IBM Software

InformationOnDemand**2010**
ComesToYou

Unlock the True Value of Your Information

Information Agenda for Government
Amish Patel
Information Management in Government
Leader - Europe
IBM Software Group

Information for Disruptive Innovation

Accelerating Business Optimization

Creating your Information Agenda

UK's challenges brought on by key drivers.

ACCELERATING GLOBALIZATION

Countries and societies are becoming more economically interdependent across social, political and cultural boundaries, as illustrated by current economic conditions.

CHANGING DEMOGRAPHICS

Median ages are rising in the developed countries of Italy, Germany and Japan, but dropping in developing ones such as India.

EVOLVING SOCIETAL RELATIONSHIPS

Today, governments are expected to deliver results and value through secure, private services that are available anywhere at any time.

RISING ENVIRONMENTAL CONCERNS

Societies and governments are becoming more attuned to what the earth can provide and what it can tolerate.

EXPANDING IMPACT OF TECHNOLOGY

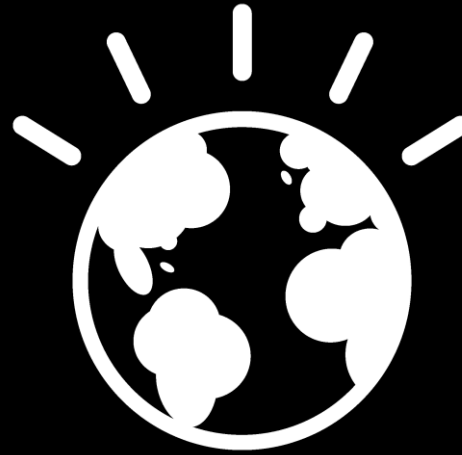The adoption of the Internet is remaking the landscapes of business, healthcare and government.

GROWING THREATS TO SOCIAL STABILITY AND ORDER

From terrorism to armed conflict to pandemics to natural disasters, the character of threats is changing.

Today's imperative: Managing within the current global financial and economic crisis in a way that begins to solve the above challenges and lay a foundation to build a better future.

Source: "Government 2020 and the perpetual collaboration mandate"
IBM Institute for Business Value
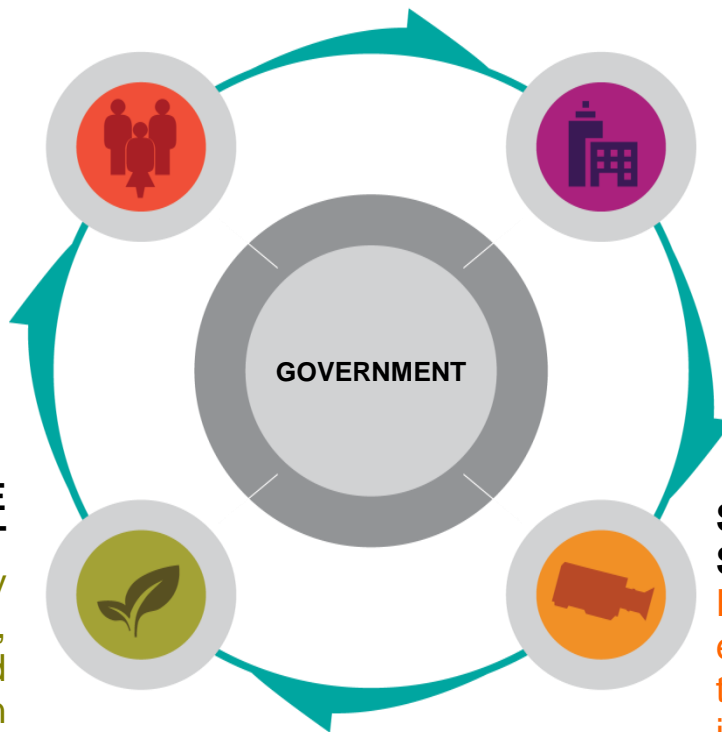
This mandate for change is a mandate for smart.

To ensure the economic health, welfare and security of their citizens, smart governments will work to…

IMPROVE CITIZEN AND BUSINESS SERVICES
Connecting people to programs based on individual needs—achieving sustainable outcomes while reducing operational costs and maximizing taxpayer value.

MANAGE RESOURCES EFFECTIVELY
Leveraging business intelligence and planning to improve insight and elevate performance with visibility and control.

GOVERNMENT

ENSURE A SUSTAINABLE ENVIRONMENT
Deploying environmentally responsible operations, from energy efficiency and conservation to transportation management and the pursuit of renewable resources.

STRENGTHEN NATIONAL SECURITY AND PUBLIC SAFETY
Enabling defense and law enforcement organizations to achieve situational awareness, increased speed of command and combat superiority.

Healthcare systems throughout the world are being confronted with the same set of change drivers

Individual Engagement	**Personalization**	**Value**	**Collaboration**

Patient/Member Centric

Informed (educated) consumers accountable for their own health

New treatments and technologies

Targeted treatments and biologics

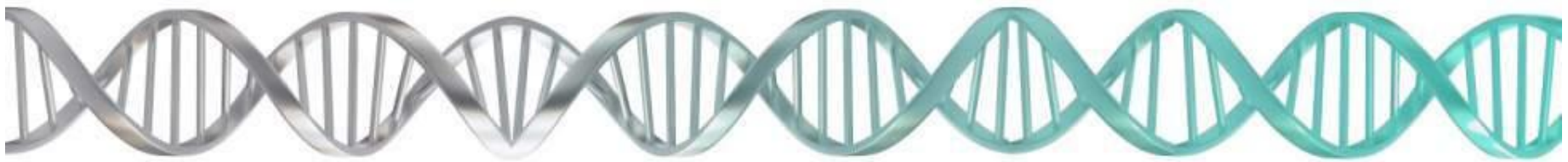Focus on quality of care and outcomes not just costs

Affordability and pay for performance

New entrants and new roles for current players

Integrated electronic healthcare records

Transformation and Reform

Healthcare system needs to provide levels of care through evidence-based personalized medicine for lifetime health maintenance and disease prevention in addition to episodic and acute care

To meet expectations for improved outcomes, increased value and more accountable, sustainable health systems, healthcare organizations are working to …

IMPROVE OPERATIONAL EFFECTIVENESS

Building flexibility into operations to support cost reduction and excellence in clinical and business performance and practices.

HEALTHCARE

DELIVER COLLABORATIVE CARE FOR PREVENTION AND WELLNESS

Collaborating across care settings to deliver integrated, personalized care experiences, prevent disease, promote wellness and manage care.

ACHIEVE BETTER QUALITY AND OUTCOMES

Applying insights to improve quality of care, clinical outcomes and services and deliver personalized healthcare value, while improving financial results.

The Key is Leveraging Information and Analytics
Informed, Real-time Decisions at the Point of Impact…
An Information-Led Transformation

Information-Led Transformation
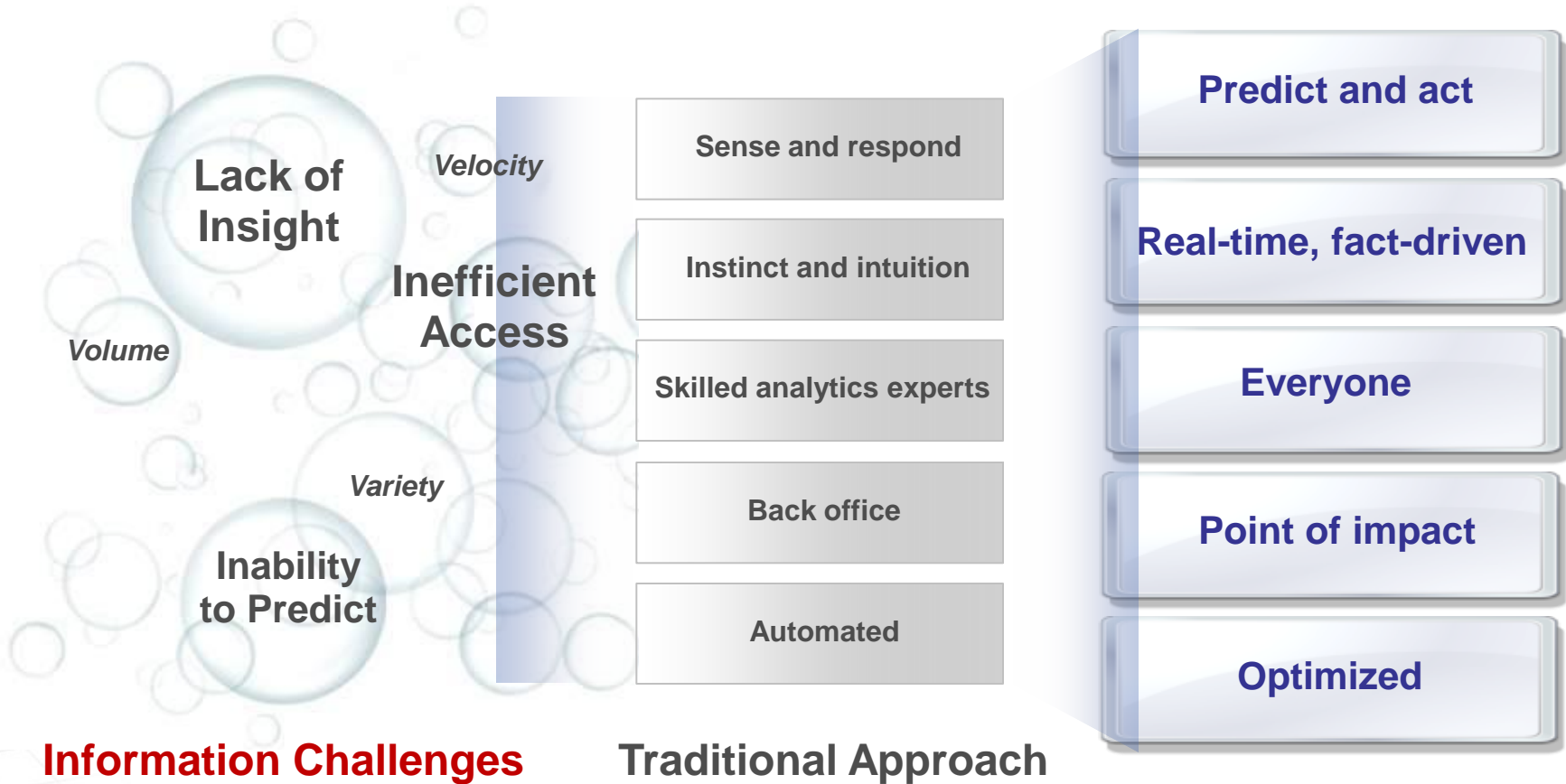
Lack of Insight

Velocity

Inefficient Access

Volume

Variety

Inability to Predict

Traditional Approach	Information-Led Transformation
Sense and respond	**Predict and act**
Instinct and intuition	**Real-time, fact-driven**
Skilled analytics experts	**Everyone**
Back office	**Point of impact**
Automated	**Optimized**

Information Challenges   **Traditional Approach**

9

Information for Disruptive Innovation

Accelerating Business Optimization

Creating your Information Agenda

Information Supply Chain

Info. Integration
Data Quality
Info. Services

APPLICATIONS

INTERNAL DATABASES

EXTERNAL DATABASES

Operational Systems/Data

MASTER DATA

OPERATIONAL DATA

UNSTRUCTURED CONTENT

METADATA

Trusted Information

DATA WAREHOUSE

DATA MARTS

OLAP CUBES

Analytical Information

BI (REPORTS, DASHBOARDS, QUERY, OLAP)

PREDICTIVE ANALYTICS

TEXT ANALYTICS

USERS

OPTIMIZATION

Business Analytics

APPLICATIONS

INTERNAL/ EXTERNAL DATBASES

Define & Govern

Information Supply Chain

Operational systems and databases designed for project-specific requirements

Information in application and database silos

Data quality problems

Information Supply Chain

- Info. Integration
- Data Quality
- Info. Services

UNSTRUCTURED CONTENT

OPERATIONAL DATA

MASTER DATA

DATA WAREHOUSE

DATA MARTS

BI (REPORTS, DASHBOARDS, QUERY, OLAP)

PREDICTIVE ANALYTICS

TEXT ANALYTICS

USERS

APPLICATIONS

INTERNAL/ EXTERNAL DATBASES

- Information integrated
- Quality enhanced
- Single version of the truth

OPTIMIZATION

Analytics

OLAP CUBES

Analytical Information

APPLICATIONS

INTERNAL DATABASES

METADATA

Trusted Information

EXTERNAL DATABASES

Operational Systems/Data

Define & Govern

Information Supply Chain

- Info. Integration
- Data Quality
- Info. Services

UNSTRUCTURED CONTENT

OPERATIONAL DATA

MASTER DATA

DATA WAREHOUSE

TEXT ANALYTICS

PREDICTIVE ANALYTICS

BI (REPORTS, DASHBOARDS, QUERY, OLAP)

USERS

- Operational systems/data synched with single version of the truth
- Data available through information services (batch & real time, SOA)

APPLICATIONS

INTERNAL DATABASES

EXTERNAL DATABASES

METADATA

OLAP CUBES

OPTIMIZATION

Analytics

Analytical Information

Trusted Information

Operational Systems/Data

Define & Govern

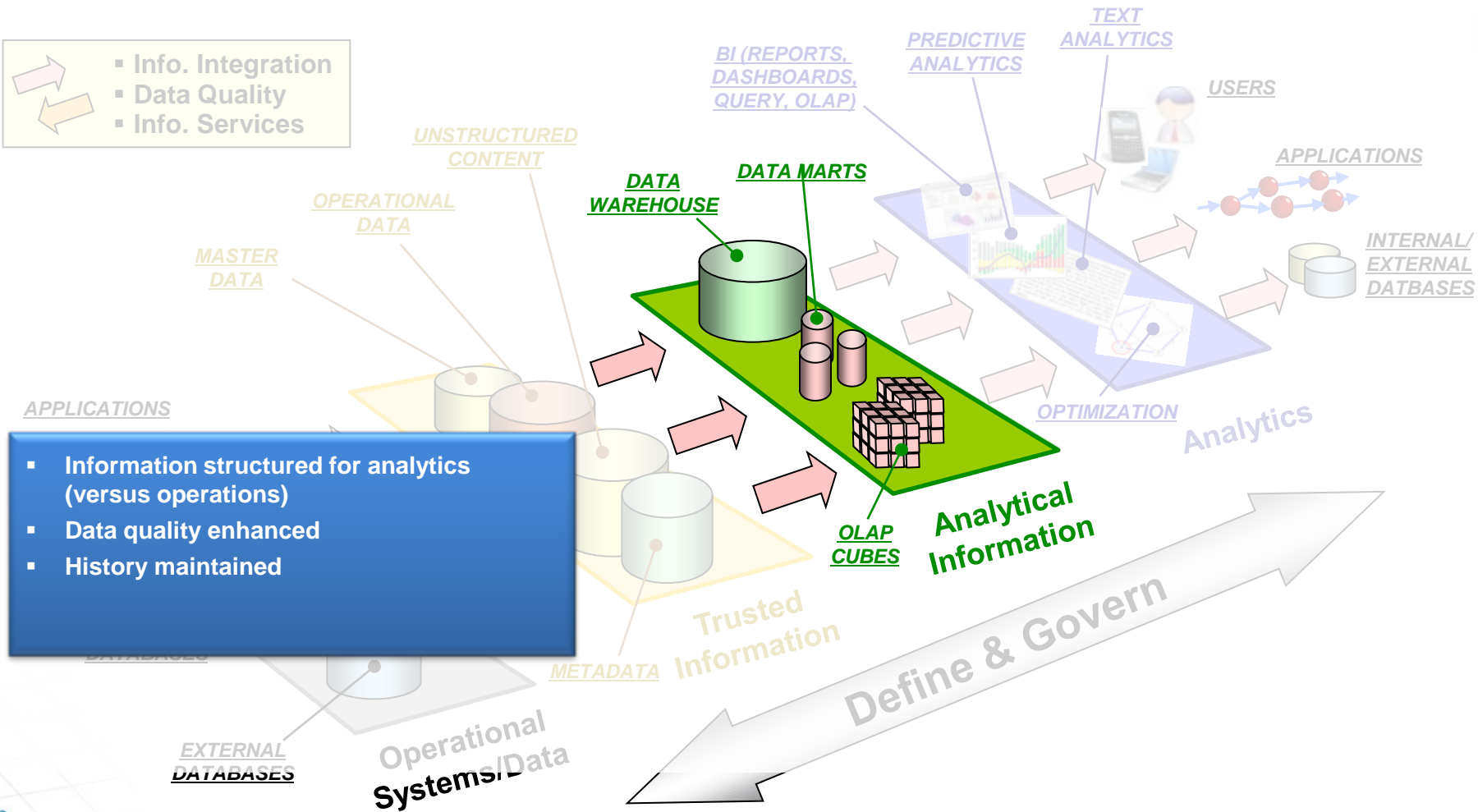# Information Supply Chain

Information Supply Chain

- Info. Integration
- Data Quality
- Info. Services

TEXT ANALYTICS

PREDICTIVE ANALYTICS

BI (REPORTS, DASHBOARDS, QUERY, OLAP)

USERS

APPLICATIONS

UNSTRUCTURED CONTENT

DATA MARTS

DATA WAREHOUSE

OPERATIONAL DATA

MASTER DATA

INTERNAL/ EXTERNAL DATBASES
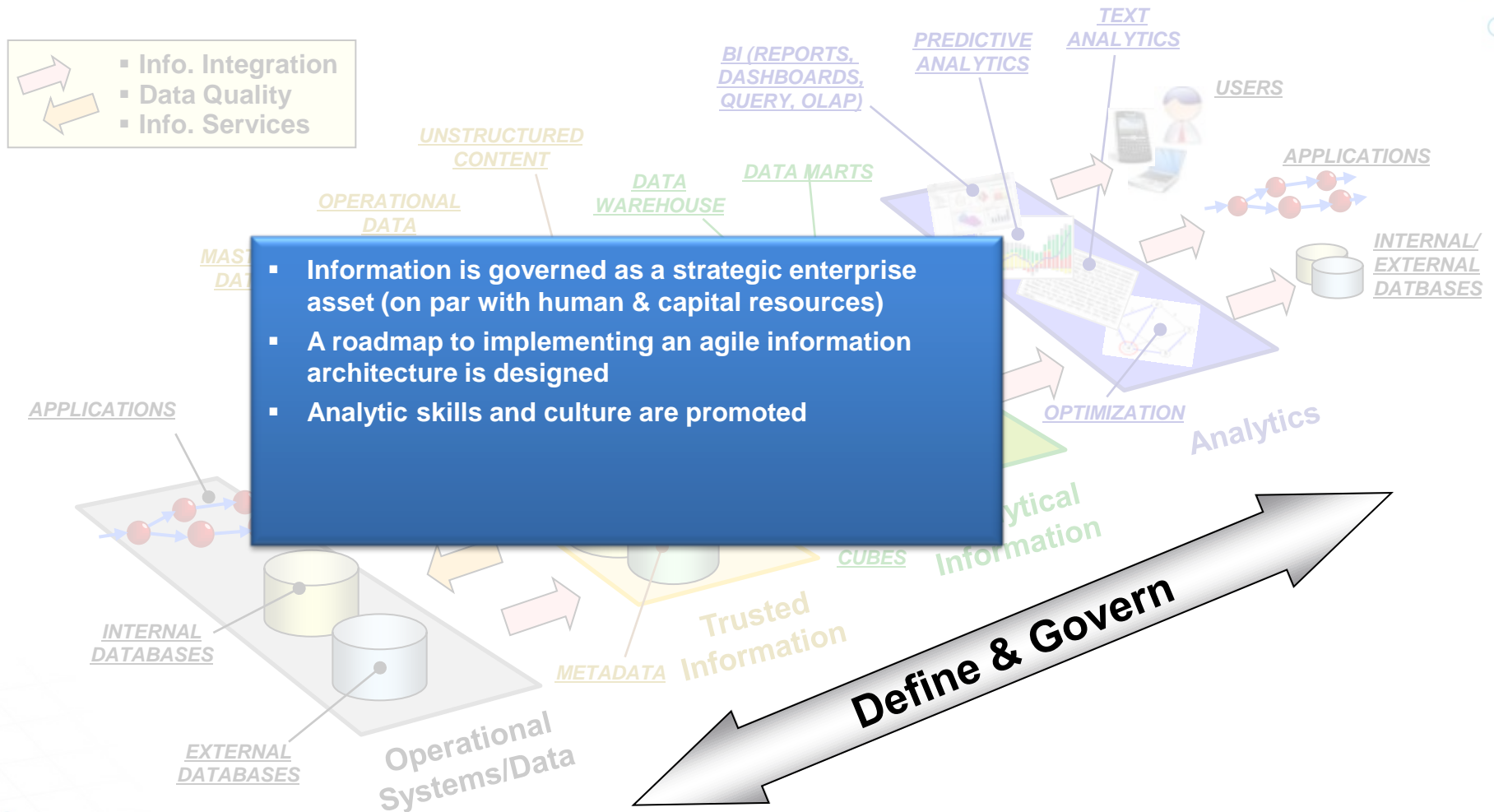
OPTIMIZATION

APPLICA...

- **Information analyzed (reports, query, visualization and OLAP**
- **Relationships uncovered and used to predict outcomes**
- **Patterns/trends in unstructured text discovered**
- **Schedules, routing, and operations are optimized**

Analytics

Analytical Information

OLAP CUBES

Define & Govern

...ion

EXTERNAL DATABASES

Operational Systems/Data

Information Supply Chain

- Info. Integration
- Data Quality
- Info. Services

UNSTRUCTURED CONTENT

OPERATIONAL DATA

MASTER DATA

DATA WAREHOUSE

DATA MARTS

BI (REPORTS, DASHBOARDS, QUERY, OLAP)

PREDICTIVE ANALYTICS

TEXT ANALYTICS

USERS

APPLICATIONS

INTERNAL/ EXTERNAL DATBASES

- **Analysis and reports delivered to users**
- **Real-time analytics embedded in operational applications, and available as an information service**
- **Analysis results are part of operational databases**

APPLICATIONS

INTERNAL DATABASES

EXTERNAL DATABASES

METADATA

OPTIMIZATION

Analytics

Trusted Information

Operational Systems/Data

Define & Govern

Information Supply Chain

- Info. Integration
- Data Quality
- Info. Services

UNSTRUCTURED CONTENT

OPERATIONAL DATA

DATA WAREHOUSE

DATA MARTS

BI (REPORTS, DASHBOARDS, QUERY, OLAP)

PREDICTIVE ANALYTICS

TEXT ANALYTICS

USERS

APPLICATIONS

INTERNAL/ EXTERNAL DATBASES

OPTIMIZATION

Analytics

- **Information is governed as a strategic enterprise asset (on par with human & capital resources)**
- **A roadmap to implementing an agile information architecture is designed**
- **Analytic skills and culture are promoted**

APPLICATIONS

INTERNAL DATABASES

EXTERNAL DATABASES

Operational Systems/Data

METADATA

CUBES

Trusted Information

Analytical Information

Define & Govern

Information for Disruptive Innovation

Accelerating Business Optimization

Creating your Information Agenda

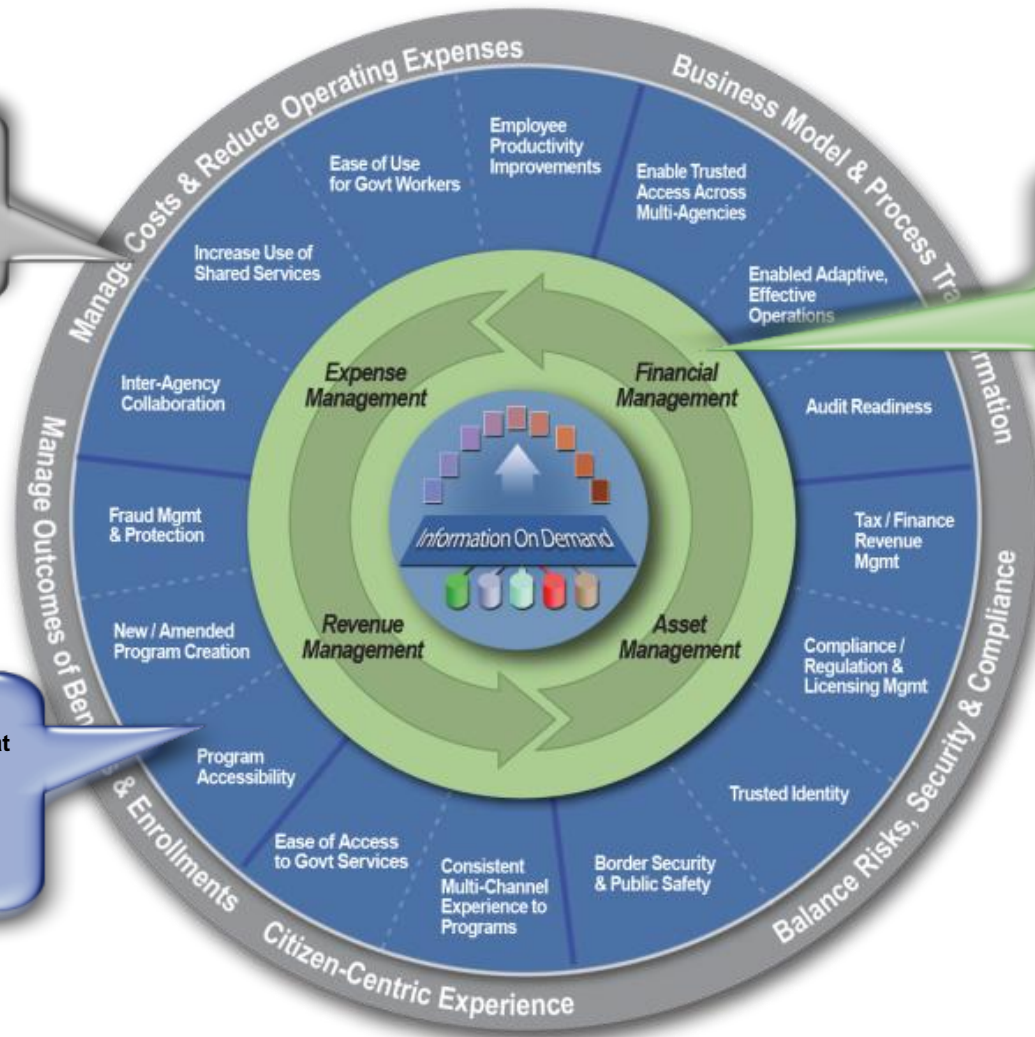# Creating an Information Driven Government

Strategic Imperatives
Top of mind areas critical to improving business performance.

Business Competencies
Business areas and functions containing the skills and capabilities of the organization.

Business Initiatives
Processes and activities that can be optimized through more effective use of information.

Creating an Information Driven Healthcare Provider Organization

Strategic Imperatives
Top of mind areas critical to improving business performance.

Business Competencies
Business areas and functions containing the skills and capabilities of the organization.

Business Initiatives
Processes and activities that can be optimized through more effective use of information.

Process Efficiency & Cost Reduction

Quality, Safety & Outcomes

Access Transparency

Profitable Growth

Risk & Compliance Management

Pay for Performance / Quality Care

Clinical Efficiency & Productivity

Operational Efficiency & Productivity

Revenue Cycle Management

Clinical Outcomes / Patient Safety

Disease Profiling

Clinical Research

Trusted View Patients / Providers

Patient / Clinician Satisfaction

Patient Security & Privacy

Financial Security & Fraud Mgmt

Regulatory Compliance

New Services & Procedures

Partnership Growth / Physician Profile

Capacity Planning / Throughput Mgmt

Supply Chain Optimization

Finance & Administration

Patient Care & Ancillary Services

Patient Financial Services

Ambulatory & Physician Services

Procurement & Supply Chain

Physician Alignment & Strategic Planning

Human Resources & Staffing
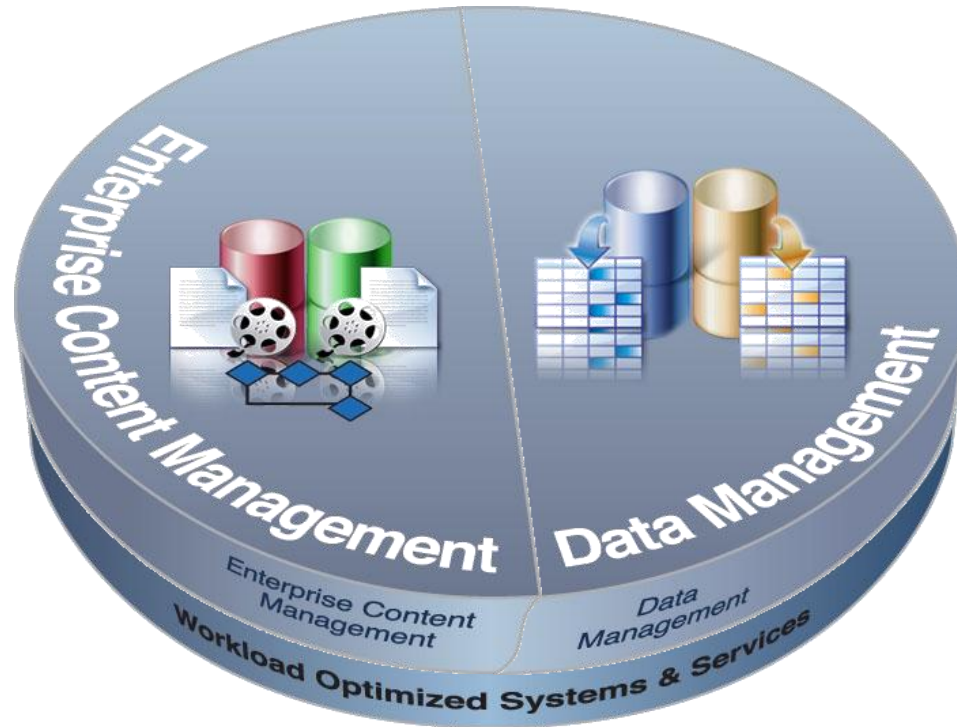
Information Technology

Business Optimization

Information Agenda Government Solutions supported by Information Infrastructure

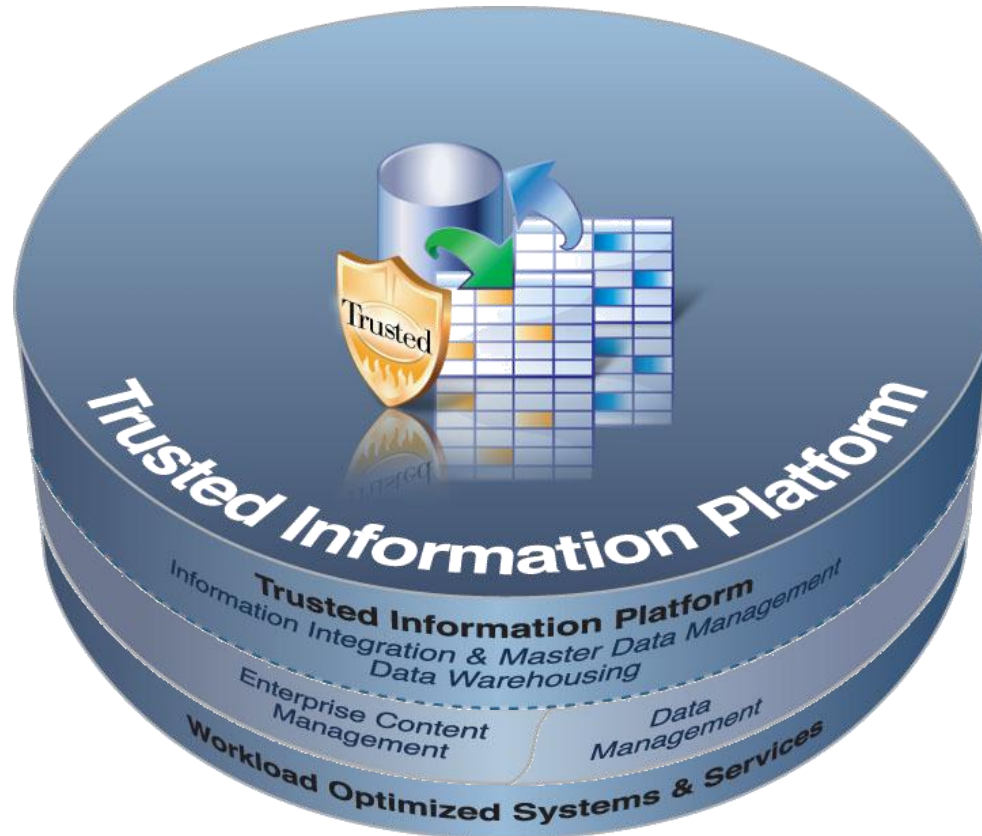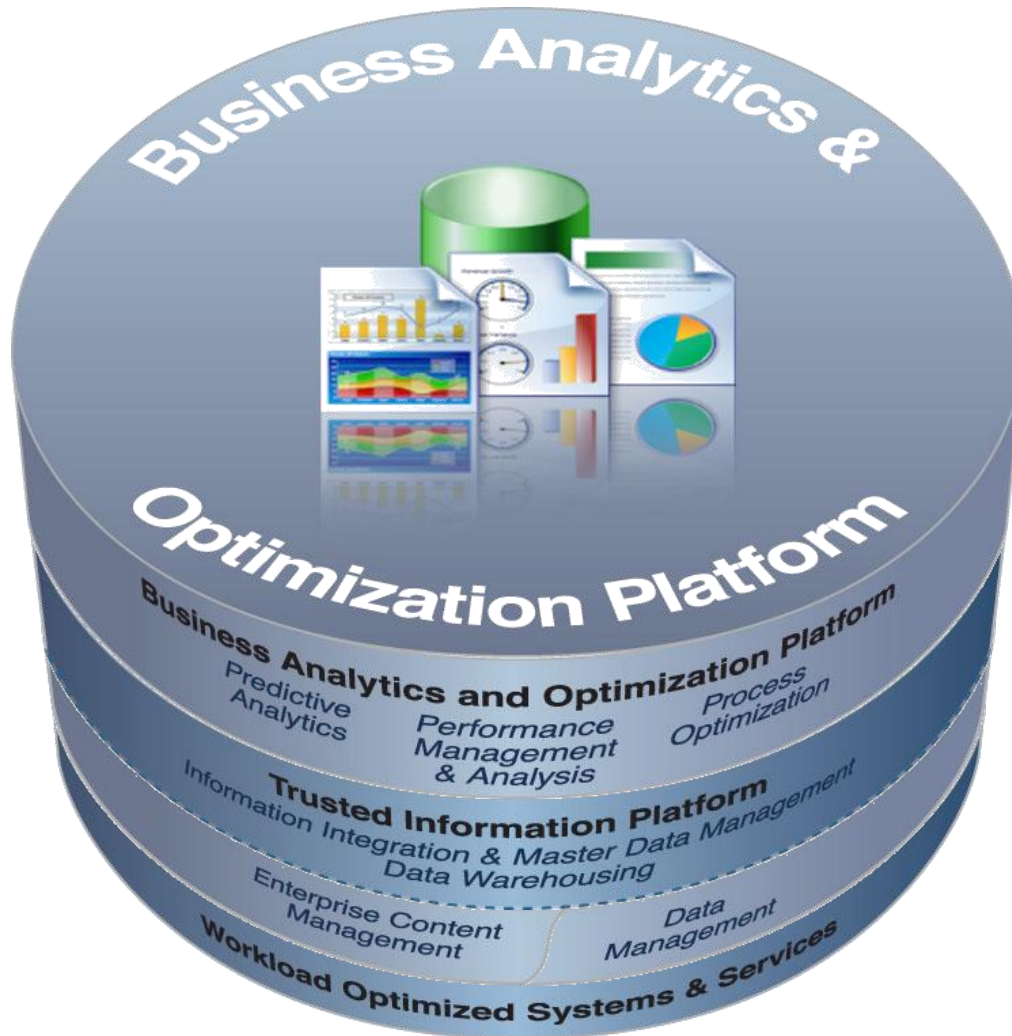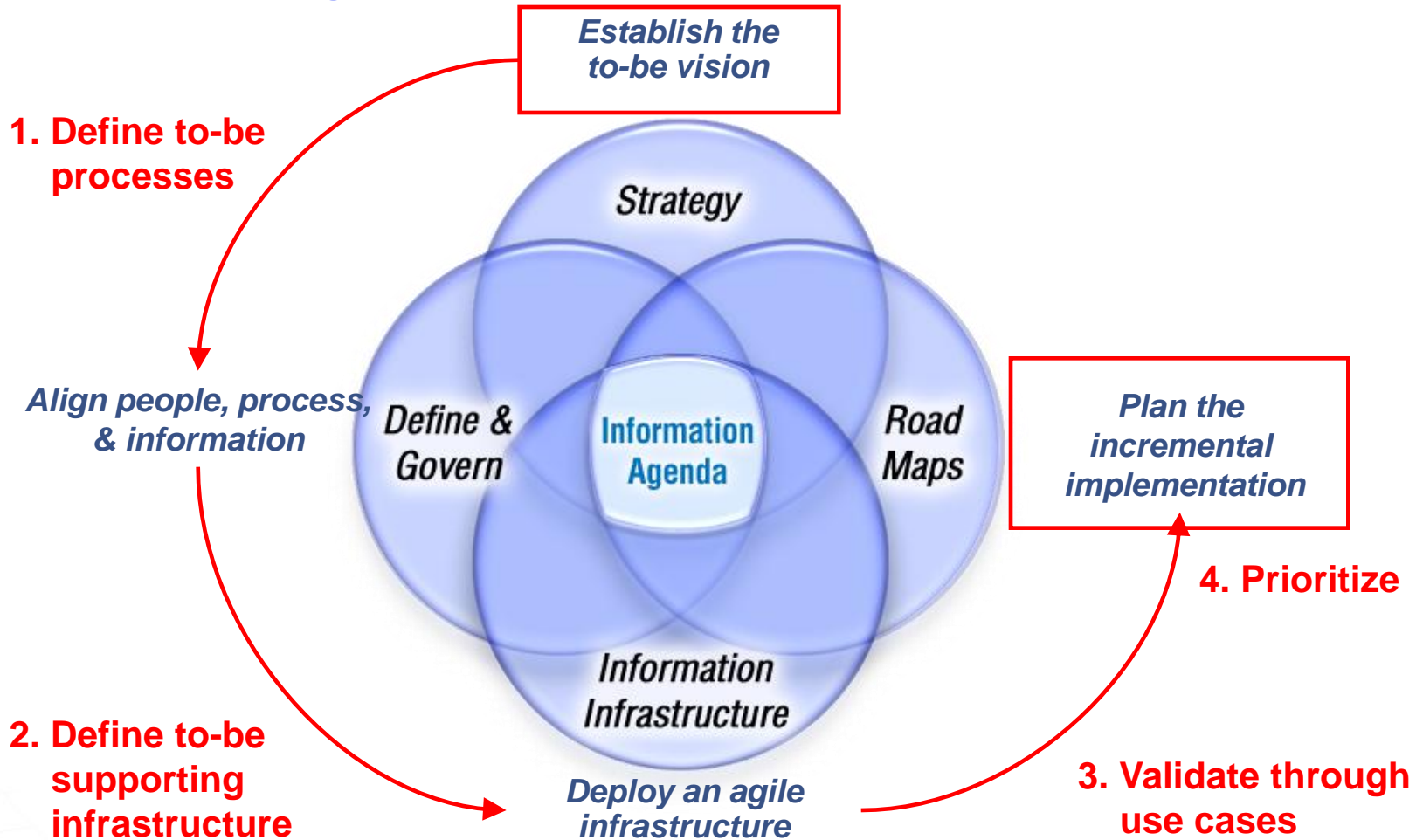# Information Agenda Government Solutions supported by Information Infrastructure

Information Agenda Government Solutions supported by Information Infrastructure

Information Agenda Government Solutions supported by Information Infrastructure

Information Agenda Government Solutions supported by Information Infrastructure

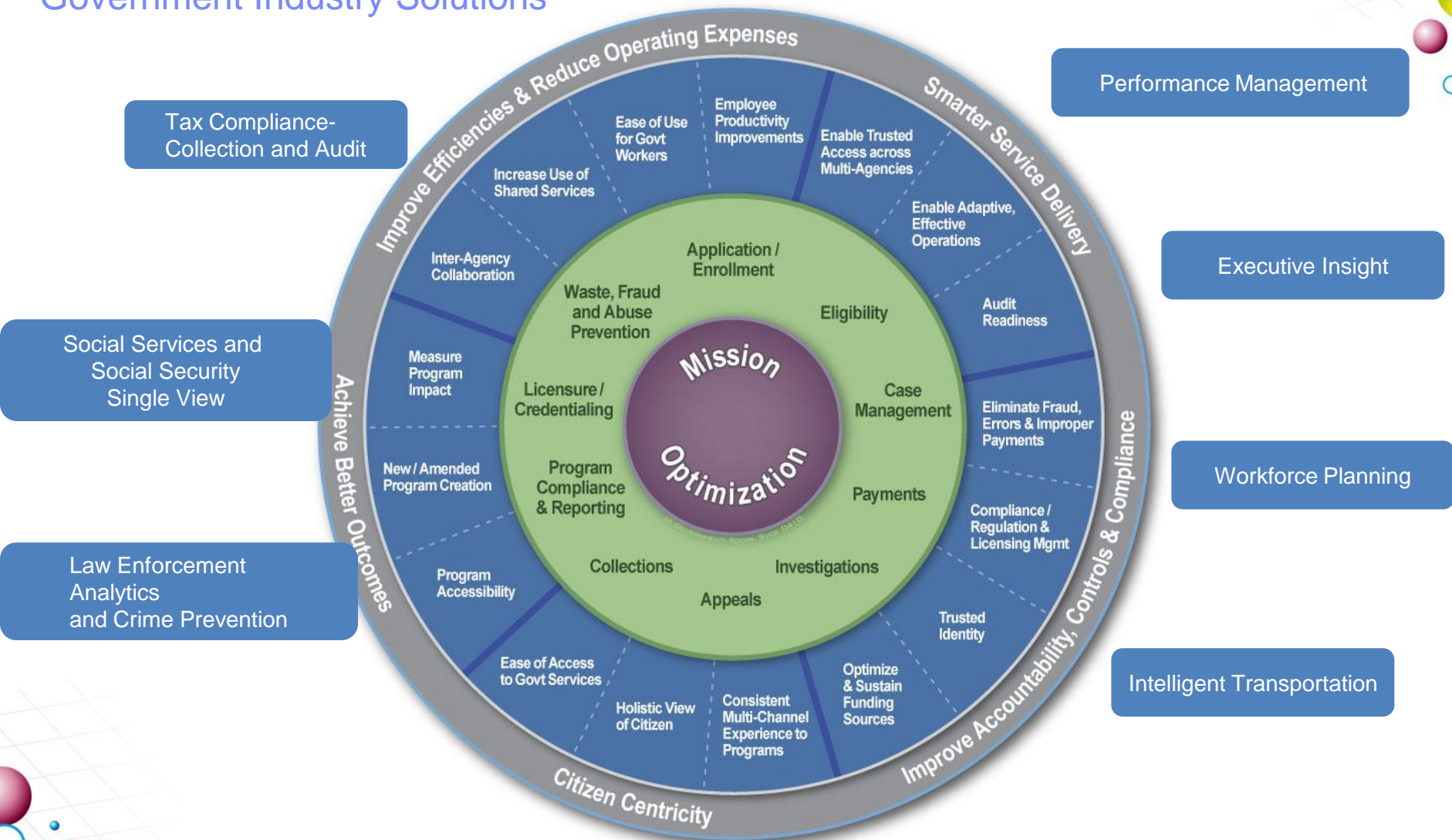Information Agenda Government Solutions supported by Information Infrastructure

Information Agenda Government Solutions supported by Information Infrastructure

An Information Agenda is the way to enable business value leveraging information as a strategic asset

Establish the to-be vision

1. Define to-be processes

Align people, process, & information

Plan the incremental implementation

4. Prioritize

2. Define to-be supporting infrastructure

Deploy an agile infrastructure

3. Validate through use cases

Strategy

Define & Govern

Information Agenda

Road Maps

Information Infrastructure

Government Industry Solutions

Tax Compliance-
Collection and Audit

Social Services and
Social Security
Single View

Law Enforcement
Analytics
and Crime Prevention

Performance Management

Executive Insight

Workforce Planning

Intelligent Transportation

Information Driven Public Safety & Justice

Miami- Dade Clerk of Courts
Transformed traffic court case operations to eliminate paper, reduce staff and increase fine collection

Richmond Police
Pinpoints hotspots & leads to 20-30% decrease in violent crimes

NYPD
Dynamic ability to redeploy resources in response to crime patterns and trends by developing single point of access to crime data linked with GIS mapping and visualization tools to head off spikes in criminal activity..

Edmonton Police
Police are able to see data in near real time, which helps them identify problems, associated trends and locations of crimes, so they can determine their response solutions..

Information Driven Tax and Revenue

New York State
e-file
www.nystax.gov

Regional Tax Authority
Improved tax compliance to avoid losing more than $1 billion in revenue.

Large Local Tax Authority
Integrated 200 databases and provided real-time access to single view of trusted data
Established an enterprise foundation for service delivery and fosters inter-agency collaboration

Internal Revenue Service
DEPARTMENT OF THE TREASURY
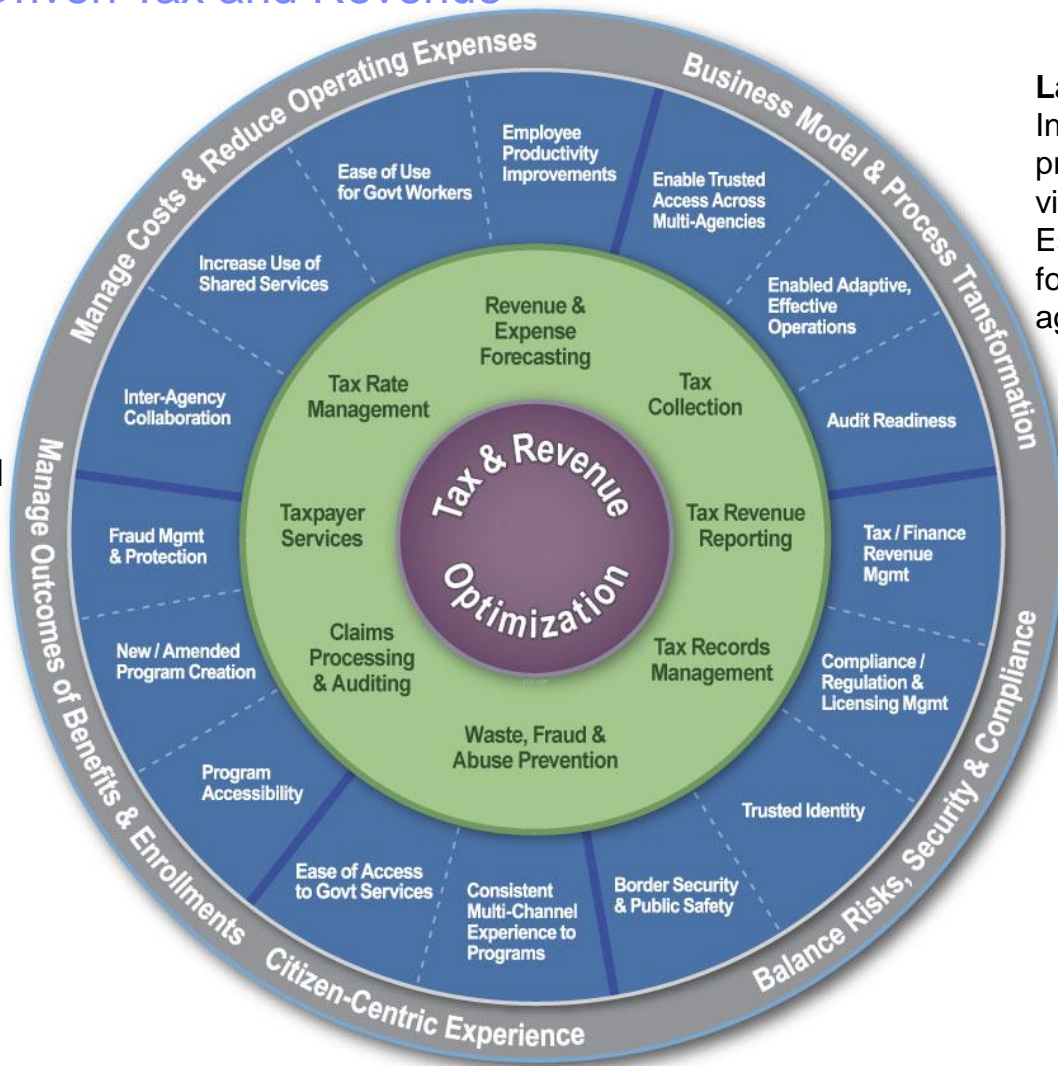
Deployed an electronic document filing service to speed processing, reduce errors and support processing of non-structured data

Large Tax agency uses IBM's Tax Compliance solutions to predict non-compliance at the time a tax declaration is filed

Challenge New York DTF wanted to enhance current audit case selection methods for detection of audit issues at the time a return is processed. Specific audit programs include Earned Income Credit, Dependent Child Care Credit, Itemized Deductions, Wage/Withholding, and Identity Theft.

Solution IBM's Tax Audit and Compliance System (TACS). TACS applies business rules and predictive models to categorize and score returns nightly and identifies the 'next best case' for audit selection. In addition, a separate web based portal provides screening and resolution of cases.

Benefits
- $889 millions increase in revenue primarily from Refund denials in the first five years
- Increased screener and auditor productivity
- Enhanced taxpayer correspondence
- Improved audit program management

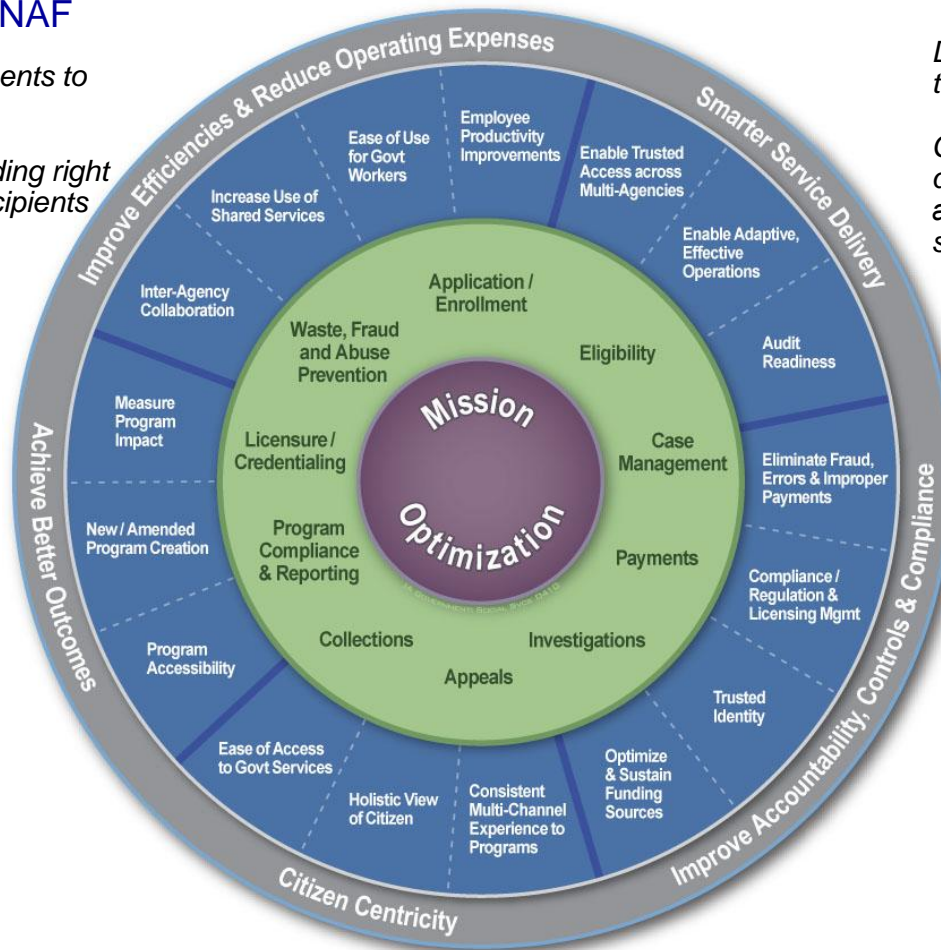# Information Driven Social Services – Single View of Citizen

Government of France CNAF

•*Reduced level of improper payments to ineligible persons*

•*Increased effectiveness of providing right service to eligible citizens and recipients*

Clark County Department of Family Services

*Decreased reporting time
Monitors case worker compliance with state policies
Identifies bottlenecks and improves business processes*

Alameda County Social Services Agency

Direct savings of over US$11 million through waste reduction

Gives managers and caseworkers a deep, real-time understanding of case and program status and models "what if" scenarios based on current data

HHS-Connect

*Gain a rapid understanding of citizens, applicants and providers across multiple programs and cases.
Increase the effectiveness of providing right service to eligible citizens and recipients*

Healthcare Provider Industry Solutions
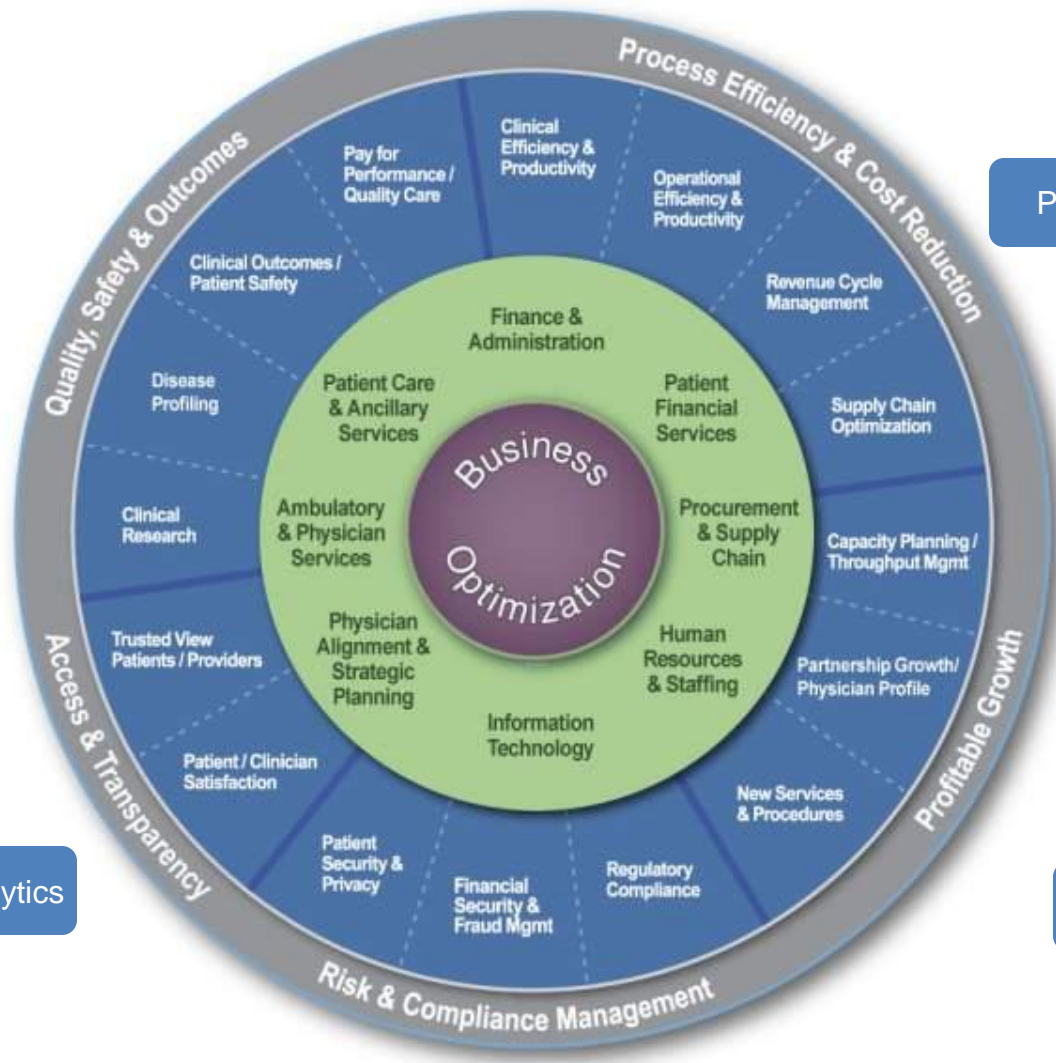
Clinical Analytics

Performance Management

Single View Patient/ Disease

Executive Insight

Medical Records Text Analytics

Workforce Planning

Diagram

Outer ring:
- Process Efficiency & Cost Reduction
- Profitable Growth
- Risk & Compliance Management
- Access & Transparency
- Quality, Safety & Outcomes

Middle ring (blue):
- Pay for Performance / Quality Care
- Clinical Efficiency & Productivity
- Operational Efficiency & Productivity
- Revenue Cycle Management
- Clinical Outcomes / Patient Safety
- Supply Chain Optimization
- Disease Profiling
- Capacity Planning / Throughput Mgmt
- Clinical Research
- Partnership Growth/ Physician Profile
- Trusted View Patients / Providers
- New Services & Procedures
- Patient / Clinician Satisfaction
- Regulatory Compliance
- Patient Security & Privacy
- Financial Security & Fraud Mgmt

Inner ring (green):
- Finance & Administration
- Patient Care & Ancillary Services
- Patient Financial Services
- Ambulatory & Physician Services
- Procurement & Supply Chain
- Physician Alignment & Strategic Planning
- Human Resources & Staffing
- Information Technology

Center:
- Business Optimization

IBM Software
InformationOnDemand2010
ComesToYou

Healthcare Applications - Analytics

Beneficiary Analytics

- Understand beneficiary health and wellness needs
- Predict impact of programs, care, and lifestyle
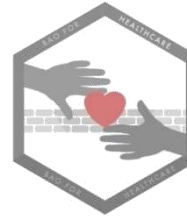
Quality of Care Analytics

- Assess comparative effectiveness
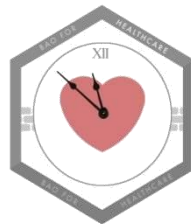- Identify quality trends and monitor improvements

Wellness & Chronic Disease Analytics

- Identify effective interventions
- Inform lifestyle and preventative care choices

Operational Efficiency Analytics

- Identify fraud/waste/abuse
- Target early intervention and remediation

Incentive Analytics

- Understand quality outcomes and efficiency
- Monitor of Pay for Performance indicators/incentive payments

InfoSphere Clinical Analytics

Fully integrated Assets for building a CDW:

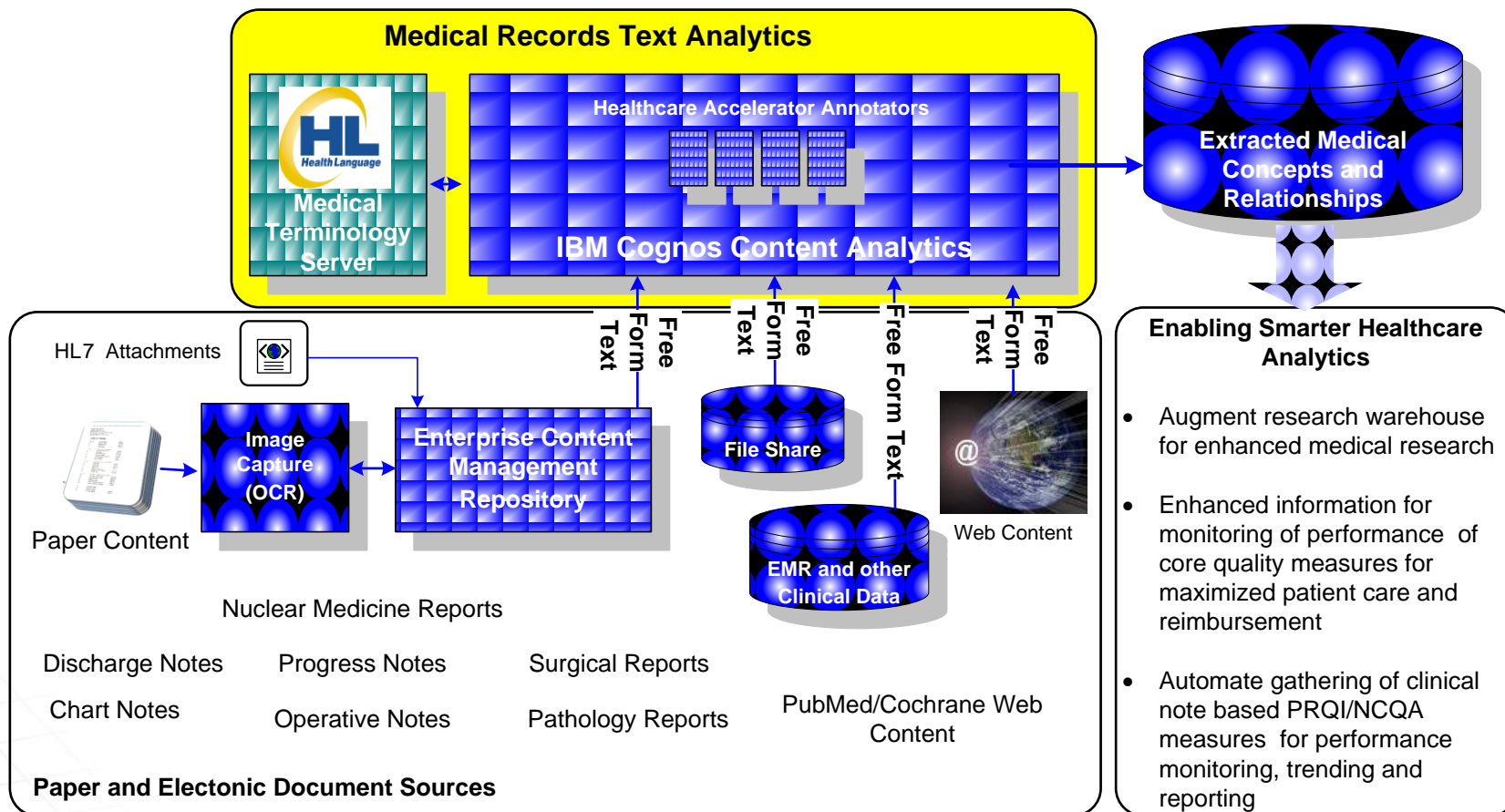- ✓ Server + Clinical Data Warehouse +Solution Templates + Tools + Dashboards

Unique features:

- ✓ Create longitudinal record from inpatient, outpatient, specialty and ambulatory care setting
- ✓ Source data system agnostic
- ✓ Patient record De-Id and Re-Id
- ✓ Data validation 1,000+ Programs
- ✓ Medical vocabulary mapping
- ✓ Standards support
- ✓ Cohort screening application
- ✓ Analysis of whole organization down to physician and patients
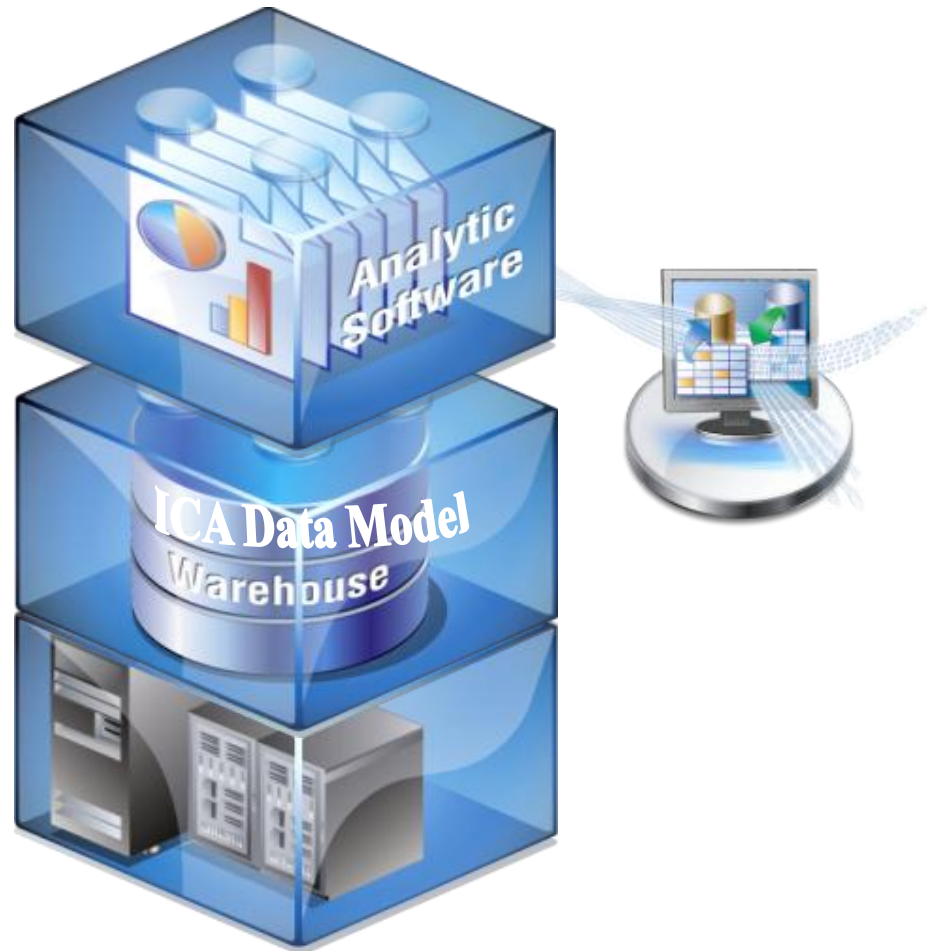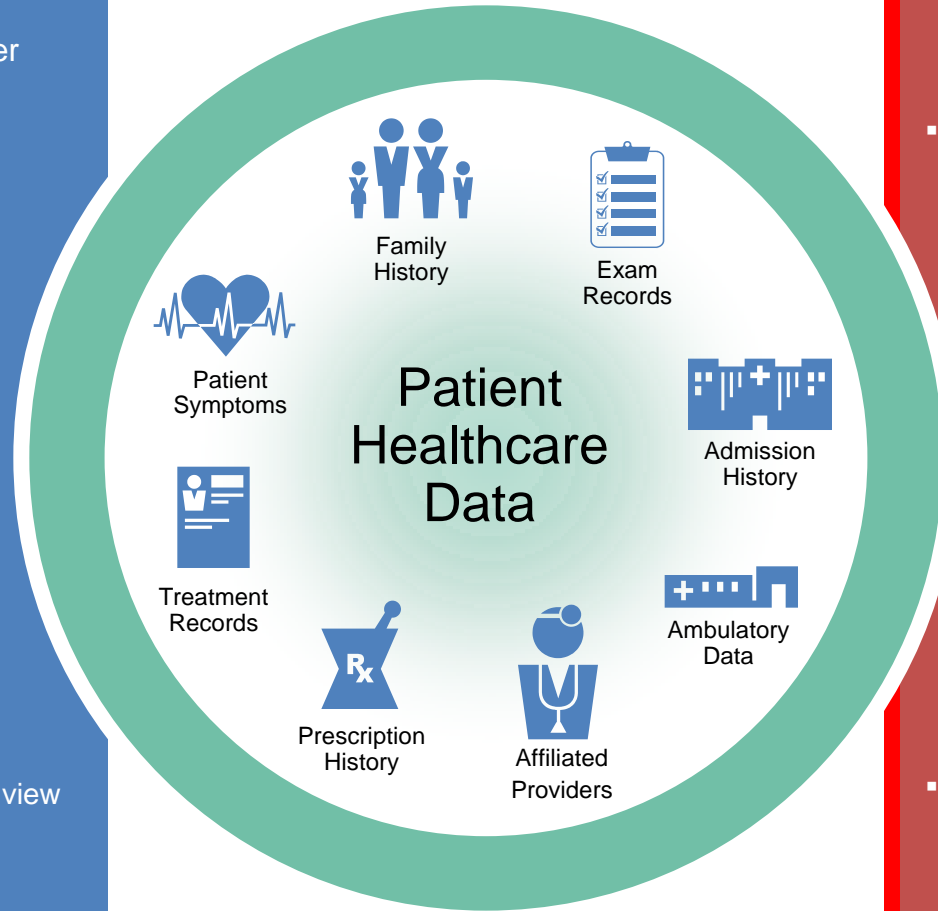
Medical Records Text Analytics Solution
CCA Platform / Healthcare Annotators Accelerator / Health Language

Medical Records Text Analytics

HL Health Language

Medical Terminology Server

Healthcare Accelerator Annotators

IBM Cognos Content Analytics

Extracted Medical Concepts and Relationships

HL7 Attachments

Image Capture (OCR)

Enterprise Content Management Repository

Paper Content

File Share

EMR and other Clinical Data

@ Web Content

Free Form Text

Nuclear Medicine Reports

Discharge Notes   Progress Notes   Surgical Reports

Chart Notes   Operative Notes   Pathology Reports

PubMed/Cochrane Web Content

Paper and Electonic Document Sources

Enabling Smarter Healthcare Analytics

- Augment research warehouse for enhanced medical research

- Enhanced information for monitoring of performance of core quality measures for maximized patient care and reimbursement

- Automate gathering of clinical note based PRQI/NCQA measures for performance monitoring, trending and reporting

IBM Initiate solutions enable HIE

IBM® Initiate® Patient
IBM® Initiate® Provider

- Support data sharing across patient domains

- Enable trusted and un-trusted data to work together

- Leverage patient & provider relationships

- Communicate consistently with providers
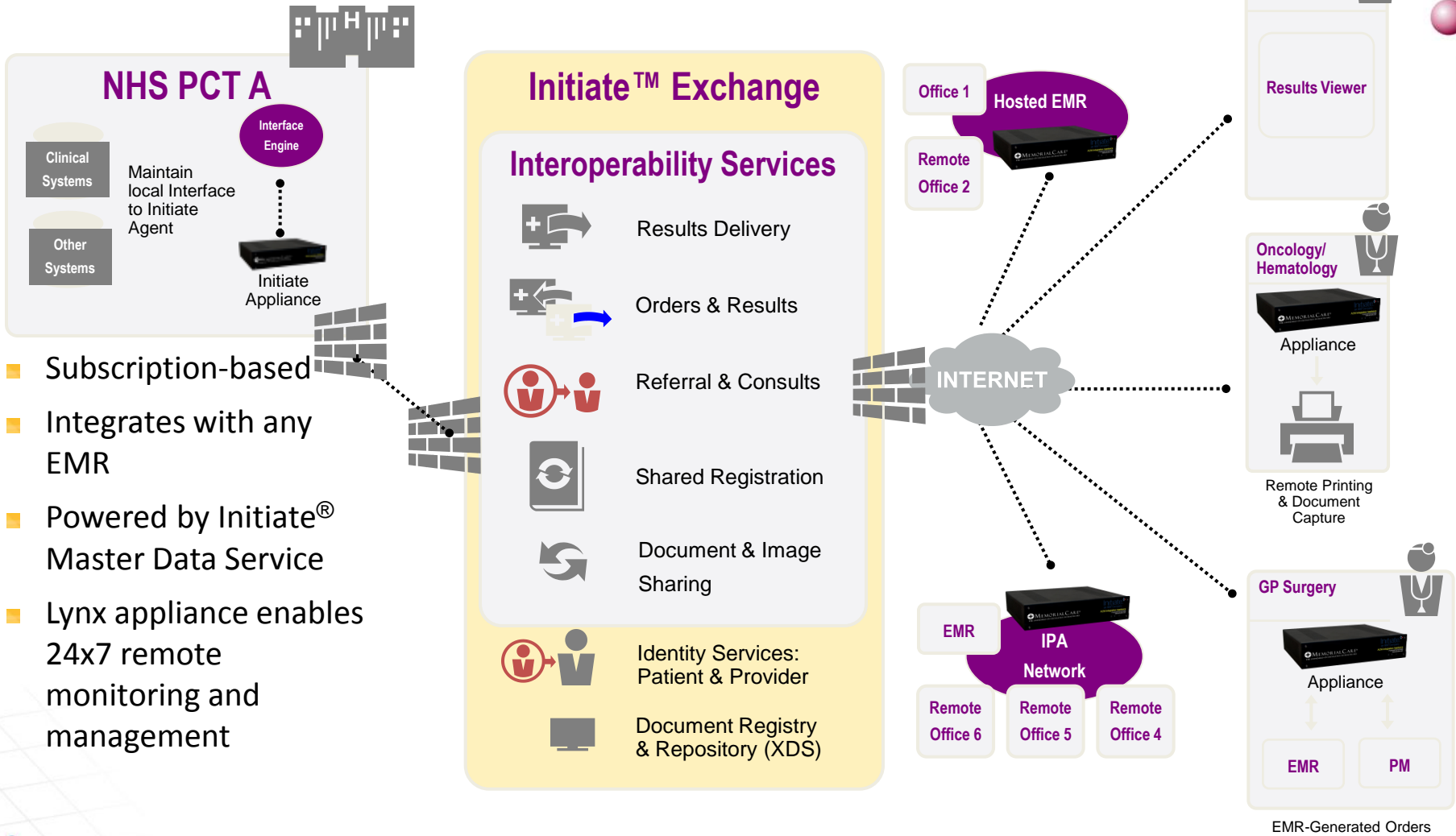
- Create an accurate view of patients and providers

Patient Healthcare Data

- Family History
- Exam Records
- Patient Symptoms
- Admission History
- Treatment Records
- Ambulatory Data
- Prescription History
- Affiliated Providers

IBM® Initiate® Exchange

- Create competitive advantage

  - Easier to work with

  - Remove technical and political barriers to information sharing

  - Create clinical workflow efficiencies

- Pay as participants perceive value

40

Initiate™ Exchange

NHS PCT A

Interface Engine

Clinical Systems

Other Systems

Maintain local Interface to Initiate Agent

Initiate Appliance

- Subscription-based
- Integrates with any EMR
- Powered by Initiate® Master Data Service
- Lynx appliance enables 24x7 remote monitoring and management

Initiate™ Exchange

Interoperability Services

Results Delivery

Orders & Results

Referral & Consults

Shared Registration

Document & Image Sharing

Identity Services: Patient & Provider

Document Registry & Repository (XDS)

INTERNET

Office 1

Remote Office 2

Hosted EMR

Orthopedic

Results Viewer

Oncology/ Hematology

Appliance

Remote Printing & Document Capture

EMR

IPA Network

Remote Office 6

Remote Office 5

Remote Office 4

GP Surgery

Appliance

EMR

PM

EMR-Generated Orders

NYU Langone Medical Center: Clinical Analytics

Business challenge:
NYU Medical needed to connect several disparate clinical and financial systems into a single aggregated patient data warehouse. They needed to accomplish this in less than a year to meet current regulatory and University reporting requirements. It was critical for them to provide timely patient care data for analysis while the hospital migrates from Eclipsys to EPIC EMR while keeping within their already small IT resources.

What we did:
- Implemented InfoSphere Clinical Analytics solution on the IBM InfoSphere Balanced Warehouse
- IBM InfoSphere Balanced Warehouse provides embedded technologies, such as deep compression, which help exceed performance of existing data warehouse solutions
- Advanced analytics software enables healthcare providers to easily perform ad hoc queries and complex analytics across terabytes of detailed clinical data.
- Integrated administrative tools

Results:
- Normalization between the EMR systems is being done utilizing ICA -provided heuristic description resolution tools to perform the mapping of local reference codes to standards
- Additional data sources can be added over time while maintaining the integrity of the patient record allowing NYU Medical to grow their environment through an evolving process
- Improves access to key patient and provider insights by enabling automated and ad hoc queries and complex analytics with terabytes of detailed clinical data

Using the ICA development platform provides the ability to automate the integration of patient data from EMR, ADT and Ancillaries into a single longitudinal patient record in a central trusted warehouse. All with an ROI of 20 weeks

NYU Langone Medical Center

Social Security Administration:
Predictive Modeling for Disability Claims

Business challenge

The SSA was faced with two primary problems with their processes for reviewing and approving disability benefits for disabled citizens. The process for performing doctor reviews for Continuing Disability Reviews (CDR) was too expensive, and they had a huge backlog of new disability applications that needed to be processed.

What we did

- Developed a suite of predictive models that included advanced text analytics to infer meaning from unstructured data in disability applications

- Developed logistic regression models to automatically score applications and continuing disability reviews to identify potential quick decisions.

Results

- In use for the last 8 years, the CDR model has saved SSA over $2 billion in reduced doctor review costs.

- The predictive model for reviewing new disability applications has reduced the average cycle time for approving an application from 90 days to 20 days.

- Spared thousands of disabled citizens from the burden of medical reviews.

SSA leverages one of the largest content management systems ever built to efficiently process disability claims in a paperless environment.

Resources at your disposal …
Moving forward

1. Learn More About Information Agenda…
Insights, interviews, case studies and more

http://www-01.ibm.com/software/data/new-intelligence/plan/

2. Learn about the Information Agenda Industry Solutions to Accelerate your Success
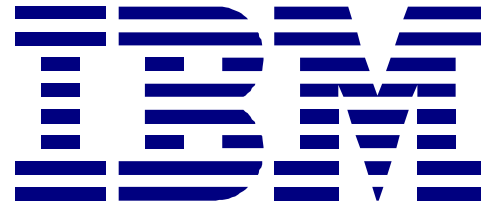
Solutions for Government

http://www-01.ibm.com/software/data/information-agenda/catalog/government.html?industry=government

2. Engage the IBM Information Agenda Team

Explore your options or schedule an information agenda workshop