Dynamic Infrastructure for Communication Service Providers
Enabling Success with IBM Service Management

One of the industry's biggest transformations is under way

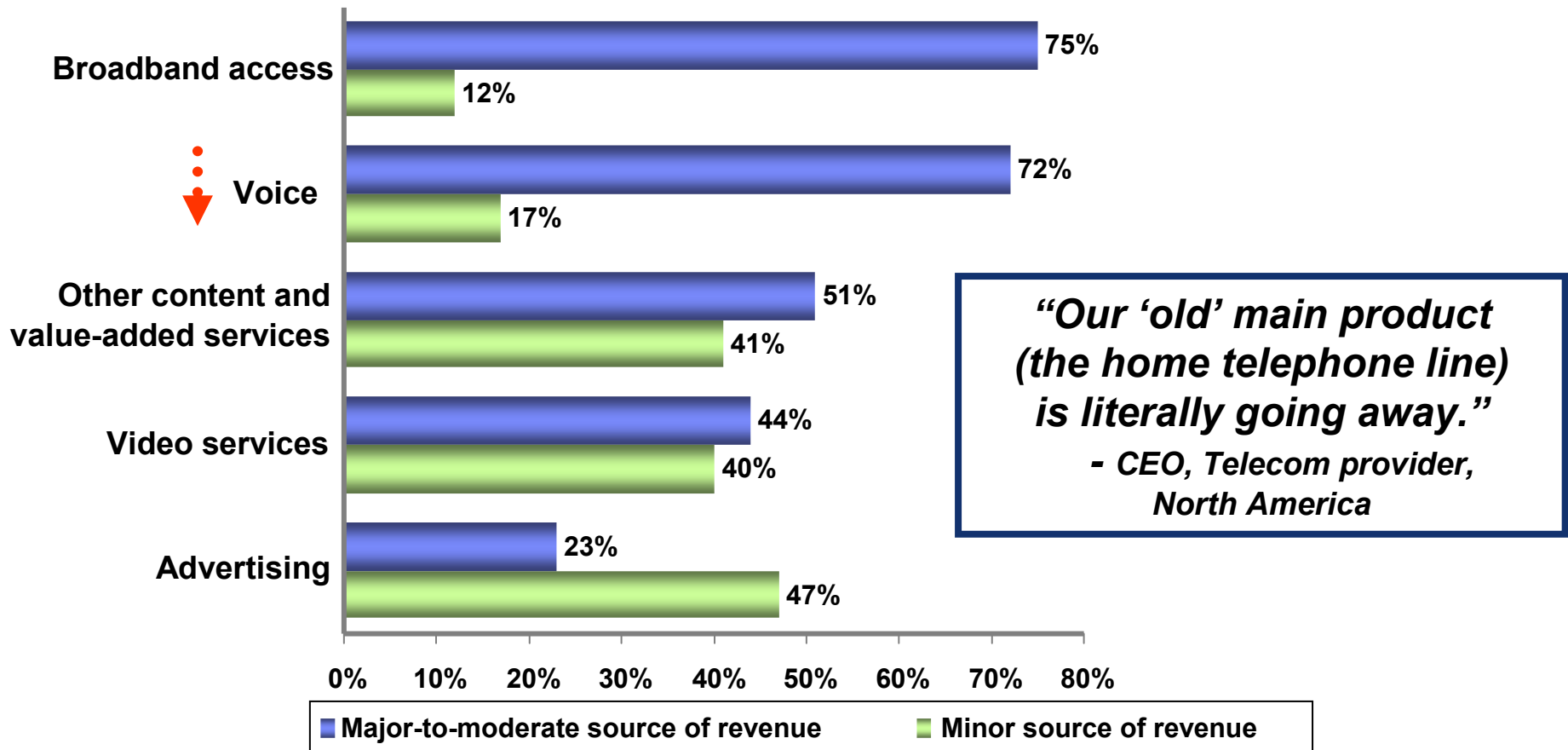**The Internet of people is 1 billion strong …**

The Internet of things is heading toward 1 trillion.

- Nearly 1/3 of the world's population – 2 billion people – will be on the Web by 2011

- Wireless applications are slated to grow by 17% annually through 2011 – compared to 1.5% for wired applications

- Worldwide mobile phone subscriptions will hit 4 billion in 2008. Nearly 60% of subscribers live in developing nations

- The number of text messages sent and received every day exceeds the world's population

After a century of dominance by voice services, demand is shifting to a much broader set of services

Global Telecom Services Revenue Mix : 2007 - 2012

Broadband access
- 75%
- 12%

Voice
- 72%
- 17%

Other content and value-added services
- 51%
- 41%

Video services
- 44%
- 40%

Advertising
- 23%
- 47%

0% 10% 20% 30% 40% 50% 60% 70% 80%

■ **Major-to-moderate source of revenue**   ■ **Minor source of revenue**

> *"Our 'old' main product (the home telephone line) is literally going away."*
> **- CEO, Telecom provider, North America**

Service is all about customer, quality and performance

With new opportunities, carriers are asking …

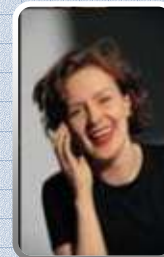| How do I manage new content-based services that span **NETWORK AND IT OPERATIONS?**	How do I gain control and **IMPROVE OUR OPERATIONAL PERFORMANCE?**	How do I know understand the **CUSTOMER EXPERIENCE & ENSURE SERVICE QUALITY?**	How do I help **MAXIMIZE RETURN ON ASSETS & REDUCE RISK?**
▪ New services are much more complex … with new applications, devices and how services are used…	▪ We continue to need to reduce costs and do more with less	▪ Customer reported problems are post event and go unresolved	▪ Governance, compliance and security are becoming increasingly important

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IBM is helping customers realize smarter business outcomes
Service management differentiates offerings and improves operational efficiency

By deploying a
Tivoli Netcool Solution

BT

Achieved 100% availability of
critical service with only 5 engineers
assigned to oversee environment

Using Tivoli
Netcool software and
trouble-ticketing integration

Cablecom

Reduced time needed to correlate a
network alarm to the service impacted
from 50 minutes to just 10 seconds

Using IBM Tivoli
Netcool to monitor business
and consumer services

SmarTone

Reduced the amount of time it
takes to manage the network
by 80%

The Tivoli Netcool
service assurance system
for monitoring existing and future
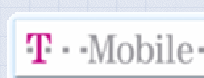wireless networks allowed

Swisscom

To triple the growth of their services
and infrastructure without a
corresponding rise in headcount

The Tivoli Netcool
end-to-end management
solution helped

T-Mobile

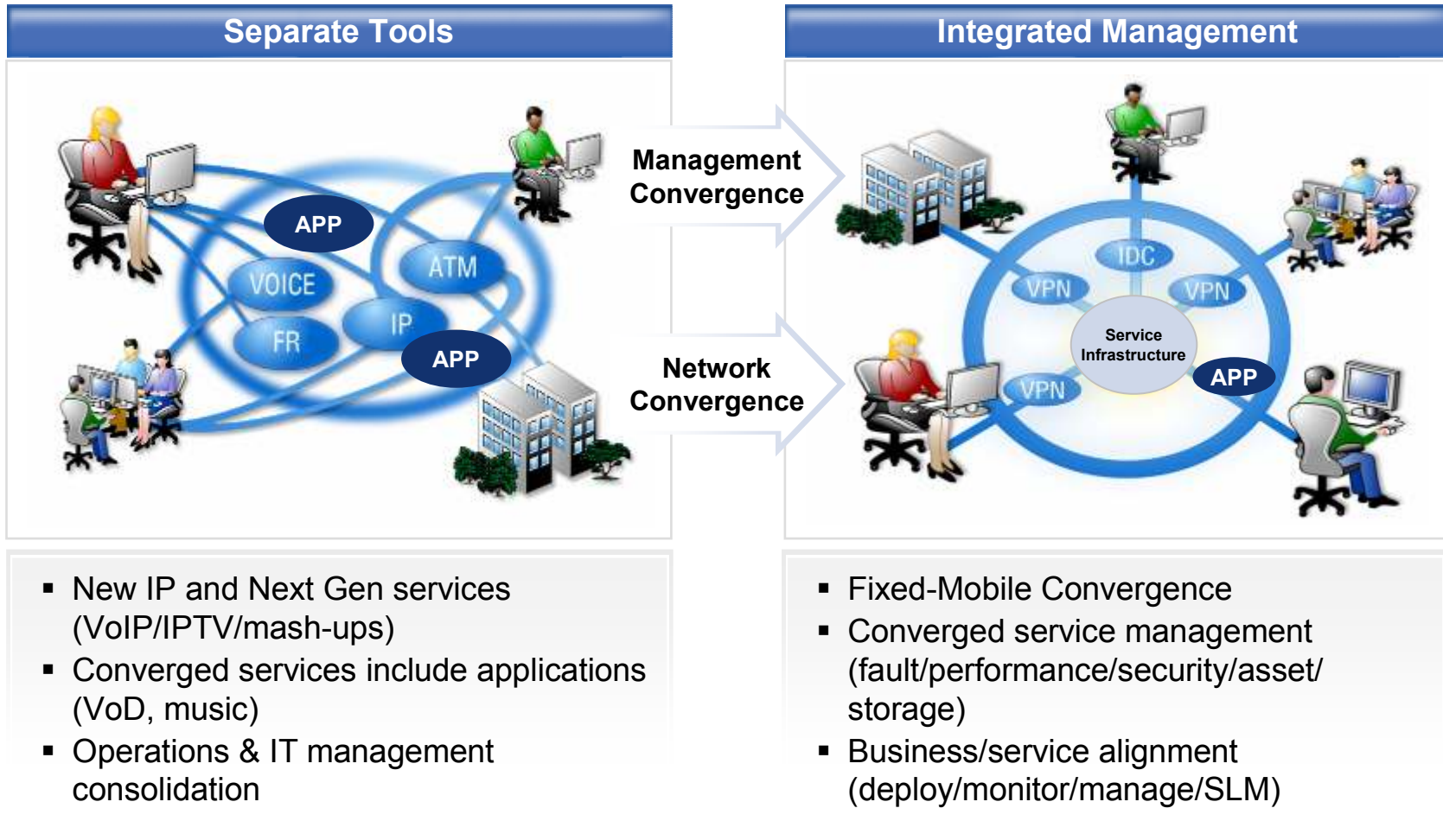To reduce the average number of
events by a factor of 100

By implementing a
Tivoli Netcool solution

Telekom Austria

Reduced fault investigation time by
50% (less than 25 min on average)

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Converged services ⇔ converged manageability

Separate Tools	Integrated Management

Management Convergence

Network Convergence

- New IP and Next Gen services (VoIP/IPTV/mash-ups)
- Converged services include applications (VoD, music)
- Operations & IT management consolidation

- Fixed-Mobile Convergence
- Converged service management (fault/performance/security/asset/ storage)
- Business/service alignment (deploy/monitor/manage/SLM)

Integration of people, processes and technology will drive efficiencies and enables effective management of the customer experience

IBM Service Management for communication service providers

IBM helps IT and business operations of **communications service providers** to **deliver business services** securely, efficiently, reliably and cost-effectively

Visibility	Control	Automation
Improve service quality and customer retention	**Maximize return on assets and reduce risk**	**Streamline processes & accelerate growth**

Visualize business and service quality … improve service quality and customer retention

Comprehensive monitoring across any type of network – wireless, wireline…

- Service Quality Management
- Customer Experience Management
- Service Transaction Monitoring

- Performance Management (IP & Wireless)
- Event/Fault Management
- Business Service Management

Business & Service Quality

- Monitor Service Quality: KQIs & KPIs

- Instantaneous SLA violation

- Pinpoint which service affecting events will impact service availability & quality

- Link service to customers, infrastructure & SLAs

- Visualize services across domain and organizational silo's

- 99.999% availability … detection of service outage in 5 seconds … customer notification in 5 minutes … and max time to repair 30 minutes – BT

IBM

# Control – maximize return on assets and reduce risk

Comprehensive service management. Manage assets and security across Ops and IT

- IT Asset Management
- Enterprise Asset Management
- Service Desk

- Security Operations Management
- Identity Management
- Storage Management

Flexible & Proactive

- Maximize TCO of Assets
- Improve labor efficiency
- Improve Governance and Compliance
- Manage the explosion of data associated to content based services

Deploy engineering work force efficiently & reduce outages on critical assets
  -- T-Mobile

© 2009 IBM Corporation
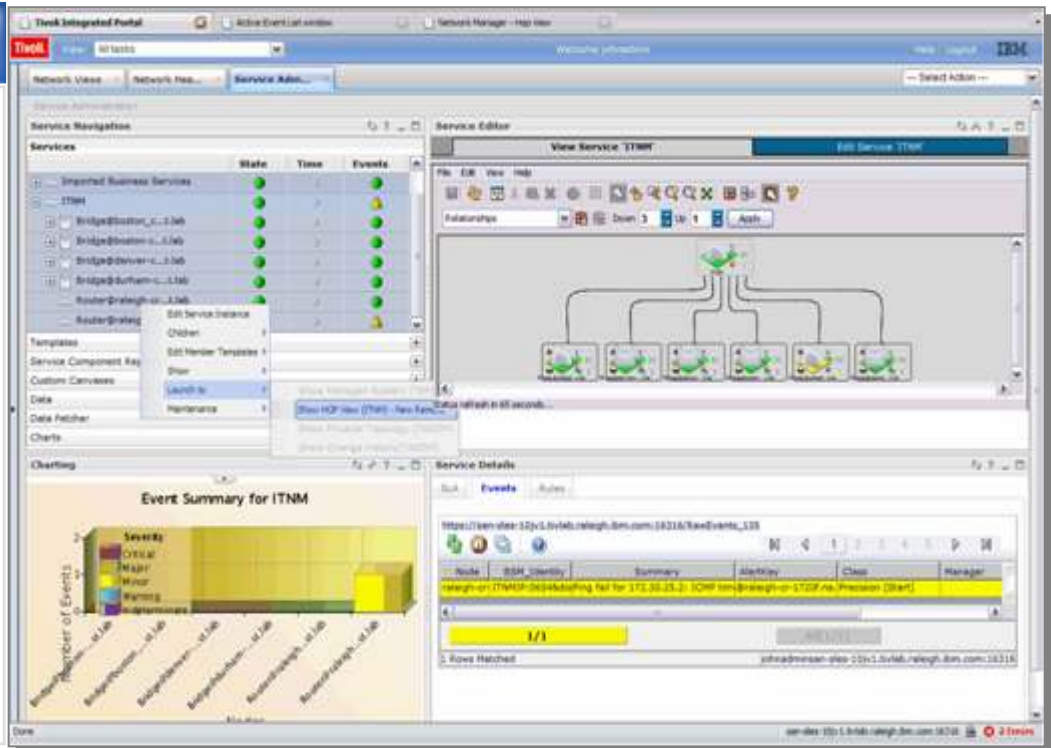
Automate – streamline processes & accelerate growth

Powerful and proven platform selected by over 1,000 communication service providers

- Monitoring for 1,000+ resource
- COTs Service Models
- Open and Standards based

- Out of the box OSS/BSS integrations
- 300+ Partner ecosystem
- Telco expertise from 1,000+ customers

Operational Performance

- Adapts to your environment
- Pinpoint root cause of service issues
- Highly Scalable: 100M+ events per day
- Single pane of glass across silos, department & technologies
- Leverages investments in existing tools and integrates into your infrastructure

- *Consolidated 27 NOCs into 2 – BT*
- *Saved $19M in 9 months – KPN*
- *80% savings in operator resources – Smartone*

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IBM Service Management is part of a bigger story

IBM solution strategy for communication service providers

Customer/Partner Management

Gain customer insight to deliver targeted/relevant offerings

Service Innovation

Online communities foster innovation for new services

Service Management

Improve quality, customer satisfaction and operational efficiencies

Capabilities

Service Creation

Bringing value added services to market more quickly

Service Integration

Integrate new services with fulfillment, assurance, billing and care systems (BSS/OSS)

Service Execution

Deliver innovative services with greater speed and quality

Next steps

1. **Establish a vision for your organization.**

   - Check our ISM live demonstrations to see the value.

2. **Conduct an assessment on where you are and where you can go.**

   - Engage our ISM Consulting Services.

3. **Build a plan to get there.**

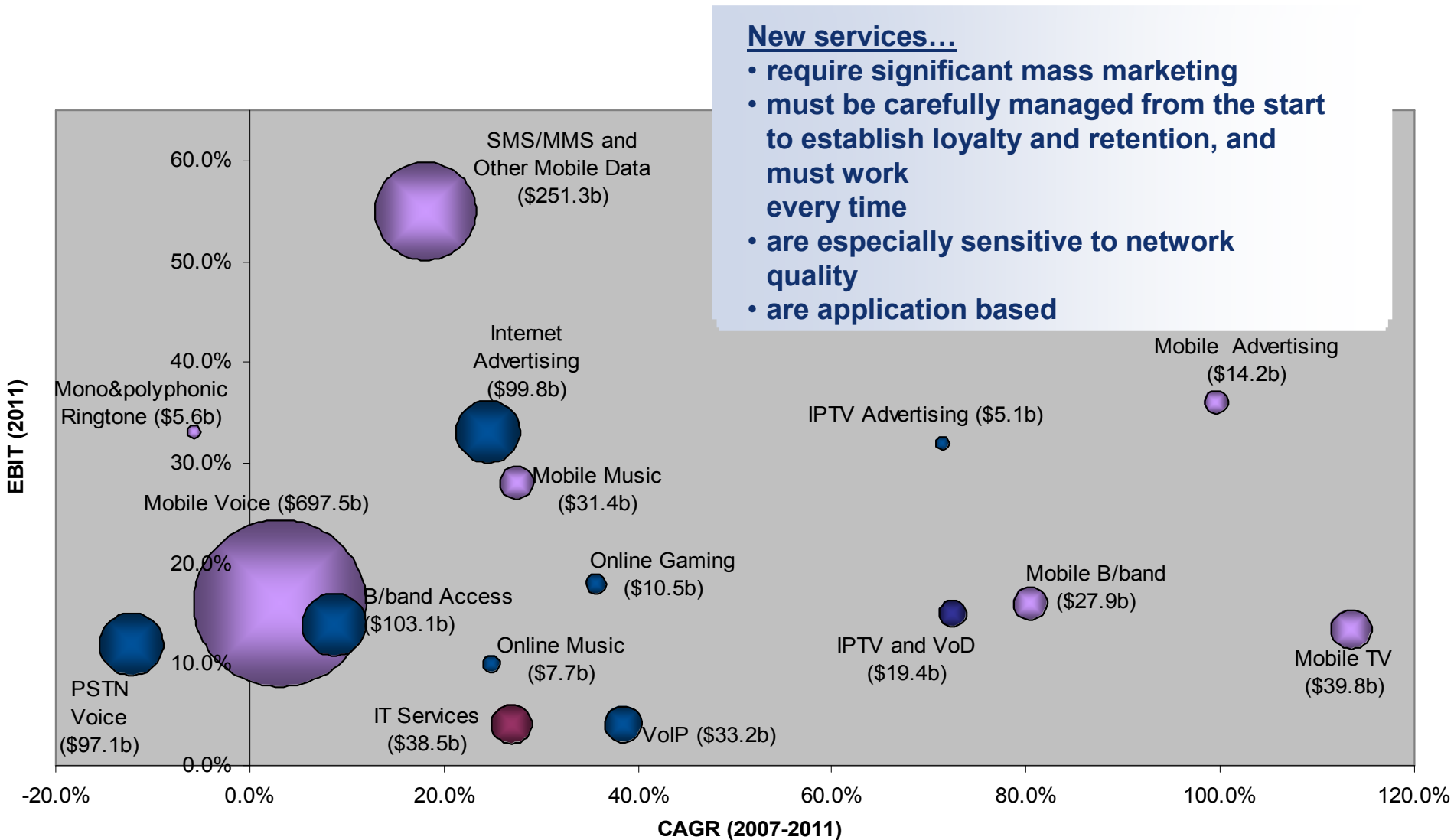   - Leverage our ISM Deployment Services.

IBM Service Management for communication service providers

Visibility	Control	Automation
Improve service quality & customer retention	**Maximize return on assets & reduce risk**	**Streamline processes & accelerate growth**
▪ True, real time end-to-end visibility into the source and resolution of issues **that compromise network performance and availability, service quality and the customer experience**	▪ Cost-effective, robust, secure and agile foundation on which to build delivery of next generation services - backed by best practices	▪ Automations, out of the box 'built for telco functionality' and integrations across service management portfolio and with other OSS/IT systems to reduce costs, improve efficiency and increase responsiveness

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Service-centric innovation … it's all about the service
New technologies, services and opportunities for communication service providers

New services…
- require significant mass marketing
- must be carefully managed from the start to establish loyalty and retention, and must work every time
- are especially sensitive to network quality
- are application based

Bubble chart — EBIT (2011) vs CAGR (2007-2011):

- SMS/MMS and Other Mobile Data ($251.3b)
- Mono&polyphonic Ringtone ($5.6b)
- Internet Advertising ($99.8b)
- Mobile Music ($31.4b)
- Mobile Voice ($697.5b)
- Online Gaming ($10.5b)
- Mobile Advertising ($14.2b)
- IPTV Advertising ($5.1b)
- B/band Access ($103.1b)
- Mobile B/band ($27.9b)
- Online Music ($7.7b)
- PSTN Voice ($97.1b)
- IPTV and VoD ($19.4b)
- Mobile TV ($39.8b)
- IT Services ($38.5b)
- VoIP ($33.2b)

Market vision: a connected and converged world

What matters is the SERVICE…

Services will span ANY type of network…

Services will connect people in new ways, ANYWHERE…

…and require a QUALITY customer experience.

Communication service providers market dynamics

Goal:
Accelerate the
End-to-End Telecom
Service Lifecycle

More Competitors

Convergence is spawning a "Telemedia" Industry among Service Providers, Internet Portals and Media

Subscriber Demands

Demand for innovative, multimedia, services and content. Subscribers quickly abandon poor services

Economic Pressures

Risk of commoditization **and** increasing operating expenses are driving the need to find new sources of revenue and profit

Defend Market Share, Grow New Revenues

Reduce customer churn **and** improve average revenue and profit per user

"We have seen more change in the last 10 years than in the previous 90."
– Ad J. Scheepbouwer, CEO KPN Telecom

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To win, communication companies must innovate and be agile

Improve time to market AND quality of value added services
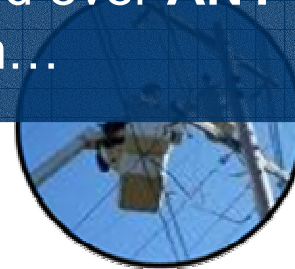
Lower operating costs to drive profitability

Services will be delivered over **ANY** medium…

What matters is the **SERVICE**…

Deliver converged voice, video AND data services
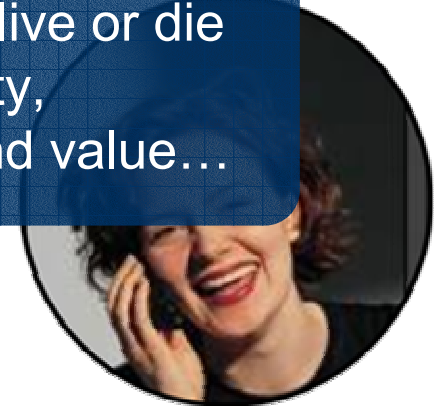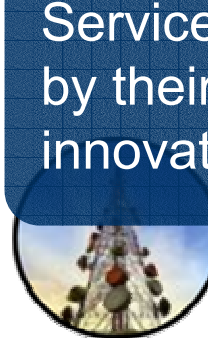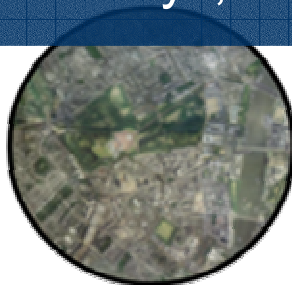
Increase retention AND drive new revenue

Services will connect people in new ways, **ANYWHERE**…

Services will live or die by their quality, innovation and value…

Integrate services AND connect with backend support systems

IBM is helping communication service providers optimize their dynamic infrastructure with service management

Business Challenges	Business Results
▪ Drive down operational expenditures ▪ Deliver high service quality to retain and grow customer base	▪ Optimized service quality with end-to-end visibility ▪ Helped contain staffing costs ▪ Improved process efficiency
▪ Deploy engineering work force efficiently ▪ Reduce outages on critical assets	▪ Saved revenue by reducing churn ▪ Dramatically improved operational efficiency ▪ Reduced dependency on internal IT development
▪ Offer ICT outsourcing for key customers ▪ Manage complex contract ▪ Integrate with many legacy systems	▪ Market share gain with ICT outsourcing ▪ Improved service management delivery

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A holistic approach to manage services is needed

The changing operational environment demands a holistic and integrated approach to deliver on the promise of Service Management

Reliable

Profitable

Available

Consumable

Responsive

Affordable

Valuable

Trusted

Customer/Partner Management

Service Innovation

Service Creation

Service Management

Service Integration

Service Execution

Objective:

Fast, efficient, cost-effective delivery of quality **services** that have all the attributes needed to make them **succeed**

Solving challenges in communications with IBM Service Management

Industry Challenges	IBM Service Management Solutions for Communications
Optimizing service quality and focus on the customer experience	**Service Quality & Customer Experience**
Managing the increasingly complex network to streamline operations	**Network Assurance**
Maximizing the value of IP and IT assets to minimize the cost of ownership	**Asset Management**
Managing security risks of converged IT networks	**Security Operations**
Managing the explosion of data associated with content-based services	**Storage Management**

Service quality and customer experience drivers and requirements

Business Drivers

- Focus on customer and quality to reduce churn and improve customer satisfaction
- Launch innovative new services quickly to
  - Capture market share and increased revenue
  - Ensure positive first-time user experience to improve new service uptake

Service Assurance Requirements

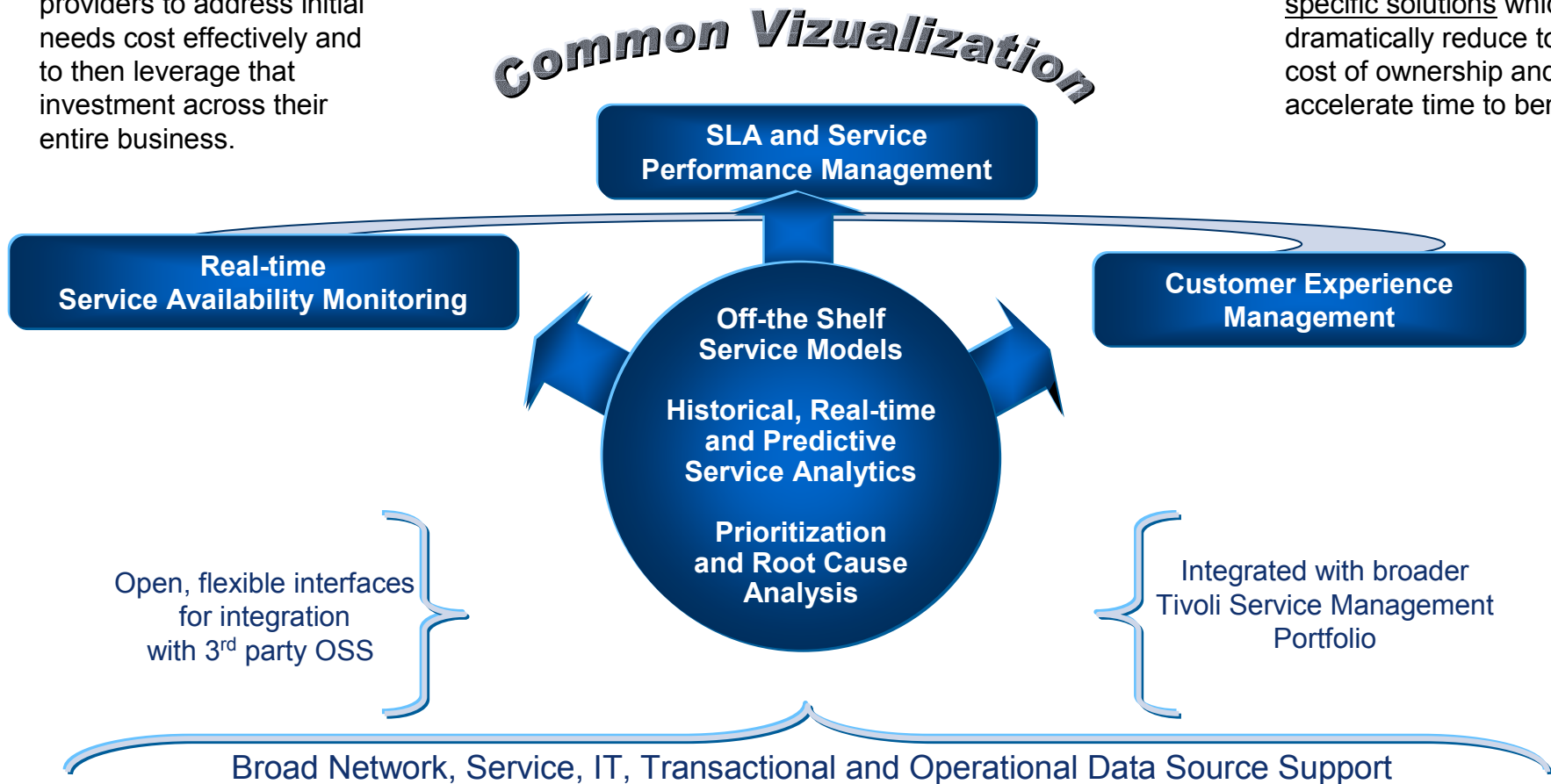- Obtain real-time and historical view of:
  - Service availability
  - Service quality
  - SLA compliance
  - Individual customer experience
- Prioritize network operations based on customer/revenue impact
- Perform rapid intelligent root cause analysis to fix outages and prevent future degradations
- Understand service usage and individual customer experience
  - What service? Who? When? Where? What device?

Service quality management capabilities

A single, integrated dashboard based solution designed to meet the full range of service quality management requirements of service providers.

A modular architecture which allows service providers to address initial needs cost effectively and to then leverage that investment across their entire business.

A rich set of extensible, off-the-shelf service-specific solutions which dramatically reduce total cost of ownership and accelerate time to benefit.

Common Vizualization

SLA and Service Performance Management

Real-time Service Availability Monitoring

Off-the Shelf Service Models

Historical, Real-time and Predictive Service Analytics

Prioritization and Root Cause Analysis

Customer Experience Management

Open, flexible interfaces for integration with 3rd party OSS

Integrated with broader Tivoli Service Management Portfolio

Broad Network, Service, IT, Transactional and Operational Data Source Support

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Service quality, SLA and customer experience management – benefits

Business

Customer

✓ **Drive Revenue Growth**
✓ **Reduce Churn**

Network
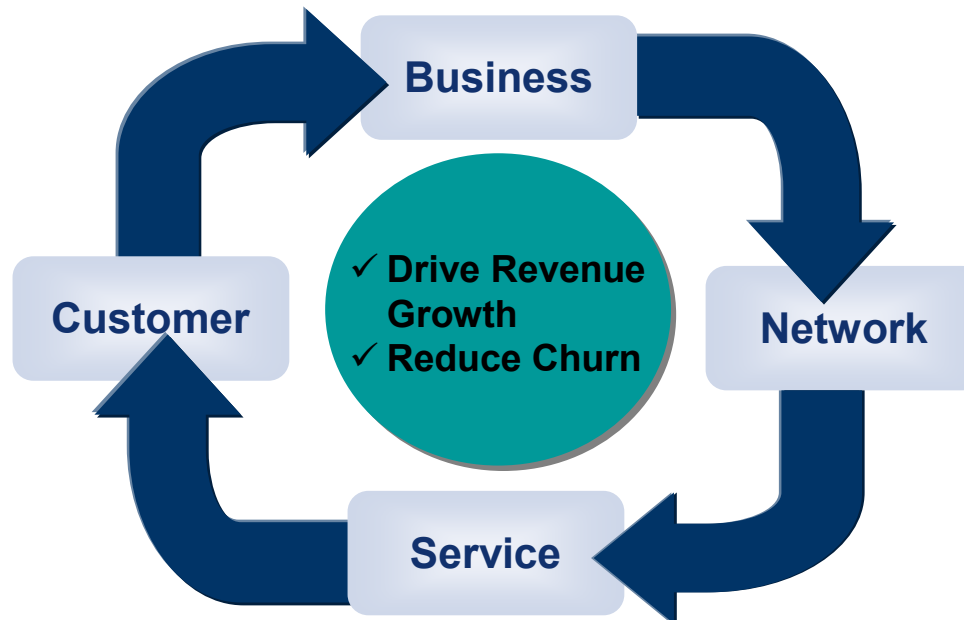
Service

Drive revenue growth

- Bring new services to market quickly with prepackaged SQM modules for IPTV, VoIP, SMS,Voicemail, DSL, HSDPA, Roaming, Blackberry
- Evaluate and increase service usage
- Offer SLAs to retain and attract corporate customers
- Target new services to profitable customers
- Design campaigns that generate the optimal use of the network and content

Reduce churn and improve customer satisfaction

- Provide instant, relevant customer experience information to Customer Care
- Automate root cause analysis of service performance problems
- Prioritize network issues by customer/business impact
- Measure service quality experienced by specific enterprises and subscriber demographics

Network assurance drivers and requirements

Business Drivers

- Improve operational efficiencies
- Reduce capital expenditures
- Improve staff effectiveness
- Embrace new frameworks such as SDP, IMS and SOA
- Drive convergence of fixed/mobile and telco/IT/media

Network Assurance Requirements

- Reduce number of disparate service assurance systems
- Replace inefficient legacy OSS/BSS
- Obtain consolidated view at device, network, service and customer layers
- Perform rapid intelligent root-cause analysis
- Streamline infrastructure complexity to enable use of new frameworks
- Automate by integrating service assurance and other key OSS functions

Network assurance capabilities

Fault/Event Management
Leverage highly scalable platform to manage 100+ million events per day as a "manager of managers" to consolidated operations.

Tivoli Service Request Manager (TSRM)
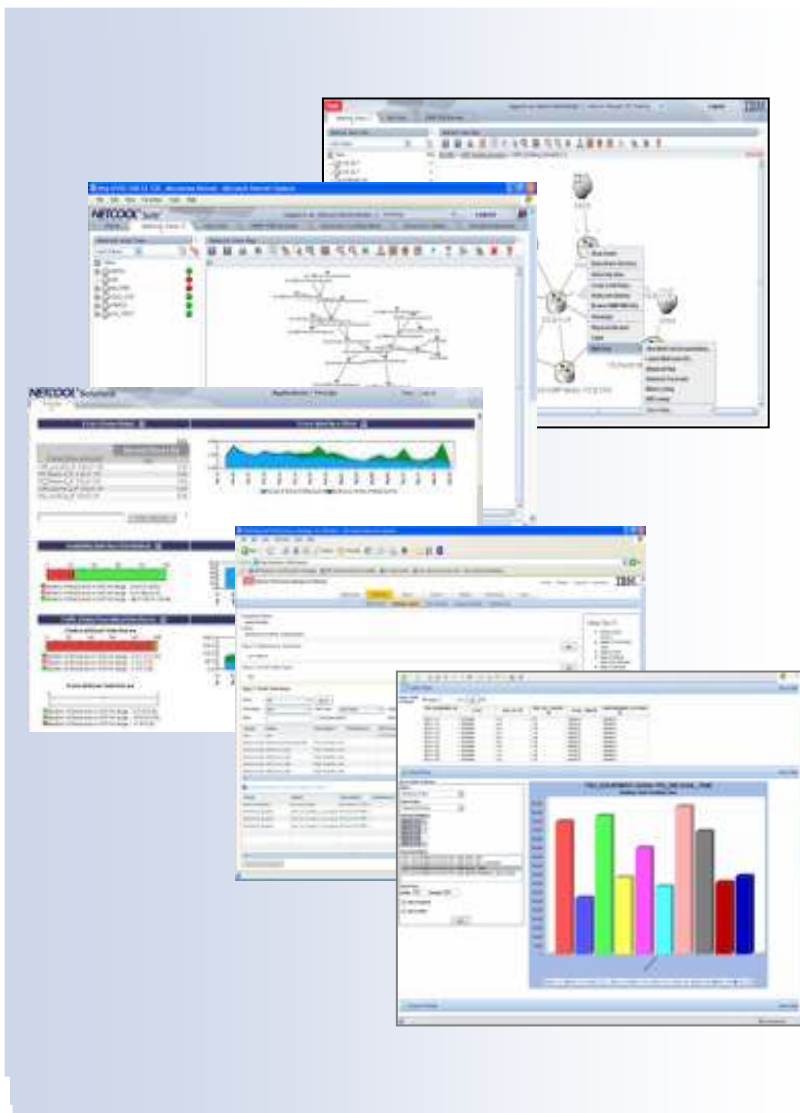
Service Quality Management Center

Fault/Event Management (Omnibus)

Service Transaction Monitoring (ITCAM for Transactions)

Performance Management
Manage performance of multi-vendor, multi-technology networks spanning wireless, IP and wireline – with the lowest cost of PM ownership.

Service Transaction Monitoring
Extend management to applications key to delivery of Telecom services for true end-to-end visibility and service management.

Impact Analysis (Netcool Impact)

Performance Management (Netcool/Proviso, Tivoli Netcool PM for Wireless)

Service Request Management
Provides flexible, easy-to-configure and upgrade-friendly next generation Service Desk capabilities – integrated with Asset Management and Change & Configuration

Network Discovery & Mediation
Discover Layer 1, 2 and 3 infrastructure and leverage network mediation, compliant with 3GPP standards, for data collection and processing.

Network assurance benefits

Improve operational performance

- Monitor entire services infrastructure to ensure uninterrupted availability
- Gain end-to-end view of network performance
- Conduct rapid root cause analysis

Manage complexity

- Support for complex, multi-technology/vendor wireless, wireline/IP and converging network infrastructures
- Receive automated alerts based on thresholds
- Visualize topology and target fault isolation

Minimize new capital expenditures

- Identify network bottlenecks and capacity planning issues
- View historical and predictive utilization across infrastructure
- Provide key customer visibility of network utilization and trending

Accelerate time to market with new technology support

- Access comprehensive network interface library
- Leverage IBM's Network Equipment Provider relationships
- Standards-based, scalable solutions

End state architecture: service assurance 2.0

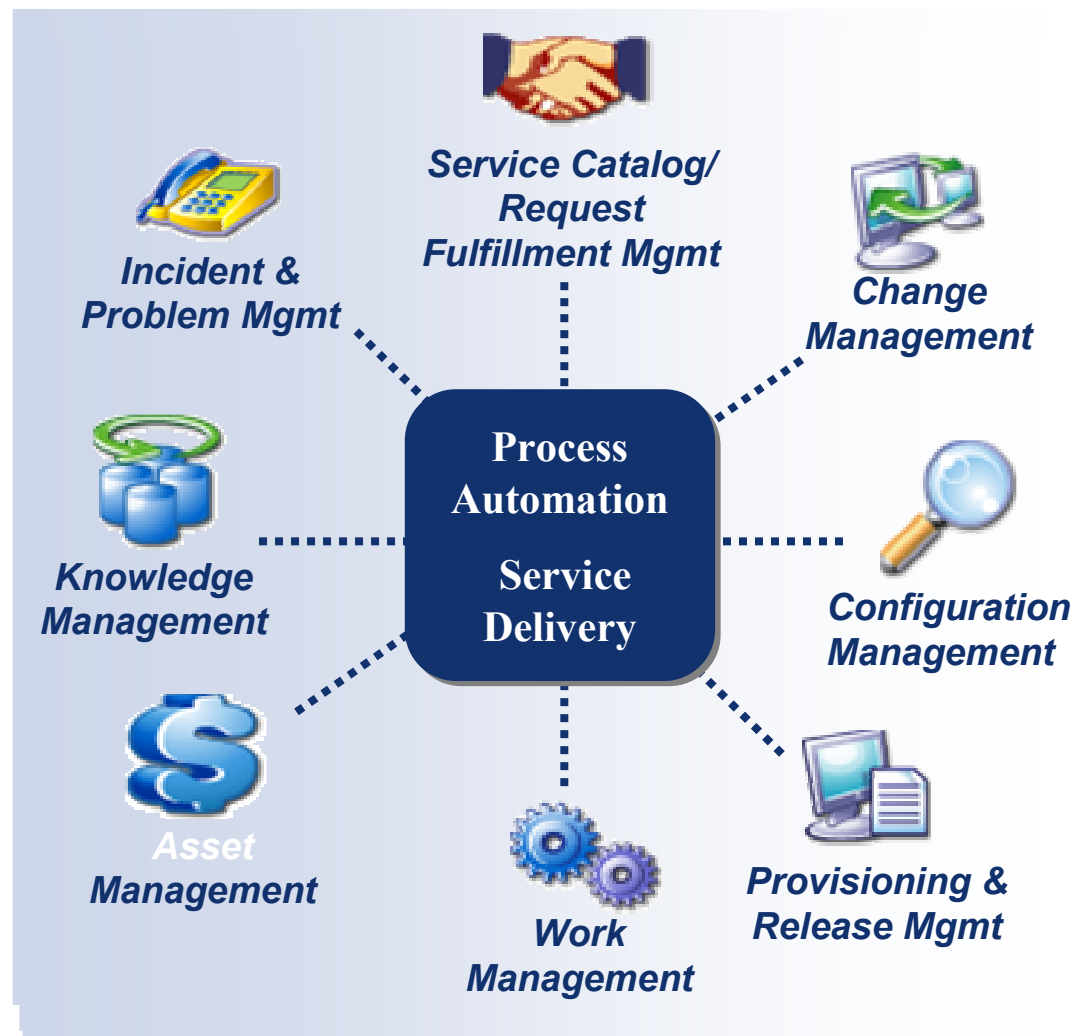# Asset management drivers and requirements

Business Drivers

- Lower total cost of ownership for each asset
- Improve efficiency
- Converge assets to streamline operations
- Obtain asset visibility and control
- Ensure compliance

Asset Management Requirements

- Improve TCO by continuously reducing IT and network asset costs throughout their lifecycles
- Increase operational and labor efficiency and services reliability by aligning network and IT assets with the business
- Manage and maintain multiple siloed asset management systems, while addressing operational and IT convergence
- Maintain visibility and control over service and operational assets and their impact on the business
- Mitigate license, regulatory, environmental and safety compliance risk, while reducing associated costs

IBM asset management capabilities

Incident & Problem Mgmt

Service Catalog/ Request Fulfillment Mgmt

Change Management

Process Automation

Service Delivery

Knowledge Management

Configuration Management

Asset Management

Work Management

Provisioning & Release Mgmt

Management of <u>physical</u> network and IT assets
- Routers, DSLAMs, switches
- Base stations, antennas, towers
- Servers, storage, VAS platforms
- Cables, Cabinets, Power Supplies

Full lifecycle coverage
- Planning
- Procurement
- Deployment
- Maintenance
- Retirement

Delivers
- Process optimization and efficiency
- Reduction of stranded/lost assets
- Better service quality
- Superior financial management

Complements inventory
- Increases accuracy
- Stable foundation for logical inventory

| Integrated Solution | Common Data Model | Processes that Work Together | No Rip and Replace | Lower Cost of Ownership |

Asset management benefits

IT Managers can see how to streamline inventory and resources across the organization

Software Asset Managers can see how to optimize licensing to avoid over/under-purchasing and mitigate compliance risk

Hardware Asset Managers can see lease and maintenance status and when to plan for upgrades

Service Desk Technicians can see asset data to streamline service request handling and expedite incident & problem resolution

Purchasing Managers can see costs and orders enterprise-wide for price comparisons, discounting, standardization and order tracking

Risk Managers can see asset detail to ensure regulatory compliance and mitigate risk

Unified IBM solution to manage all critical assets across the enterprise

IT	Facilities	Telco On-site Equipment
Transportation	Production	Telco Antenna

Business process similarities between eTOM and IT Service Management (ITIL)

Financial Managers can see the entire inventory and analyze return on assets for financial reporting

Contract Managers can see asset related contracts; negotiate vendor T&Cs and monitor supplier performance

Maintenance Managers can see plans enabled by availability of information to increase asset capacity

Facilities Managers can see assets in the Data Center to optimize power consumption and reduce unplanned outages

Operations Managers can see asset conditions in sufficient detail to improve asset utilization & performance
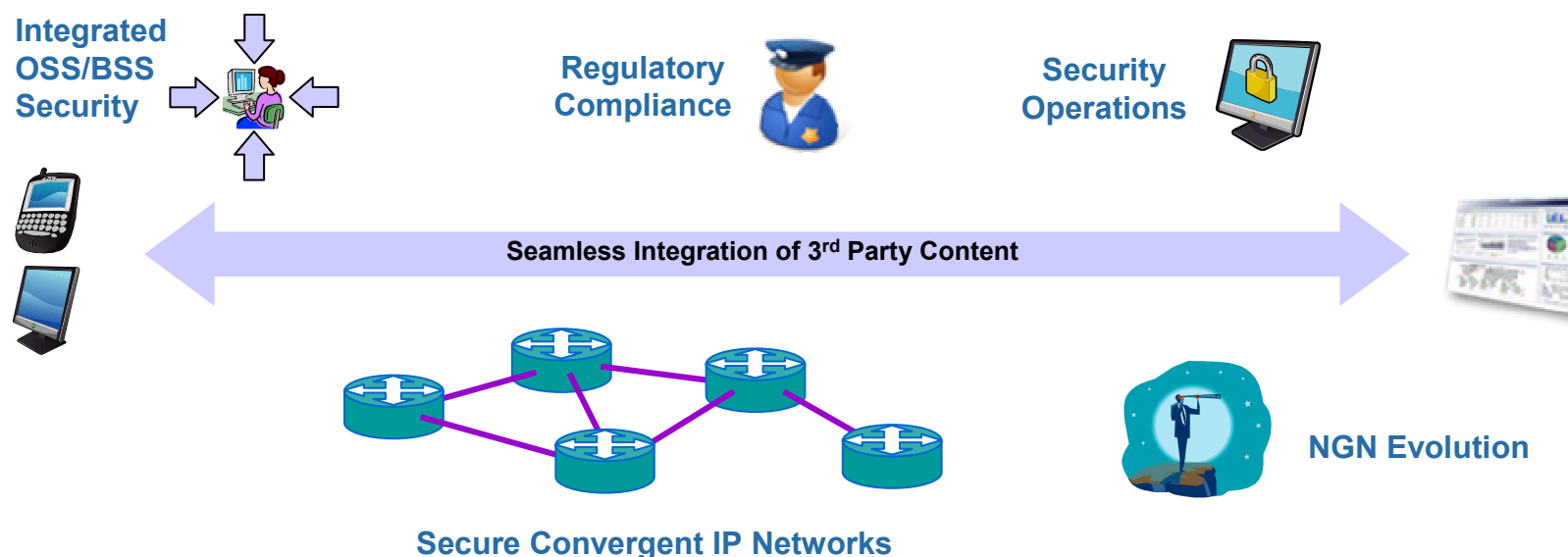
CSP security drivers

- Introduction of <u>converged IP backbones</u> leading to high-value, single point of security risk

- Shift from bandwidth to <u>content-based services</u> driving need for unified user security management at the portal, including controlling access to content from 3rd-party suppliers

- Continuously <u>increasing threats</u> leading to need for enhanced security operations

- Regulatory requirements in <u>governance and compliance</u>

- Integration and rationalization of <u>operational infrastructure</u> to create agility and cut costs

- Evolution of security infrastructures to support NGN <u>(IMS/HSS)</u>

Integrated OSS/BSS Security

Regulatory Compliance

Security Operations

Seamless Integration of 3rd Party Content

Secure Convergent IP Networks

NGN Evolution

Integrated services portal management

How do you seamlessly integrate internal and 3rd-party, content-based services at your portal while maintaining visibility of the quality of individual services?
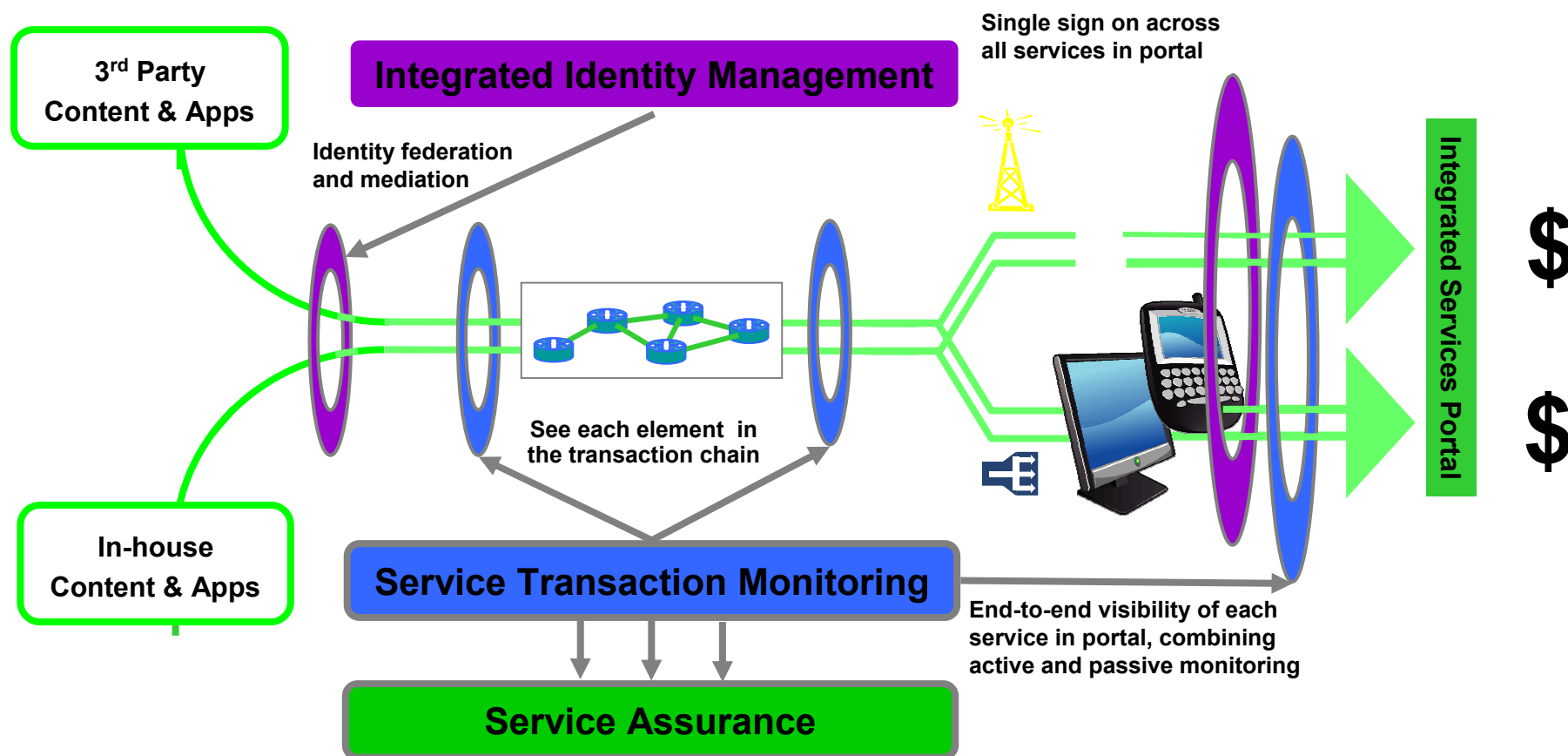
- **Integrated Identity Management** provides users single sign-on access and consistent identity
- **Service Transaction Monitoring** provides visibility of the responsiveness of each service in the portal, by monitoring actual user transactions and actively testing services.

Tivoli security information and event management
Next Generation Security Operations

Converged Operations

Network Operations

Security Operations

Level 1

Shared Workflow Shared Ticketing

Level 2

Incident Analysis

Level 2

Impact Analysis

Level 3

Level 3

Mitigation

Universal Collection Layer
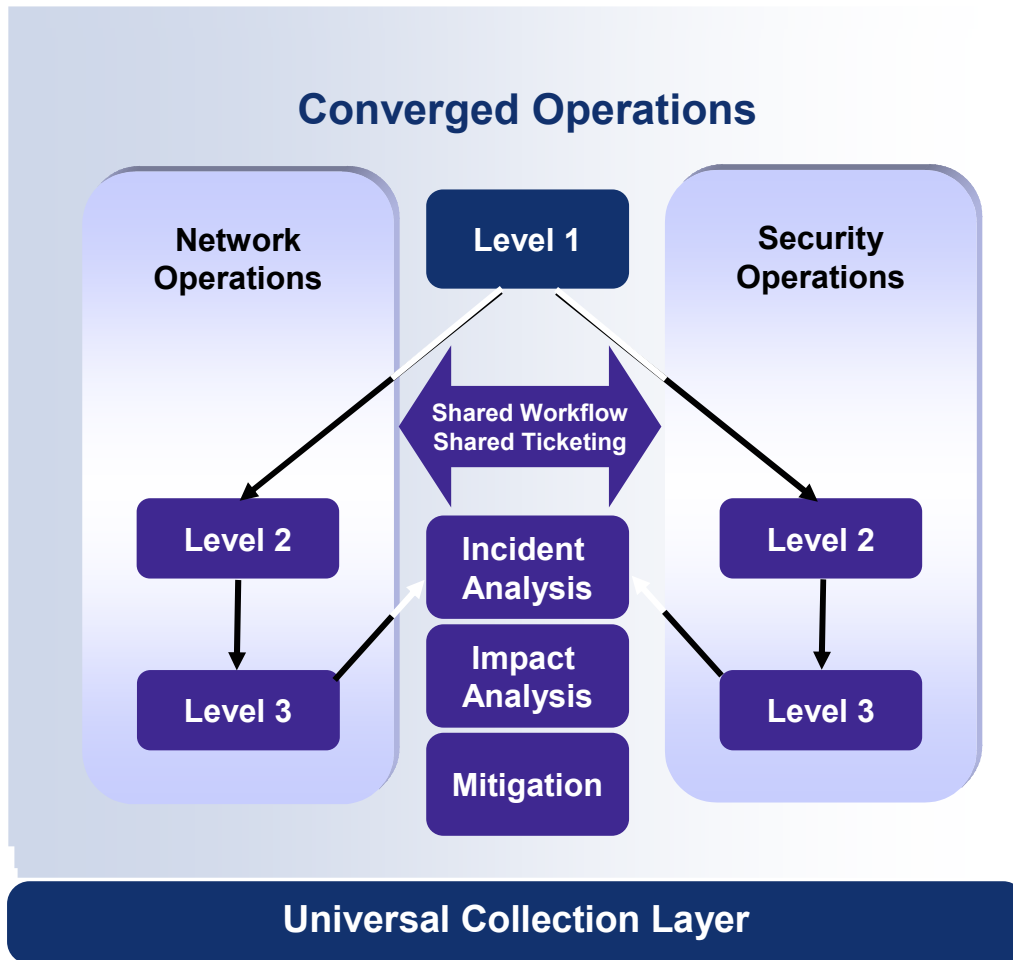
- Combines Network Operations and Security Operations within a common operations center.

- Exploits synergies to increase effectiveness

- Shared processes and systems reduce cost of ownership

Drivers: the information explosion

Data created and copied expected to grow at 57% CAGR through 2010

Growth in CSPs is higher at 90%

2005	**2006**	**2007**	**2008**	**2009**	**2010**
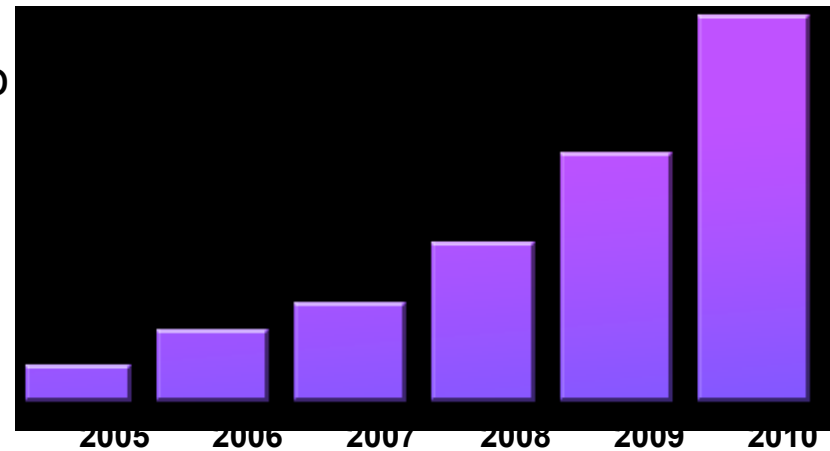
Source: ESG Research Report: Digital Archiving: End-User Survey and Market Forecast 2006 - 2010

80% is unstructured content, generated largely by email, with increasing contribution by documents, images, and video

Structured

Unstructured
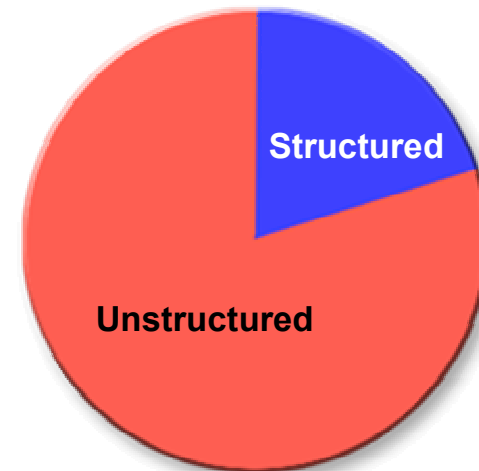
Key capabilities for successfully managing information

Information Availability
Deliver continuous and reliable access to information

Downtime costs can amount up to 16% of revenue in some industries.

Information Security
Protect and enable secure sharing of information

84% of security breaches come from internal sources.

Information Retention
Support your information retention policies

Average legal discovery request can cost organizations from $150k to $250k.

Information Compliance
Reduce reputation risks and audit deficiencies

63% IT executives rate compliance with regulations a top challenge.

IBM Service Management is part of a bigger story

IBM solution strategy for communication service providers

Customer/Partner Management

Gain customer insight to deliver targeted/relevant offerings

Service Innovation

Online communities foster innovation for new services

Service Management

Improve quality, customer satisfaction and operational efficiencies

Capabilities

Service Creation

Bringing value added services to market more quickly

Service Integration

Integrate new services with fulfillment, assurance, billing and care systems (BSS/OSS)

Service Execution

Deliver innovative services with greater speed and quality

The IBM solution strategy
Clearly links business and IT to enable new capabilities

Communications Industry Solutions

**SPDE Partner Program
Business Partner Ecosystem**

Service Provider Delivery Environment

Service Innovation

Service Creation

Service Execution

SOA

Service Integration

Service Management

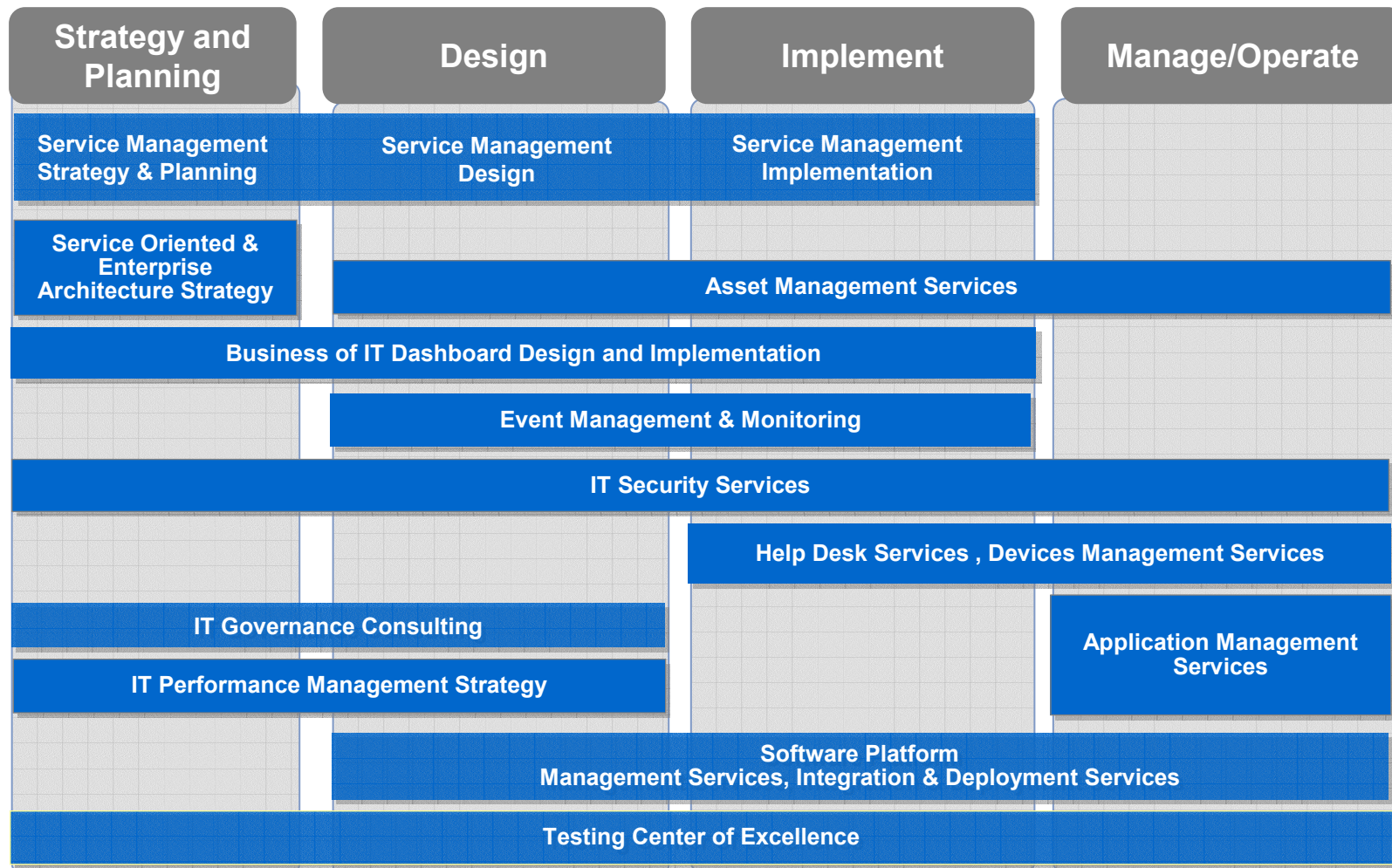Customer/Partner Management

Governance
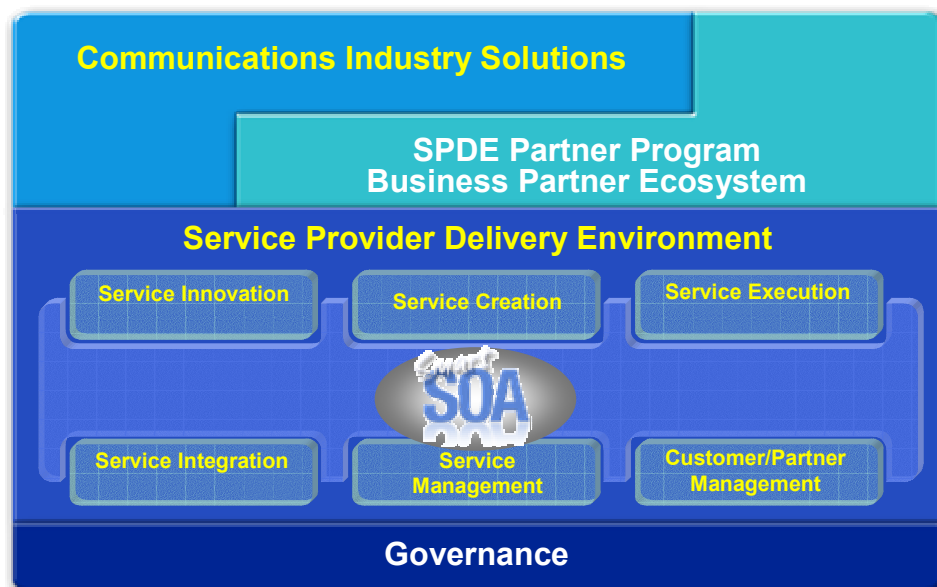
Provide solution offerings based on industry assets, partners and best practices that support:

- new business models
- transformation of business operations, and
- acceleration of the end-to-end service lifecycle

Provide a standards-based industry framework that:

- creates flexibility
- enables integration, and
- provides a unified platform

IBM provides comprehensive services to help clients on their journey to Service Management

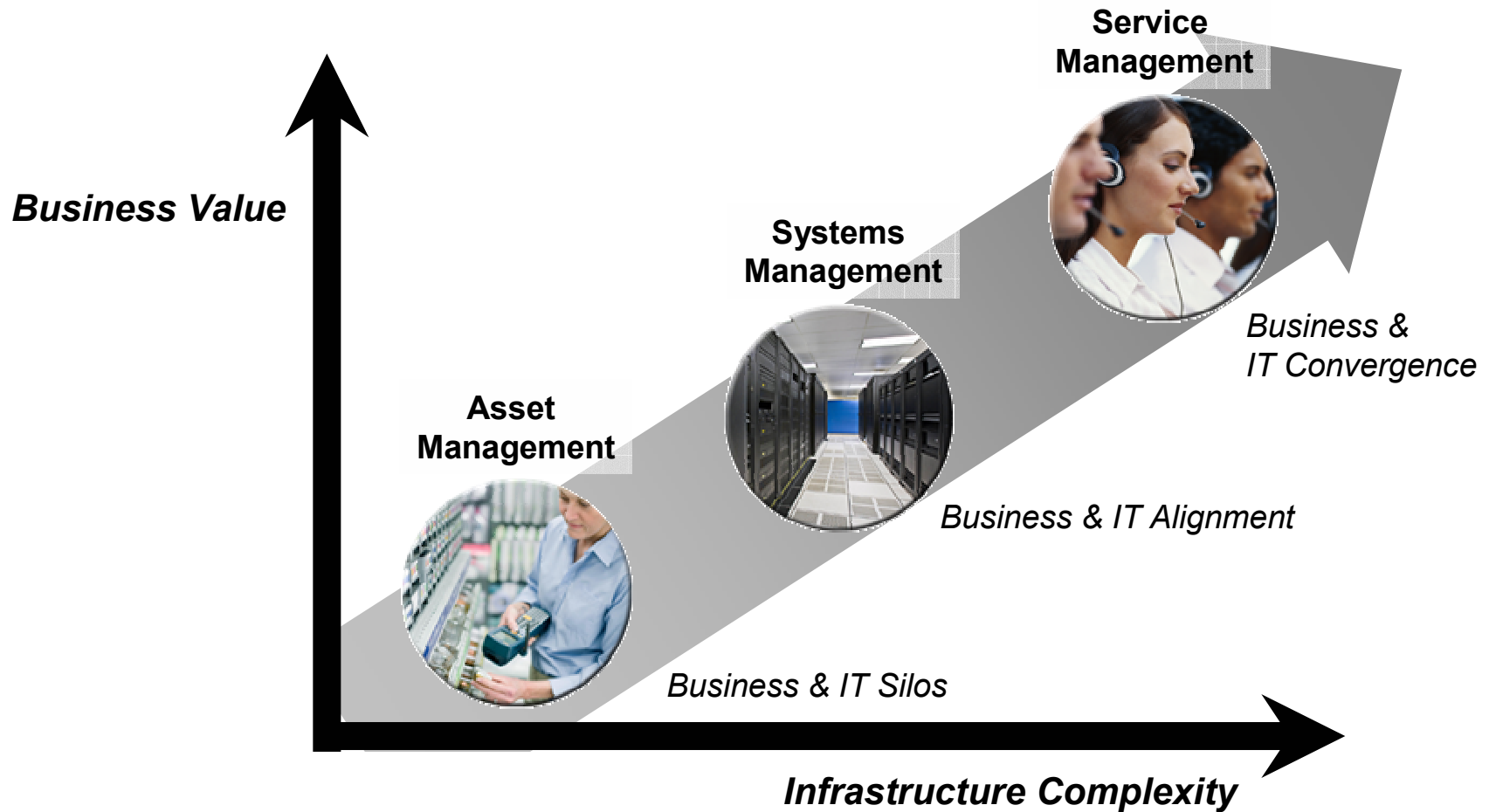| Strategy and Planning	Design	Implement	Manage/Operate
Service Management Strategy & Planning	Service Management Design	Service Management Implementation	
Service Oriented & Enterprise Architecture Strategy			
	Asset Management Services		
Business of IT Dashboard Design and Implementation			
	Event Management & Monitoring		
IT Security Services			
		Help Desk Services , Devices Management Services	
IT Governance Consulting			Application Management Services
IT Performance Management Strategy			
	Software Platform Management Services, Integration & Deployment Services		
Testing Center of Excellence			

Develop a strategic implementation roadmap.

Complete design of the future environment and define a comprehensive implementation and management solution.

Accelerate implementation of service management disciplines and the realization of business value.

Rely on skilled professionals to help run and manage your applications and services.

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IBM Service Management builds on what you have to create a dynamic infrastructure

Business Value

Service Management

Systems Management

Asset Management

Business & IT Convergence

Business & IT Alignment

Business & IT Silos

Infrastructure Complexity

Next steps

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   - Check our ISM live demonstrations to see the value.

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