HIELIX

HEALTHCARE CONNECTED

Basic Data Governance

Acknowledgements

The contents of this presentation are primarily attributed to the Data Management Association. Information and content from the Data Management Body of Knowledge (DAMA-DMBOK Guide) was used extensively in the preparation of this presentation.

Hielix Background

Started in 1993 as a change management consulting company

Started working full time in healthcare in 2005 – Focus on HIE

Created several programs for RHI and the Center

Have worked with fifteen states of a variety of HIT projects focusing on:

- Data Governance
- Interoperability
- Operational Governance
- Financial Sustainability
- Privacy and Security
- Policy and Procedure
- Clinical Workflow Analysis

Webinar Overview

Purpose

- Expose the participants to the Data Management Body Of Knowledge (DMBOK)

Objective

- Provide exposure to approaches currently being used by organizations to manage and control their data assets
- Engage in a discussion with the participants to determine a future path regarding Data Governance

Topics Covered

- Current state of IT in Health Care
- Ten components of Data Management
- Change Management Process
- Tools and Resources

Stress and Pressure

We are just beginning to assemble large quantities of health care data. Moving forward, the amount of data collected and managed will increase exponentially.

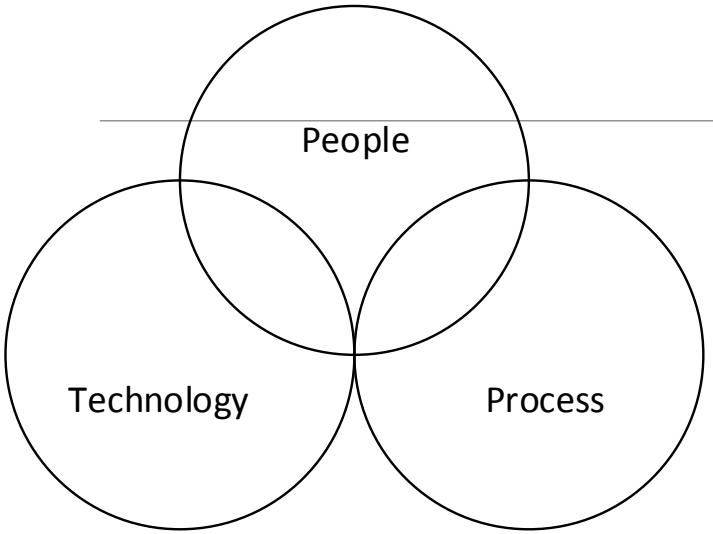
Most health care IT organizations are just beginning to realize the problems associated with poor data management practices. The rest of the organization is not yet fully aware of the issue.

All healthcare organizations are resource constrained. They do not have the funds, personal, time or skills to design and maintain a strong data management program.

Most health care organizations do not understand the need for a strong data management program nor are they willing to engage appropriately in the solution.

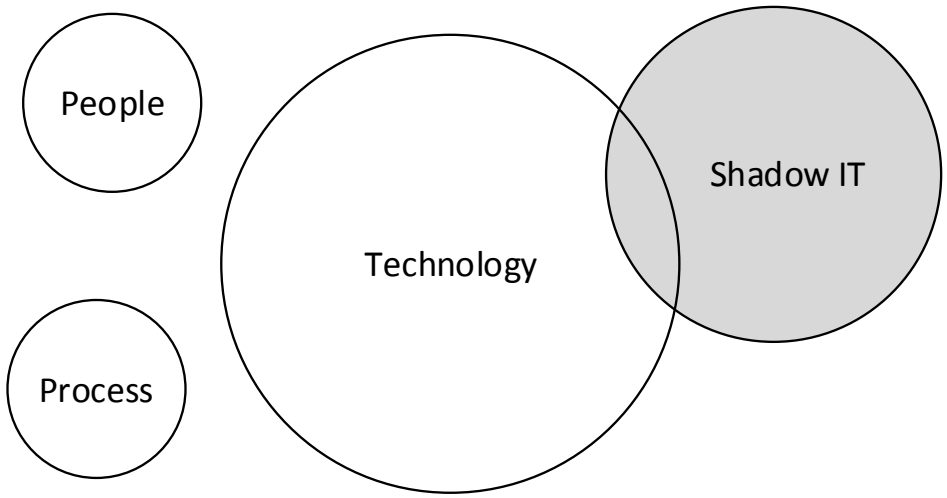
Gaining stakeholder support and engagement in resolving these problems will require strong internal political skills.

Where Are We Today



Historic IT Model

Current Observation



Why is This Important?

The model is out of alignment

- Too much emphasis on IT
- People and Process need active involvement to create solutions to these issues
- Shadow IT is a major issue in many organizations (Turf Protection)

The DMBOK Guide spends significant time addressing the need for a partnership between IT and business/clinical decision makers

The Hielix methodology is build on the integration of operations and technology

Keys to Success

Clear Vision and Strategy

Balance Between Technology and Operations

Stakeholder Engagement

Strong Organizational Leadership and Governance Structure

Services Stakeholders Wants, Needs and Interests

Identifiable Value Proposition

Equitable Financial Model

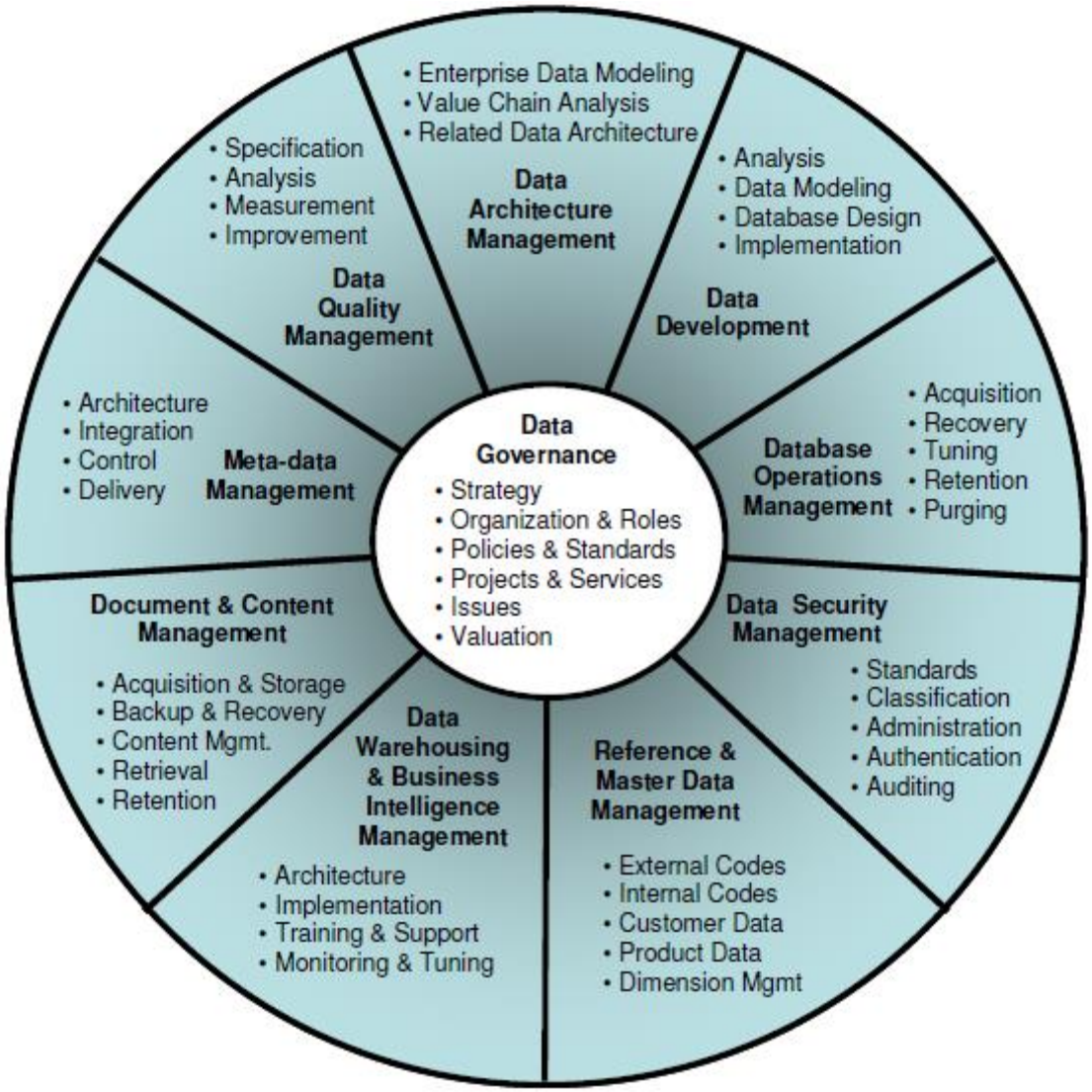
Concrete Success Measures

Realistic Timelines

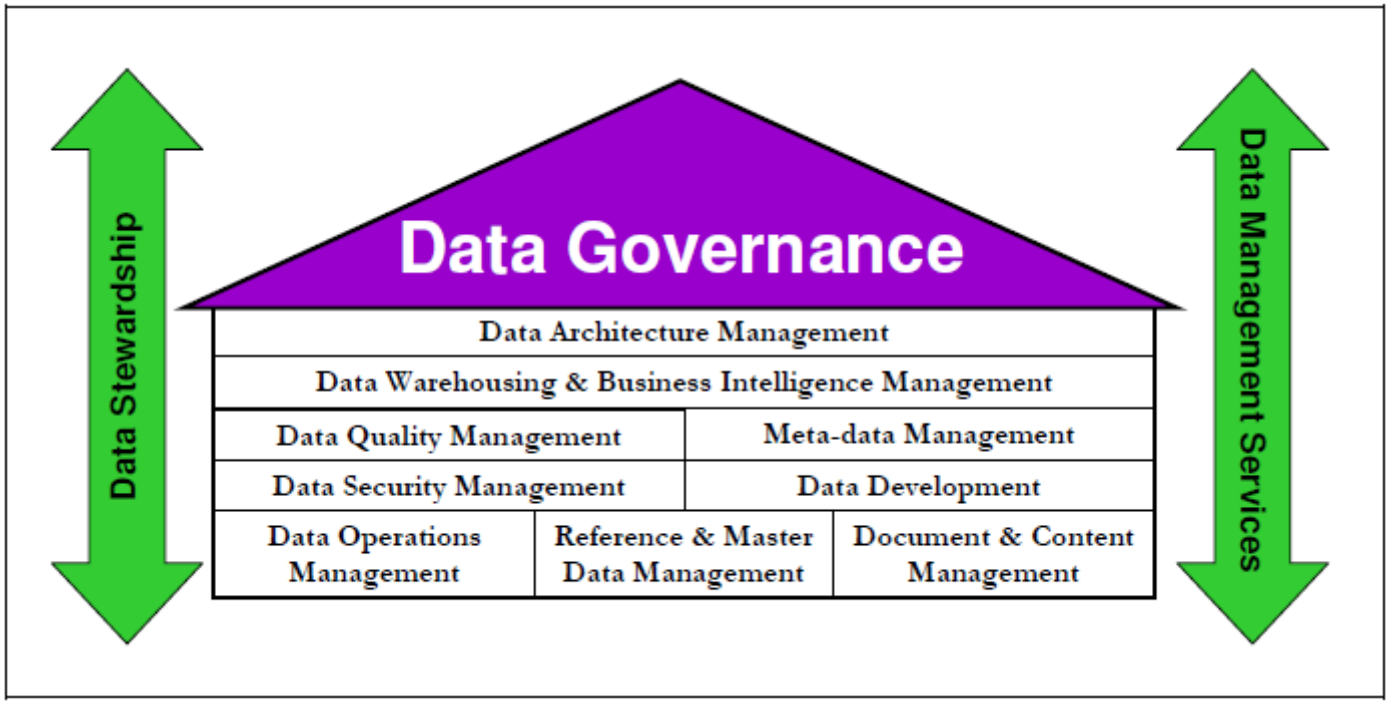
Milestones and Trigger Points

Market Feedback

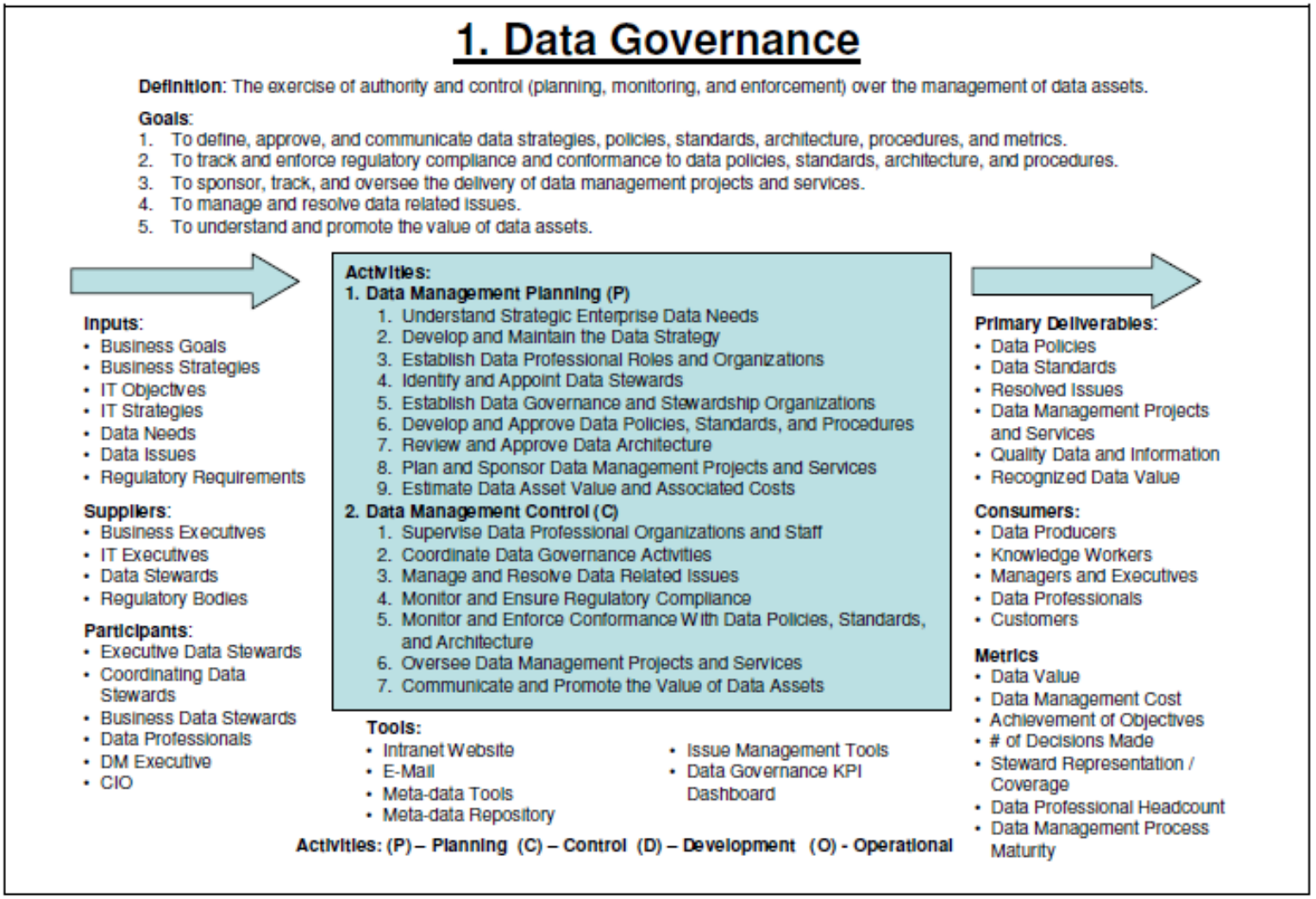
Introduction to Data Management



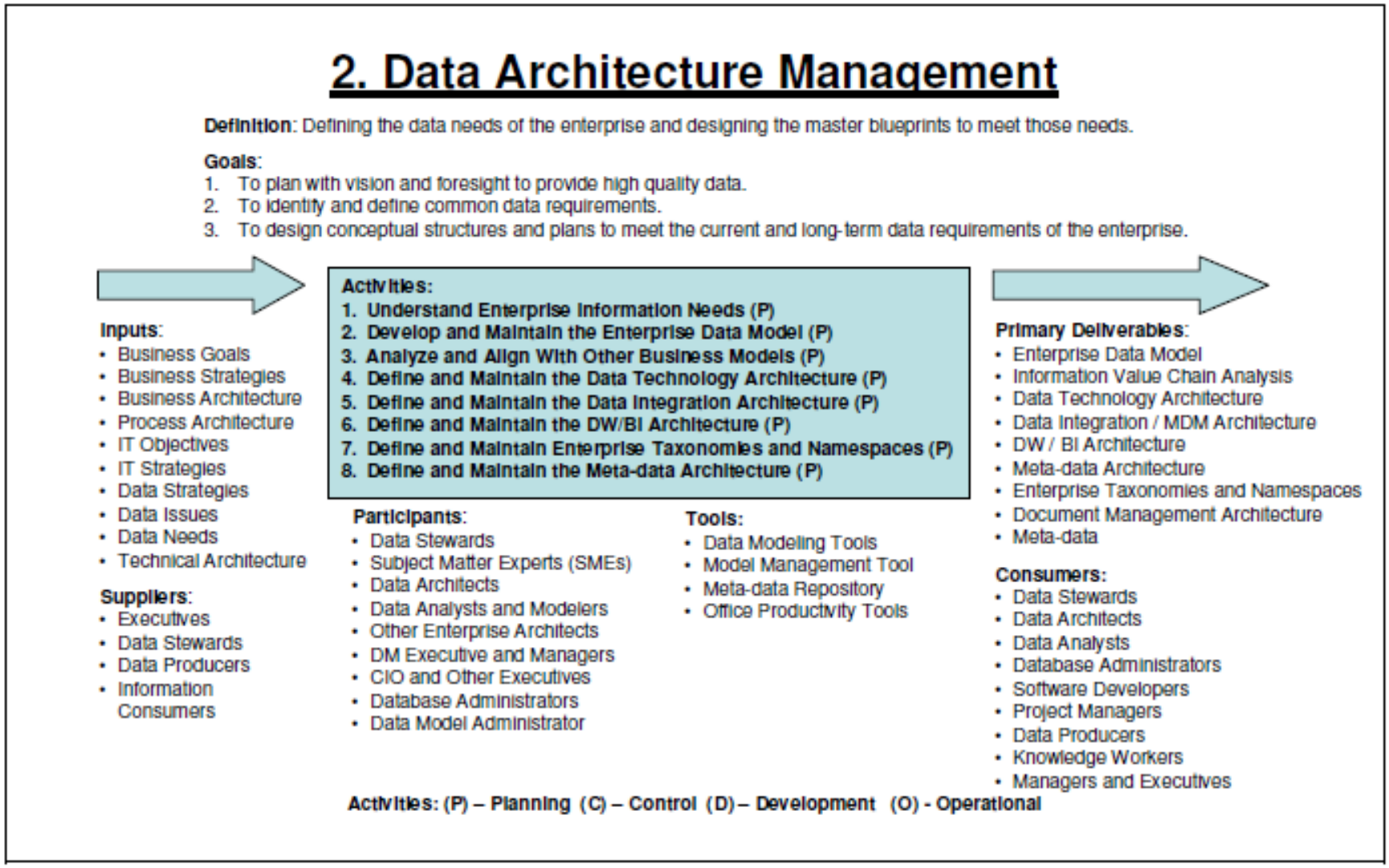
Component Integration



Data Governance



Data Architecture Management



Data Development

3. Data Development

Definition: Designing, implementing, and maintaining solutions to meet the data needs of the enterprise.

Goals:

1. Identify and define data requirements.
2. Design data structures and other solutions to these requirements.
3. Implement and maintain solution components that meet these requirements.
4. Ensure solution conformance to data architecture and standards as appropriate.
5. Ensure the integrity, security, usability, and maintainability of structured data assets.

Inputs:

- Business Goals and Strategies
- Data Needs and Strategies
- Data Standards
- Data Architecture
- Process Architecture
- Application Architecture
- Technical Architecture

Suppliers:

- Data Stewards
- Subject Matter Experts
- IT Steering Committee
- Data Governance Council
- Data Architects and Analysts
- Software Developers
- Data Producers
- Information Consumers

Participants:

- Data Stewards and SMEs
- Data Architects and Analysts
- Database Administrators
- Data Model Administrators
- Software Developers
- Project Managers
- DM Executives and Other IT Management

Activities:

1. **Data Modeling, Analysis and Solution Design (D)**
   1. Analyze Information Requirements
   2. Develop and Maintain Conceptual Data Models
   3. Develop and Maintain Logical Data Models
   4. Develop and Maintain Physical Data Models
2. **Detailed Data Design (D)**
   1. Design Physical Databases
   2. Design Information Products
   3. Design Data Access Services
   4. Design Data Integration Services
3. **Data Model and Design Quality Management**
   1. Develop Data Modeling and Design Standards (P)
   2. Review Data Model and Database Design Quality (C)
   3. Manage Data Model Versioning and Integration (C)
4. **Data Implementation (D)**
   1. Implement Development / Test Database Changes
   2. Create and Maintain Test Data
   3. Migrate and Convert Data
   4. Build and Test Information Products
   5. Build and Test Data Access Services
   6. Validate Information Requirements
   7. Prepare for Data Deployment

Primary Deliverables:

- Data Requirements and Business Rules
- Conceptual Data Models
- Logical Data Models and Specifications
- Physical Data Models and Specifications
- Meta-data (Business and Technical)
- Data Modeling and DB Design Standards
- Data Model and DB Design Reviews
- Version Controlled Data Models
- Test Data
- Development and Test Databases
- Information Products
- Data Access Services
- Data Integration Services
- Migrated and Converted Data

Consumers:

- Data Producers
- Knowledge Workers
- Managers and Executives
- Customers
- Data Professionals
- Other IT Professionals

Tools:

- Data Modeling Tools
- Database Management Systems
- Software Development Tools
- Testing Tools
- Data Profiling Tools
- Model Management Tools
- Configuration Management Tools
- Office Productivity Tools

Activities: (P) – Planning (C) – Control (D) – Development (O) - Operational

Data Operations Management

4. Data Operations Management

Definition: Planning, control, and support for structured data assets across the data lifecycle, from creation and acquisition through archival and purge. .

Goals:
1. Protect and ensure the integrity of structured data assets.
2. Manage availability of data throughout its lifecycle.
3. Optimize performance of database transactions.

Inputs:
- Data Requirements
- Data Architecture
- Data Models
- Legacy Data
- Service Level Agreements

Suppliers:
- Executives
- IT Steering Committee
- Data Governance Council
- Data Stewards
- Data Architects and Modelers
- Software Developers

Participants:
- Database Administrators
- Software Developers
- Project Managers
- Data Stewards
- Data Architects and Analysts
- DM Executives and Other IT Management
- IT Operators

Activities:
1. **Database Support**
   1. Implement and Control Database Environments (C)
   2. Obtain Externally Sourced Data (O)
   3. Plan for Data Recovery (P)
   4. Backup and Recover Data (O)
   5. Set Database Performance Service Levels (P)
   6. Monitor and Tune Database Performance (C)
   7. Plan for Data Retention (P)
   8. Archive, Retain, and Purge Data (O)
   9. Support Specialized Databases (O)
2. **Data Technology Management**
   1. Understand Data Technology Requirements (P)
   2. Define the Data Technology Architecture (P)
   3. Evaluate Data Technology (P)
   4. Install and Administer Data Technology (C)
   5. Inventory and Track Data Technology Licenses (C)
   6. Support Data Technology Usage and Issues (O)

Tools:
- Database Management Systems
- Data Development Tools
- Database Administration Tools
- Office Productivity Tools

Primary Deliverables:
- DBMS Technical Environments
- Dev/Test, QA, DR, and Production Databases
- Externally Sourced Data
- Database Performance
- Data Recovery Plans
- Business Continuity
- Data Retention Plan
- Archived and Purged Data

Consumers:
- Data Creators
- Information Consumers
- Enterprise Customers
- Data Professionals
- Other IT Professionals

Metrics
- Availability
- Performance

Activities: (P) – Planning (C) – Control (D) – Development (O) - Operational

Data Security Management

5. Data Security Management

Definition: Planning, development, and execution of security policies and procedures to provide proper authentication, authorization, access, and auditing of data and information.

Goals:

1. Enable appropriate, and prevent inappropriate, access and change to data assets.
2. Meet regulatory requirements for privacy and confidentiality.
3. Ensure the privacy and confidentiality needs of all stakeholders are met.

Inputs:

- Business Goals
- Business Strategy
- Business Rules
- Business Process
- Data Strategy
- Data Privacy Issues
- Related IT Policies and Standards

Activities:

1. **Understand Data Security Needs and Regulatory Requirements (P)**
2. **Define Data Security Policy (P)**
3. **Define Data Security Standards (P)**
4. **Define Data Security Controls and Procedures (D)**
5. **Manage Users, Passwords, and Group Membership (C)**
6. **Manage Data Access Views and Permissions (C)**
7. **Monitor User Authentication and Access Behavior (C)**
8. **Classify Information Confidentiality (C)**
9. **Audit Data Security (C)**

Primary Deliverables:

- Data Security Policies
- Data Privacy and Confidentiality Standards
- User Profiles, Passwords and Memberships
- Data Security Permissions
- Data Security Controls
- Data Access Views
- Document Classifications
- Authentication and Access History
- Data Security Audits

Suppliers:

- Data Stewards
- IT Steering Committee
- Data Stewardship Council
- Government
- Customers

Participants:

- Data Stewards
- Data Security Administrators
- Database Administrators
- BI Analysts
- Data Architects
- DM Leader
- CIO/CTO
- Help Desk Analysts

Tools:

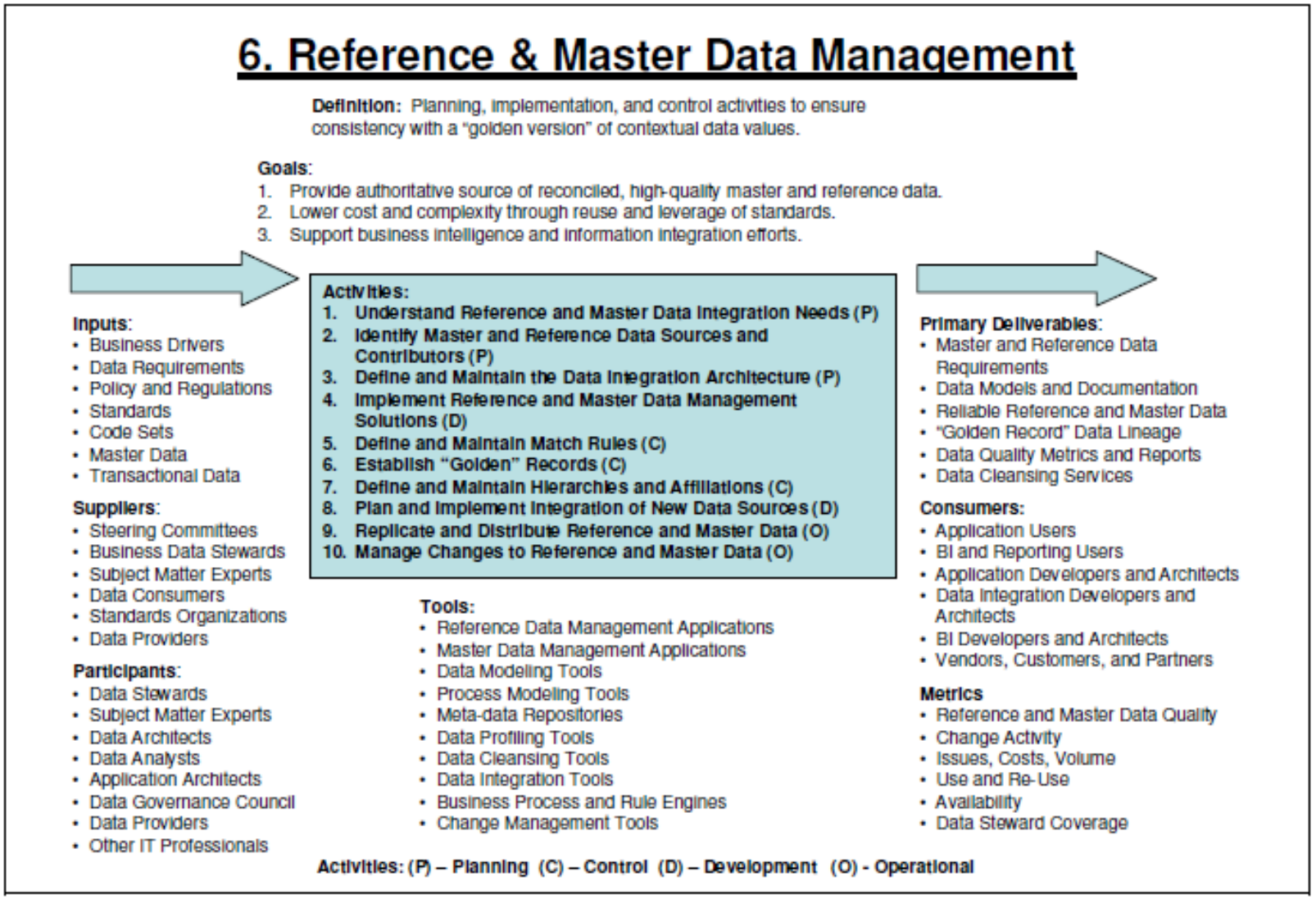
- Database Management System
- Business Intelligence Tools
- Application Frameworks
- Identity Management Technologies
- Change Control Systems

Consumers:

- Data Producers
- Knowledge Workers
- Managers
- Executives
- Customers
- Data Professionals

Activities: (P) – Planning (C) – Control (D) – Development (O) - Operational

Reference and Master Data Management



Data Warehousing and Business Intelligence

7. Data Warehousing & Business Intelligence Management

Definition: Planning, implementation, and control processes to provide decision support data and support knowledge workers engaged in reporting, query and analysis.

Goals:
1. To support and enable effective business analysis and decision making by knowledge workers.
2. To build and maintain the environment / infrastructure to support business intelligence activity, specifically leveraging all the other data management functions to cost effectively deliver consistent integrated data for all BI activity.

Inputs:
- Business Drivers
- BI Data and Access Requirements
- Data Quality Requirements
- Data Security Requirements
- Data Architecture
- Technical Architecture
- Data Modeling Standards and Guidelines
- Transactional Data
- Master and Reference Data
- Industry and External Data

Suppliers:
- Executives and Managers
- Subject Matter Experts
- Data Governance Council
- Information Consumers (Internal and External)
- Data Producers
- Data Architects and Analysts

Activities:
1. **Understand Business Intelligence Information Needs (P)**
2. **Define and Maintain the DW / BI Architecture (P)**
3. **Implement Data Warehouses and Data Marts (D)**
4. **Implement BI Tools and User Interfaces (D)**
5. **Process Data for Business Intelligence (O)**
6. **Monitor and Tune Data Warehousing Processes (C)**
7. **Monitor and Tune BI Activity and Performance (C)**

Participants:
- Business Executives and Managers
- DM Execs and Other IT Mgmt
- BI Program Manager
- SMEs and Other Info Consumers
- Data Stewards
- Project Managers
- Data Architects and Analysts
- Data Integration (ETL) Specialists
- BI Specialists
- Database Administrators
- Data Security Administrators
- Data Quality Analysts

Tools:
- Database Management Systems
- Data Profiling Tools
- Data Integration Tools
- Data Cleansing Tools
- Business Intelligence Tools
- Analytic Applications
- Data Modeling Tools
- Performance Management Tools
- Meta-data Repository
- Data Quality Tools
- Data Security Tools

Primary Deliverables:
- DW/BI Architecture
- Data Warehouses
- Data Marts and OLAP Cubes
- Dashboards and Scorecards
- Analytic Applications
- File Extracts (for Data Mining/Stat. Tools)
- BI Tools and User Environments
- Data Quality Feedback Mechanism/Loop

Consumers:
- Knowledge Workers
- Managers and Executives
- External Customers and Systems
- Internal Customers and Systems
- Data Professionals
- Other IT Professionals

Metrics:
- Usage Metrics
- Customer/User Satisfaction
- Subject Area Coverage %s
- Response/Performance Metrics

Activities: (P) – Planning (C) – Control (D) – Development (O) - Operational

Document and Content Management

8. Document & Content Management

Definition: Planning, implementation, and control activities to store, protect, and access data found within electronic files and physical records (including text, graphics, images, audio, and video).

Goals:

1. To safeguard and ensure the availability of data assets stored in less structured formats.
2. To enable effective and efficient retrieval and use of data and information in unstructured formats.
3. To comply with legal obligations and customer expectations.
4. To ensure business continuity through retention, recovery, and conversion.
5. To control document storage operating costs.

Inputs:

- Text Documents
- Reports
- Spreadsheets
- Email
- Instant Messages
- Faxes
- Voicemail
- Images
- Video recordings
- Audio recordings
- Printed paper files
- Microfiche
- Graphics

Suppliers:

- Employees
- External parties

Activities:

1. **Document / Records Management**
   1. Plan for Managing Documents / Records (P)
   2. Implement Document / Records Management Systems for Acquisition, Storage, Access, and Security Controls (O, C)
   3. Backup and Recover Documents / Records (O)
   4. Retain and Dispose of Documents / Records (O)
   5. Audit Document / Records Management (C)
2. **Content Management**
   1. Define and Maintain Enterprise Taxonomies (P)
   2. Document / Index Information Content Meta-data (O)
   3. Provide Content Access and Retrieval (O)
   4. Govern for Quality Content (C)

Primary Deliverables:

- Managed records in many media formats
- E-discovery records
- Outgoing letters and emails
- Contracts and financial documents
- Policies and procedures
- Audit trails and logs
- Meeting minutes
- Formal reports
- Significant memoranda

Participants:

- All Employees
- Data Stewards
- DM Professionals
- Records Management Staff
- Other IT Professionals
- Data Management Executive
- Other IT Managers
- Chief Information Officer
- Chief Knowledge Officer

Tools:

- Stored Documents
- Office Productivity Tools
- Image and Workflow Management Tools
- Records Management Tools
- XML Development Tools
- Collaboration Tools
- Internet
- Email Systems

Consumers:

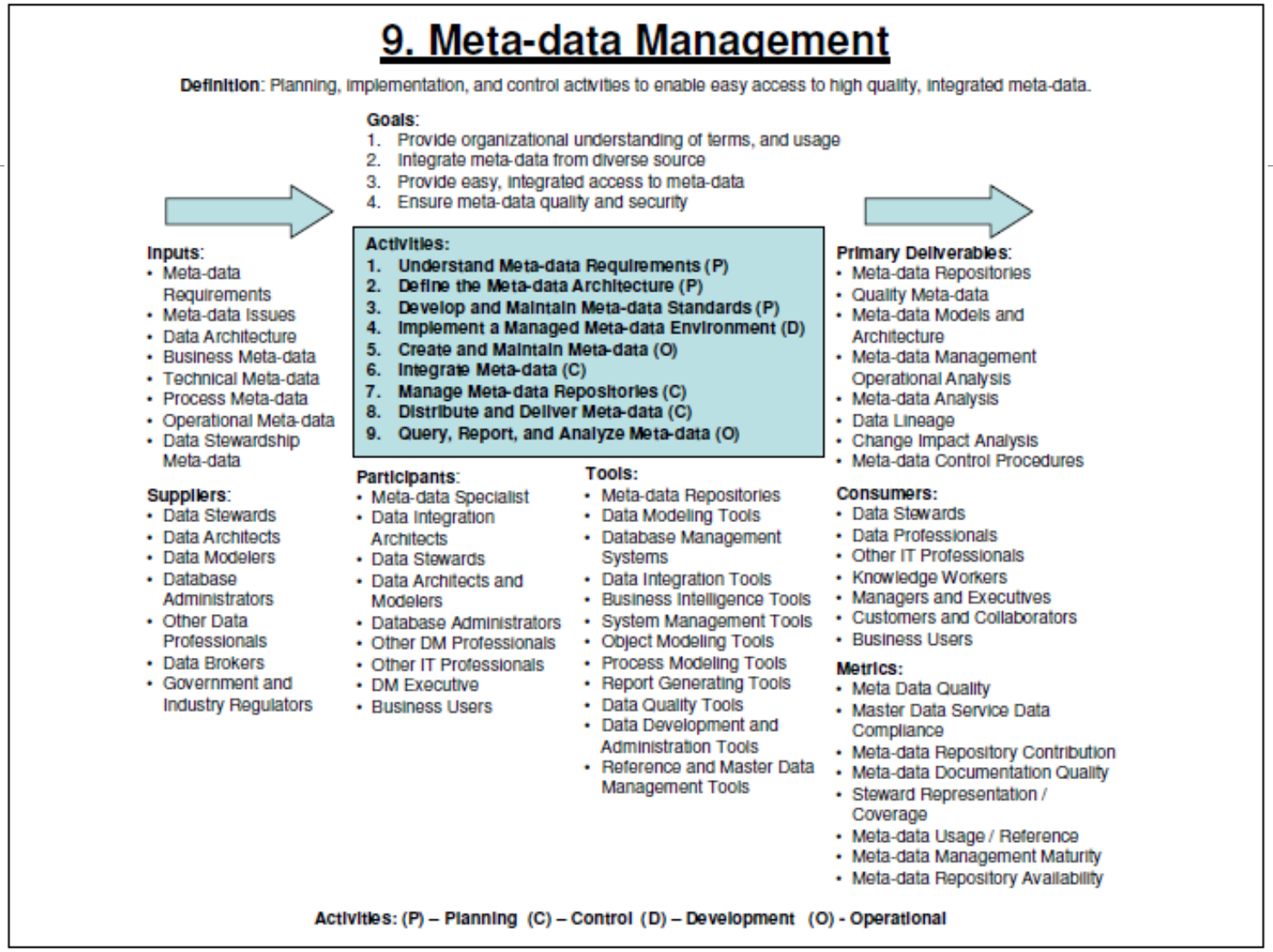
- Business and IT users
- Government regulatory agencies
- Senior management
- External customers

Metrics:

- Return on Investment
- Key Performance Indicators
- Balanced Scorecards

Activities: (P) – Planning (C) – Control (D) – Development (O) - Operational

Meta-Data Management



Data Quality Management

10. Data Quality Management

Definition: Planning, implementation, and control activities that apply quality management techniques to measure, assess, improve, and ensure the fitness of data for use.

Goals:

- To measurably improve the quality of data in relation to defined business expectations.
- To define requirements and specifications for integrating data quality control into the system development lifecycle.
- To provide defined processes for measuring, monitoring, and reporting conformance to acceptable levels of data quality.

Inputs:

- Business Requirements
- Data Requirements
- Data Quality Expectations
- Data Policies and Standards
- Business Meta-data
- Technical Meta-data
- Data Sources and Data Stores

Suppliers:

- External Sources
- Regulatory Bodies
- Business Subject Matter Experts
- Information Consumers
- Data Producers
- Data Architects
- Data Modelers
- Data Stewards

Activities:

1. **Develop and Promote Data Quality Awareness (O)**
2. **Define Data Quality Requirements (D)**
3. **Profile, Analyze, and Assess Data Quality (D)**
4. **Define Data Quality Metrics (P)**
5. **Define Data Quality Business Rules (P)**
6. **Test and Validate Data Quality Requirements (D)**
7. **Set and Evaluate Data Quality Service Levels (P)**
8. **Continuously Measure and Monitor Data Quality (C)**
9. **Manage Data Quality Issues (C)**
10. **Clean and Correct Data Quality Defects (O)**
11. **Design and Implement Operational DQM Procedures (D)**
12. **Monitor Operational DQM Procedures and Performance (C)**

Participants:

- Data Quality Analysts
- Data Analysts
- Database Administrators
- Data Stewards
- Other Data Professionals
- DRM Director
- Data Stewardship Council

Tools:

- Data Profiling Tools
- Statistical Analysis Tools
- Data Cleansing Tools
- Data Integration Tools
- Issue and Event Management Tools

Primary Deliverables:

- Improved Quality Data
- Data Management Operational Analysis
- Data Profiles
- Data Quality Certification Reports
- Data Quality Service Level Agreements

Consumers:

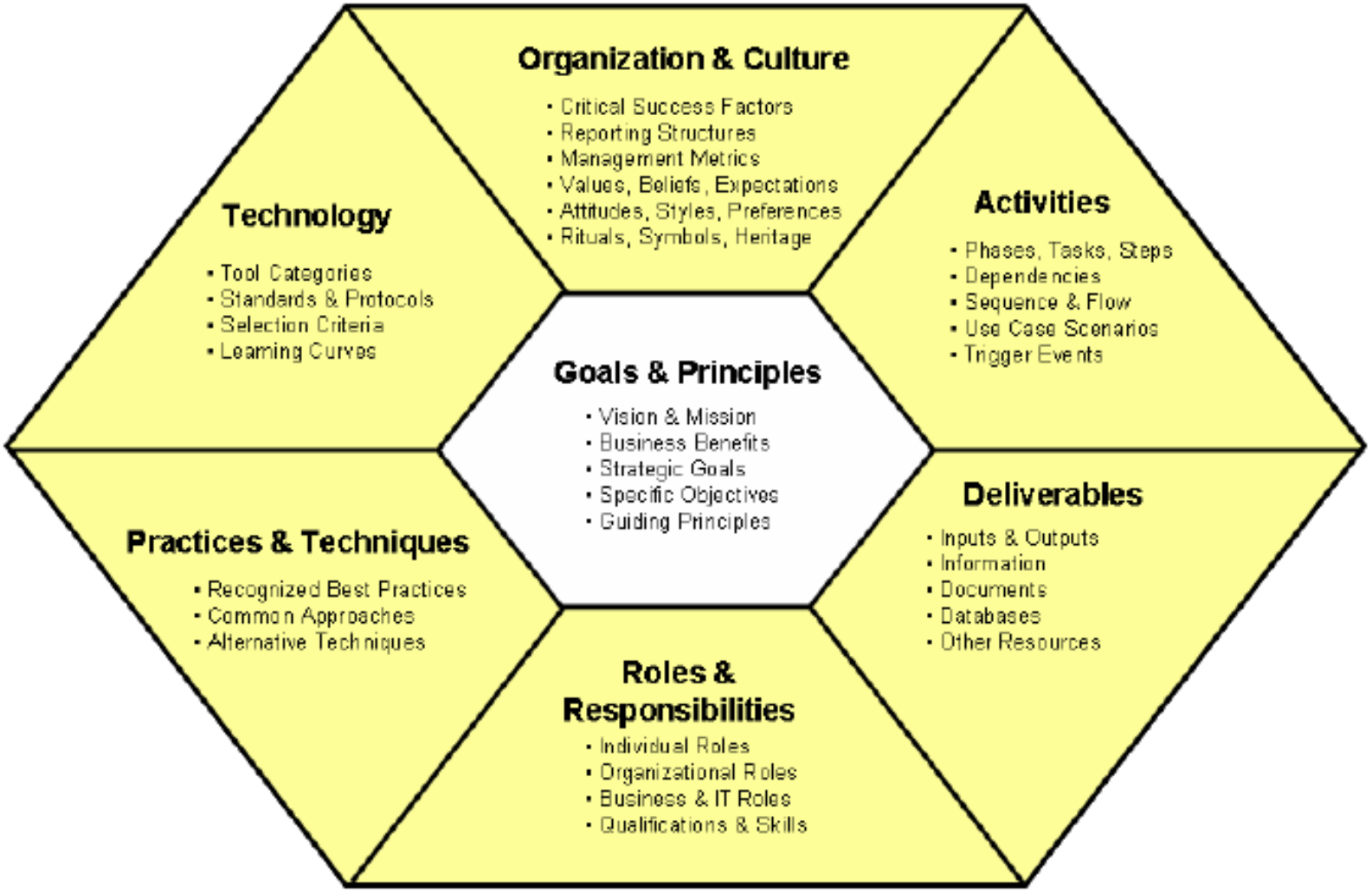
- Data Stewards
- Data Professionals
- Other IT Professionals
- Knowledge Workers
- Managers and Executives
- Customers

Metrics:

- Data Value Statistics
- Errors / Requirement Violations
- Conformance to Expectations
- Conformance to Service Levels

Activities: (P) – Planning (C) – Control (D) – Development (O) - Operational

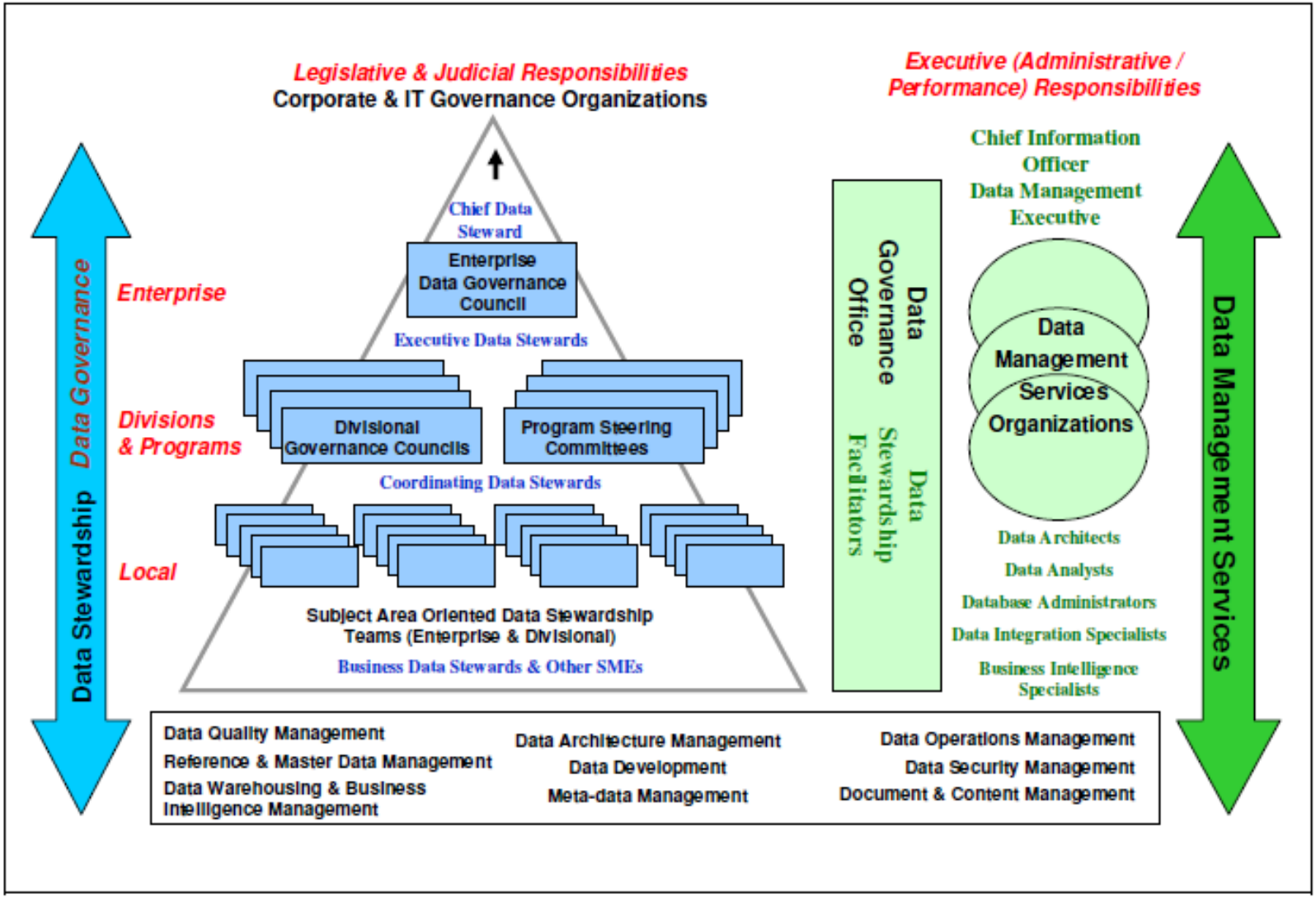
Introduction to the Change Process



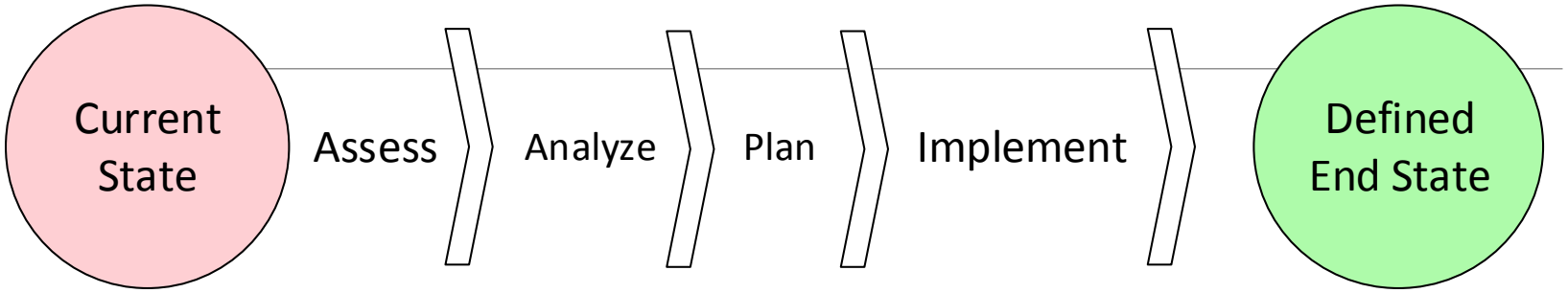
Model Integration

Data Management Functions	Goals and Principles	Activities	Primary Deliverables	Roles and Responsibilities	Technology	Practices and Techniques	Organization and Culture
Data Governance							
Data Architecture Management							
Data Development							
Data Operations Management							
Data Security Management							
Reference and Master Data Management							
Data Warehousing and Business Intelligence Management							
Document and Content Management							
Meta-data Management							
Data Quality Management							

Stakeholder Integration



Change Management Model



1. Determine the Desired End State
2. Assess the Current State
3. Analyze the Information to Find the Gaps
4. Create an Action Plan
5. Implement the Action Plan
6. Test and Verify for the Desired Result

Change Management Model

Step 1: Lead Your Culture, Select Your Team, and Learn

Step 2: Document Your Process, Findings, and Actions

Step 3: Perform Data Management Risk Analysis

Step 4: Develop an Action Plan

Step 5: Manage and Mitigate Risks

Step 6: Achieve Compliance with Industry Standards

Step 7: Monitor, Audit, and Update Data Management on an Ongoing Basis

Step 1 - Lead Your Culture

1) Designate a Data Management Team
2) Discuss you Data Management requirements with your staff
3) Consider using a qualified Data Governance expert
4) Use the available tools to conduct your Data Governance risk analysis
5) Refresh your knowledge base
6) Promote a culture of sound data management practices

Step 2 - Document Your Processes, Findings and Actions

1. Documents your processes
2. Identify needed Data Governance policies and procedures
3. Create an Employee training program
4. Create internal operating agreements
5. Exam your Data Governance risks
6. Develop your Data Governance risk management action plans
7. Report your findings

Step 3 – Review Existing Privacy and Security Risks

1. Conduct a privacy risk assessment
2. Conduct a security risk assessment
3. Identify potential threats
4. Engage all employees in the analysis

Step 4 – Develop an Action Plan

1. Complete the Data Governance gap analysis
2. Identify the necessary industry/organizational standards to be implemented
3. Identify the necessary policies and procedures to be implemented
4. Identify the necessary administrative safeguards to be implemented
5. Identify the necessary physical safeguards to be implemented
6. Identify the necessary technical safeguards to be implemented

Step 5 – Manage and Mitigate Risks

1. Implement your action plan
2. Ensure compliance by educating and training your workforce
3. Communicate with all stakeholders
4. Update your Business Associate Agreements

Step 6 – Achieve Compliance with Industry Standards

1. Establish Data Governance polices and procedures to industry standards
2. Build the new organizational culture supportive of the new Data Governance standards
3. Attain general compliance both technological and operationally

Step 7 – Monitor, Audit, and Update

1. Establish strict audit controls
2. Decide when and how often to conduct in-house audits
3. Determine what to audit
4. Identify trigger indicators
5. Establish a regular audit schedule
6. Create a process to correct any audit deficiencies
7. Report the results to the CEO on a regular basis

Data Governance Gap Analysis Tool

Developed by Hielix for This Project

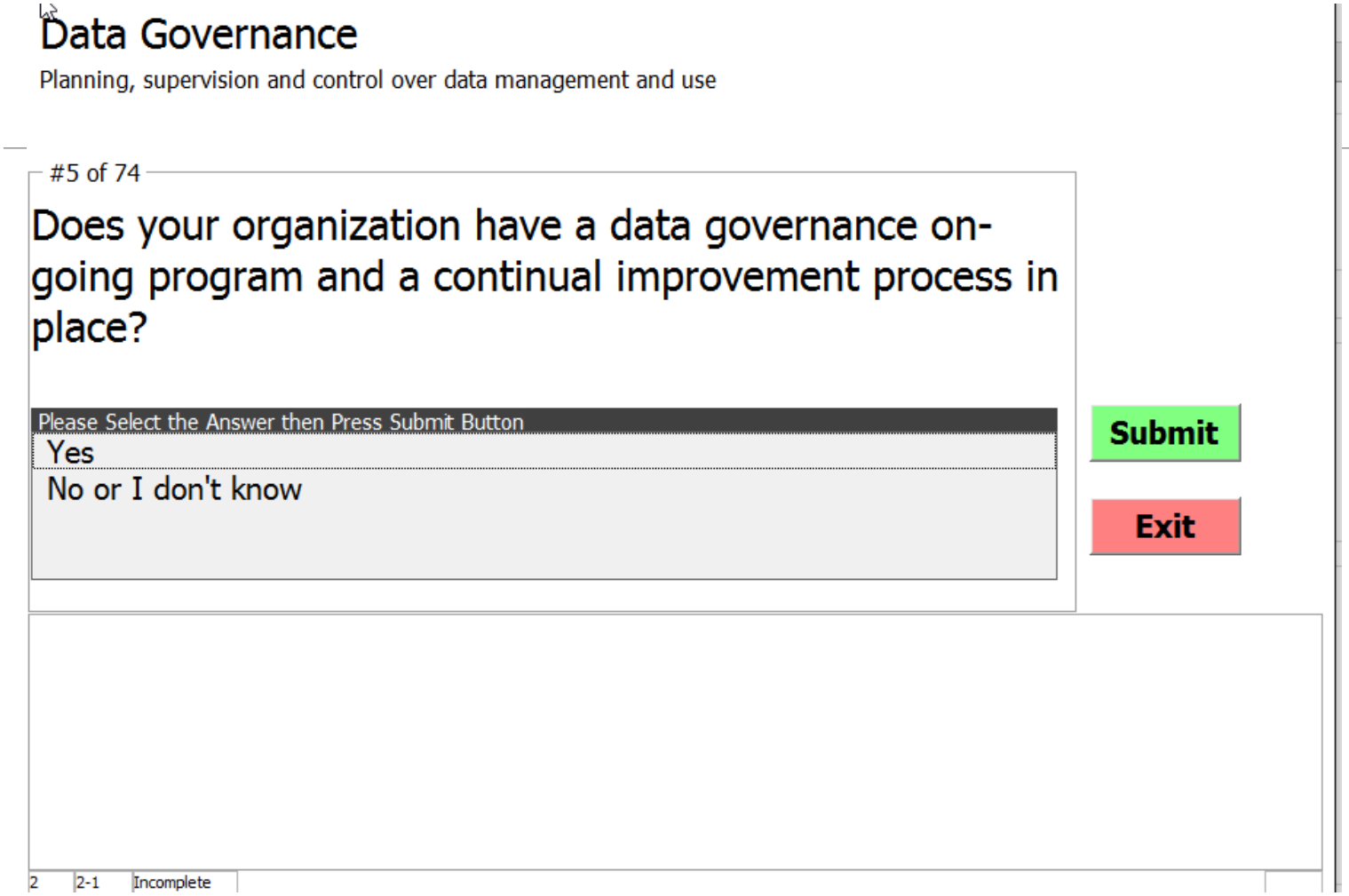
Focus is Solely on Data Governance

Created Using the Data Governance Body of Knowledge

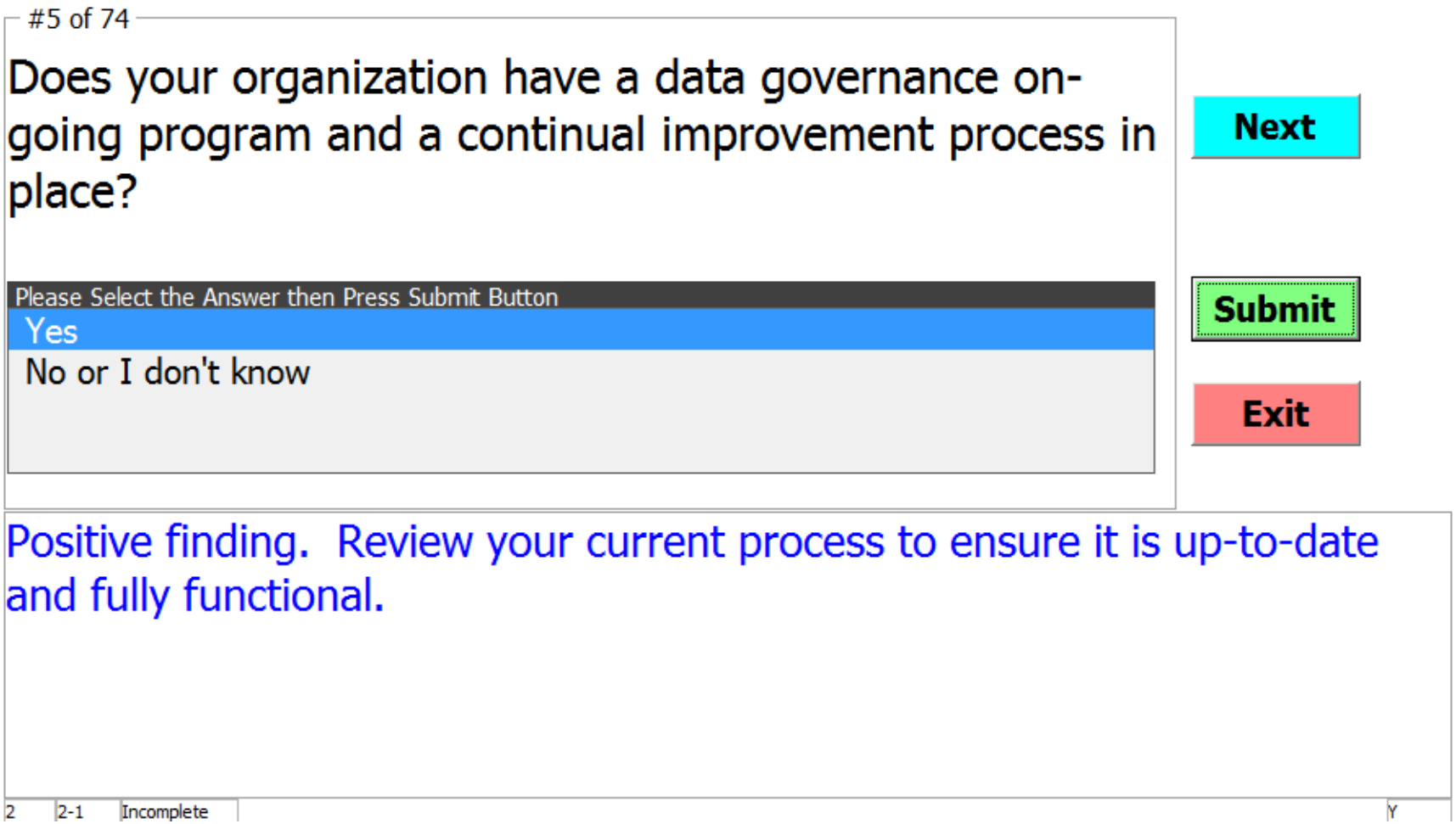
Covers All of the Major Data Governance Areas

Will be Available in the Future at the RHI and Center Website

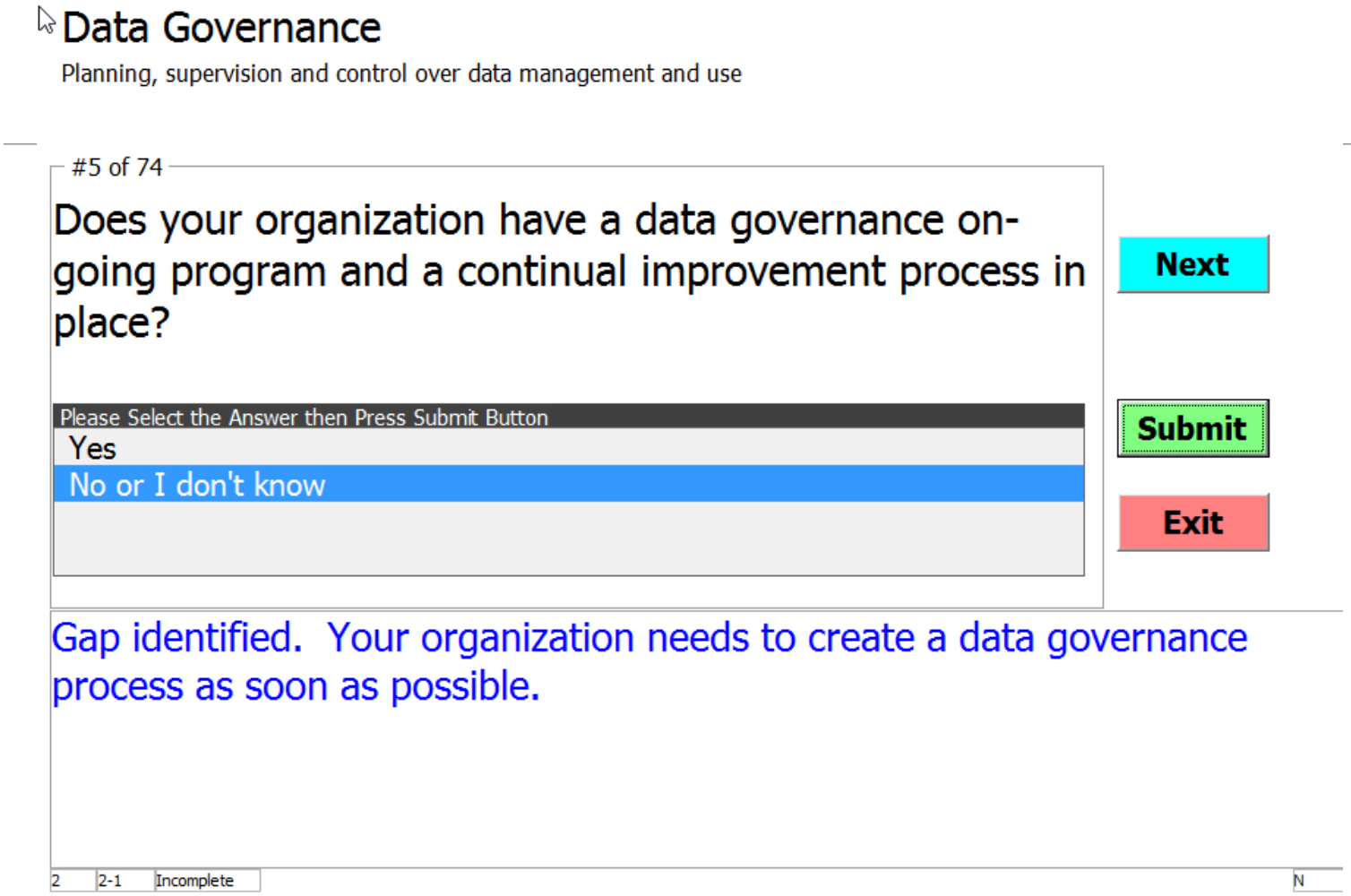
Screen Shot 1 – Typical Question



Screen Shot 2 – Affirmative Response



Screen Shot 3 – Negative Response



Screen Shot 4 – Report Format

Assessment Summary Report

Updated	6/14/2016	New

Section	Question#	Question	Answer	Feedback	Positive Finding?

Tools Reference

DMBOK Guide

- https://www.dama.org/content/body-knowledge

Gap Analysis Tool (Available Fall of 2016)

- www.ruralcenter.org

CMS Change Management Tool

- www.healthit.gov/providers-professionals/ehr-privacy-security

Information Technology Infrastructure Library (ITIL)

- https://en.wikipedia.org/wiki/ITIL

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