IBM Software Group

Business-Driven IT Management

David Caddis

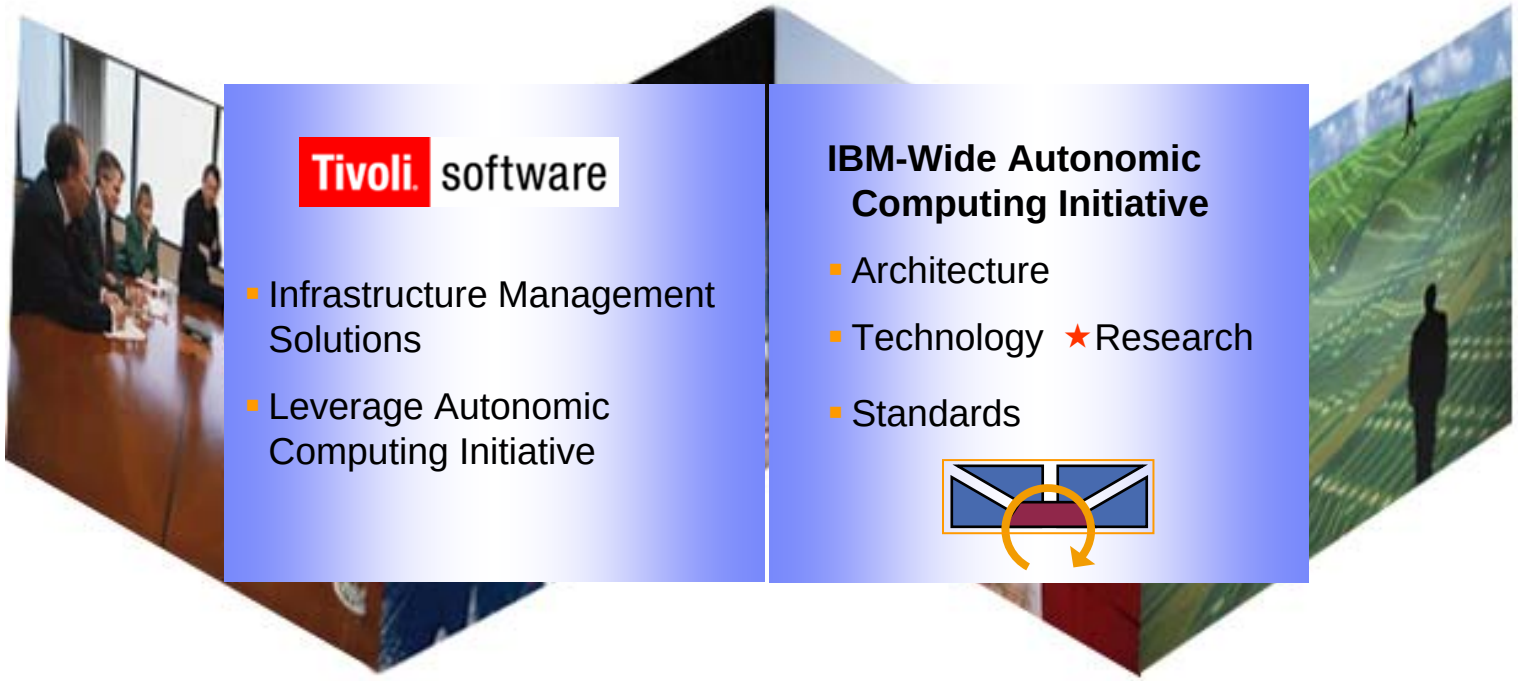
Director, Service Delivery Strategy

IBM Tivoli

ON DEMAND BUSINESS

IBM Tivoli and IBM Autonomic Computing

Business-Driven IT Management



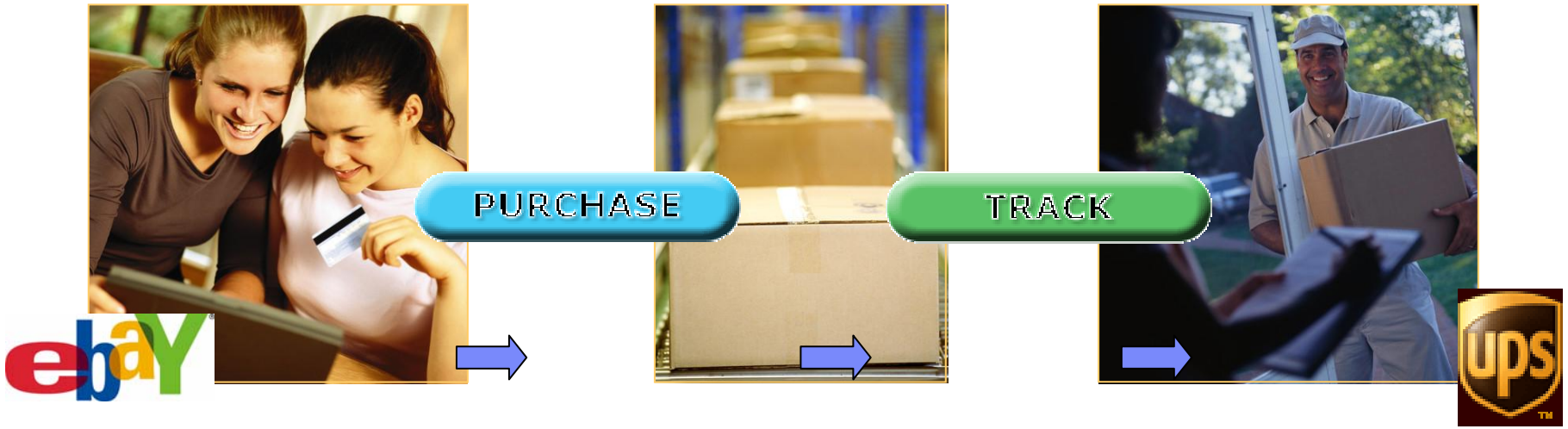
- **Technology Breadth & Depth**
- **Open Standards & Architecture**
- **Innovation & Research**

Today We Are Talking About . . .

- **Change Drivers and Barriers to Success**
- **IBM Tivoli Solutions**
- **IBM Tivoli and IBM Autonomic Computing**
- **IBM's Future Direction for Business-Driven IT Management**

On demand business

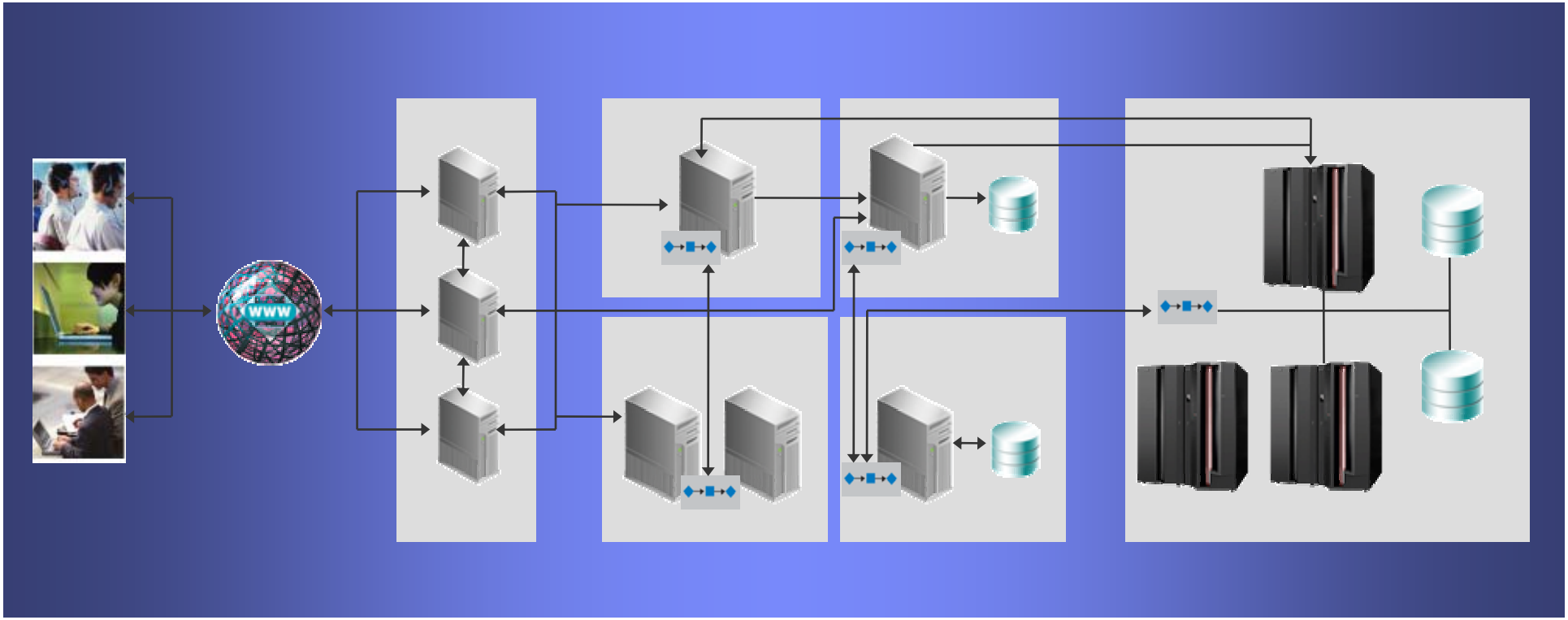
An on demand business is an enterprise whose business processes—integrated end-to-end across the company and with key partners, suppliers and customers—can respond with flexibility and speed to customer demand, market opportunity or external threat.



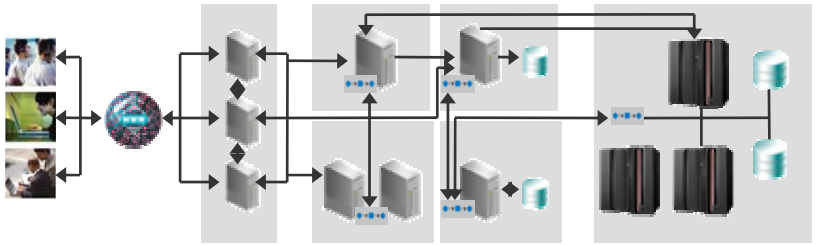
... multiple companies, seamless process

Composite applications underlie an on demand business

Composite application lifecycle: Design, Build, Test, Deploy, and Manage



Change Drivers



“Our 4 tier, 30 server, load balanced architecture makes it very difficult to identify the root cause of problems.”
Mike Dewey, Head of Development Standards, Reuters

… Complexity

Most organizations manage a large and complex IT environment to support business processes.

… Speed of Change

Fast-changing external forces and unpredictable variations in workloads make meeting service levels difficult.

“Business activity across our applications is in constant flux.
The correct settings for performance yesterday will be different from what it needs to be today, and different from what it will need to be tomorrow.”
Ken Van Kley
Blue Cross Blue Shield Illinois

Change Drivers

"Tracking relevant data for internal auditing has always been a part of our business. This need is becoming mission-critical with increasing external threats and liability concern. The trick is to do so without increasing operational costs."

David Quinn, Systems Director, Prudential Financial

… Compliance

The changing global regulatory and business environment requires security, privacy, and on-going audit capabilities.

… Cost

To meet business expectations infrastructure costs have been outpaced by spending on management and administration.

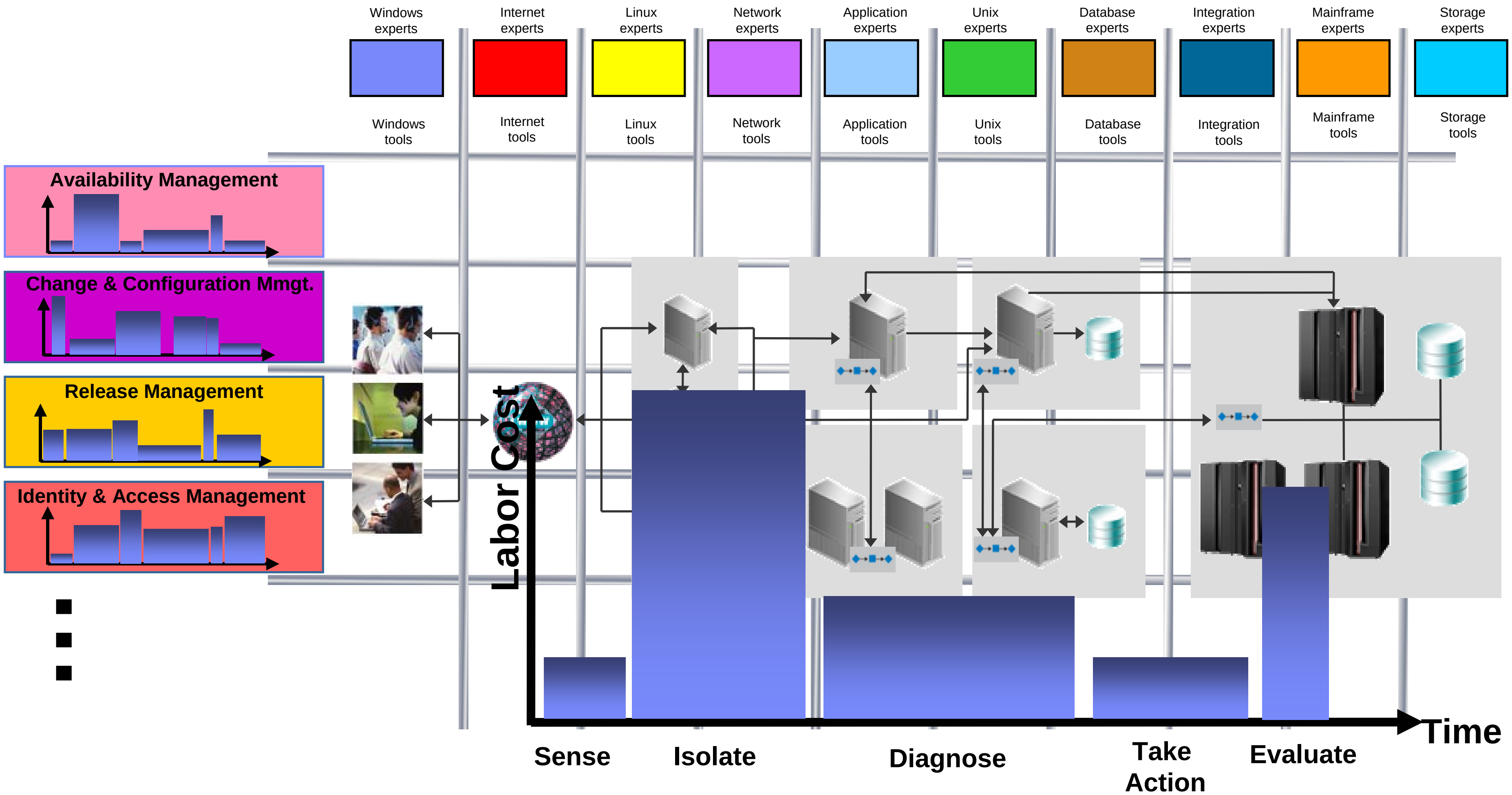
"IT efficiency is critical to our business. We are growing in size and sophistication to support the demand for new services. We are continually looking for new ways to improve our management processes in order to scale cost effectively."

Mark Lamb, Vice President, Star Technology Group

Barriers to success

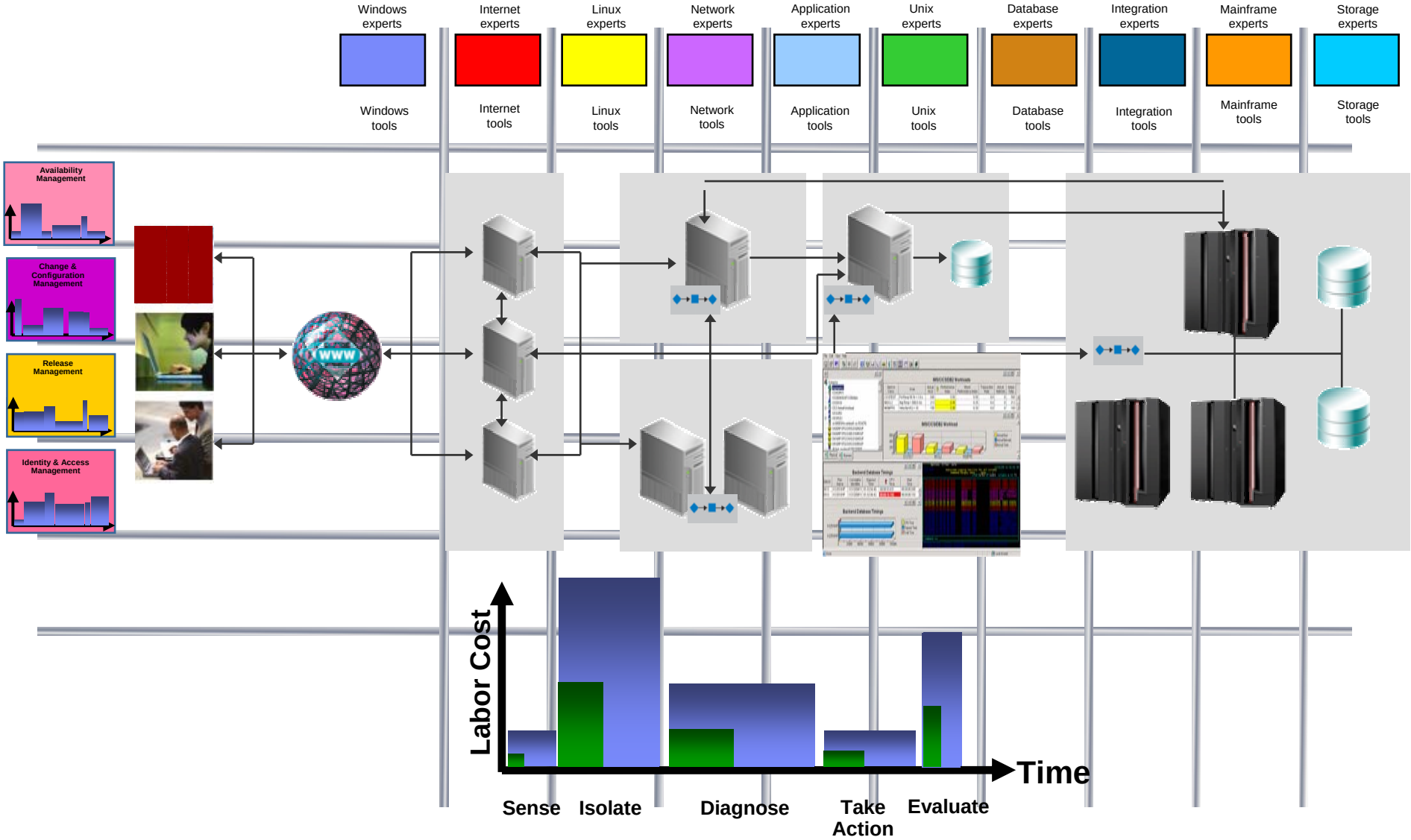
The delivery of IT service to the business requires coordination and information flow across siloed domain experts, specialized domain tools, and cross-cutting IT activities

The complexity of activity coordination and information flow leads to inefficiencies in time and labor costs

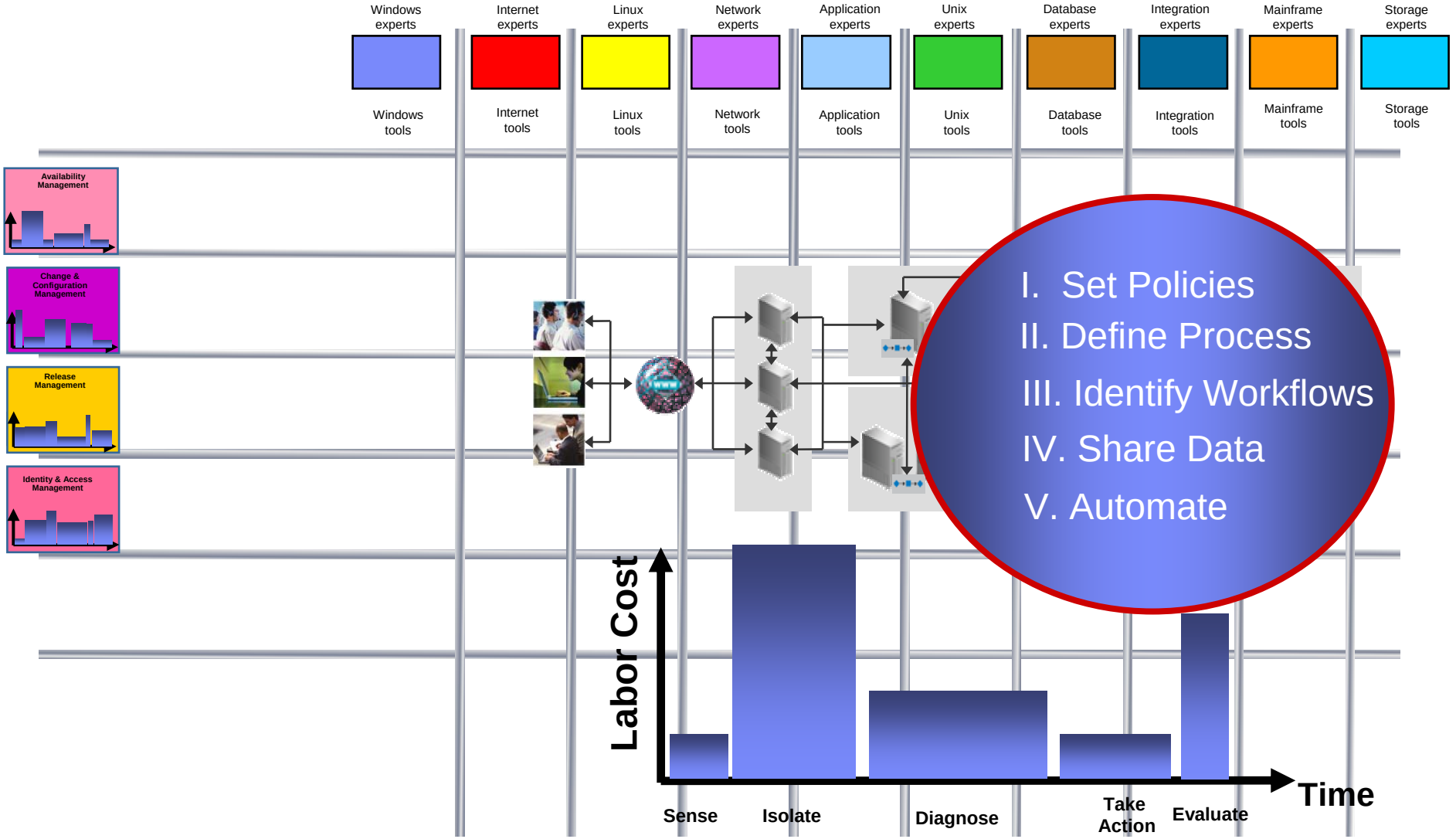


Problem: *Business process stalled by slow system response time*

Solution: *Enable quicker response via automation*



Tivoli's offerings work across the silos to deliver improved IT management efficiency and effectiveness.



IBM Tivoli in Action

Tivoli capabilities working in concert

IBM Tivoli Business Systems Manager

IBM Tivoli Monitoring for Transaction Performance

IBM Tivoli Omegamon XE

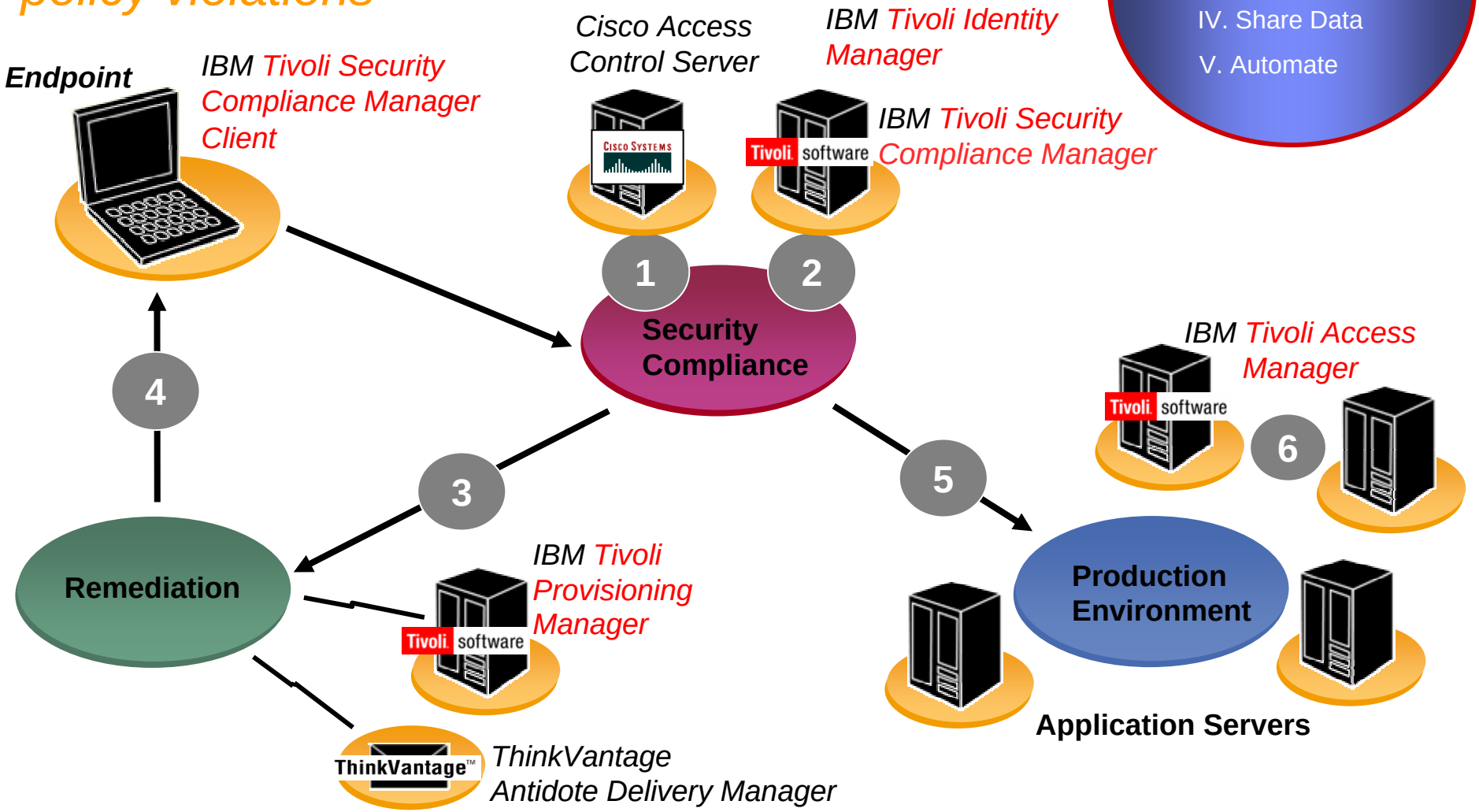
IBM Tivoli Provisioning Manager

IBM Tivoli Intelligent Orchestrator

Tivoli. software

Problem: *Enforcing network end-point security*
Solution: *Automatically detect and remediate policy violations*

I. Set Policies
II. Define Process
III. Identify Workflows
IV. Share Data
V. Automate



IBM Tivoli in Action

IBM Tivoli, ThinkVantage, & Cisco working in concert

IBM Tivoli Security Compliance Manager

IBM Tivoli Identity Manager

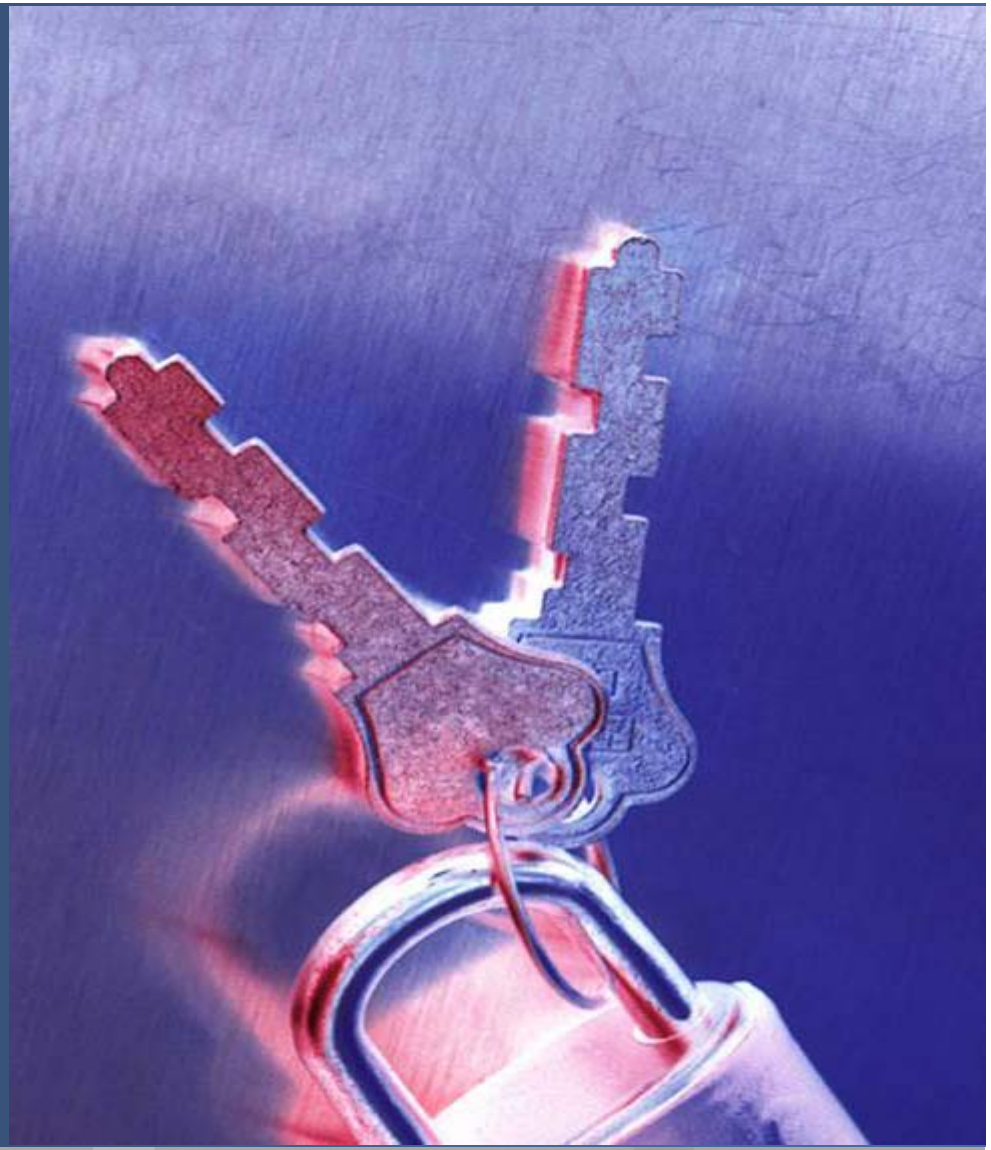
IBM Tivoli Provisioning Manager

IBM Tivoli Access Manager

Cisco Access Control Server

ThinkVantage Antidote Delivery Manager

Tivoli. software

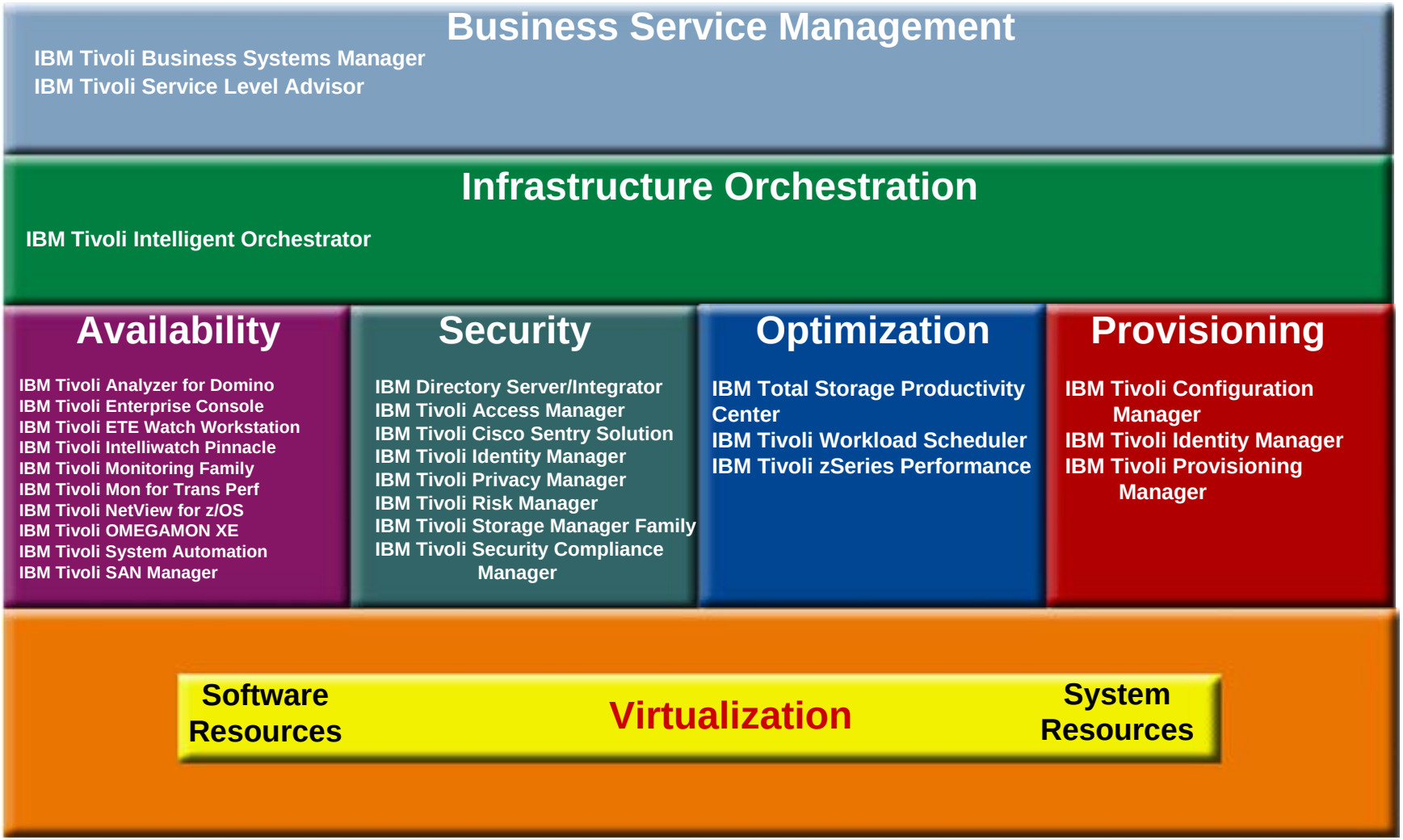


Customers See The Benefit of IBM Infrastructure Management Solutions

"Since implementing IBM and Cisco's security technologies, we've been able to better serve our customers by streamlining our business processes and increasing staff productivity. We look forward to working with IBM and Cisco as they expand their collaboration in security to help us in our continued goal of improving our business processes through the use of technology."

— Bernardo Zapata, Security Information Officer Bancolombia

IBM Tivoli Portfolio



Security – streamlining administration

Common Infrastructure Management Scenarios

Provisioning Security Access

Without Tivoli Infrastructure Management

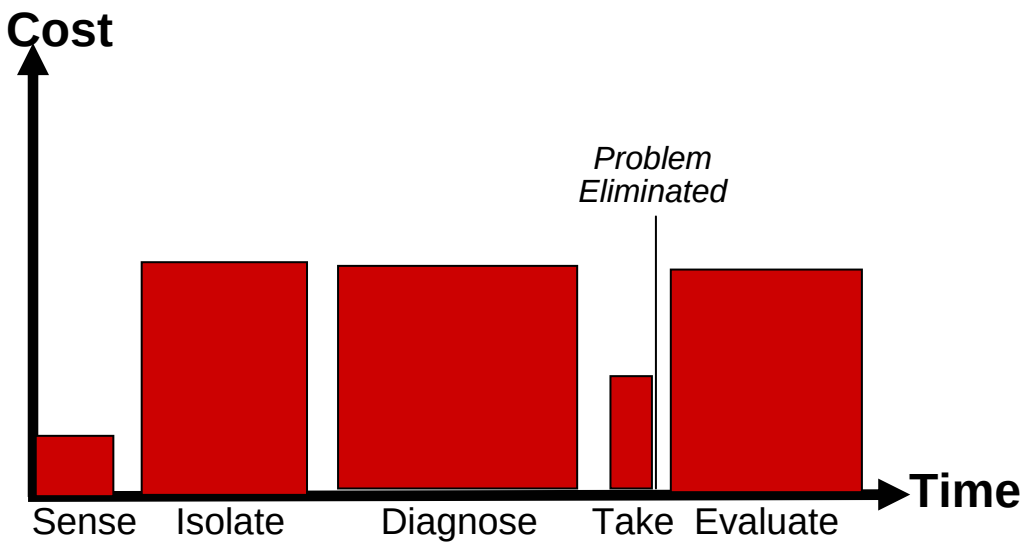
1. Sense
- A new hire's request for access to several systems and applications is put in a long queue of similar requests

2. Isolate
- Operations team forwards request to application owners and awaits response

3. Diagnose
- Departments handle new hire's requests via multiple, varied processes

4. Take Action
- Departments eventually send new hire many IDs/passwords

5. Evaluate
- IT Operations impacted by data gathering for measuring security compliance



Common Infrastructure Management Scenarios

Provisioning Security Access

With Tivoli Infrastructure Management

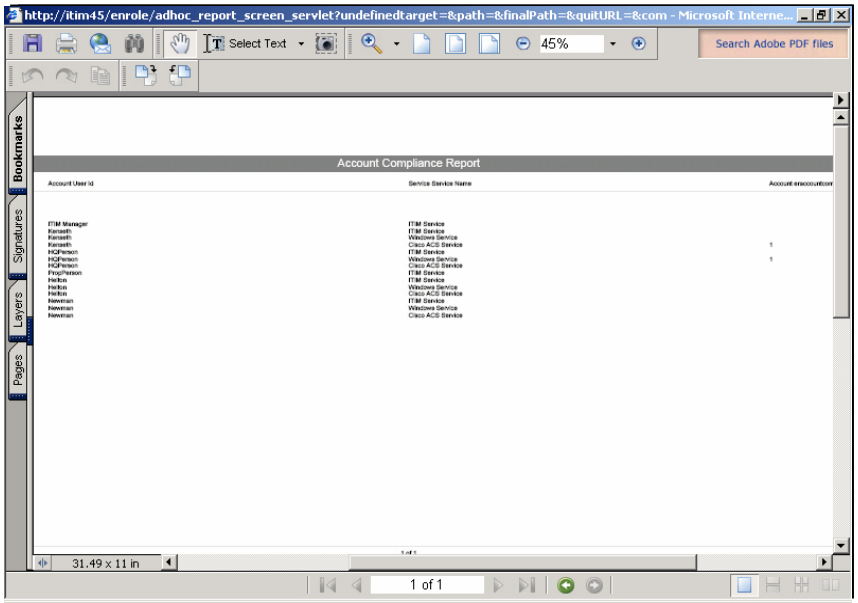
1. Sense
- Entering new hire's data triggers workflow
- Administrator and employee's manager automatically notified of access requests

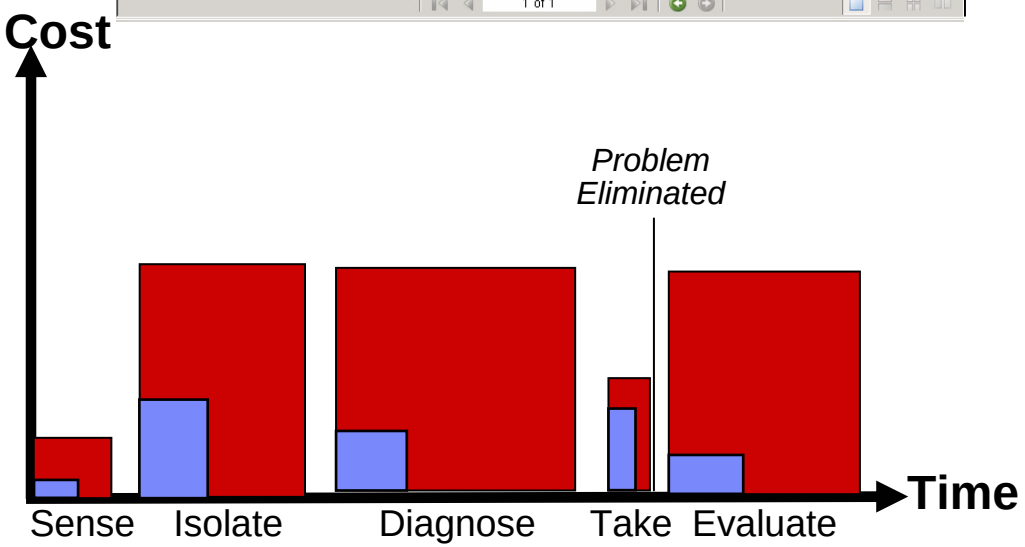
2. Isolate
- Pre-established policies execute workflows to provision new hire's access to systems

3. Diagnose
- Access levels are predefined for employee
- IDs and passwords engineered to deliver single sign-on to Web applications

4. Take Action
- New hire receives email notification of their ability to access the desired systems

5. Evaluate
- Regularly scheduled analytics enable compliance to corporate policy

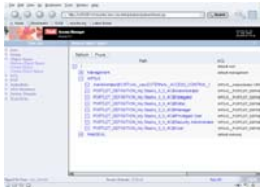




Common Infrastructure Management Scenarios

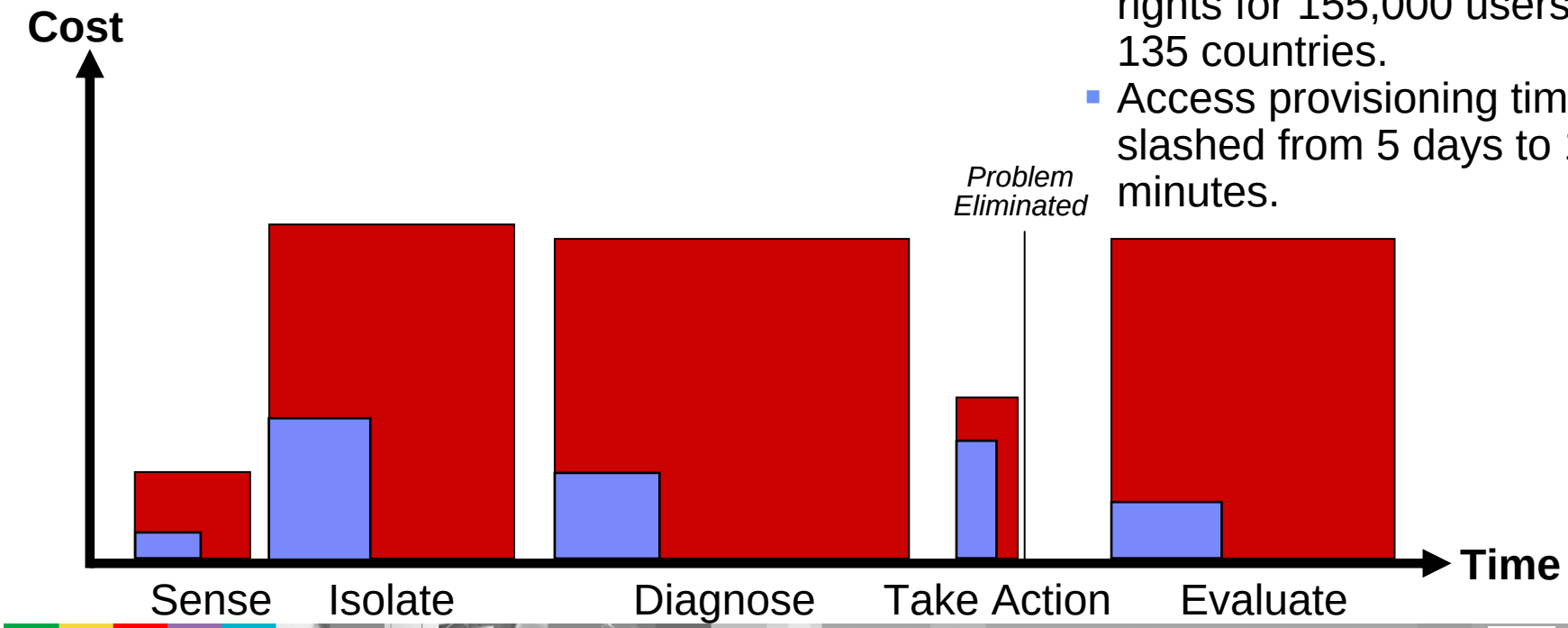
Provisioning Security Access – Quantifiable Benefits

Tivoli Identity Manager



Tivoli Access Manager for e-business

- Automated management of frequent changes to access rights for 155,000 users in 135 countries.
- Access provisioning time slashed from 5 days to 10 minutes.



Availability – eliminating peformance bottlenecks

Common Infrastructure Management Scenarios

Performance Bottleneck

Without Tivoli Infrastructure Management

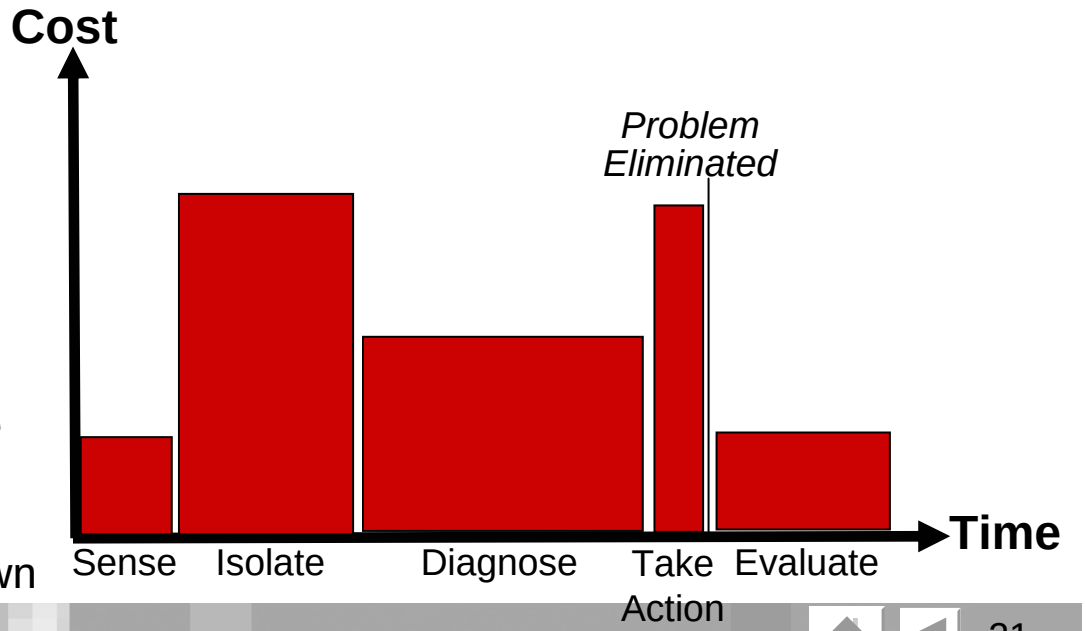
1. Sense
- Customers experience performance delays; some call Help Desk to complain

2. Isolate
- IT team searches for problem throughout infrastructure, using disparate systems and metrics
- Potential causes isolated to section of infrastructure

3. Diagnose
- IT team searches for solution to problem, again using different tools
- Trial and error leads to best solution

4. Take Action
- Actions taken to fix problem and migrate to production

5. Evaluate
- Solution validated; other impacts unknown



Common Infrastructure Management Scenarios

Performance Bottleneck

With Tivoli Infrastructure Management

1. Sense

- Dashboard automatically senses poor performance in a mortgage application

2. Isolate

- Deeper look shows a 12-second delay
- Delay located in specific DB2 subsystem

3. Diagnose

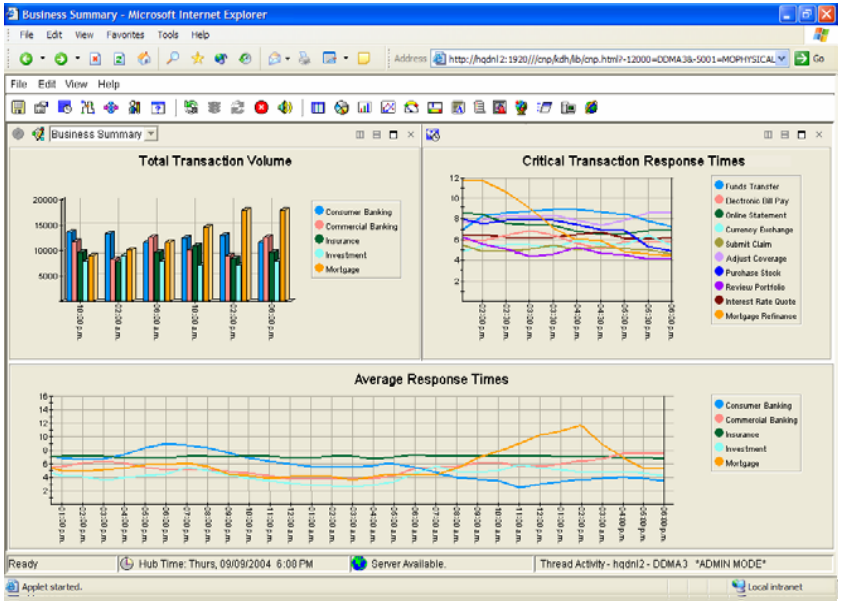
- Several DB2 threads are backed up, waiting to be processed

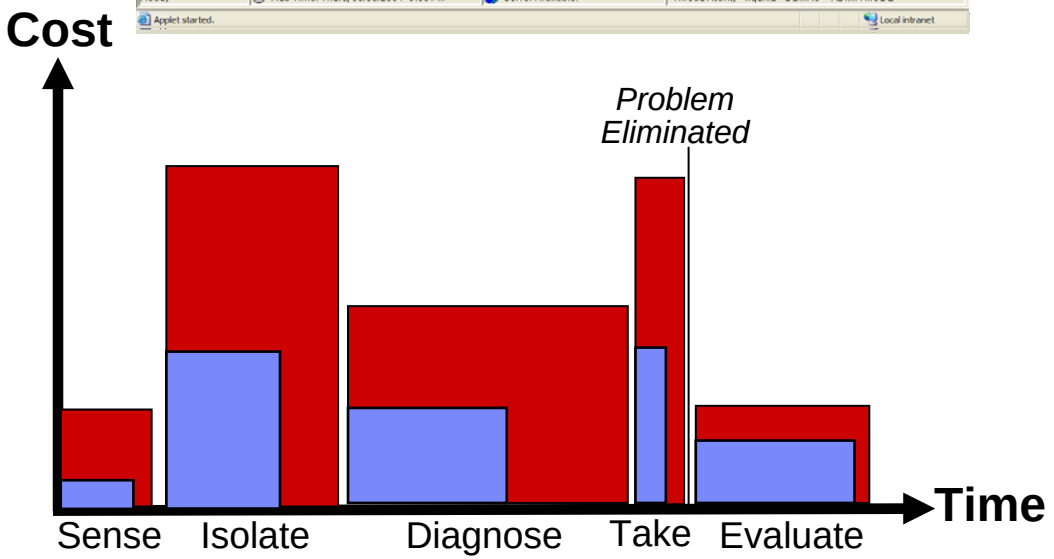
4. Take Action

- Increase DB2 thread pool size to speed up processing and clear backlog

5. Evaluate

- Significant decrease in DB2 thread wait times; response times back to normal

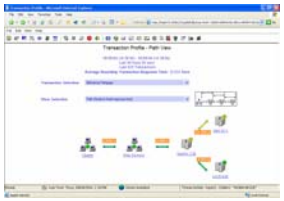




Common Infrastructure Management Scenarios

Performance Bottleneck – Quantifiable Benefits

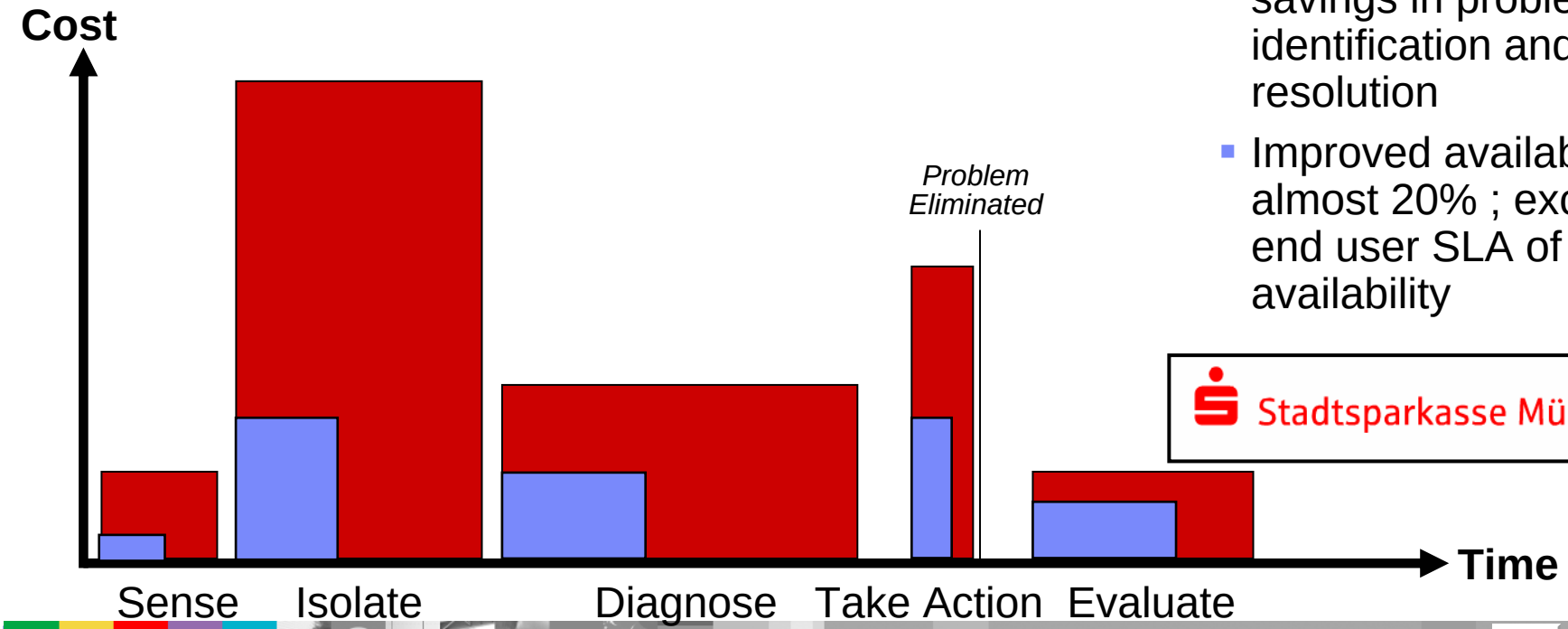
Tivoli OMEGAMON DE on z/OS



Tivoli Web Segment Analyzer

Tivoli OMEGAMON XE for DB2 on z/OS

- $100K annual cost savings in problem identification and resolution
- Improved availability by almost 20% ; exceeded end user SLA of 99.5% availability



Stadtsparkasse München

Availability – rapid diagnosis of application problems

Common Infrastructure Management Scenarios

Application Server Crash

Without Tivoli Infrastructure Management

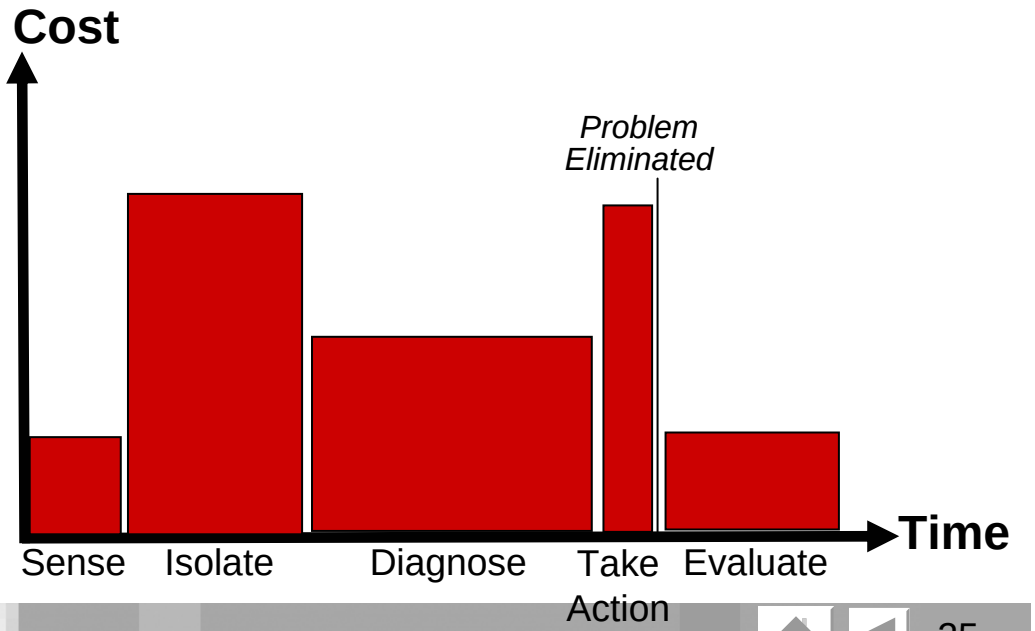
1. Sense
- Users call Help Desk to report outage
- Help Desk notifies IT Operations team, which confirms performance problems

2. Isolate
- The team searches across the enterprise, using disparate tools and metrics, before locating a poorly performing server

3. Diagnose
- While diagnosing the problem, they must restart the server each night to keep things running ... a “Band-Aid” fix
- Finally, they diagnose a coding error that’s causing memory leaks in the server

4. Take Action
- Code is rewritten, tested and migrated

5. Evaluate
- Solution validated; other impacts unknown



Common Infrastructure Management Scenarios

Application Server Crash

With Tivoli Infrastructure Management

1. Sense

- 12-second delay indicated for customers trying to submit home loan refinancing

2. Isolate

- Perform segmentation analysis on transactions to isolate the problem

3. Diagnose

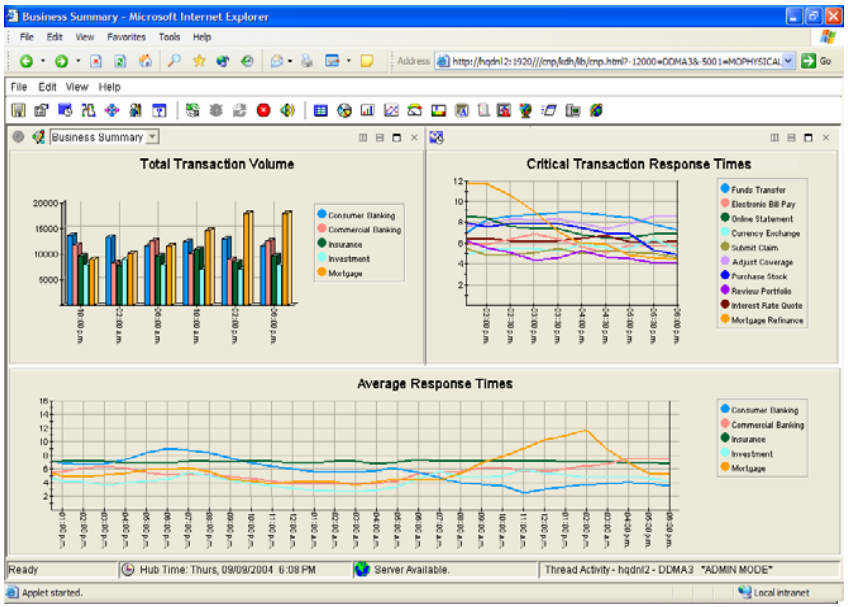
- Heap usage and freed memory show less memory being freed in each cycle
- HTTP sessions show problem not from increased demand – rather a memory leak

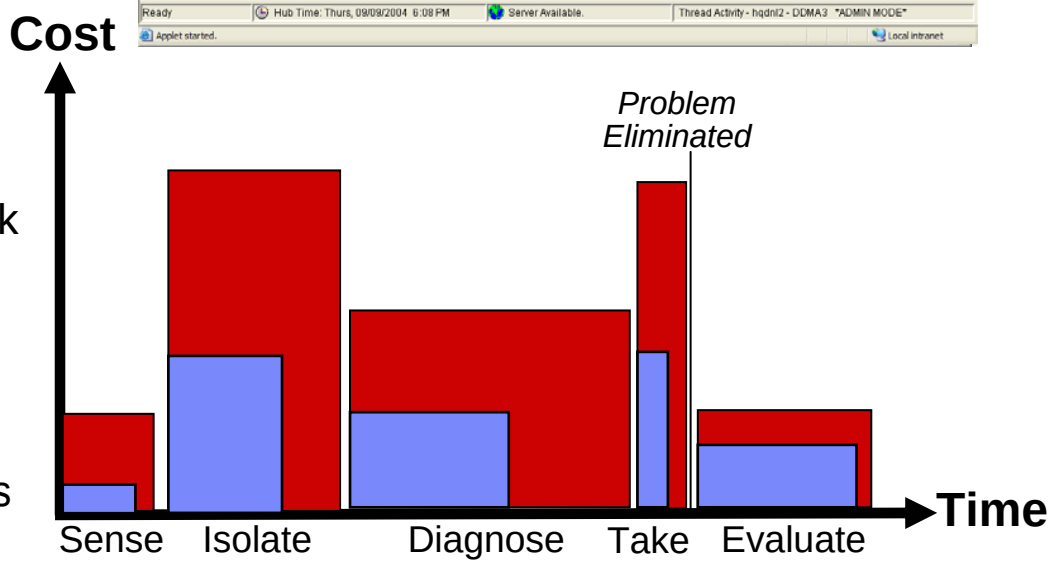
4. Take Action

- Diagnosing the faulty code, Developer modifies application and migrates fix

5. Evaluate

- After new code is applied, improvement is noted

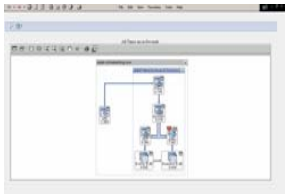




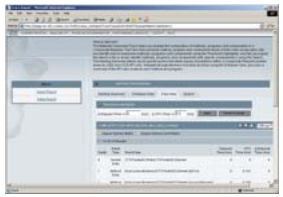
Common Infrastructure Management Scenarios

Application Server Crash – Implemented Tivoli Solution

Tivoli OMEGAMON DE on z/OS



Tivoli Monitor for Transaction Performance



WebSphere Studio Application Monitor

- Accelerated response time for issues by quickly pinpointing the cause of a problem
- Decreased number of staff needed to manage internal operational processes by 60 percent

Optimization – minimizing mean time to service recovery

Common Infrastructure Management Scenarios

File Server Disk Failure

Without Tivoli Infrastructure Management

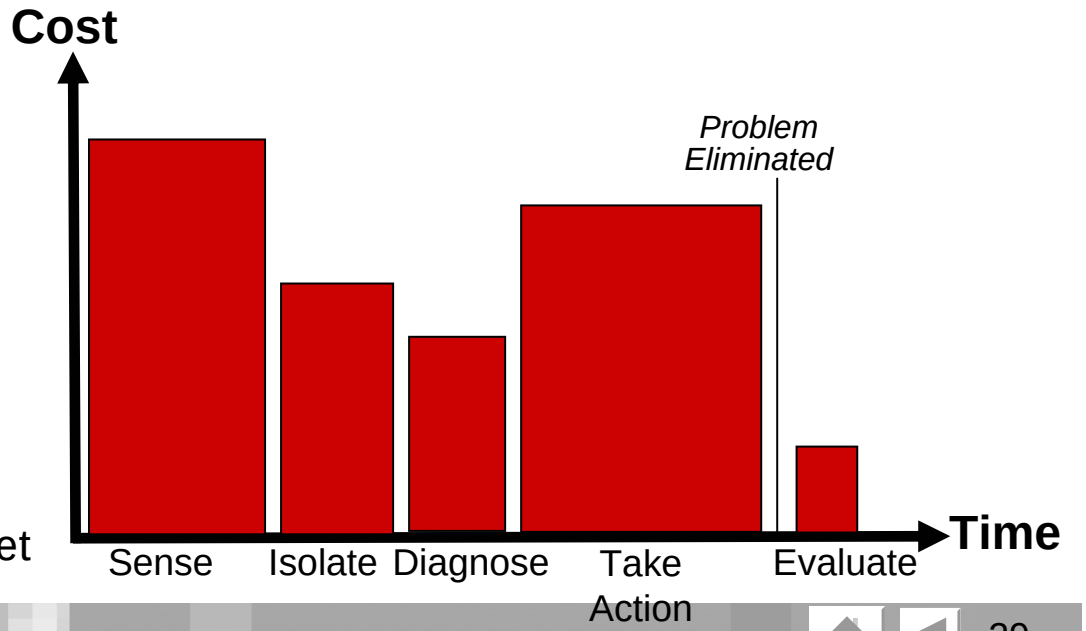
1. Sense
- Users and customers can't access files
- After numerous calls, the Help Desk escalates the problem

2. Isolate
- Application, network and storage teams meet to investigate the problem
- Potential causes isolated to a section of the storage infrastructure

3. Diagnose
- Deeper investigation shows that the problem is caused by a disk failure

4. Take Action
- New disk is installed into disk array
- Time is taken to find/restore latest backup of file server data

5. Evaluate
- Team works to ensure SLAs are being met



Common Infrastructure Management Scenarios

File Server Disk Failure

With Tivoli Infrastructure Management

1. Sense

- Dashboard automatically alerted system administrator of performance slowdown

2. Isolate

- Alert tracks down location of problem to a particular file server

3. Diagnose

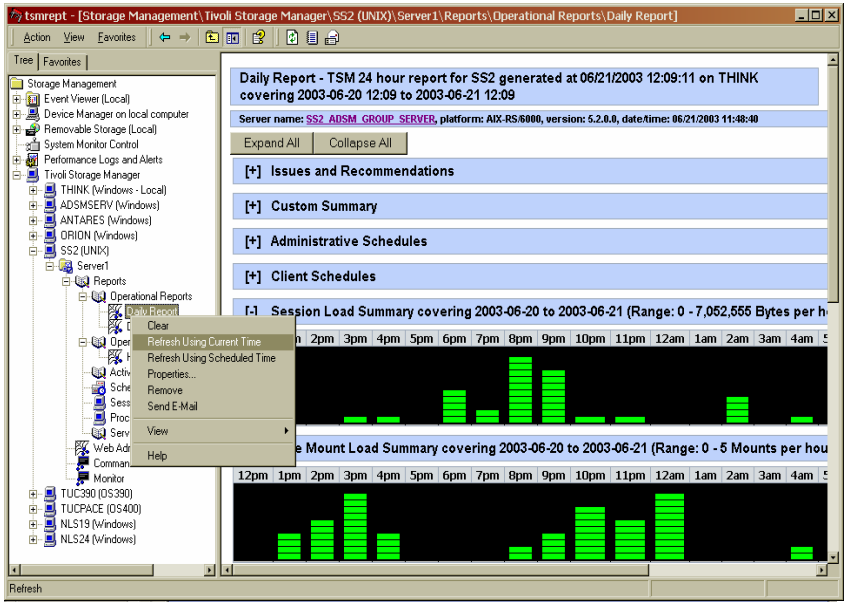
- Alert shows storage architect that a file server disk has failed
- Automated recovery plan already in place to manage such disk failures

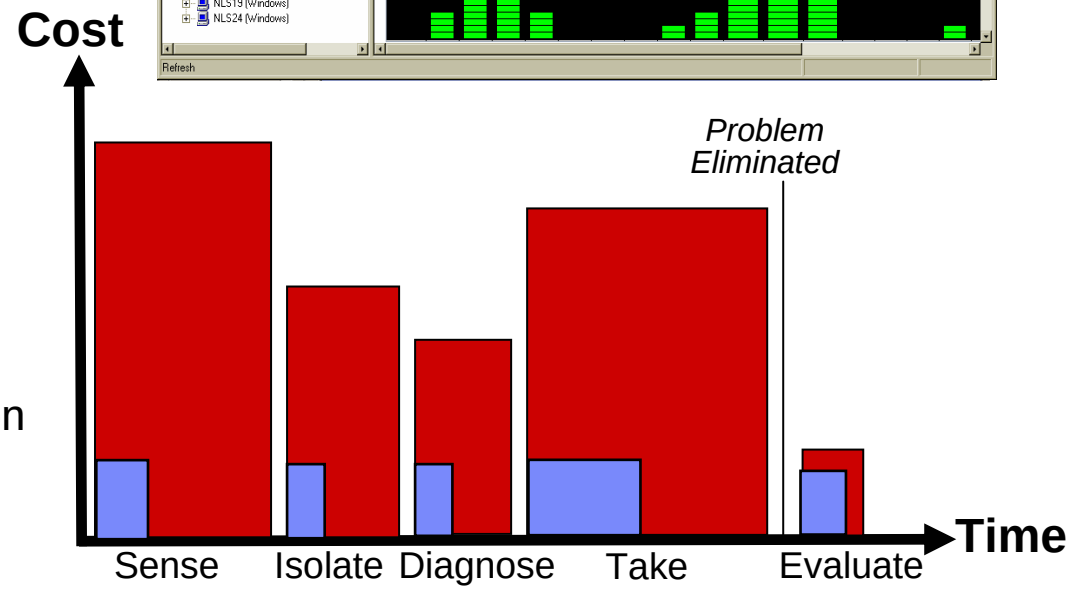
4. Take Action

- Workflows automatically provision new disk, oversee installation, data restoration

5. Evaluate

- Storage team able to accurately report how well solution is meeting SLAs



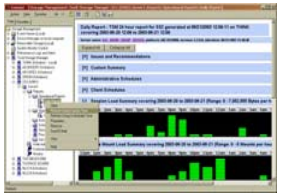


Common Infrastructure Management Scenarios

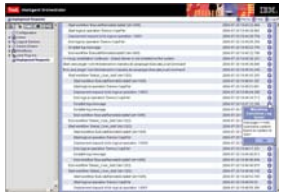
File Server Disk Failure – Implemented Tivoli Solution

Tivoli Enterprise Console

TotalStorage Productivity Center for Data



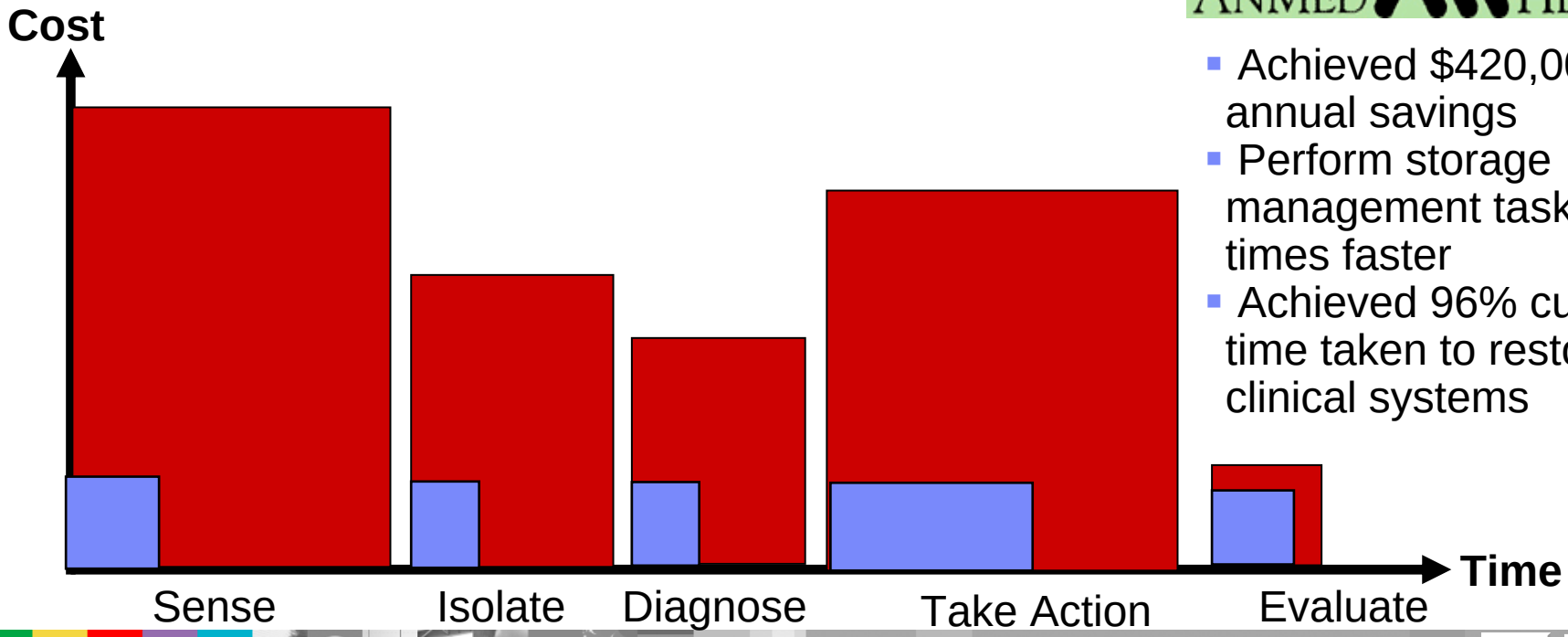
Tivoli Storage Manager



Tivoli Provisioning Manager

ANMED HEALTH

- Achieved $420,000 in annual savings
- Perform storage management tasks 10 times faster
- Achieved 96% cut in time taken to restore clinical systems



Orchestration and Provisioning – adding server capacity on demand

Common Infrastructure Management Scenarios

Provisioning Server Capacity

Without Tivoli Infrastructure Management

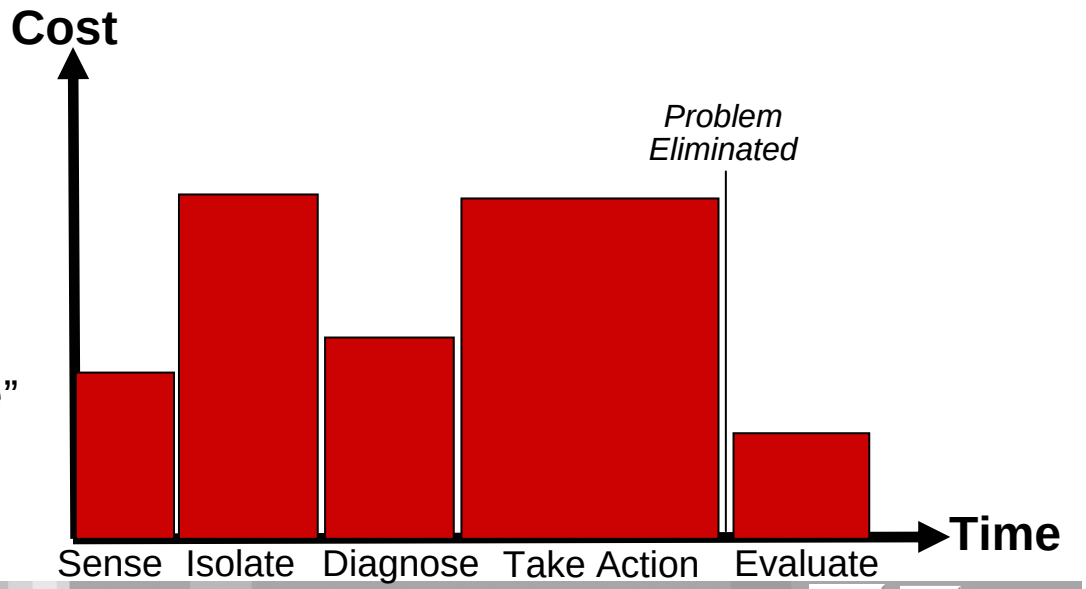
1. Sense
- Some customers experience performance delays
- Help desk reports problem after numerous calls
- Performance delays confirmed, cause unknown

2. Isolate
- Team investigates using disparate systems & metrics
- Potential causes isolated to section of infrastructure

3. Diagnose
- Team finds that specific resource is operating at full capacity

4. Take Action
- Over-provision all resources “just-in-case”

5. Evaluate
- Continuing spiral of lower and lower resource utilization



Common Infrastructure Management Scenarios

Provisioning Server Capacity

With Tivoli Infrastructure Management

1. Sense

- Critical Web application alerts a pending service level breach

2. Isolate

- Tracing poor performing transactions, a poor performing segment is pinpointed

3. Diagnose

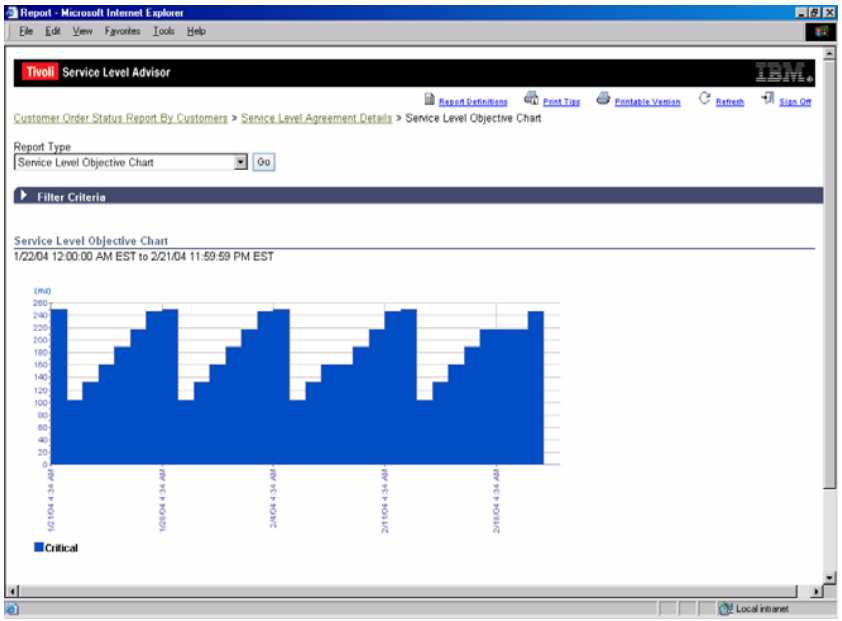
- Web application needs more processing power driving related database demand

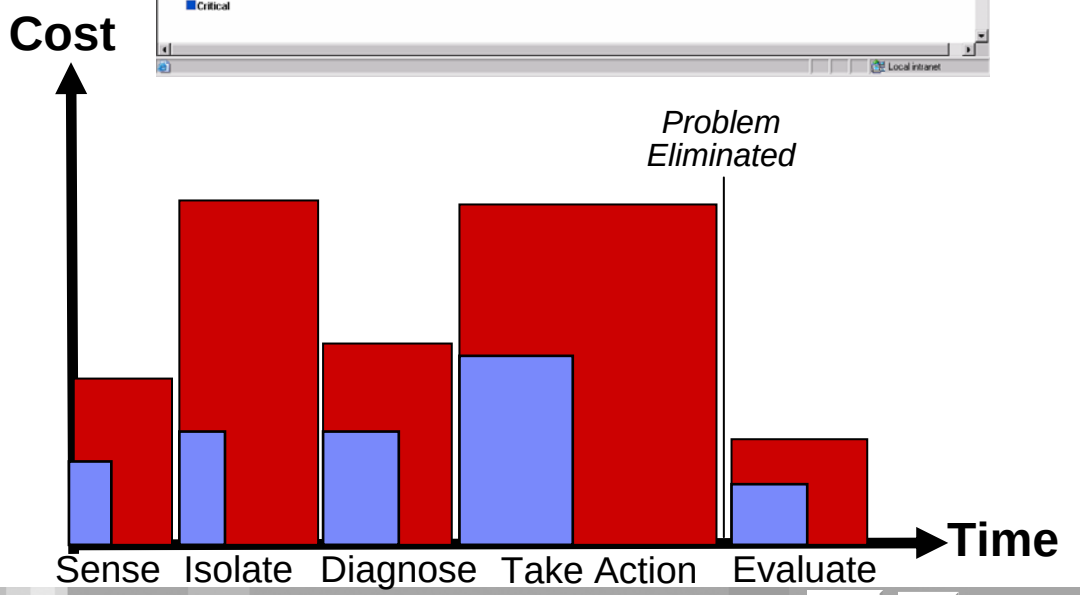
4. Take Action

- Automated server provisioning for web application and related database from resource pool

5. Evaluate

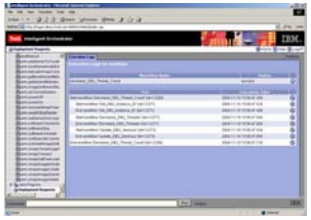
- Peak workload met – resources returned to pool as demand decreases – service levels maintained throughout



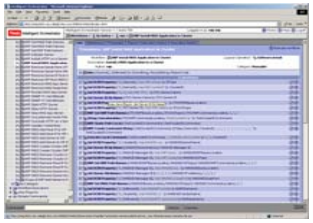


Common Infrastructure Management Scenarios

Provisioning Server Capacity – Implemented Tivoli Solution

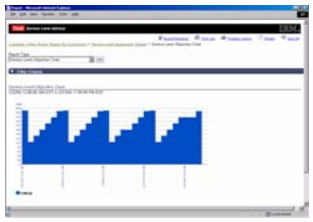


Tivoli Intelligent Orchestrator

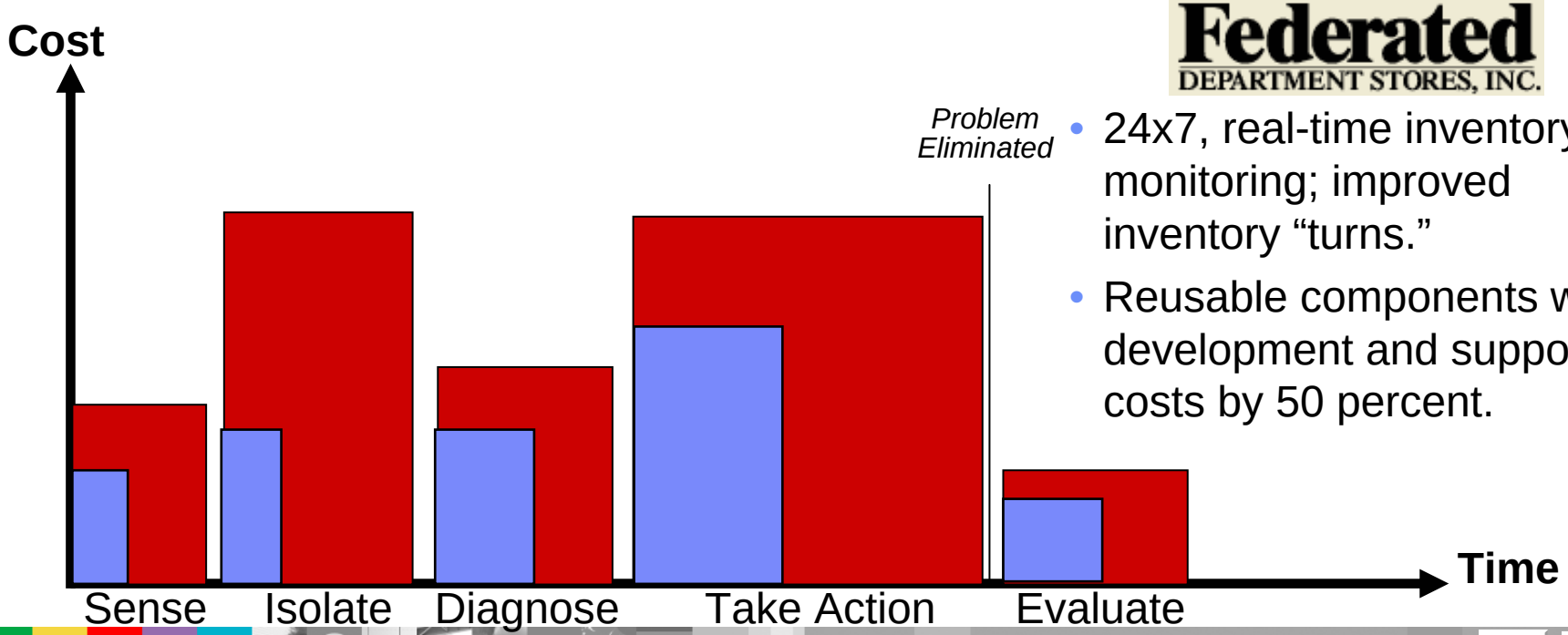


Tivoli Provisioning Manager

Tivoli Configuration Manager



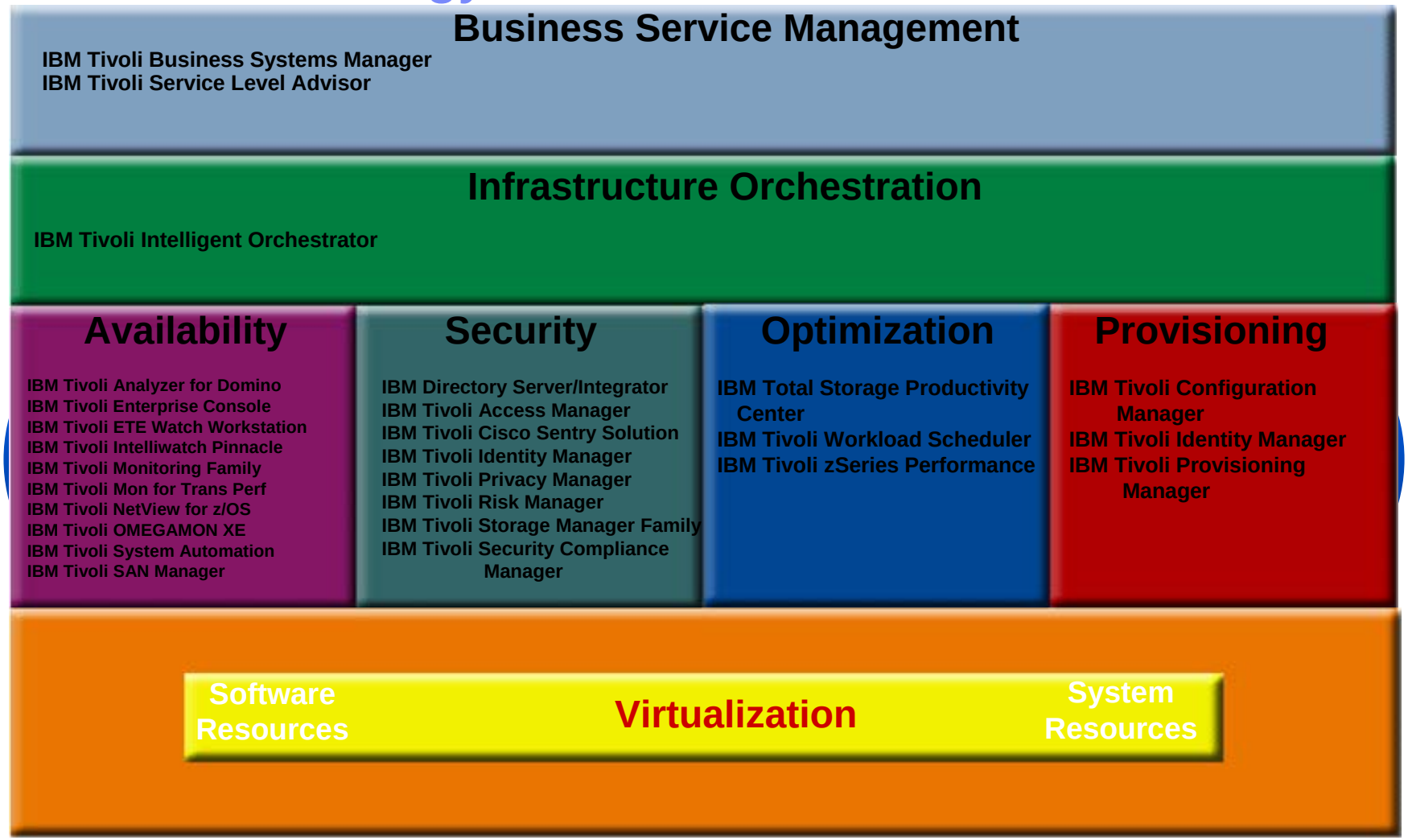
Tivoli Service Level Advisor



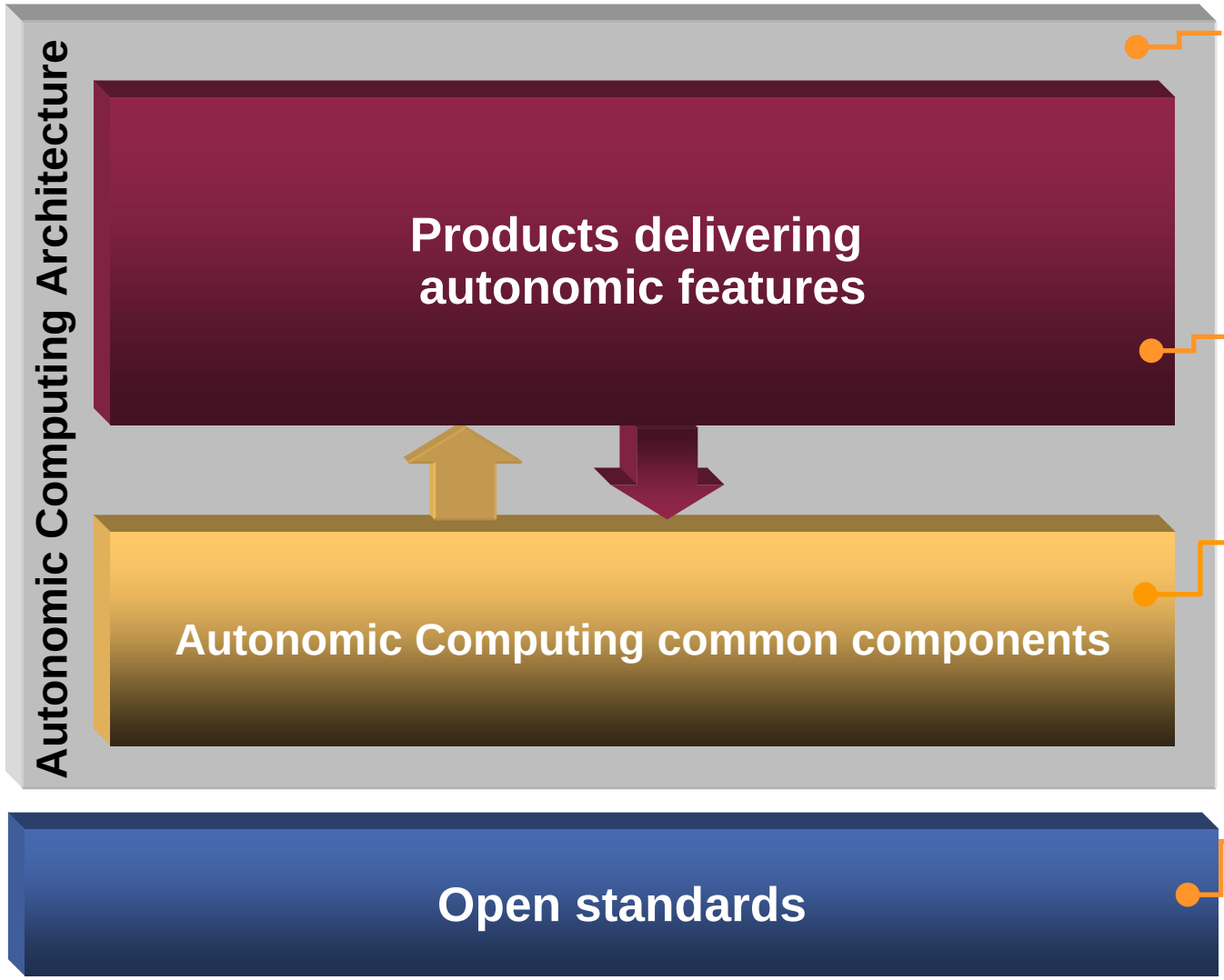
Federated DEPARTMENT STORES, INC.

- 24x7, real-time inventory monitoring; improved inventory “turns.”
- Reusable components will cut development and support costs by 50 percent.

IBM Tivoli Strategy

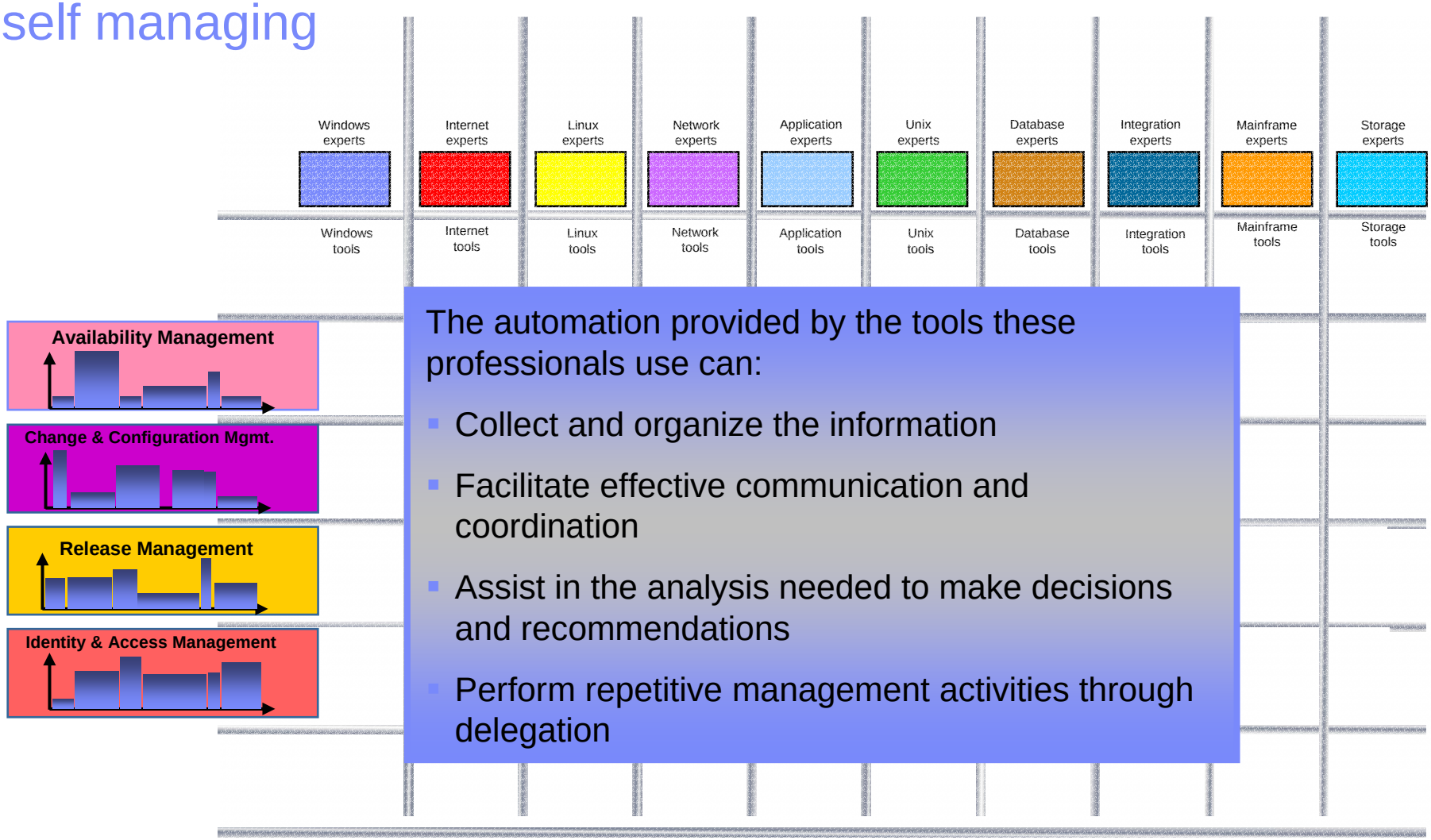


IBM Autonomic Computing



- Define a **base reference architecture** which creates a common language and design for autonomic computing
- Deliver **products** with built-in autonomic capabilities
- Develop **common components** that provide for an open framework for the industry
- Create and leverage **open standards** for autonomic computing

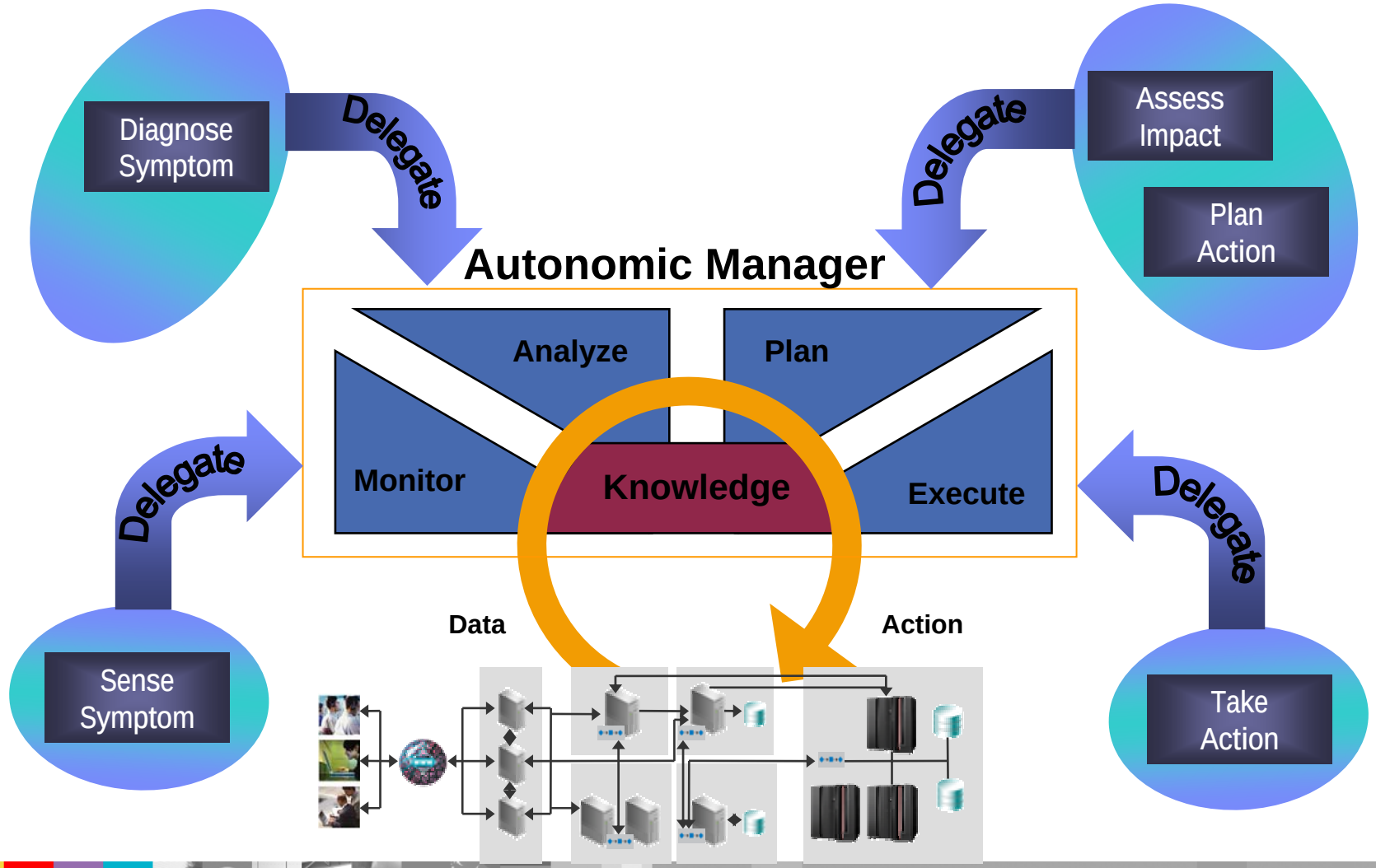
Automating the manual management activities performed by IT professionals in IT processes is essential to making systems self managing



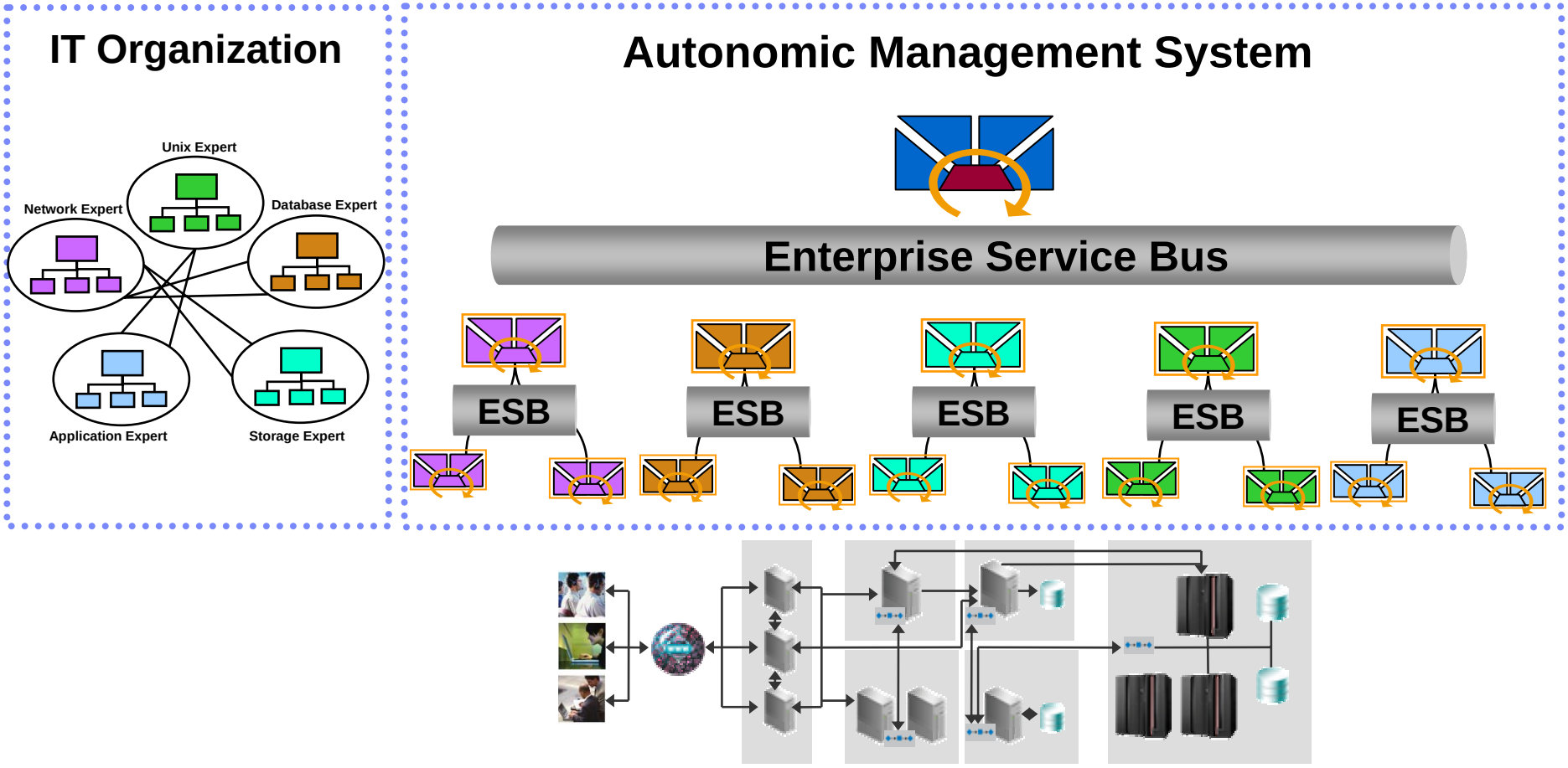
The automation provided by the tools these professionals use can:

- Collect and organize the information
- Facilitate effective communication and coordination
- Assist in the analysis needed to make decisions and recommendations
- Perform repetitive management activities through delegation

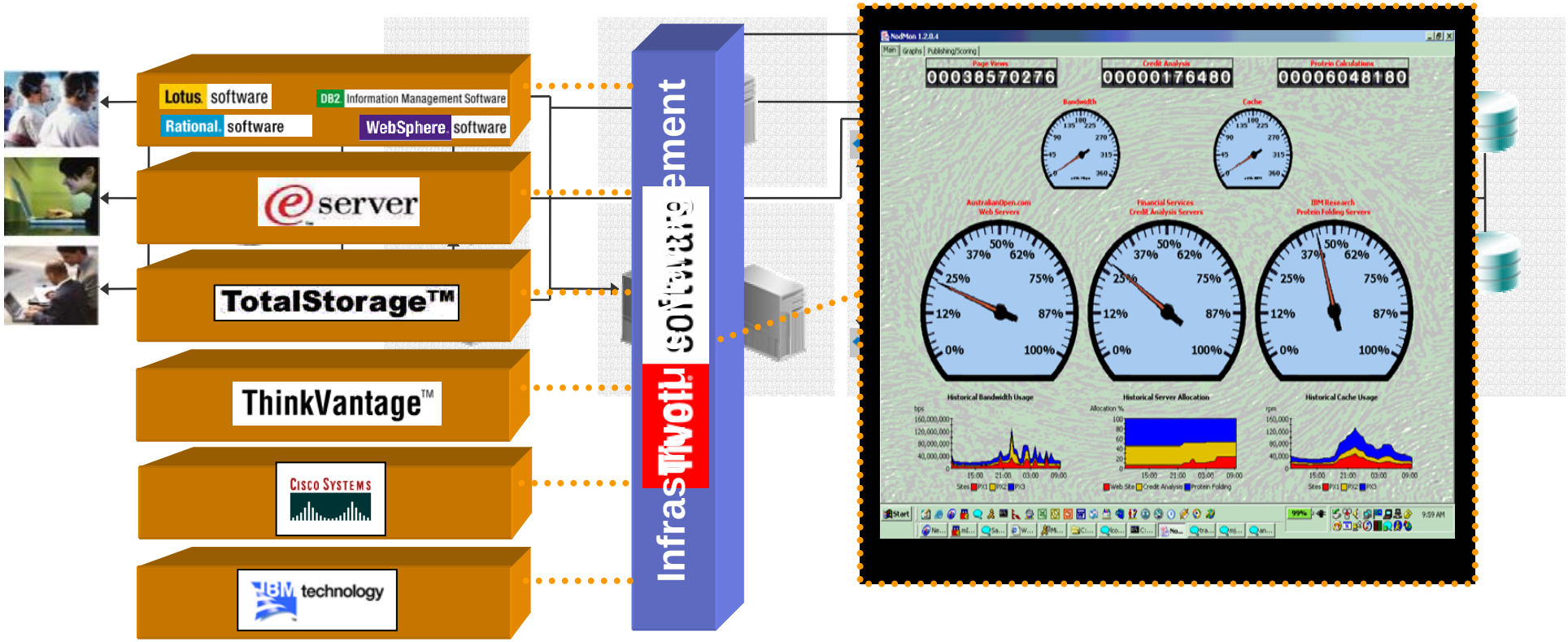
Integrating automated capabilities into a control loop enables the system to manage itself



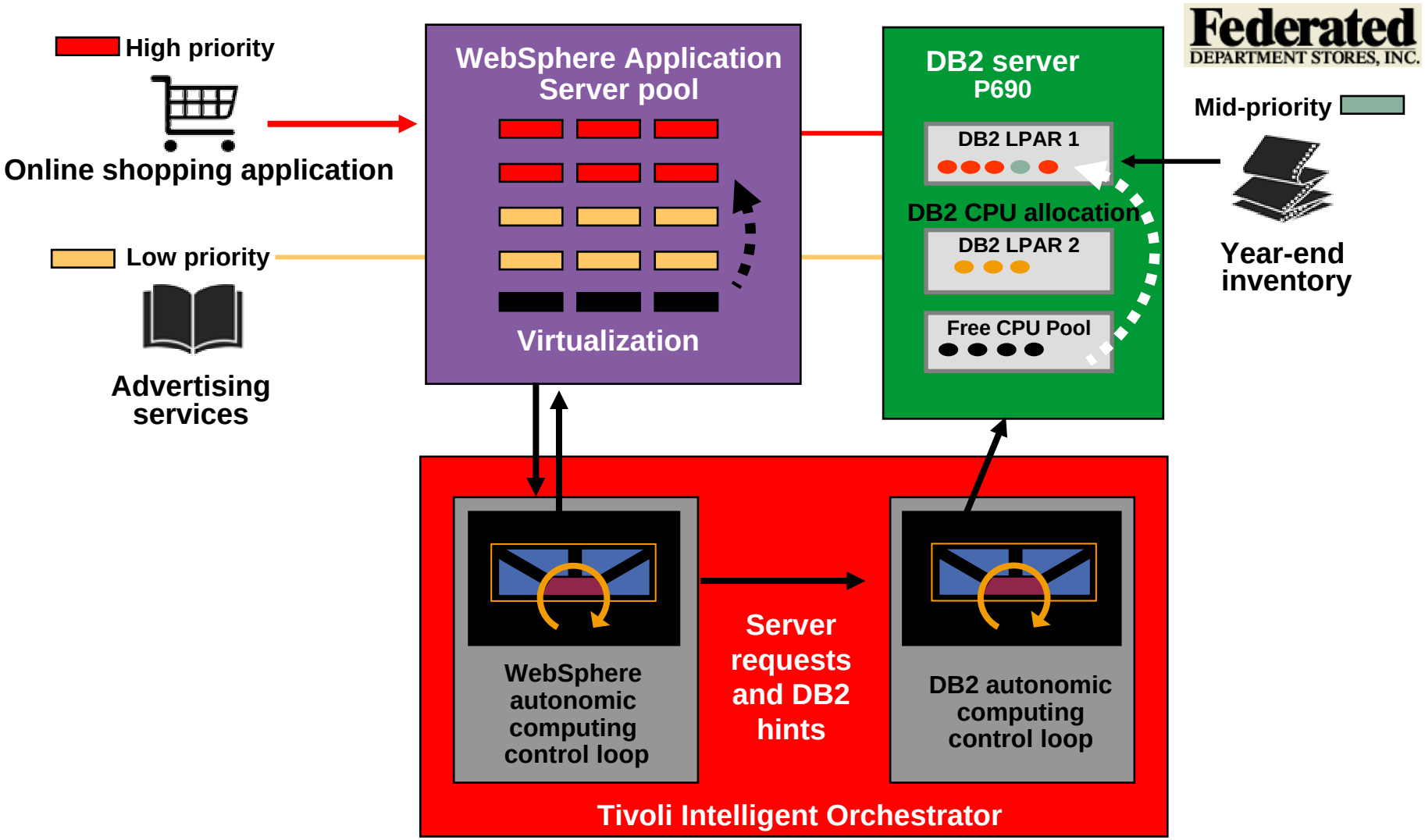
Autonomic managers are integrated to match the operations of the IT organization using the Enterprise Service Bus



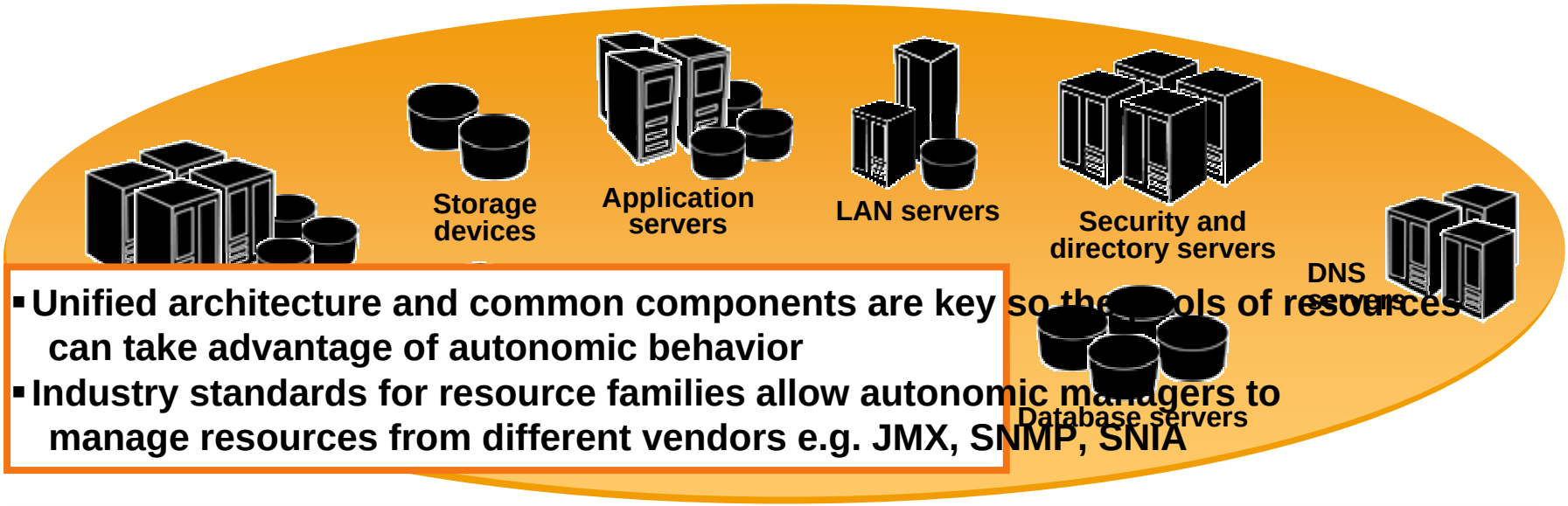
Tivoli integrates and leverages the autonomic capabilities of the IT environment



Tivoli integrates and leverages the autonomic capabilities of WebSphere and DB2



Autonomic behavior works on multiple levels



- Unified architecture and common components are key so the pools of resources can take advantage of autonomic behavior
- Industry standards for resource families allow autonomic managers to manage resources from different vendors e.g. JMX, SNMP, SNIA

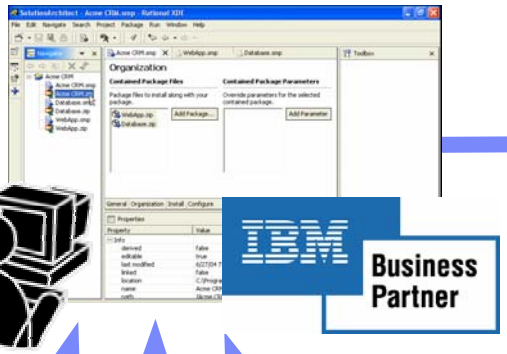
- Industry standards that cross resource types allows autonomic managers to manage multi-vendor, multi-type infrastructure e.g. DMTF, OASIS WSDM TC, GGF
- Autonomic behavior at the system level reduces IT Management complexity

Bridging the gap between development and operations

Build

Deploy

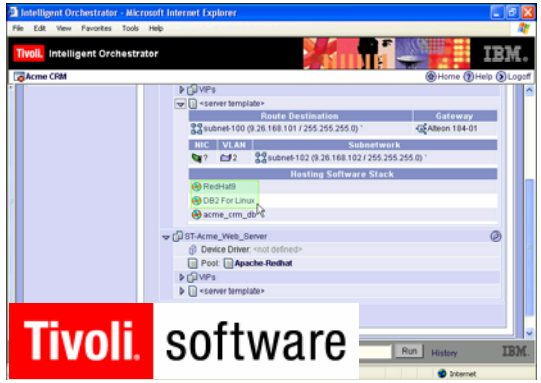
2. Create packages



1. Design/Development

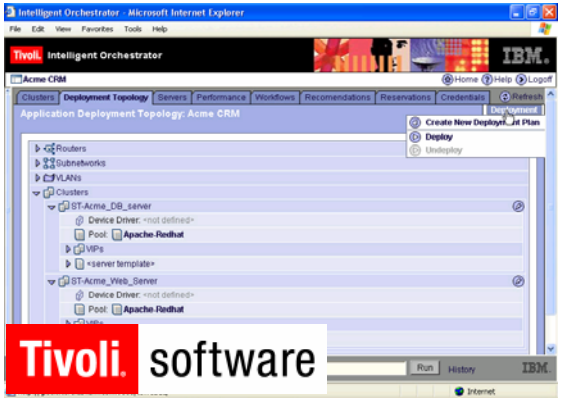
Solution Installation

- Standardized XML schema for describing the solution – submitted to W3C
- Dependency checking at packaging and deployment stages
- Enabled OS and middleware via touch points



3. Analyze dependencies

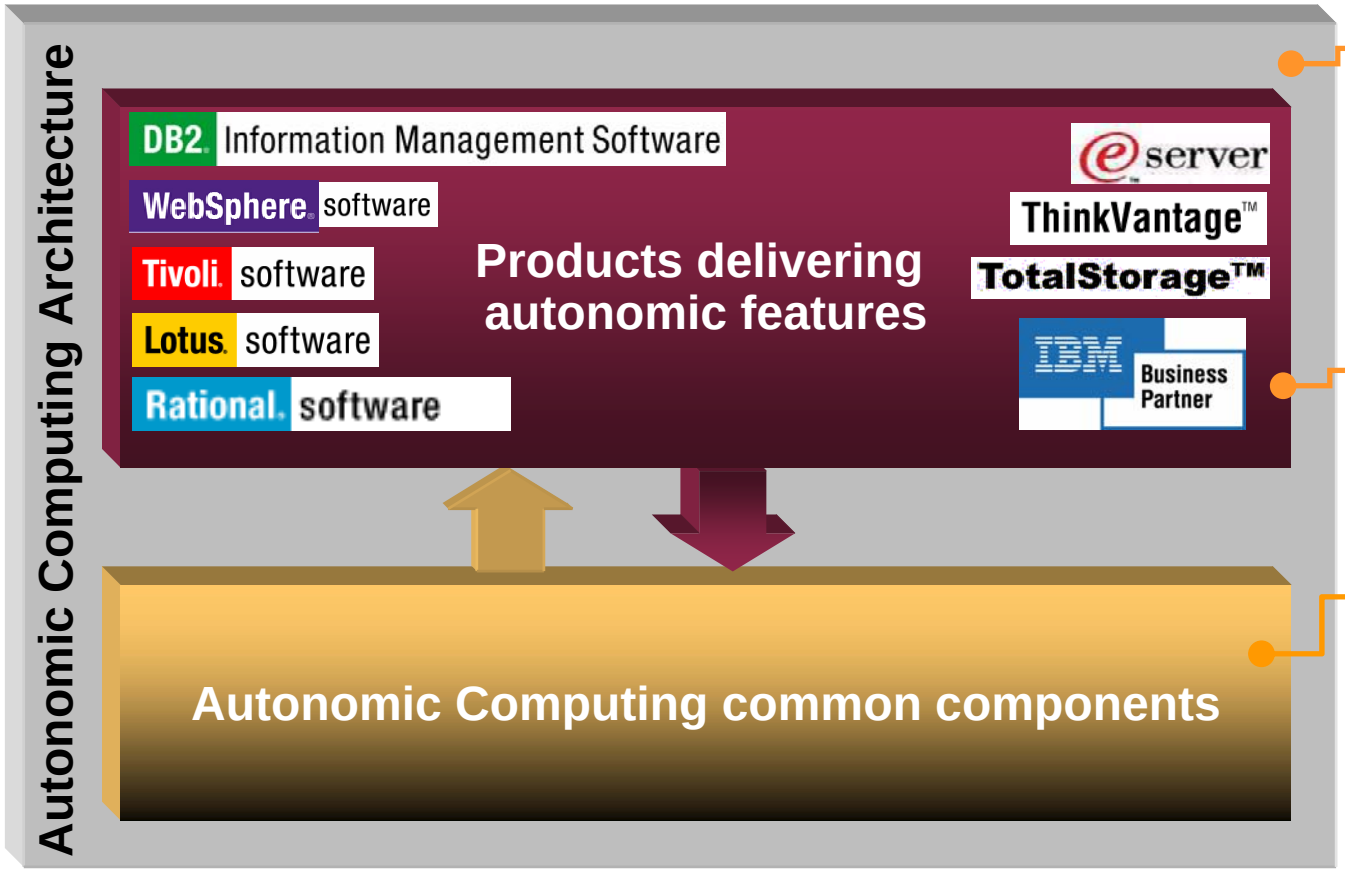
4. Create deployment plan



5. Deploy solution

6. Update libraries with deployment information

Making progress



- AC Control Loop
- AC Architecture Blueprint

- 50 products with 415+ features
- Partner solutions

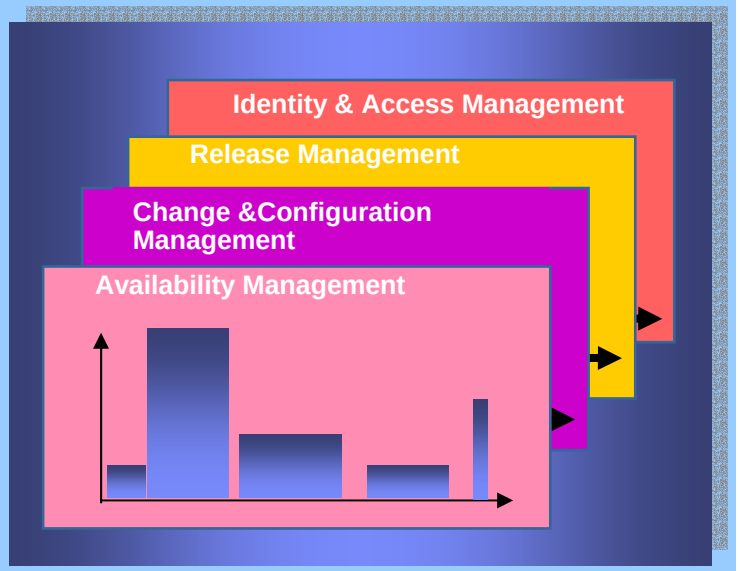
- Log/Trace Analyzer
- Solution installation dependency checking
- Common console
- AC Toolkit

- Common log format
- Solution installation schema

Helping Customers Get Started

Creating an IT roadmap that supports the business objectives

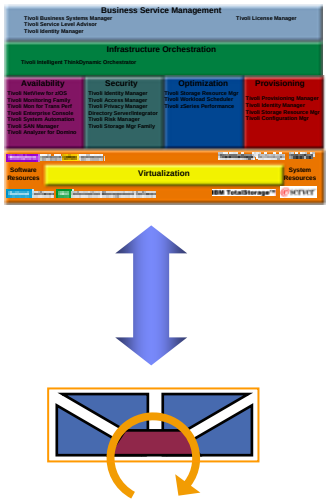
- Automation Assessment Tool
- IGS Autonomic Computing Readiness Assessment



"The Autonomic Computing Readiness Engagement approach has helped us see immediate benefit in the planning, design and successful implementation of our Enterprise Integrated Testing Center." — Rick Felts, Executive Director, SBC

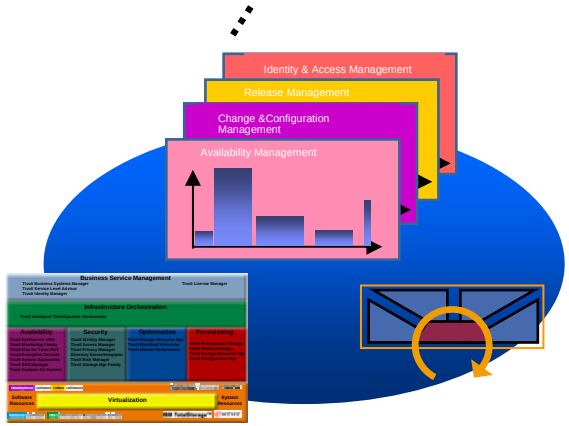
The Future of Business-Driven IT Management

Today



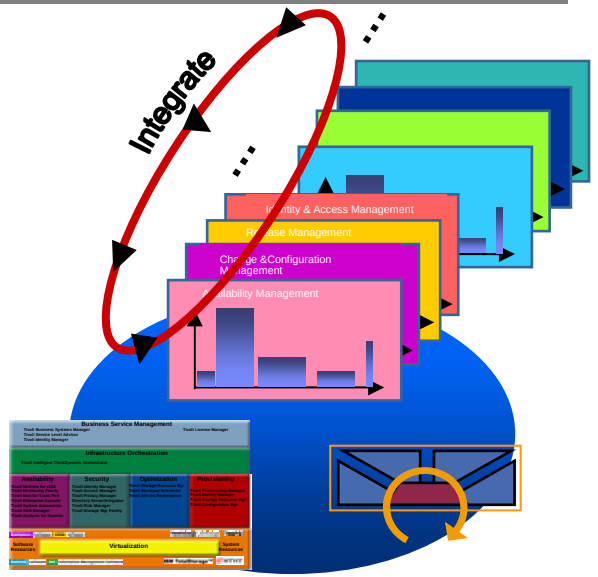
- Automate IT Activities
- Integrate Autonomic Components
- Standardize Management

Near Term



- Automate Key IT Processes
- Increase Automated Information Sharing Across Processes
- More Autonomic Capabilities

Future



- Integrate Across IT Processes
- Delegate Many Activities to Autonomic Managers

- Technology Breadth & Depth
- Open Standards & Architecture
- Innovation & Research