IBM Information Agenda:
Unlocking the Business Value of Information for SmartCities in Government

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Information-Led Transformation in Government
Gap Between Existing Current Environments and What Required Now

Current IT Environment

Information, business process and logic are captive to applications and aligned to organization silos

IT Challenge

• Redundant data, applications and infrastructure

• Legacy systems poorly integrated difficult to maintain

Business Consequence

• No single, reliable, consolidated view of enterprise data

• Inconsistency in quality of information and levels of "service"

Outcome…

✓ *40%+ of IT budgets consumed by simply maintaining old systems*

✓ *Inability to deliver flexibility and responsiveness to business needs*

✓ *Proliferation of point-solutions and departmental silos of information*

Desired IT Environment

Trusted information which is governed across an integrated across the enterprise – which is available when and where it's needed

IT Objective

• Consolidation of data, applications and infrastructure

• Eliminate hand coded integration spaghetti

Business Consequence

• Run the business with a single, reliable view of information

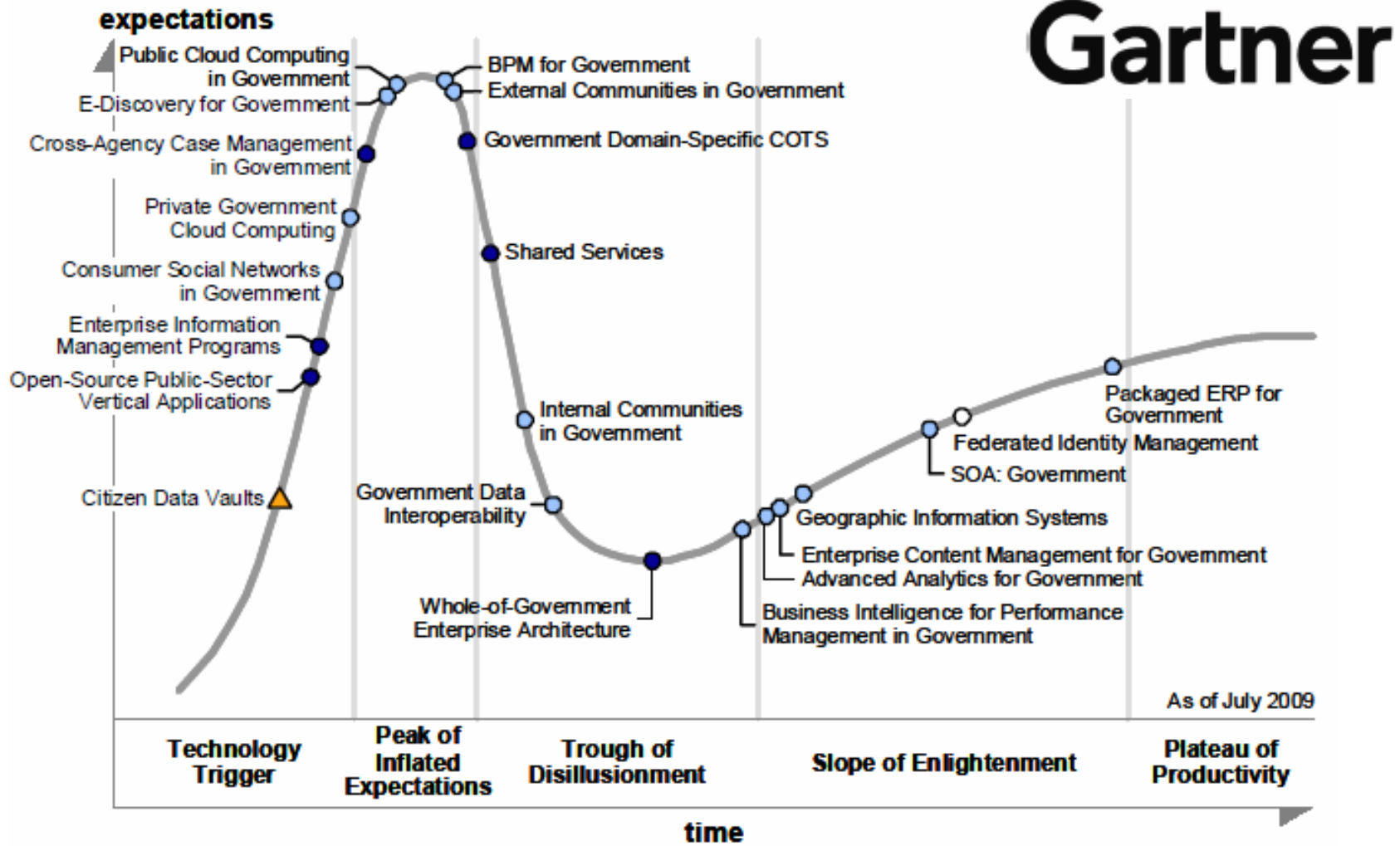• Reduce costs, improve responsiveness

Desired Achievement…

✓ *Integrated information management platform enabling reuse across business and IT initiatives*

✓ *Data provided as a service separating information from application process*

Source: IBM Global Business Services and IBM Institute for Business Value

Government Technology Adoption Trends
Technology Hype-Cycle for Government

expectations

Public Cloud Computing in Government

E-Discovery for Government

Cross-Agency Case Management in Government

Private Government Cloud Computing

Consumer Social Networks in Government

Enterprise Information Management Programs

Open-Source Public-Sector Vertical Applications

Citizen Data Vaults

BPM for Government

External Communities in Government

Government Domain-Specific COTS

Shared Services

Internal Communities in Government

Government Data Interoperability

Whole-of-Government Enterprise Architecture

Geographic Information Systems

Enterprise Content Management for Government

Advanced Analytics for Government

Business Intelligence for Performance Management in Government

Federated Identity Management

SOA: Government

Packaged ERP for Government

Gartner

As of July 2009

| Technology Trigger | Peak of Inflated Expectations | Trough of Disillusionment | Slope of Enlightenment | Plateau of Productivity |

time

Years to mainstream adoption:
○ less than 2 years   ◔ 2 to 5 years   ● 5 to 10 years   △ more than 10 years   ⊗ obsolete before plateau
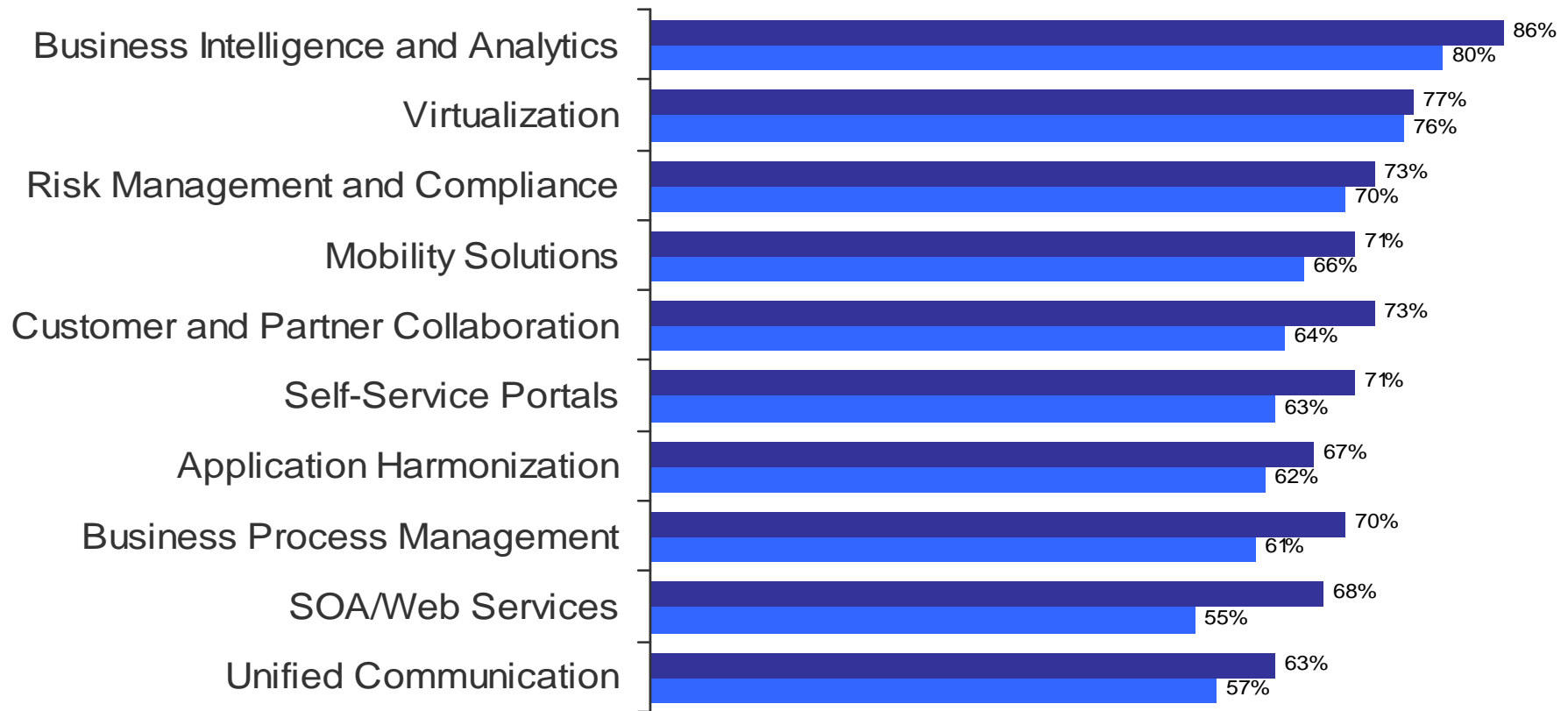
IBM Global CIO Study

Innovation is not limited to IT solutions: Business-oriented plans rank high among CIOs' visions of delivering strategic value

Ten most important visionary plan elements
Interviewed CIOs could select as many as they wanted

	Low growth	High growth
Business Intelligence and Analytics	80%	86%
Virtualization	76%	77%
Risk Management and Compliance	70%	73%
Mobility Solutions	66%	71%
Customer and Partner Collaboration	64%	73%
Self-Service Portals	63%	71%
Application Harmonization	62%	67%
Business Process Management	61%	70%
SOA/Web Services	55%	68%
Unified Communication	57%	63%

Source: IBM Global CIO Study 2009; n = 2345

Story: Italian City Government - Making Innovation Real

✓ Local Italian government iwanted to provide a better quality of life for the people living and working in their city

✓ To achieve this goal the CIO:

1. Leveraged new "intelligence" for the existing infrastructure to optimize resources, reduce traffic congestion, and improve services to citizens

2. Developed virtual city offices where citizens are able to interact with the municipality as if there is a municipal official in front of them

3. Created an Innovation Board to identify and design a new model for a sustainable city through a range of digital solutions

✓ Benefits as a result of this visionary yet pragmatic

1. Improved the quality of life for all its citizens in a cost effective way

2. Transformed the relationship between consumes and suppliers by infusing intelligence into it's systems
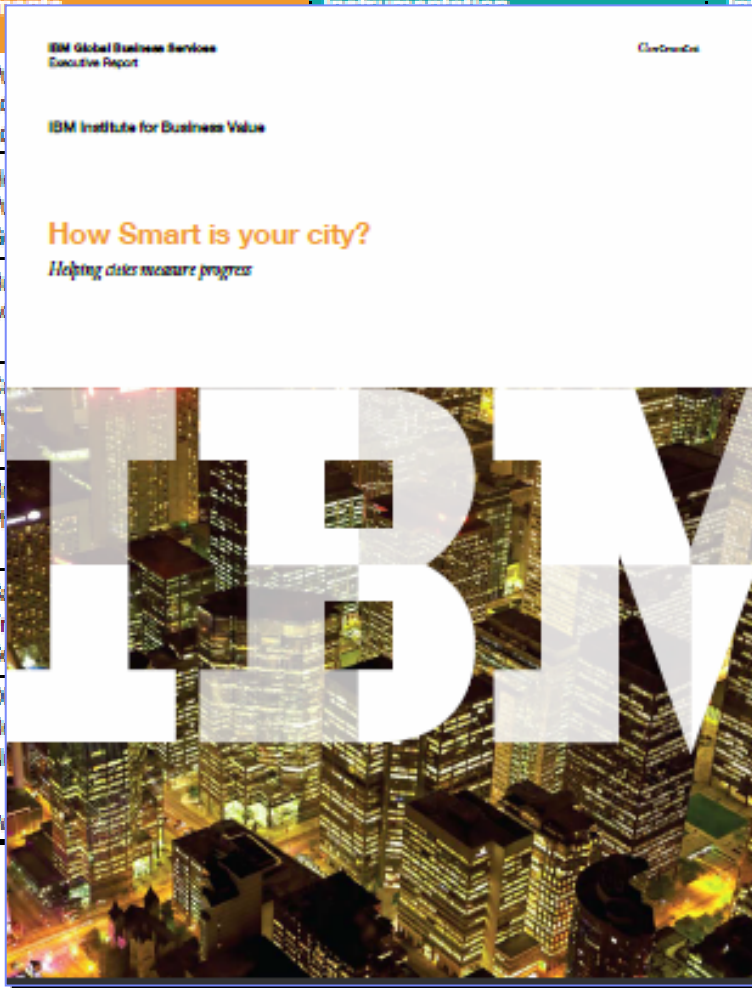
Handout: *"How Smart is Your City?"*
Delivering Strategic Value of Information Through Instrumentation, Interconnection of Data and Intelligent Processing

System	Elements	Instrumentation	Interconnection	Intelligence
City services	• P... • L... a...		...rconnected service delivery	Immediate and joint-up service provision
Citizens	• H... • P... • G...		...rconnect records for ...tors, hospitals and other ...lth providers	Patient-driven pre-emptive care
Business	• B... • A...		...rconnect stakeholders ...ss city's business system	Customized service delivery for businesses
Transport	• C... • P... • A...		...grated traffic, weather and ...eller information services	Road pricing
Communication	• B... • P...		...rconnect mobile phones, ...d line, broadband	Information for consumers on city services, on their own time
Water	• S... • F... • S...		...rconnect businesses, ports, ...rgy users of water	Quality, flood and drought response
Energy	• O... • R... • N...		...rconnect appliances and ...ices between energy ...sumers and providers	Optimize the use of the system and balance use across time

Source: IBM Institute for Business V...

IBM Global Business Services
Executive Report

IBM Institute for Business Value

How Smart is your city?
Helping cities measure progress

Top 50 Global SmartCities

What did we do?

- We examined the worlds 50 largest cities to understand common issues and challenges

- We aggregated the findings to understand the trends and directions among the cities

- We segmented the cities based on demographics and aspirations

How did we do it?

- The top 50 cities were selected based on *GDP, Estimated GDP in 2020, GDP growth and Urban Agglomeration population*

- Each City and its Mayor were profiled. We synthesized and analyzed these profiles to provide overall trends and directions.

- We summarized the strategic and quantitative information from the city profiles to provide a framework for city characteristics and goals

Why?

- To guide decisions for the SmarterCities Information on Demand program management
- To drive the selection of venues Customer Summits
- To drive the Information Agenda needed to build SmarterCities

let's build a smarter planet

Common and Unique Challenges Exist Across Geographies

ASIA	N.A. & EUROPE	AFRICA	LATIN AMERICA
Rapid expansion	*Negative growth*	*Rural exodus increasing poverty*	*Decentralization*
▪ Over the next decade, Asia's urban areas will grow by more than 100,000 people a day ▪ Growth rates are more rapid than the investment in infrastructure ▪Benefits of new infrastructure investments have not been distributed equally	▪ 46 countries (including Germany, Italy, most former Soviet states) are expected to be smaller in 2050 ▪ The number of shrinking cities has increased faster in the last 50 years than the number of expanding cities	▪ In 2008, more than 12M Africans left their rural homes to live in urban areas ▪ The projected increase in urban migration will exacerbate the problems of providing infrastructure, sanitation. health services, and food	▪ Large cities have incorporated nearby villages and towns – as a result, large urban areas developed sub-centers whose functions duplicated those of the central city ▪ Many large cities are competing with their outlying suburbs for people, revenue, and employment

Source: *Various; IBM MI Analysis;*

Top 50 Global Cities Selected for Analysis

Mature Cities – Large ($300b by 2020)

	Est GDP 2008 / 2020 (US $bn)	GDP Growth 2005-2020	Population : Urban Agglomeration in 2008 (k)
Americas			
New York	$1209 / 1561	2.2%	20,090
Los Angeles	682 / 886	2.2%	14,730
Chicago	492 / 645	2.3%	9,030
Philadelphia	334 / 440	2.3%	5,270
Washington, DC	321 / 426	2.4%	4,260
Buenos Aires	272 / 416	3.6%	12,390
Boston	311 / 413	2.4%	4,750
Dallas/Ft Worth	288 / 384	2.4%	5,160
Atlanta	255 / 347	2.6%	4,160
San Francisco	260 / 346	2.4%	5,450
Houston	253 / 339	2.5%	4,550
Miami	248 / 331	2.4%	5,220
Toronto	228 / 327	3.0%	5,790
Europe			
London	494 / 708	3.0%	8,320
Paris	487 / 611	1.9%	10,430
Asia Pac			
Tokyo	1,264 / 1,602	2.0%	34,400
Osaka/Kobe	358 / 430	1.6%	17,270
Hong Kong	271 / 407	3.5%	6,950
Seoul	240 / 349	3.2%	20,010

Mature Cities - Medium

	Est GDP 2008 / 2020 (US $bn)	GDP Growth 2005-2020	Population : Urban Agglomeration in 2008 (k)
Americas			
Detroit	$217 / 287	2.3%	3,860
Seattle	200 / 269	2.5%	2,790
Phoenix	168 / 228	2.5%	3,540
Minneapolis	167 / 224	2.5%	2,570
San Diego	164 / 220	2.4%	2,790
Denver	140 / 190	2.6%	2,180
Montreal	130 / 180	2.8%	3,360
EMEA			
Madrid	207 / 299	3.2%	5,130
Barcelona	150 / 201	2.4%	4,040
Rome	134 / 187	2.9%	2,740
Milan	125 / 174	2.8%	4,190
Johannesburg	87 / 131	3.4%	6,470
Berlin	78 / 88	1.1%	3,690
Asia Pac			
Sydney	186 / 256	2.7%	4,080
Singapore	143 / 218	3.6%	4,320
Melbourne	146 / 200	2.6%	3,420

Cities in Transition >4% growth

	Est GDP 2008 / 2020 (US $bn)	GDP Growth 2005-2020	Population: Urban Agglomeration in 2008 (k)
Americas			
Mexico City	$359 / 608	4.5%	18,430
Sao Paulo	254 / 411	4.1%	19,140
Rio de Janeiro	159 / 256	4.1%	11,160
EMEA			
Moscow	204 / 325	4.0%	13,260
Istanbul	155 / 287	5.2%	11,220
Dubai	60 / 232	11%	2,150
Cairo	114 / 212	5.3%	16,750
Asia Pac			
Shanghai	168 / 360	6.5%	14,460
Mumbai	150 / 300	6.0%	19,530
Beijing	120 / 259	6.6%	12,770
Manila	128 / 257	5.9%	19,550
Jakarta	118 / 253	6.5%	21,800
Delhi	111 / 229	6.2%	18,000
Guangzhou	103 / 227	6.9%	11,810
Kolkata	112 / 24	5.9%	15,010
Bangkok	102 / 180	4.8%	8,290

Sources: GDP 2008/2020 Estimates:
www.citymayors.com/statistics/richest-cities-2020.html;
*Population Estimates: Urban Agglomeration from
Demographia.com, IBM Global Centre for Economic Development

Mature Medium Cities top priority is Social Services/ Public Works. These cities spend more per capita than any other – likely not having gained the efficiency of scale their larger counterparts have achieved.
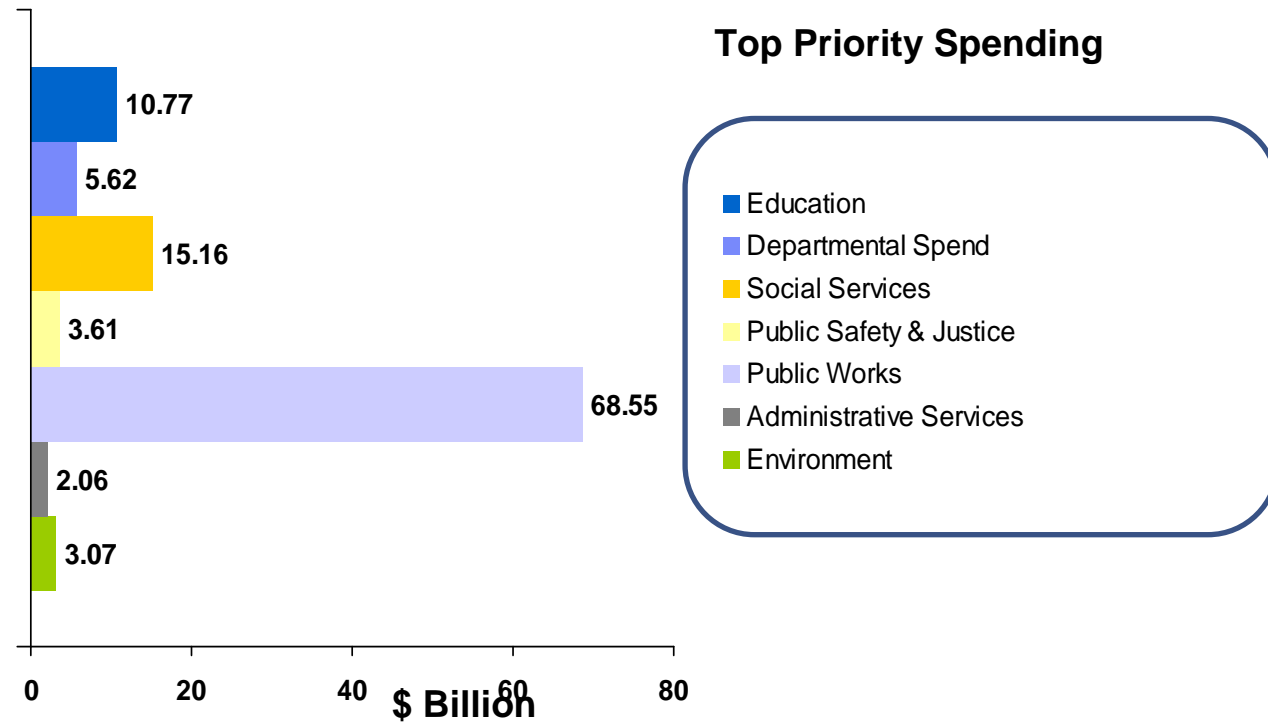

Top Priority Spending

- Education
- Departmental Spend
- Social Services
- Public Safety & Justice
- Public Works
- Administrative Services
- Environment

0.88
6.14
33.8
21.7
26.4
10.2
0.48

0   10   20   30   40

$ Billion
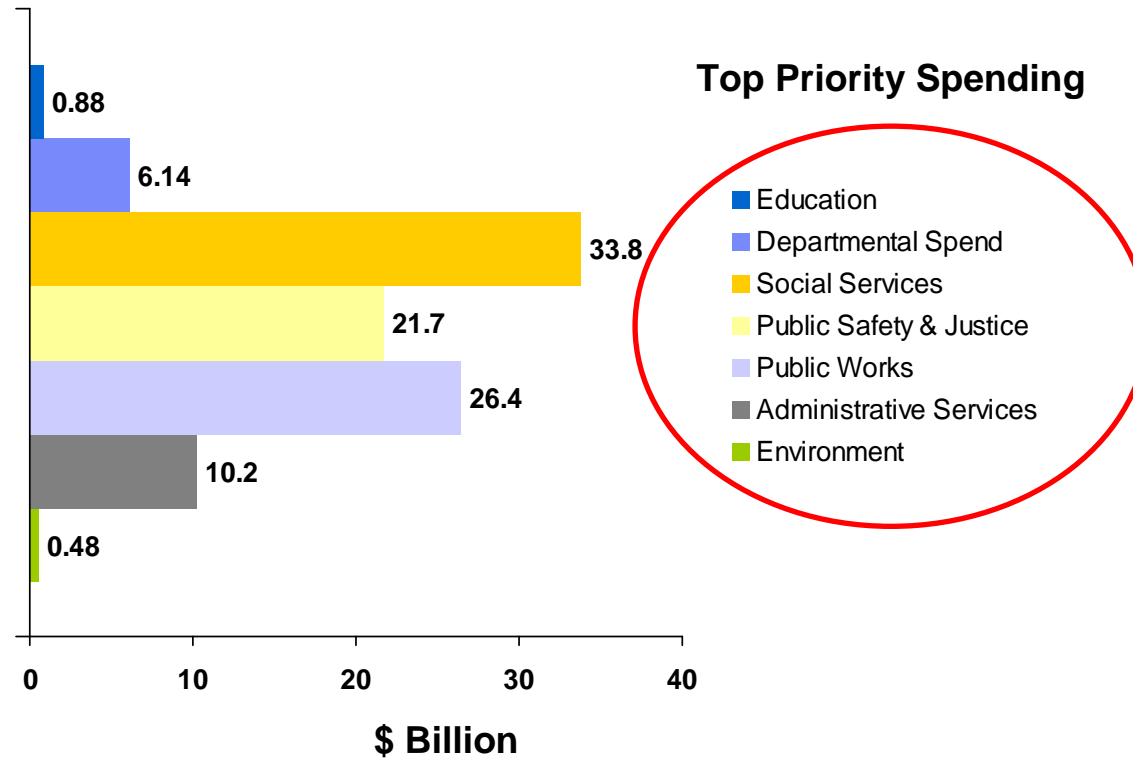
- The segment spends $100B in the top priority areas which is approximately 87% of the total segment budget
  - *Social Service & Public Works account for a share of 53% of the total budget*
- Berlin & Singapore are the largest contributors to the top priority spending areas & combined, they account for 67% of segment's spend on priority areas ($100B)

Assumptions: Public Works = Transport+ Commerce+ Industry+ Development+ Maintenance; Social Services=Human Service+ Healthcare +Social
Departmental Spends= Budgetary +Appropriations+Debt Services+Support for Other Institutions +Non Department Allocations:

Budgets for "Cities In Transition" mainly focus on "Public Works" – Driven by Infrastructure Activities

Top Priority Spending

Bar chart ($ Billion):
- Education: 10.77
- Departmental Spend: 5.62
- Social Services: 15.16
- Public Safety & Justice: 3.61
- Public Works: 68.55
- Administrative Services: 2.06
- Environment: 3.07

Legend:
- ■ Education
- ■ Departmental Spend
- ■ Social Services
- ■ Public Safety & Justice
- ■ Public Works
- ■ Administrative Services
- ■ Environment

- The segment spends $109B in the top priority areas which comprises of 68% of the total segment budget
    - *Public Works & Social Service are the top two priority areas & account for 52% of the total budget*
    - *Public Works which is the largest focal area is driven by infrastructure activities - particularly from the Chinese Cities*
- Moscow & Beijing are the largest contributors to the priority spending areas & they account for 42% of segment's spend on priority areas($109B)

Assumptions: Public Works = Transport+ Commerce+ Industry+ Development+ Maintenance; Social Services=Human Service+ Healthcare +Social
Departmental Spends= Budgetary +Appropriations +Debt Services+Support for Other Institutions +Non Department Allocations :
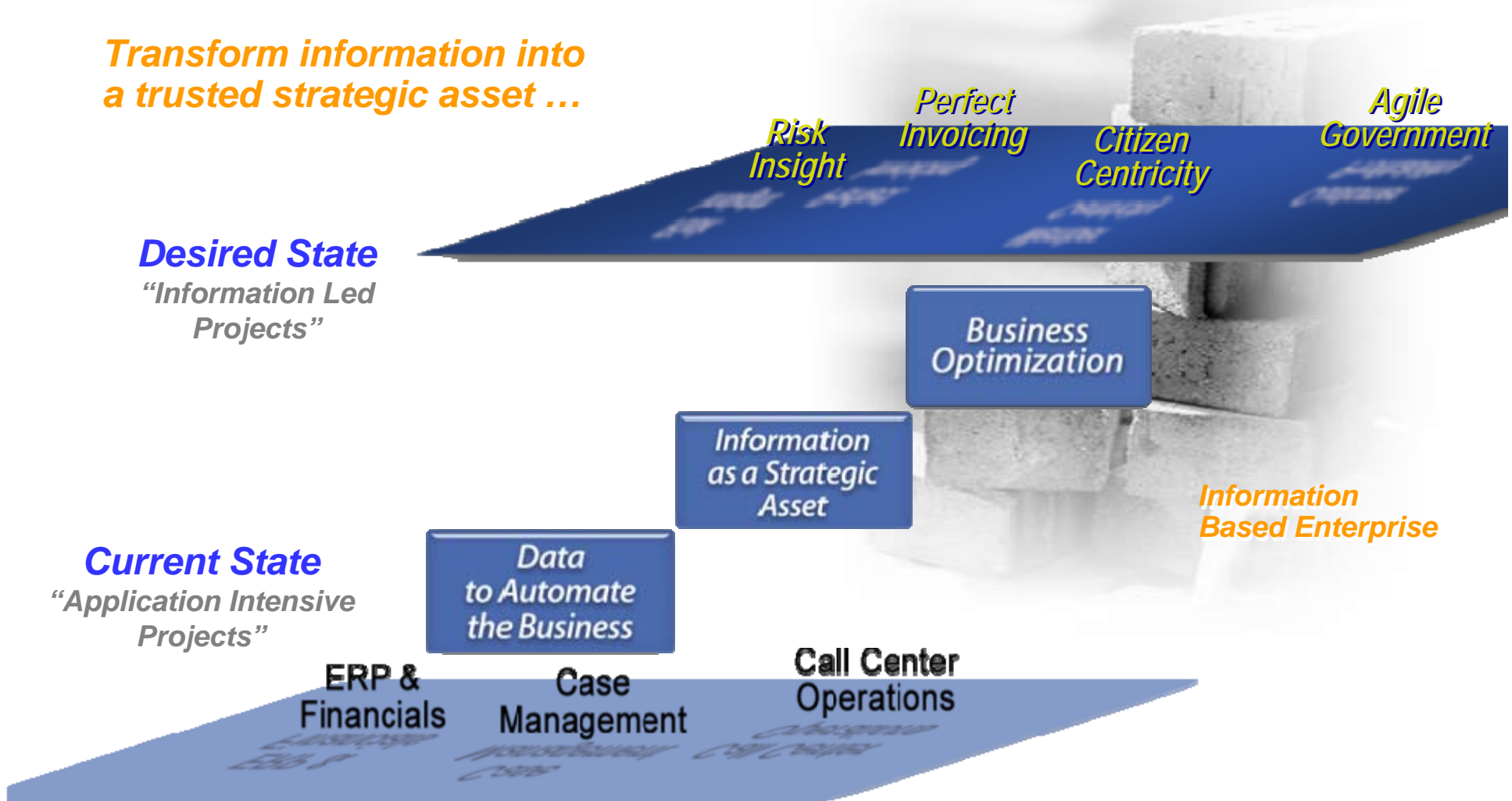
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Bridging the SmartCities Gap
Becoming an Information-Based Enterprise

Unlocking Business Value of Information

Transform information into a trusted strategic asset …

Risk Insight

Perfect Invoicing

Citizen Centricity

Agile Government

Desired State
"Information Led Projects"

Business Optimization

Information as a Strategic Asset

Information Based Enterprise

Current State
"Application Intensive Projects"

Data to Automate the Business

ERP & Financials

Case Management

Call Center Operations

Bridging the SmartCities Gap
Becoming an Information-Based Enterprise

Business Value

Unlock the business value of information …

Information as a Strategic Asset

Adaptive Business Performance

Information as a Strategic Asset

Real-time Single View of the Truth

Information to Enable Innovation

Information in Context

Flexible Information Architecture

Information Based Enterprise

…an enterprise with an Information agenda

Basic Information Interaction

Information to Manage the Business

Focus on Data And Reporting

Data to Run the Business

Agenda

Information

Maturity of Information Use

Information Maturity Assessment

- ✓ *At what level do you currently manage and use information within your enterprise?*

- ✓ *How broadly integrated is your information?*

- ✓ *What policies & practices do you have regarding information governance?*

- ✓ *How broadly are you required to provide access to information across your organization?*

- ✓ *Can you measure data quality and determine its variability, value & costs?*

- ✓ *What types of analytical capabilities are important to your and your users?*
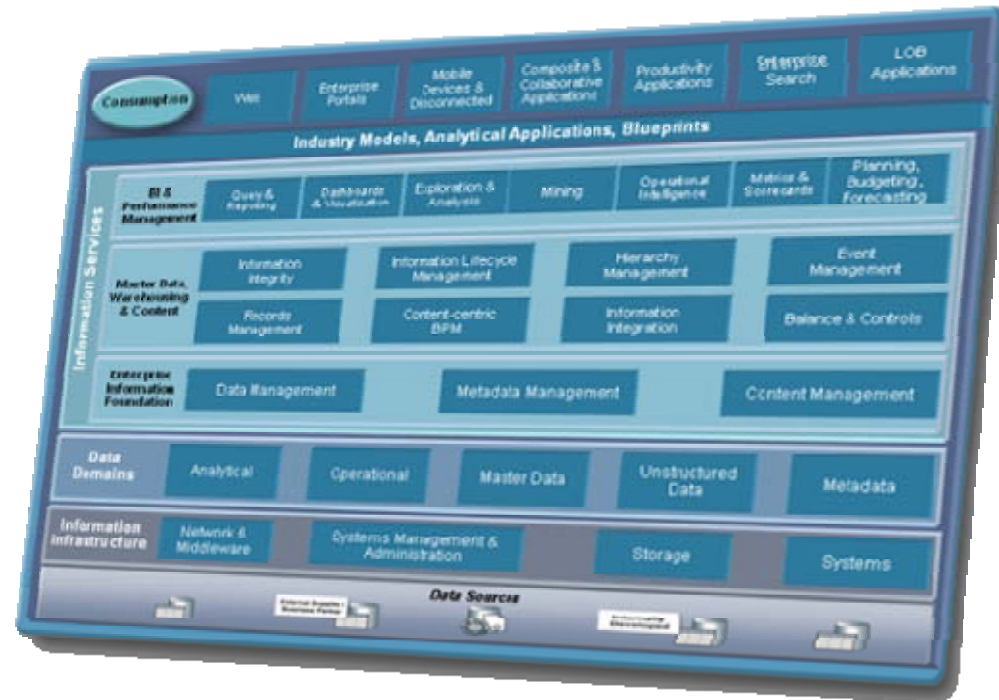
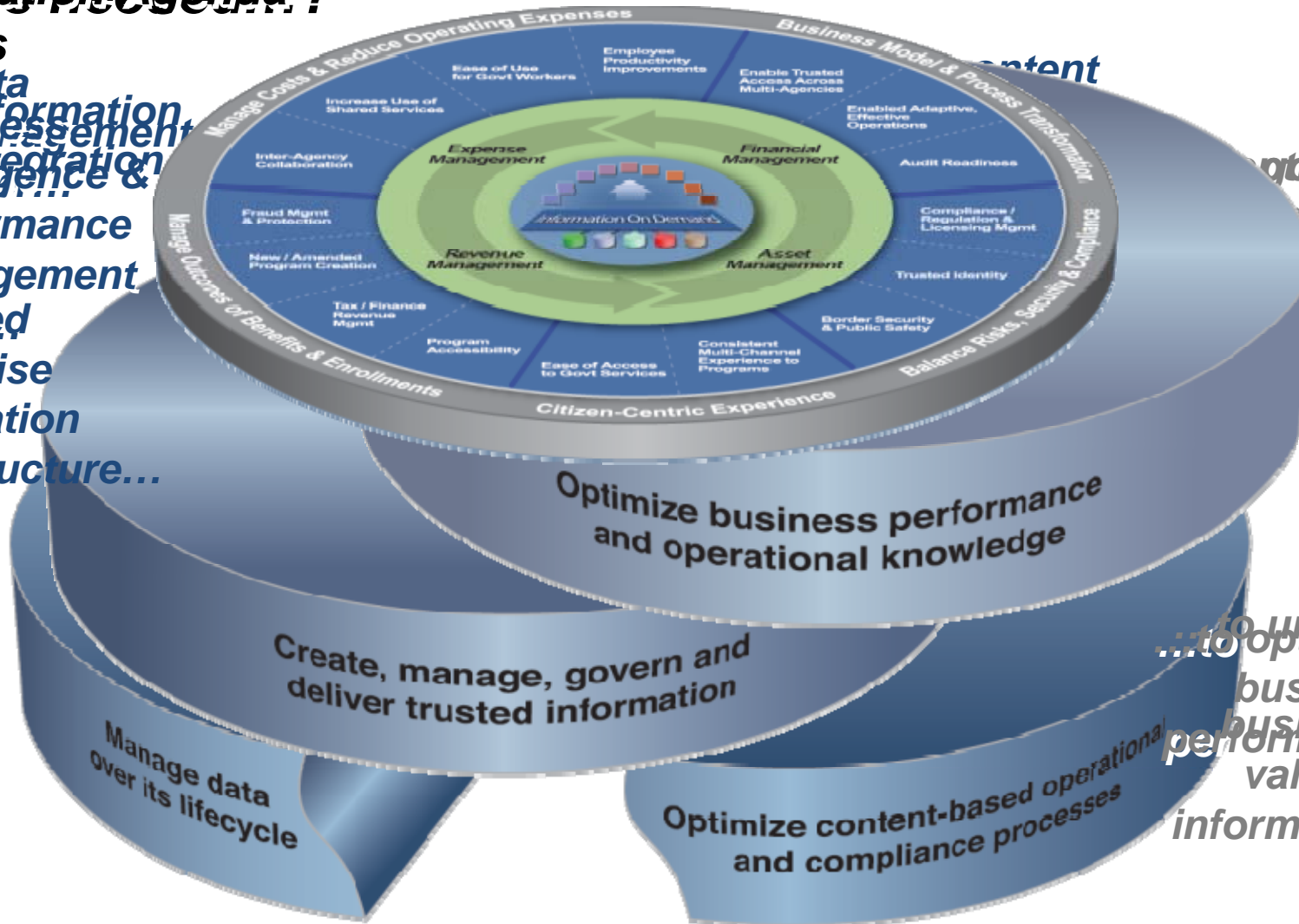*…to what degree does your customer have a "unified" strategy for managing information?*

Unified Information Management Strategy

What is the secret of an Information Agenda ?

Guides

1. Data
3. Information
management
integration
4. Business
intelligence &
performance
management

A unified
layer...
enterprise
information
infrastructure…

Optimize business performance and operational knowledge

Create, manage, govern and deliver trusted information

Manage data over its lifecycle

Optimize content-based operational and compliance processes

...to optimize the business performance value of information

IBM Unified Information Management

Data Management

Common platform to manage data over its lifecycle

Capabilities:

- Enables open communication and exchange of information between systems that use different data formats

- Foundation for the storage of operational and re-shaped information that adds business value

Business Value:

✓**Connect** – integrate systems across the enterprise boundary

✓**Share** – high value data among communities

✓**Improve efficiency** – re-use existing assets and infrastructure

✓ **Accelerate innovation** – rapid deployment of new services

✓ **Address business problems** – transparently allow business requirements to be captured and realized in the IT System

Optimize business performance and operational knowledge

Create, manage, govern and deliver trusted information

Manage data over its lifecycle

Optimize content-based operational and compliance processes

Informix SOFTWARE

optim

solidDB

DB2

IBM Unified Information Management

Enterprise Content Management

Optimize content-based operations and compliance processes

Optimize business performance and operational knowledge

Create, manage, govern and deliver trusted information

Manage data over its lifecycle

Optimize content-based operational and compliance processes

Capabilities:

Leverage Enterprise Content
- ✓ Integrate content with processes to add value and transform their business

Manage Content for Compliance
- ✓ Enable compliance through an integrated information infrastructure

Integrated Service Delivery
- ✓ Eliminate paper-based, manual processes

Automate Content-Centric Processes
- ✓ Optimize complex processes to improve the flow of work

Business Value:

- ✓ Deliver an integrated, open platform that can be deployed globally
- ✓ Provide interoperability with the widest selection of IT systems, thereby reducing costs and improving efficiency

IBM Unified Information Management

InfoSphere – Trusted Information

Foundation to create, manage, govern and deliver trusted information

Capabilities:

- Uniform way of representing, accessing, maintaining, managing, analyzing and integrating data across heterogeneous information sources
- Provides a unified, powerful data warehouse delivering access to structured and unstructured information
- Integration of operational and transactional data in real time

Business Value:

- ✓ Establish foundation for shifting towards a customer-centered business model to improve service experience, outcomes and lower costs
- ✓ Foundation for transforming from a siloed environment into a single trusted view
- ✓ Master information - 'one version of the truth' across all customer touch points, business applications
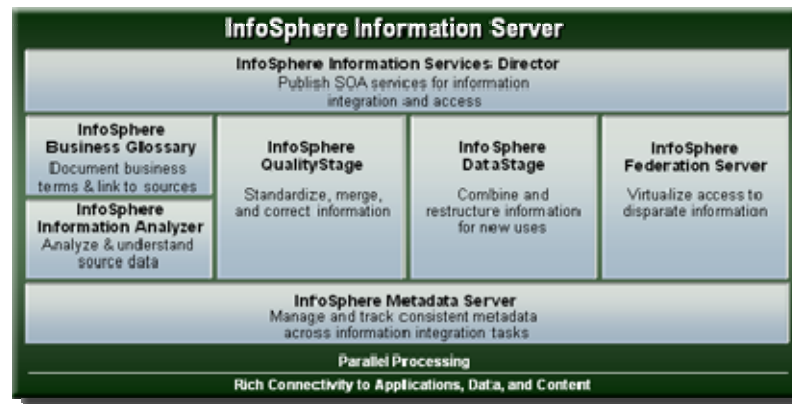- ✓ More effective service delivery, coordination across extended enterprise

IBM Unified Information Management

InfoSphere – Trusted Information

Foundation to create, manage, govern and deliver trusted information

InfoSphere Information Server

InfoSphere Information Server
InfoSphere Information Services Director Publish SOA services for information integration and access

InfoSphere Business Glossary Document business terms & link to sources	InfoSphere QualityStage Standardize, merge, and correct information	InfoSphere DataStage Combine and restructure information for new uses	InfoSphere Federation Server Virtualize access to disparate information
InfoSphere Information Analyzer Analyze & understand source data			

InfoSphere Metadata Server Manage and track consistent metadata across information integration tasks

Parallel Processing

Rich Connectivity to Applications, Data, and Content

Understand   *Cleanse*   *Deliver*   *Transform*

✓ *Understand*

  Discover, model, and govern information structure and content

✓ *Cleanse*

  Standardize, merge, and correct information

✓ *Deliver*

  Combine and restructure information for new uses

✓ *Transform*

  Synchronize, virtualize and move information for in-line delivery

Create A Citizen-Centered Information Hub

Provide more effective, efficient government with shared information

Public Safety

Tax

Employers and Financial Institutions

Employment

Data

Data

Data

Shared Information
- Taxpayers
- Partners
- Employer
- Others

Health Insurance

Data

Data

Data

Data

Citizen

Customs, Border
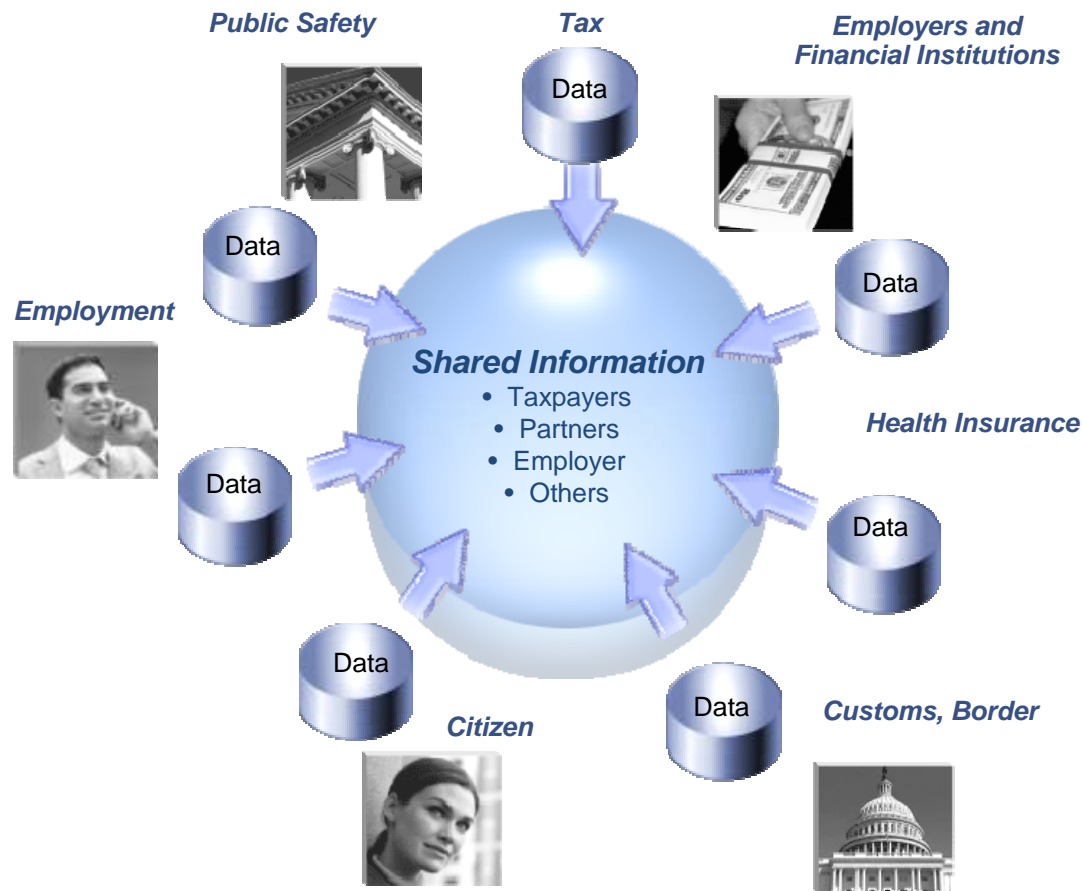
✓ *Collect information once and reduce the burden on citizens*

✓ *Reduce errors, duplications*

✓ *Coordinated service delivery*

✓ *Can help the citizen receive faster service*

✓ *Information available across authorized organizations*

✓ *Privacy protections*

IBM Unified Information Management

Capabilities:

- Reporting and deep analytics for better understand and optimize business performance

- Role-based visualization for planning and strategic metrics alignment

- Search based access and dynamic drill-through and alert & detect in-time actions

SPSS

Cognos

Business Intelligence & Performance Management

Business Value:

✓ "Right Time" Operational Adjustments

- Optimize staff, facilities, and resources

✓ Optimize Revenue Cycle

- Manage & measure receivables, collection rates, monitor trends

✓ Expedite data-driven quality and cost improvement

- Identify best practices in service delivery
- Collaborative reporting and results

✓ Gain greater insight into business drivers

- Monitor performance to strategic targets
- Increase accuracy, condense budget cycles and closings

Key Government Initiatives

Areas customers use Cognos to optimize their operations

Process Efficiency & Cost Reduction

- ✓ Enterprise Financial Planning, Forecasting, & Budgeting
- ✓ Service Line Analysis
  - Departmental services
  - Cost per case
  - Procedures
- ✓ Self Service reports to departmental users
- ✓ Metrics Dashboard & Scorecards
  - Quality Indicators
  - Productivity Metrics
- ✓ Revenue Cycle Optimization

Risk & Compliance Management

- ✓ Regulatory reporting
- ✓ Outcomes and Transparency

Resource Management

- ✓ Workforce Performance Management
- ✓ Resource Allocation and Scheduling

Leverage information to better understand and optimize business performance

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What's Next?
Information Agenda Roadmap

Becoming an Information Based Enterprise...

Establish an information driven
strategy & objectives to enable
business priorities…

Discover & design trusted
information with unified
tools and expertise to
sustain competitive
advantage over time…

Accelerate information
intensive projects aligned
with the strategy to speed
both short and long-term
returns on investment…

Strategy

Define &
Govern

**Information
Agenda**

Road
Maps

Information
Infrastructure

Deploy open and agile
technology and leverage
existing information assets for
speed and flexibility…

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Information Maturity Assessments & IA Workshops
Accelerate the Development of Your Information Agenda Roadmap

1 **Self-Assessment** → Identifies your level of maturity in leveraging information as a strategic asset

Health Check

2 **Roadmap Workshop** → Short term roadmap with distinct set of actionable projects that move you towards enterprise information infrastructure

Quick Value, Near-term

3 **Solution Pilot Workshop** → Business case and high level plan for the first project to deliver business value now and in the long-term

Comprehensive, Long-term

Strategy

Define & Govern   Information Agenda   Road Maps

Information Infrastructure
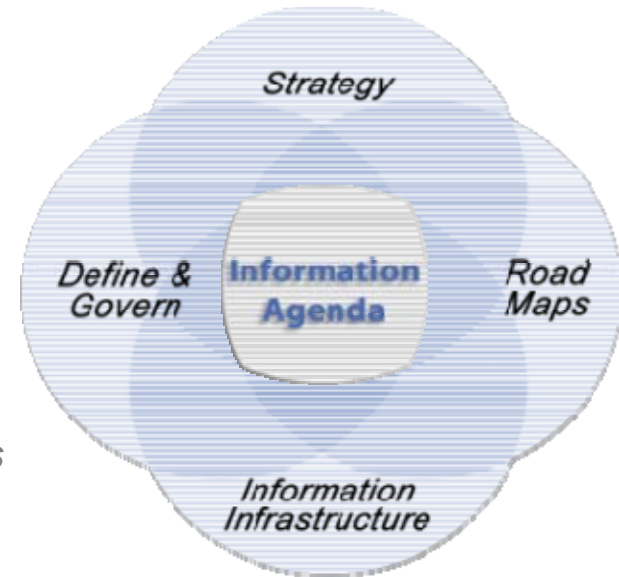
Information Maturity Assessment

IBM Information Maturity Capability Assessment

Sample Information Maturity Health Check

Take the Information On Demand self-assessment now to check your company's information maturity level and receive recommendations for improvement……

Information Agenda Customer Briefings & Workshops
Customer Focused Sessions

	Information Agenda Briefing	*Roadmap Workshop*	*Business Solution Workshop / Pilot*
Objective	*Understand Value of Information Strategy*	*Build Vision and High Level Roadmap*	*Identify and Architect Initial Pilot*
Duration	**Half - Full Day**	**3 – 6 Days**	**4 – 12 Weeks**
Deliverables	• Industry best practices • White Papers • Business Value References	• Current State Analysis • Business Goals & Requirements • Desired Technical Architecture • Gap Analysis & Roadmap • Business Value Opportunities	• Pilot Identification • Business Processes • Technical Architecture • Demos • Business Case • Implementation Plan • Implementation Best Practices

Information Agenda Workshops

Roadmap Workshop

2-3 Day workshop to help build an Information Agenda Roadmap using a proven five-step approach:

5-Step Approach

1. Conduct Information Maturity Assessment
2. Document the Business Problem / Challenge
3. Identify Challenges and Opportunities for Improvement
4. Provide A Business Vision & Technology Requirements
5. Define the Business Value

Benefits

✓ Helps prioritize tactical projects based upon business value

✓ Helps client identify best approach to solve tactical projects with industry leading capabilities – resulting in more successful implementation, tangible business results, and minimized risk

✓ Ties current IT initiatives to business value – with long term vision and strategy for leveraging information as a strategic asset
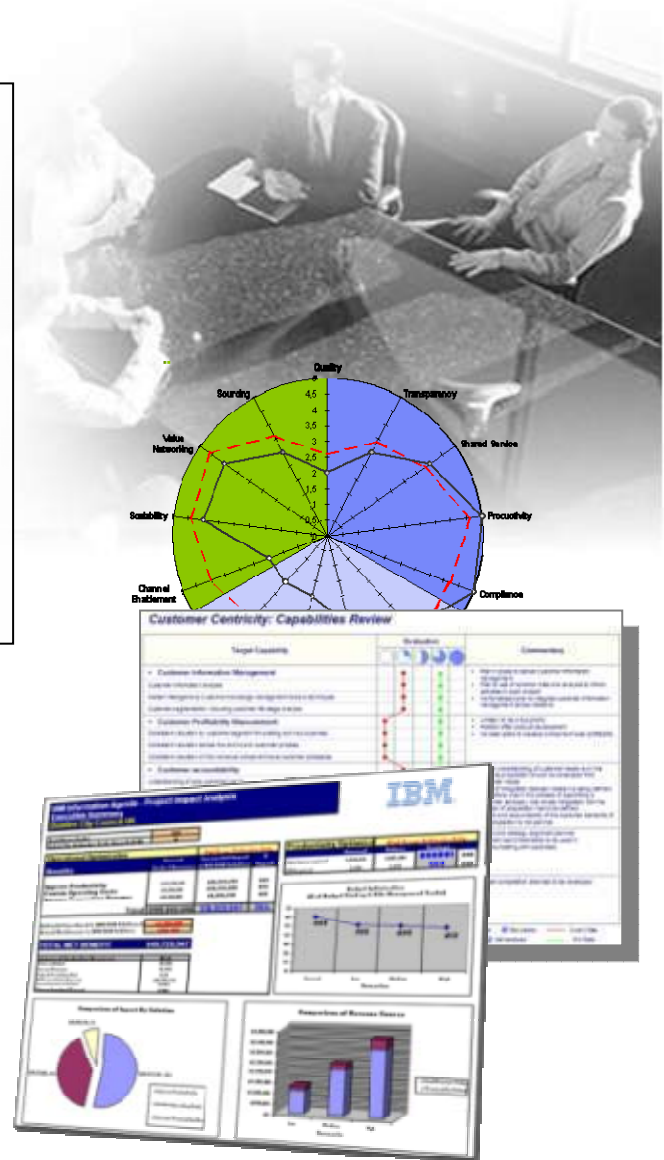
Information Agenda Workshops

Business Solution Pilot
Architect an Initial Solution Project

Solution Pilot

✓ Create business case and high level plan for the first project to deliver business value in the near term

Scope

1-4 Week project focused on developing a technical solution architecture and business value case. Typical activities include:

✓ Define Project

✓ Model Future State Solution Architecture

✓ Evaluate And Select Software

✓ Size And Scope Project

✓ Business Value Assessment