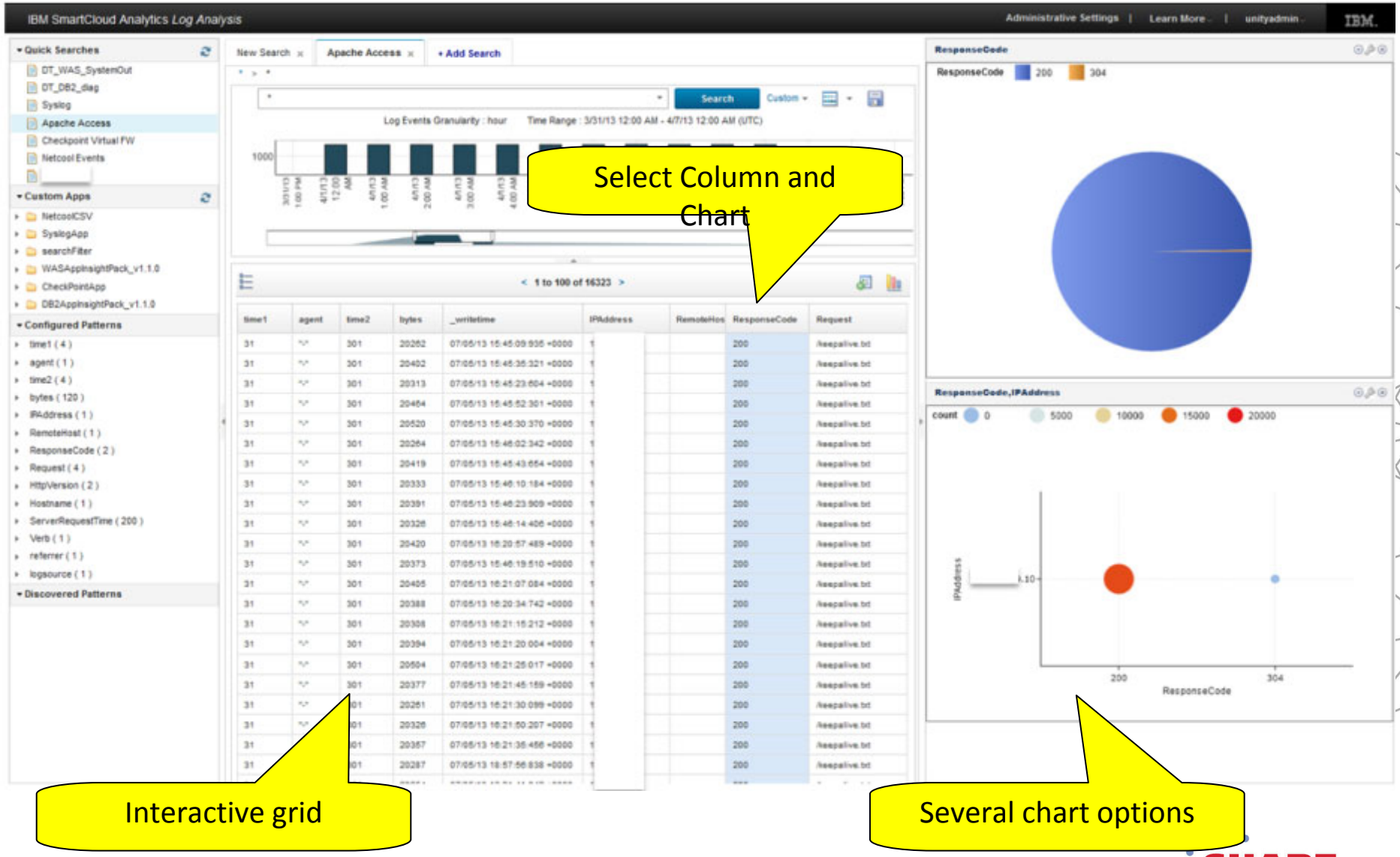
Search WAS Applications for Java Exceptions



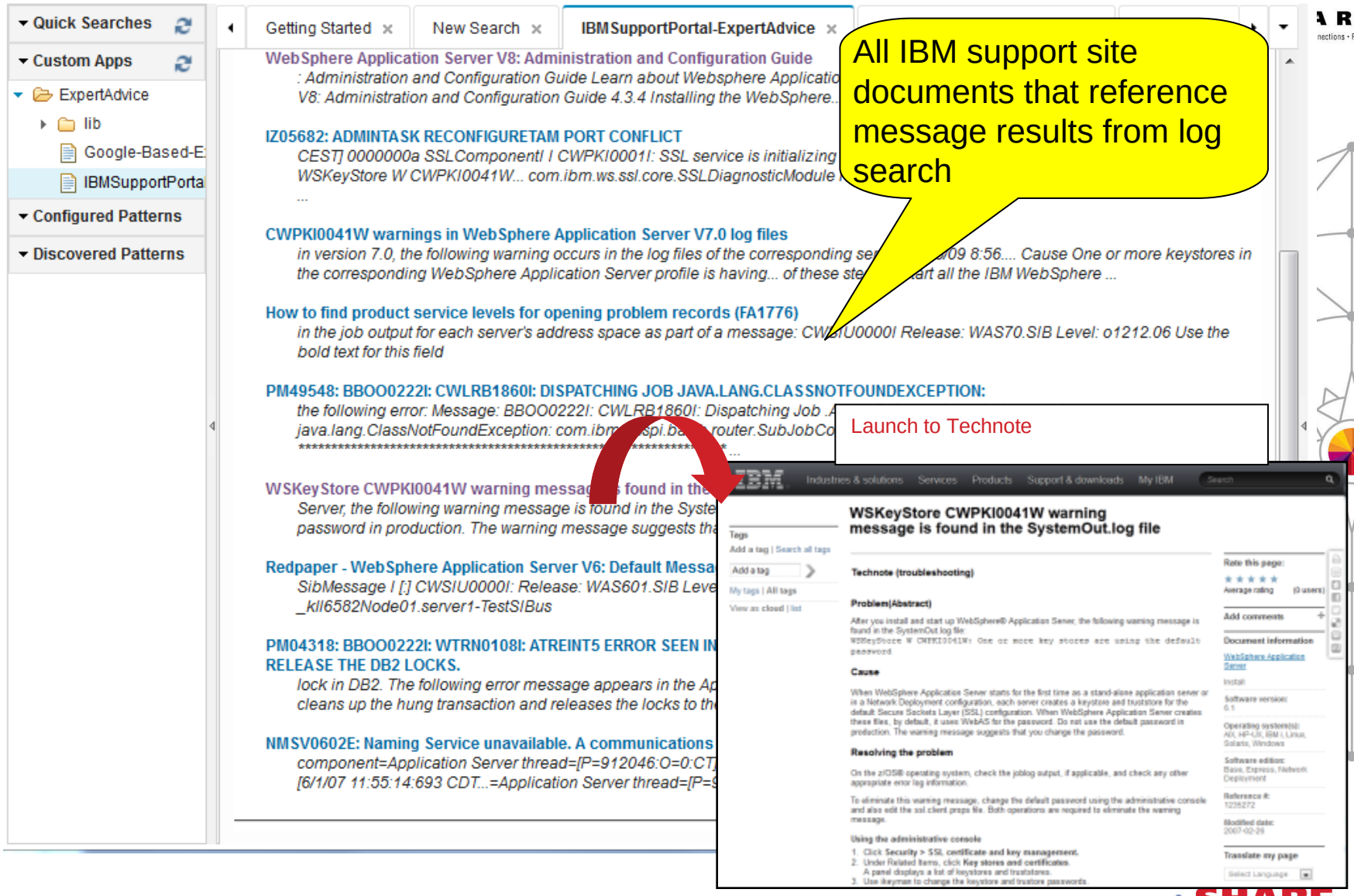
Search results containing “Exception” – Grid View



Grid View - Interactive



IBM Support Portal based Expert Advice



Handle more complex workloads with increasing metrics for early prediction of problems

SmartCloud Analytics – Predictive Insights

- **New next-generation behavioural learning and predictive analytic solution.**
- **Discovers how your IT & Network infrastructure is related from a holistic viewpoint.**
- **Maximizes early detection of problems manifest in performance and monitoring data before service or business is disrupted (enabling prevention)**
- **Identifies problems before you know to look for them, catching them the first time they happen.**

Highlights

- Learns normal operational behaviour, including how metrics behave together.
- Accurately identifies problems, and reduces expensive and time consuming false alerts.
- Provides maximum warning of service impact, deterioration or outage.
- Detects service impacts that are not identifiable by standard adaptive & seasonal thresholds.
- Leverages state-of-the art IBM InfoSphere Streams real-time analytic engine for unsurpassed performance and scalability.

Predictive Insights (PI) Analytics reports on events and anomalies that could cause future problems

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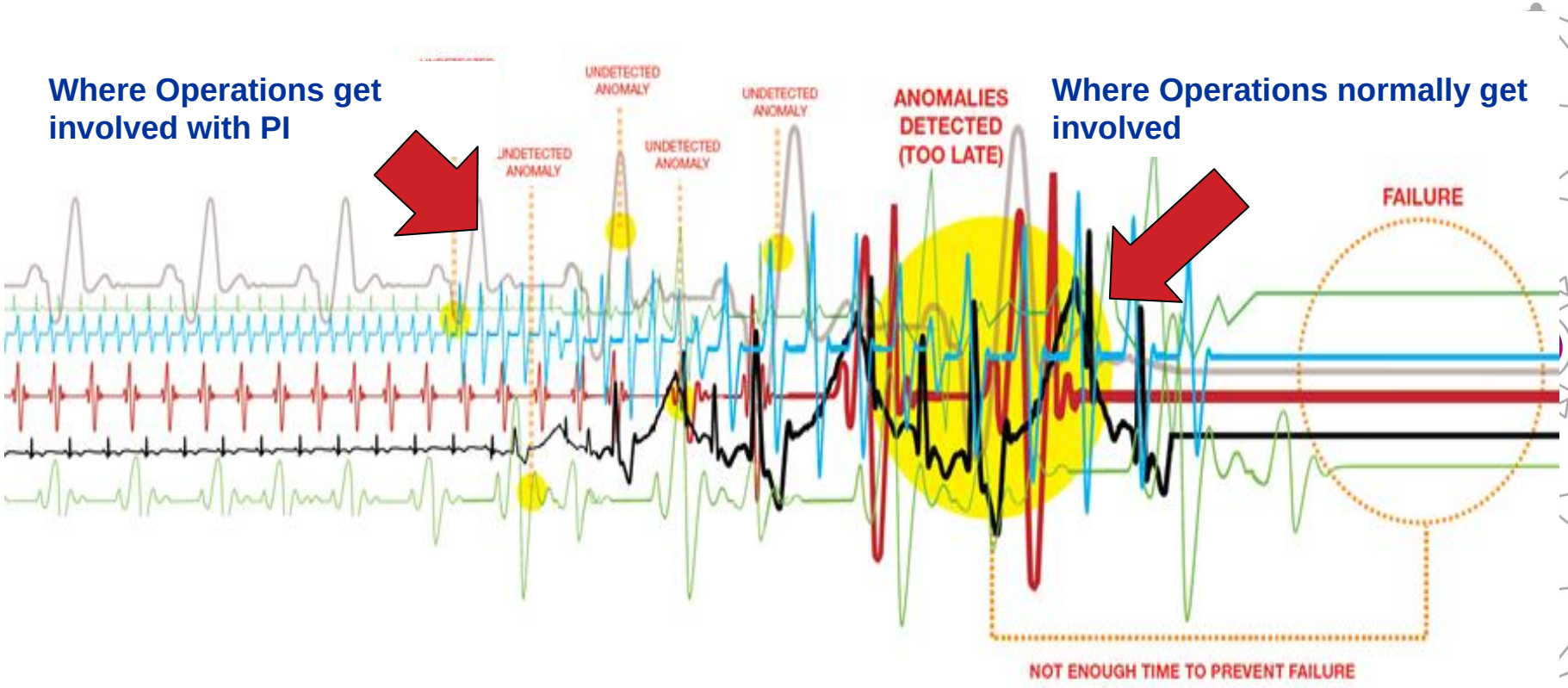
Technology · Connections · Results

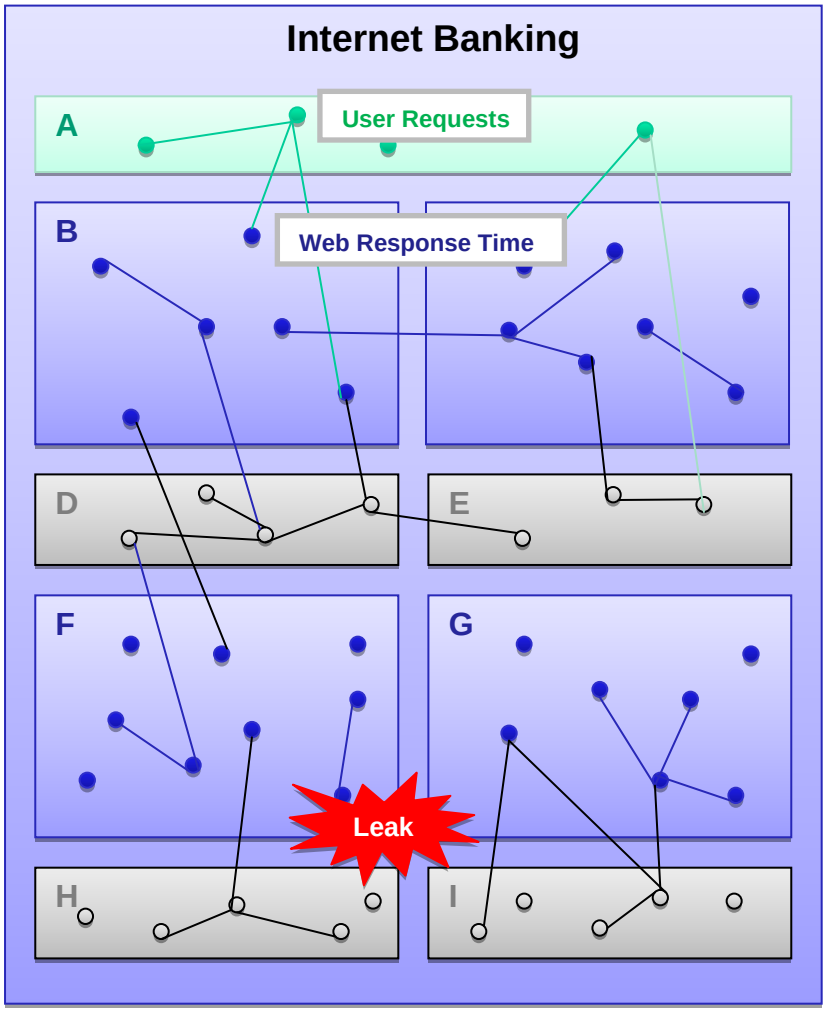
Using SmartCloud Analytics – Predictive Insights

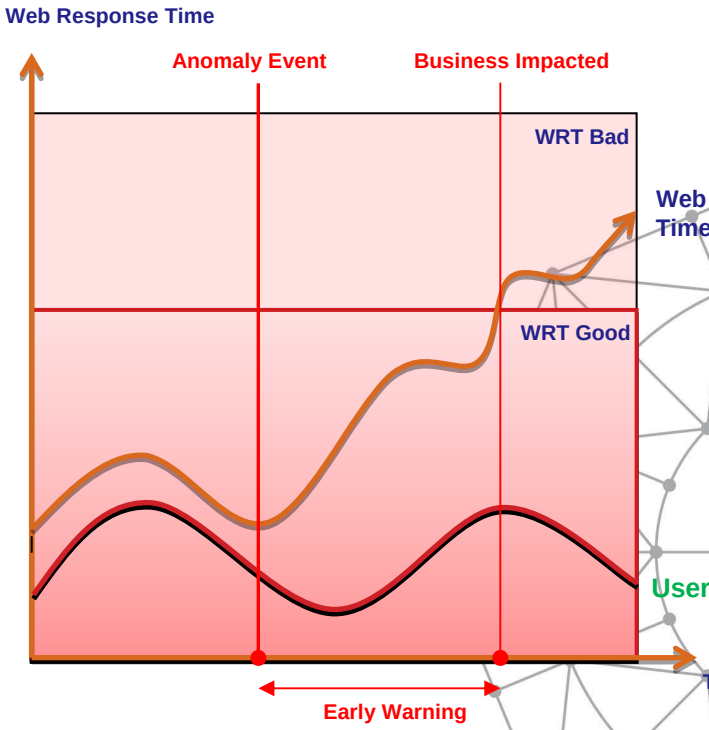


- Operations teams can now focus more on prevention!
- Predictive Insights can consume data from distributed and mainframe systems

Example Scenario: Internet Banking Application

Granger based analytics learns the mathematical relationship between metrics



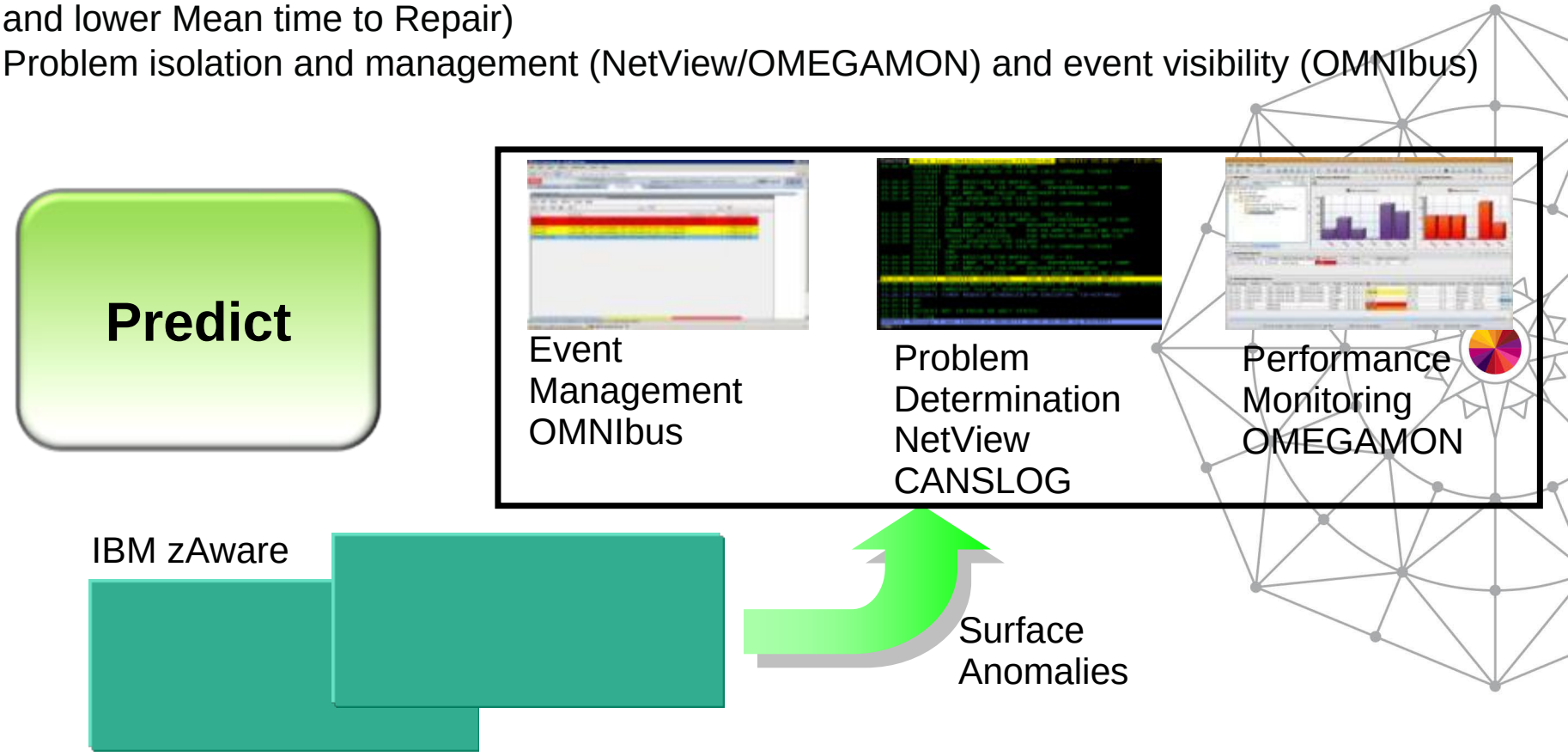


- Learns 'Web Response Time' has a normal causal relationship with 'User Requests' - WRT gets slower as user load gets higher.
- If this healthy historical relationship breaks down, say due to a memory leak, an anomaly is raised immediately
- The problem is detected even while WRT service is "good"

Emerging problems can be detected even while service levels are good

Predictive Analysis with IBM zAware – Log Analytics on System z using Anomaly Detection

- Save money by ensuring z/OS availability (decrease time to perform problem determination and lower Mean time to Repair)
- Problem isolation and management (NetView/OMEGAMON) and event visibility (OMNIbus)



Optimize Big Data and applications to create knowledge for easier business and IT planning

Capacity Management Analytics (CMA) solution

- Analytics, monitoring and management across Big Data on System z environment including CICS, DB2, IMS, WAS

•Insights into operations with TDSz, SPSS and Cognos

- Focuses on data related to System and Workload Characteristics, Performance and Trending

- Provides recommendation to optimize Systems and Workloads based on Predictions and Forecasting

Optimize

http://www-03.ibm.com/software/products/en/capacity-management-analytics/

Capacity Management Analytics supports key customer requirements for improved business agility

- **System/Workload Characteristics, Performance and Trending**
  - What's driving demand?
  - Capacity constraints causing bottlenecks and what's being impacted
  - Anomalies occurred that impacted resource usage and/or performance

- **System/Workload Optimization, Prediction and Forecasting**
  - Available capacity to move workloads / applications to alleviate bottlenecks
  - Balance resource usage across servers/LPARs/VMs and defer capacity upgrade
  - Enough available capacity to add new workloads/applications to current environment

IBM Capacity Management Analytics provides cost effective, optimal use of zEnterprise capacity

A single, integrated cost effective solution

System Management:
Problem Identification & Resolution
Capacity Forecasting & Monitoring

Manage the complete time horizons

Historical reporting of past performance
Forecasting future requirements
Right-time optimal decision making

Jumpstart your time to value & ease implementation.

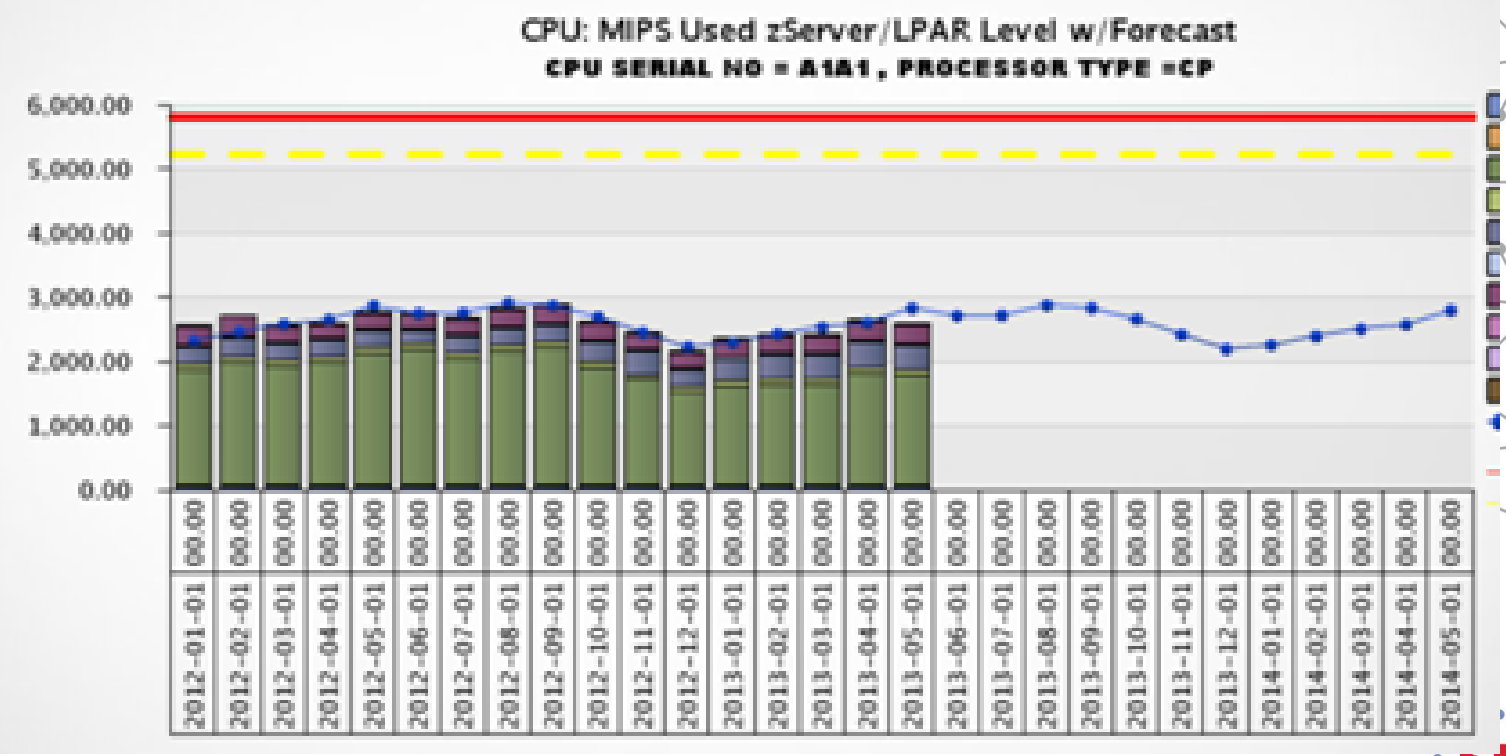
Built on IBM's easy of use analytics
Includes prepackaged, interactive reports
Optional services and education

IBM Capacity Management Analytics: Systems Management

Dashboard & report capabilities provide executives, managers, capacity & performance specialists with custom views

IBM Capacity Management Analytics: Predictive Analytics, Capacity Forecasting & Real-time Scoring

- Predictive analytics helps organizations use data to make better decisions
  - Draw reliable, data-driven conclusions about current conditions and future events.
- Requirements forecasted to ensure sufficient capacity available when business needs it.
- Real-time scoring of transactions performed enabling comparison to forecast.



IBM System z analytics improving ability to reduce risks by adding capability over time

- Operators and subject matter experts overwhelmed with volumes of data to be manually processed
- Enhance current tools with analytics for more efficiency and productivity
- Add additional analysis capability over time

Predictive Analytics
Predictive Insights
OMEGAMON/
IBM zAware
Capacity Management
Analytics

Log Data Analysis
Log Analytics

Detailed Event Analysis

Configuration Change Analysis

Gain insight into entire end-to-end workload

Learn more about Analytics on z at SHARE

15380: Capacity Management Analytics on System z
Monday, March 10, 2014: 3:00PM – 4:00PM

15190: IT Analytics and Big Data - Making Your Life Easier
Wednesday, March 12, 2014: 9:30AM - 10:30AM

15375: Exploit analytics to monitor and manage new technologies on System z
Wednesday, March 12, 2014: 12:00PM - 1:00PM

15036: Enabling Best-of-breed analytics with zEnterprise
Wednesday, March 12, 2014: 3:00PM – 4:00AM

Thank You!!!