CMS and State Medicaid Programs Modernization

Medicaid Information Technology Architecture (MITA)

William Branch and Kathleen Connor

October 26, 2005

Medicaid Today

► Provides health care services to more than 53 million low-income and disabled citizens across the country

► This jointly funded state/federal program typically consumes the largest share of every state's budget

► Unlike Medicare, a federal program with a national set of eligibility standards and uniform benefit package, Medicaid varies widely from state to state

► Must respond to evolving and challenging requirements at both the state and federal levels

Growth in Program Complexity

Medicaid program is continually evolving to meet new requirements

- ▶ Changing State and Federal requirements
- ▶ Changing populations eligible for the program
  - ▪ e.g., HIV/AIDs, Care in the Community, Hurricane evacuees
- ▶ Waivers – State specific programs for special populations
  - ▪ Behavioral Health, Long-Term Care, Developmental Disabilities, Maternal and Child Support, Disease Case Management
- ▶ HIPAA, BBA, MMA
  - ▪ EDI Transaction and Code Sets, Privacy, Security, NPI, etc.
- ▶ Focus on Quality and Pay for Performance
- ▶ Medicare/Medicaid Dual Eligibles
- ▶ Medicare Part D

Growth in Medicaid Beneficiaries
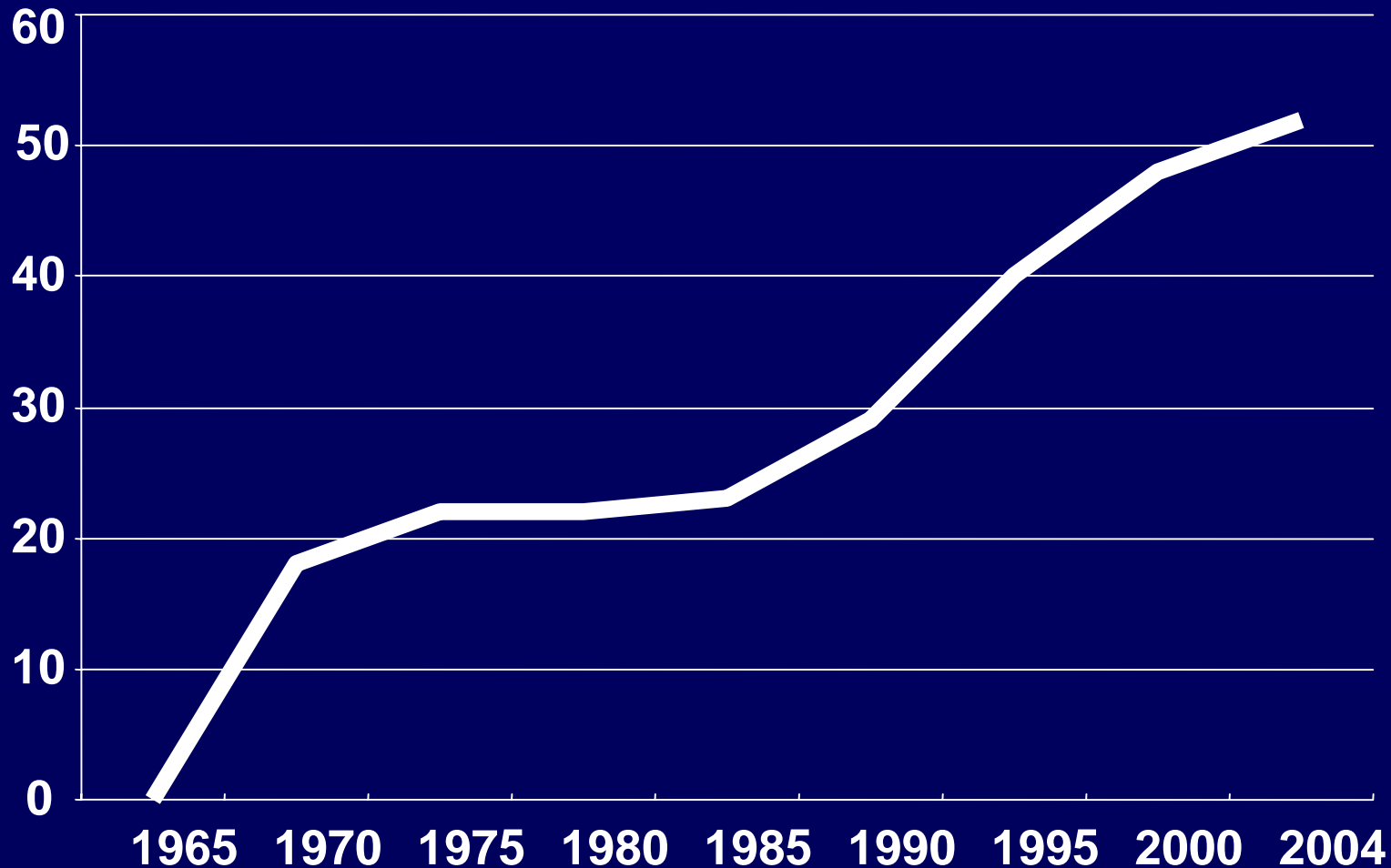
MEDICAID: People and Money

	People	Money
U.S. Totals	294 million	$1.54 trillion
Medicaid	52 million (1 out of every 6 Americans)	$305 billion (1 out of every 5 health care dollars)
Medicare	42 million	$ 297 billion
Medicaid and Medicare	87 million*	$602 billion

About 7 million duals have been subtracted from the total to avoid double-counting

Source: Kaiser Commission, 2005

MMIS

► To support programs that meet the needs of their highly diverse populations, 50 states have built customized Medicaid Management Information Systems (MMIS)

► Built primarily for claims processing and information retrieval, these legacy systems are difficult and cost-prohibitive to adapt to changing program and business requirements

► A new MMIS today typically cost over $50 million

► Procurement and implementation may take a decade to complete and the technology may be outdated before it "goes live"

MMIS

► MMIS do not easily share information across system platforms, much less, interdepartmental or state boundaries

► Hardwired workarounds needed to support managed care, disease management and decision support => spaghetti coding

► Siloed systems and lack of data standards make it difficult to develop comprehensive views of Medicaid client needs and services

► Impedes states' ability to administer holistic, client-centric Medicaid programs

Question: What Does This Have to Do with MITA?

Answer: Everything

What is MITA ?

The Medicaid Information Technology Architecture (MITA) is an initiative of the Centers for Medicare and Medicaid Services (CMS), aligned with the National Health Infrastructure Initiative (NHII), and intended to foster integrated business and information technology transformation across the Medicaid enterprise to improve the administration of the Medicaid program.

Why MITA?

- **Increasing Costs**
- **Increasing Needs**
- **Obsolete Systems**
- **Emphasis on Business Benefit**

- **Rate of Change Increasing**
- **New Public Health Focus**

- **National Initiatives (NHII, FHA, CHI)**
- **Focus on Beneficiaries**
- **Focus on Data Exchange**

- **Ongoing Standardization Supports Data Exchange**

MITA Goals
Standards First
Commonality and Differences
Co-Exist
Business Driven Design
Built-in Security and Privacy
Collaborative Approach

MITA Objectives

- ► Adopt data and industry standards
- ► Promote secure data exchange
- ► Promote reusable component through standard interfaces and modularity
- ► Promote efficient and effective data sharing to meet stakeholder needs
- ► Provide a beneficiary-centric focus
- ► Support interoperability and integration using open architecture and data standards
- ► Support integration of clinical and administrative data to enable better decision making
- ► Break down artificial boundaries between systems, geography, and funding (within the Medicaid program)

MITA Vision of Evolving Medicaid Systems

What Will the World of Medicaid Look Like Ten Years from Now?

We See a World in Which

- ► Collaboration to improve health
- ► Patient empowerment
- ► Virtual care delivery
- ► Funding follows the person
- ► From transactions to actions
  - Machines talk to machines
  - People focus on services
  - Health Outcomes

Access to Data

Automation

Shared Services
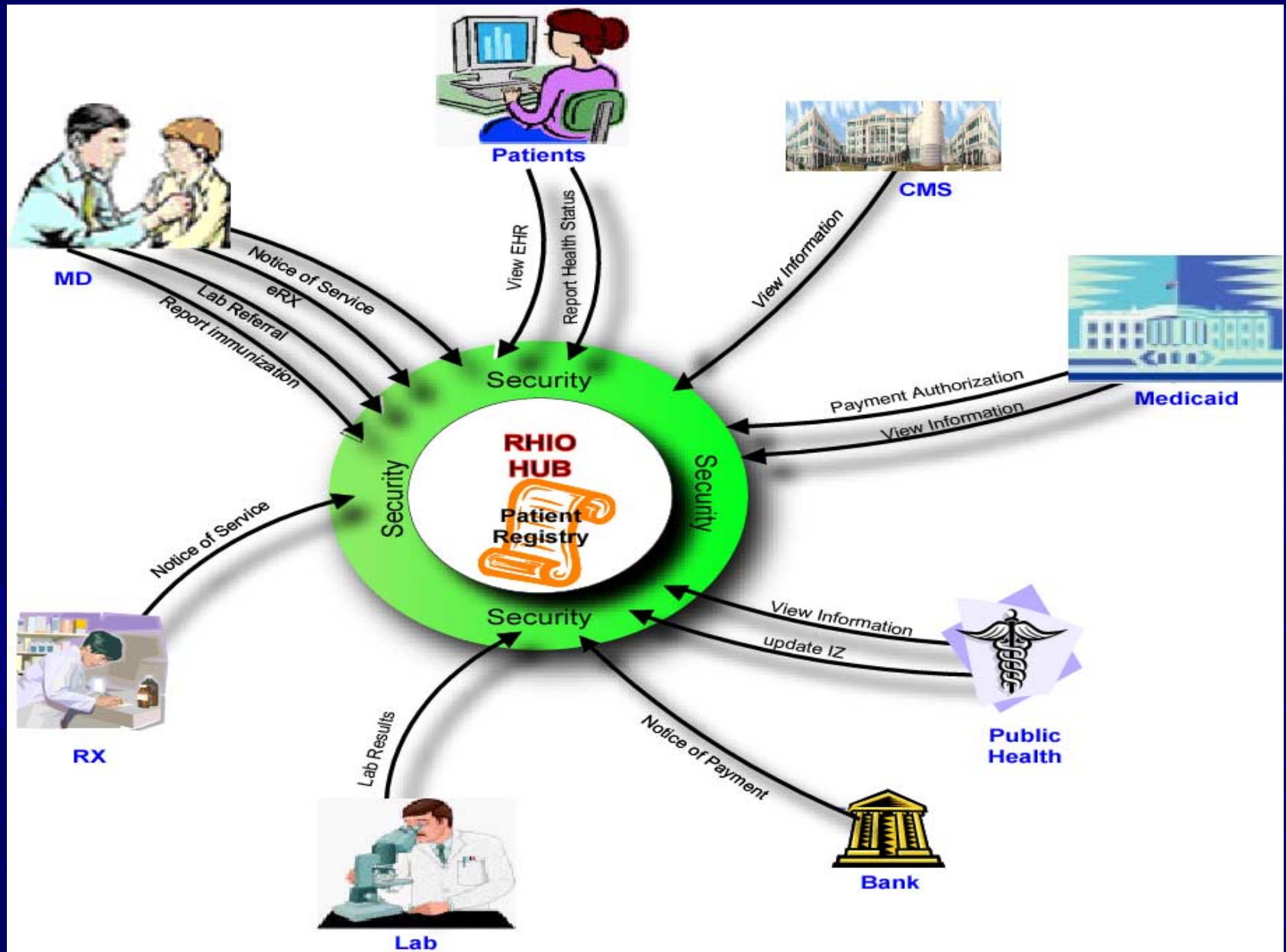
What will Change?

► Long-term vision
- "As-is" and 'To-be" examples
- Enabling technology examples

► Interim Vision
- "As-is" and 'To-be" examples
- Enabling technology examples

"As Is"

- ► Beneficiary health care enrollment complexities – No Right Door
- ► Administrative burden
  - Manual operations and rules => inconsistent results
  - Paper forms => expensive to process
  - Processing delays, errors => access to care not timely
- ► Retroactive fraud detection
- ► Decision-making hampered by lack of clinical data and outcome measures
- ► Ability to safeguard the health of beneficiaries constrained
  - Lack of comparable data for Disease management
  - Limited ability to collaborate with Public Health

Improvement Initiatives

► Current Enhancements
  - EDI, Web-portals, Decision Support, Data Sharing
  - Consumer Driven Health Care – *No Wrong Door*

► Developing "To Be"
  - Greater access to data through standards
  - Improved Collaboration between Medicaid, Public Health, and Other Organizations
  - Outcome-based decision making through
    - ► Access to Clinical Data
    - ► Integration of Payer and Provider Systems via RHIOs
    - ► Performance Measurement
  - Reduction in Cost of System Replacement/Maintenance

How Is This Possible?
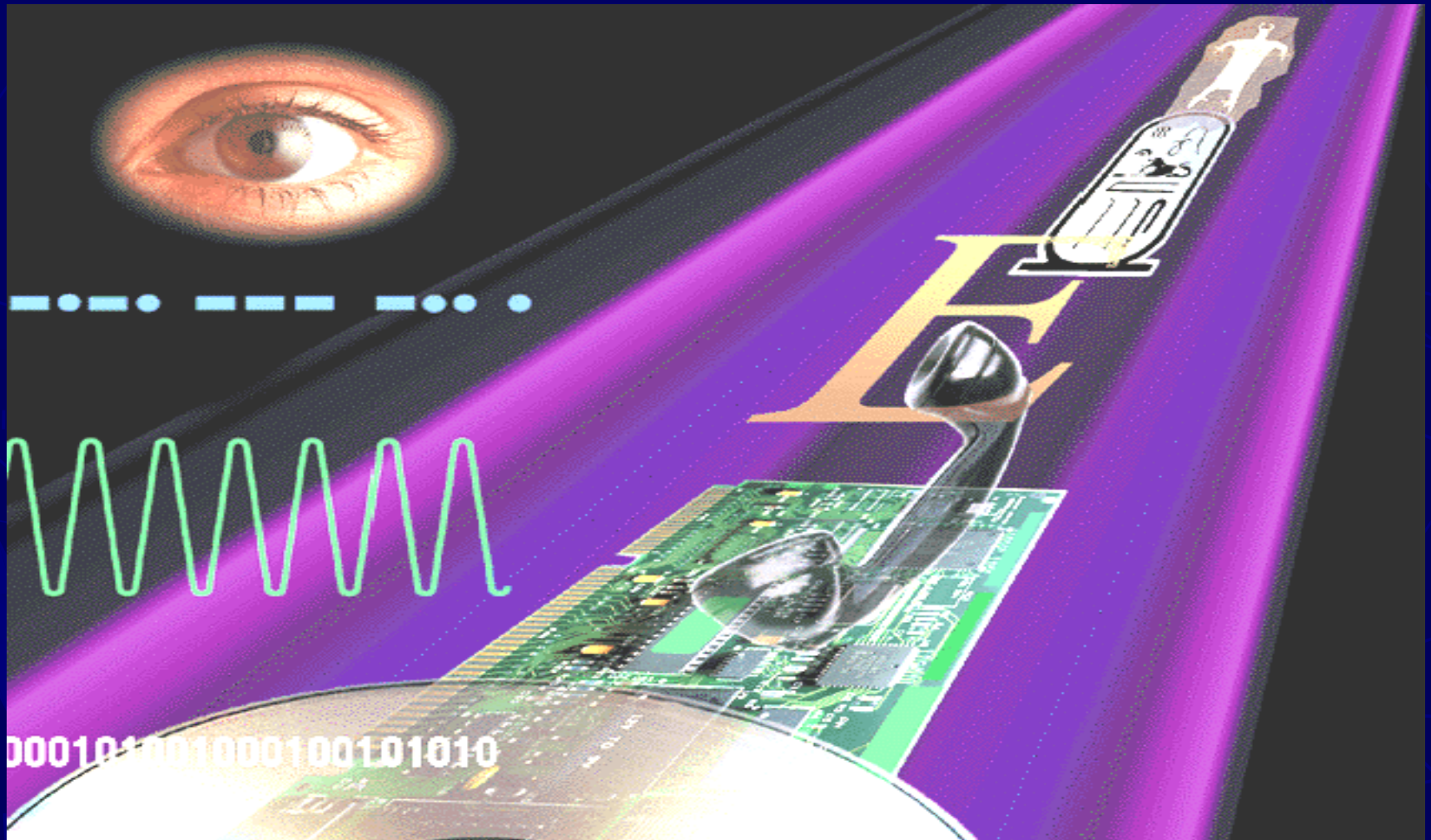
MITA Is A Paradigm Shift

► MMIS orientation was on subsystems

► MITA's orientation is on:

- Federal Health Architecture (FHA) principles

- NHII vision and ONCHIT initiatives

- Business Processes and Business Services

- Enabling Healthcare Data Interoperability

- Evolving the Maturity of Medicaid Enterprise Capabilities

MITA Technical Enablers

► The Electronic Health Record (EHR)

► Federated Systems

► Service-Oriented Architecture

► Harmonization of Standards for Interoperability

► EHRs Functional Model, Certification, and Services Standards

► NHII Vision, FHA, ONCHIT initiatives, Federal & State Legislation, RHIOs

What Is the MITA Role in this Transformation?

► Provide the Framework and Architectural Principles

► Provide Guidance and Models

► Provide the Roadmap including Self-Assessment and Levels of Maturity

► Encourage Collaboration Among States, CMSO, RHIOs, Providers, Health Plans, Public Health, Consumers, and Vendors

MITA's Approach

- ► Business driven service oriented architecture solution

- ► Firmly grounded in enterprise architecture principles

- ► Defines a business transformation over a five year and long-term (10 years and greater) timeframe

- ► Includes a technical architecture and a transition strategy to enable the business transformation

- ► This approach, which is common today across industries as diverse as financial, transportation, and defense, will enable State Medicaid agencies to align IT solutions with their common and unique business needs

MITA's common business and technology vision

► Medicaid client-centric view not constrained by traditional organizational barriers

► Common standards to enable interoperability among organizations that provide services to Medicaid clients within and across States

  ▪ E.g., Medicare, public health, biosurveillance, immunization registries, and Quality Improvement Organizations

► MITA standard services interfaces

► Web-based access and integration

► Software reusability

► Use of Commercial- off-the- Shelf (COTS) software

► Integration of public health and clinical data

MITA's Components

► Business Architecture
- Operations Concept
- MITA Maturity Model
- Business Process Model
- Business Capability Matrix
- MITA Self-Assessment
- MITA Business Services

► Technical Architecture
- MITA Application Architecture
- MITA Data Architecture
- Technology Architecture
- Technical Capability Matrix
- MITA Standards

Six Steps Along MITA Path

1. Adopt a <u>business orientation</u> - identify program needs, objectives, goals – and then decide what technology is required

2. <u>Map</u> business processes to MITA business process model

3. Do a <u>self-assessment</u> against the MITA business capability matrix

4. Determine <u>maturity level</u> of each business process

5. Decide which business processes are <u>candidates for improvement</u> by implementing higher level capabilities

6. Begin to <u>collaborate</u> on the development of business services that can be shared

Why Business Processes

► Views the business cross-functionally

► Organizes the actions of the business as a set of activities in response to business events

► Cuts through the existing silos enabling opportunities for real process improvement

► Discover Shared Business Capabilities

► Capabilities point to the Services needed by the architecture
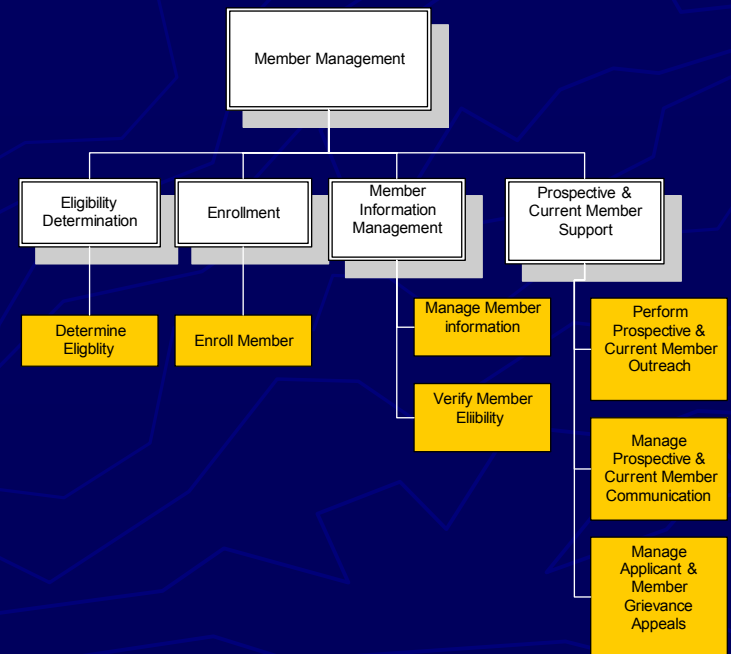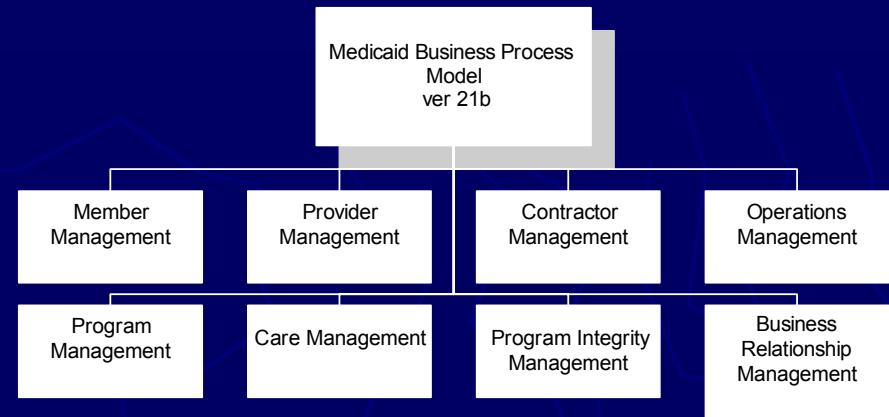
MITA Business Process

► Objective is to capture all Medicaid-related business processes in the MITA Model to determine:

- Trigger Events
- Interactions
- Application Roles
- Receiver Responsibilities
- Results
- Business rules and logic
- Shared data
- Constraints
- Failures

Edit Claim Business Process	
ITEM	**DETAILS**
DESCRIPTION	The *Edit Claim* business process receives an original or an adjustment claim data set from the *Receive Inbound Transaction* process and (ETC.)
TRIGGER EVENT	A claim/encounter data set (received from the *Receive Inbound Transaction* process. Includes both paper and EDI).
RESULTS	1. Validated claim data set (sent to the *Audit Claim* process) 2. Resolved suspended claim/encounter data set (ETC.)
BUSINESS PROCESS STEPS	1. Start: Receive claim/encounter data set from the *Inbound Transaction* process 2. Determines its status as initial, adjustment to a processed claim/encounter (based on the resubmit flag with a previously assigned ICN), or a duplicate submission that is already in the adjudication process but not yet completed and loaded into payment history (using a unique Patient Account Number) 3. Validate that claim/encounter submission meets filing deadlines based on service dates. 4. ETC.
PREDECESSOR	1. *Receive Inbound Paper/Phone/Fax* process 2. *Receive Inbound EDI process*
SUCCESSOR	1. *Audit Claim* process 2. *Etc.*
SHARED DATA	1. Provider Registry data: e.g., NPI, provider demographics, provider taxonomy 2. Member Registry data: e.g., member identifier, member demographic data, third party resources 3. ETC..
CONSTRAINTS	[Requirements, variations]
FAILURES	The *Edit Claim* process contains a series of potential points of failure. The claim could fail any edit. Business rules define when one or more edit failures will result in suspending or denying the claim. 1. Examples:

MITA Business Process Model

- ► Looks at processes instead of subsystems

- ► Processes are organized into logical groups

- ► Some groups decompose to lower tiers

- ► Each lowest tier contains one or more Business Processes

- ► Objective is to capture all Medicaid-related business processes in the MITA Model

- ► States may have different ways of grouping business processes, but should be able to map to the MITA Model
  - ■ 8 Business Areas
  - ■ ~100 business Processes

Medicaid Business Process Model ver 21b

- Member Management
- Provider Management
- Contractor Management
- Operations Management
- Program Management
- Care Management
- Program Integrity Management
- Business Relationship Management

Member Management

- Eligibility Determination
  - Determine Eligblity
- Enrollment
  - Enroll Member
- Member Information Management
  - Manage Member information
  - Verify Member Elibility
- Prospective & Current Member Support
  - Perform Prospective & Current Member Outreach
  - Manage Prospective & Current Member Communication
  - Manage Applicant & Member Grievance Appeals

Business Process Model Overview
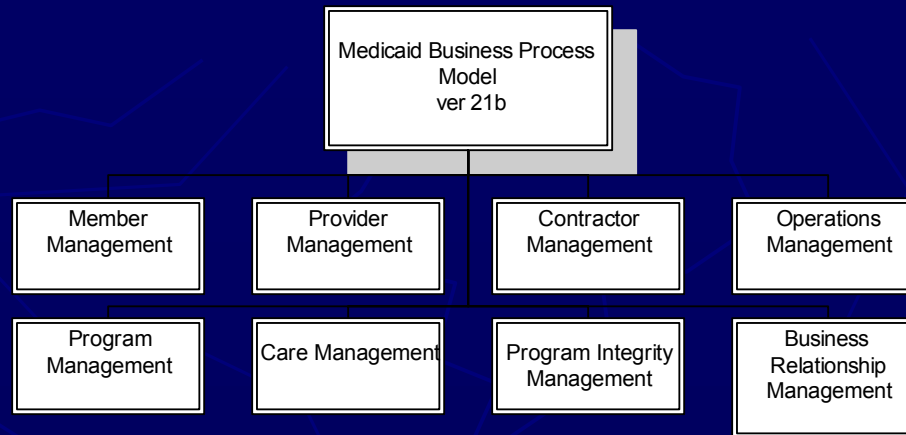
```
                    ┌─────────────────────────┐
                    │ Medicaid Business Process│
                    │          Model           │
                    │         ver 21b          │
                    └─────────────────────────┘
```

Member Management	Provider Management	Contractor Management	Operations Management
Program Management	Care Management	Program Integrity Management	Business Relationship Management

- **Definition**
- **Description of Business Logic**
- **Performance Measures**

Business Process

Trigger → **Business Logic** → **Result**

MITA Business Capabilities, Qualities, and Measurements

MITA Goals and Objectives drive the MMM. A Level is defined by general statements and qualities

MMM presents guidelines for developing Business Capabilities

Specific Business Capabilities are assigned to each BP

MITA Maturity Model

Level 1	Level 2	Level 3	Level 4	Level 5

General Business Capabilities Derived from MMM

Level 1	Level 2	Level 3	Level 4	Level 5
Timeliness Access Quality Efficiency	Timeliness Access Quality Efficiency	Timeliness Access Quality Efficiency	Timeliness Access Quality Efficiency	Timeliness Access Quality Efficiency

Business Process, e.g., Enroll Provider

Level 1	Level 2	Level 3	Level 4	Level 5

MITA MATURITY MODEL DESCRIPTION AND CHARACTERISTICS

General Description	Level 1	Level 2	Level 3	Level 4	Level 5
Brief description that captures essence of the Maturity Level; description is high level and covers all Business Areas	At Level 1, the agency focuses on meeting **compliance** thresholds dictated by state and federal regulations. It primarily targets accurate enrollment of program eligibles and timely and accurate payment of claims for appropriate services.	At Level 2, the agency focuses on cost management and improving quality of and access to care within structures designed to manage costs, e.g., managed care, catastrophic care management, disease management.	At Level 3, the agency focuses on coordination with other agencies and collaboration in adopting national standards and developing shared business services as a means to improving cost effectiveness of health care service delivery. The agency promotes usage of intra-state data exchange.	At Level 4, widespread and secure access to clinical data enables the Medicaid enterprise to improve healthcare outcomes, empower beneficiary and provider stakeholders, measure quantitative objectives, and focus on program improvement.	At Level 5, national (and international) interoperability allows the Medicaid enterprise to focus on fine tuning and optimizing program management, planning, and evaluation.

Stages of Medicaid Business Transformation

Medicaid Enrollment Process

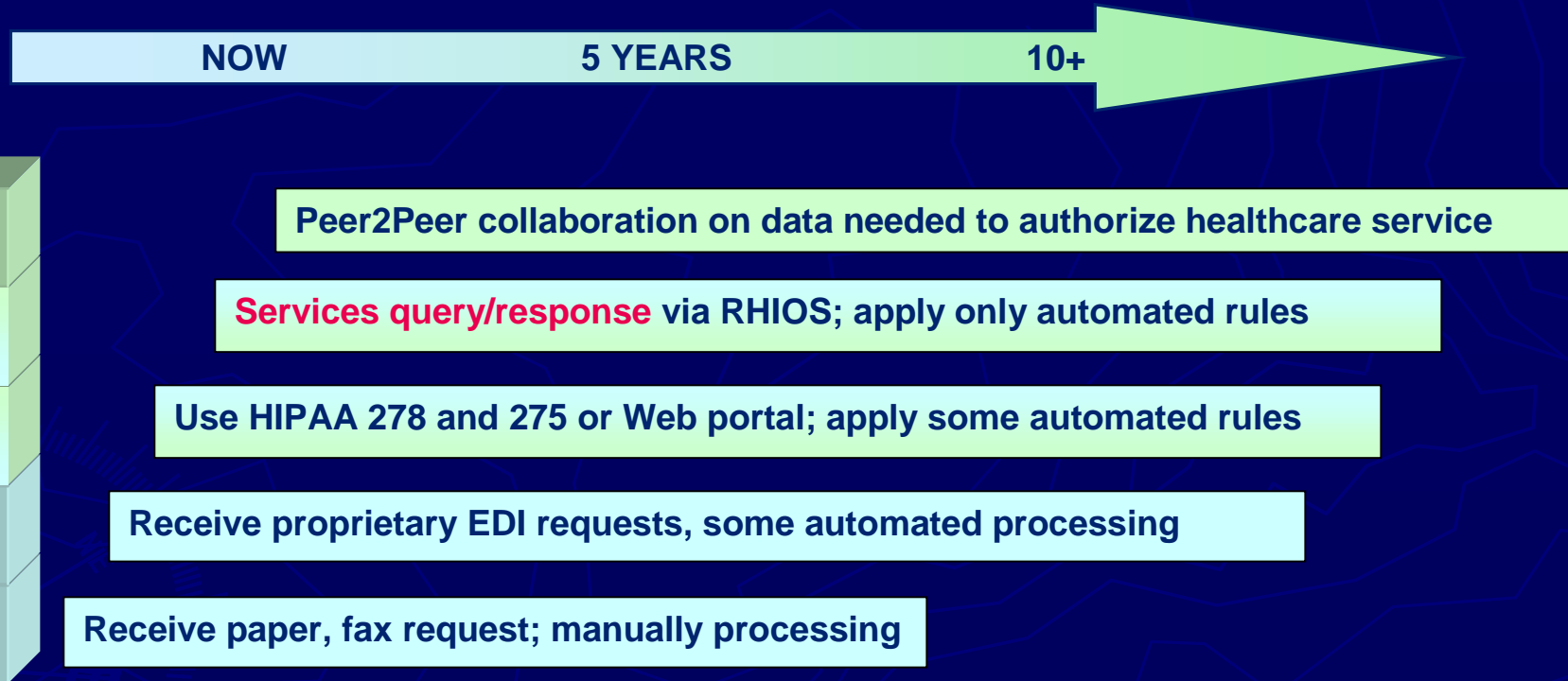| Siloed Business Processes	Enterprise SOA	Cross Enterprise Collaboration
AS IS	**INTERIM**	**LONG-TERM**
► Enrollment complexities	► Enrollment simplified	► Multi-Agency Enrollment
► Administrative burden	► Administration Automated	► Administration Transformed
► Retroactive fraud detection	► Pro-active fraud detection	► Reduction in Fraud
► Decision-making hampered	► Enabled decision-making	► Decision Making Focus
► Ability to safeguard the health of beneficiaries constrained	► Improved ability to safeguard the health of beneficiaries	► Communities collaborate to safeguard population and public health

Integration with EHRs

► As Is:
- Providers enter clinical data into a variety of non-standard medical record formats
- Payers and other providers receive requested copies of the medical record in paper (and limited electronic) formats
- Patients rarely have access to this information

► To Be:
- Providers enter clinical data into the standard EHR
- Payers, providers, patients can access (selected) segments
- There is a virtual, consolidated EHR for everyone

Authorize Healthcare Service

NOW   5 YEARS   10+

Level 5 — Peer2Peer collaboration on data needed to authorize healthcare service

Level 4 — Services query/response via RHIOS; apply only automated rules

Level 3 — Use HIPAA 278 and 275 or Web portal; apply some automated rules

Level 2 — Receive proprietary EDI requests, some automated processing

Level 1 — Receive paper, fax request; manually processing

Example of Maturing Business Capabilities…

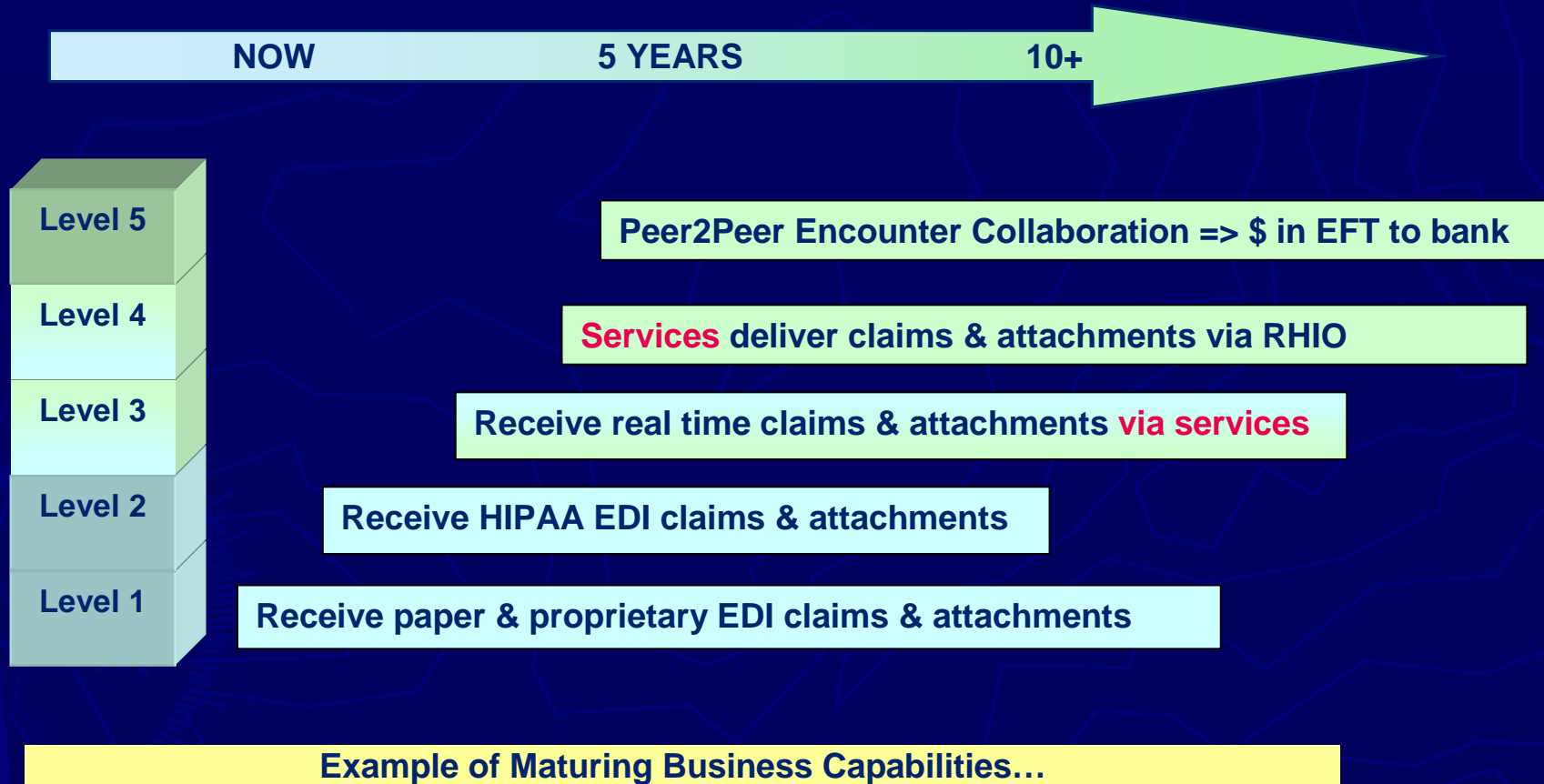# Example of Business Capability As Is and To Be: Communications

► As Is:
- M.D. writes paper referral slip
- Lab sends results back via fax or paper
- Medicaid requests and receives lab results on paper

- Patient rarely sees this information

► To Be:
- M.D. updates EHR with lab test request
- Lab accesses EHR to view test requests
- Lab updates EHR with lab test results
- M.D. views lab results in lab EHR.
- Patient can access and view report.
- Medicaid can view lab results; issue payment

Claims Processing

NOW → 5 YEARS → 10+

Level 5	Peer2Peer Encounter Collaboration => $ in EFT to bank
Level 4	Services deliver claims & attachments via RHIO
Level 3	Receive real time claims & attachments via services
Level 2	Receive HIPAA EDI claims & attachments
Level 1	Receive paper & proprietary EDI claims & attachments

Example of Maturing Business Capabilities…

Service-Oriented Architecture

► As Is:
- Provider credentials verified via telephone, fax, data matches
- Delays, non-standard responses
- Missed opportunities to identify sanctions

► To Be:
- <u>Provider's credentials verified on-line</u>
- <u>Application triggers automated requests</u>
- <u>Standardized responses</u>
- <u>Continuous scans of sanction lists</u>

ENROLL PROVIDER

NOW   5 YEARS   10+

Level 5 Outcomes based enrollment; continuous verification against national databases

Level 4 Enrollment/verification via RHIOs using services

Level 3 Real time rules driven enrollment /verification; web portal & services

Level 2 Use proprietary EDI for enrollment /verification; hard coded rules

Level 1 Receive paper enrollment application; verify via phone; manual processing

Example of Maturing Business Capabilities…

MITA Business Capability Matrix

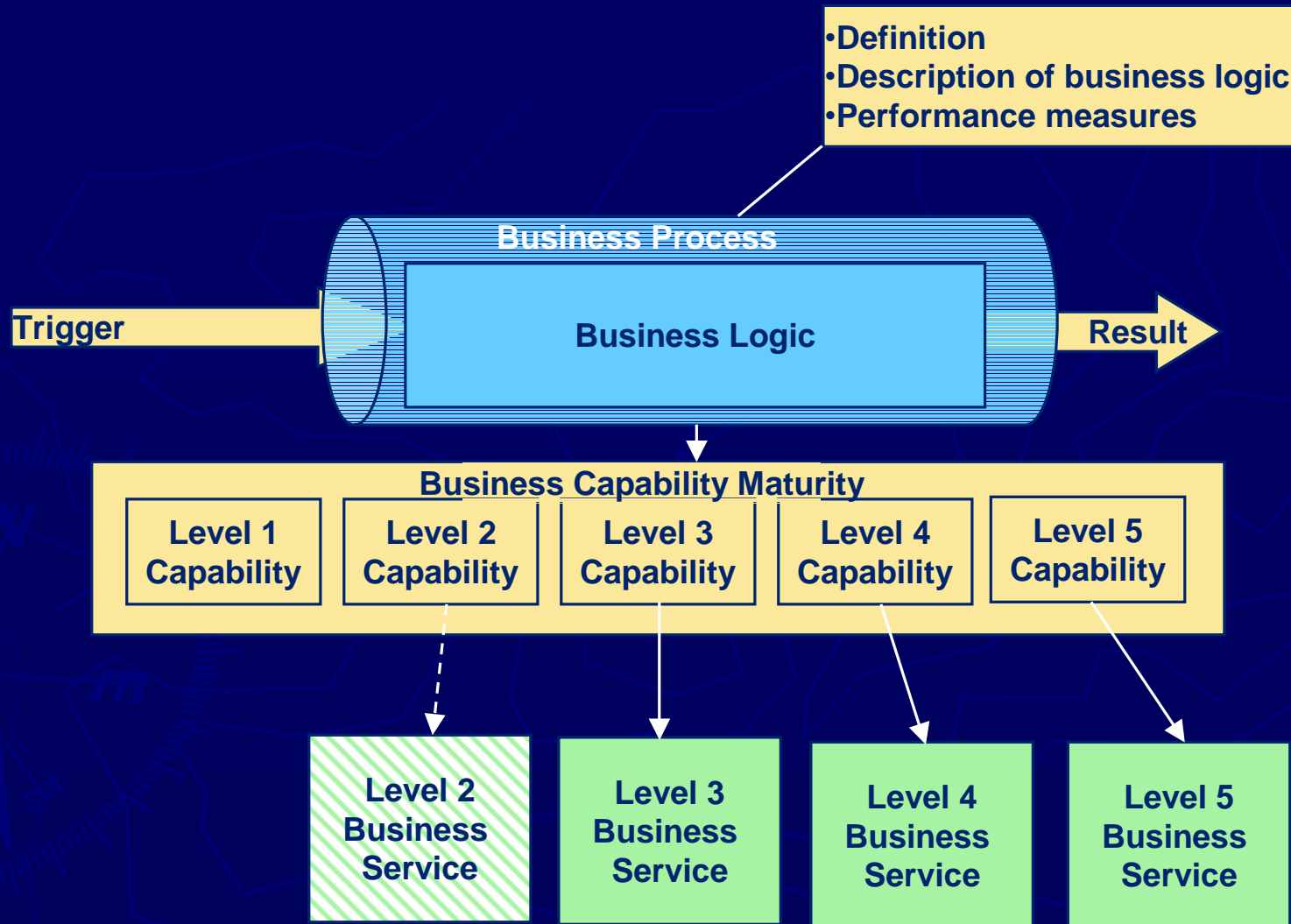| **Business Area Description**	Services the provider network through outreach, enrollment, information management, communications, and support services. Gathers and maintains provider demographic data.
Business Area Objectives	Improve quality of provider network; match needs of the population with availability of appropriate services; satisfy providers and consumers; prevent illness; improve outcomes.
Business Process	Enroll Provider/ Validate Credentials

Qualities:
Timeliness
Data Access
Quality
Efficiency
Effectiveness
Impact

Business Capabilities				
Level 1	Level 2	Level 3	Level 4	Level 5

MITA Business Process, Business Capability Matrix, and Business Services

- Definition
- Description of business logic
- Performance measures

Business Process

Trigger → **Business Logic** → Result

Business Capability Maturity

| Level 1 Capability | Level 2 Capability | Level 3 Capability | Level 4 Capability | Level 5 Capability |

Level 2 Business Service

Level 3 Business Service

Level 4 Business Service

Level 5 Business Service

MITA Business Service

►The MITA Business service is a logical implementation of a Medicaid Enterprise business process (e.g., Enroll Provider)

►The MITA business service supports

- Interoperability and plug-and-play

- States adapting and extending the service to meet their individual requirements

►A MITA business service is implementation neutral

MITA Business Service

► Interfaces are defined in Web Service Definition Language (WSDL)

► Messages are defined in XML schemas

► Business Logic – currently free form text, will become business rules in the future

► Business Service Management (orchestration) is defined in Web Service – Business Process Execution Language (WS-BPEL)

► Data is defined in MITA logical data model
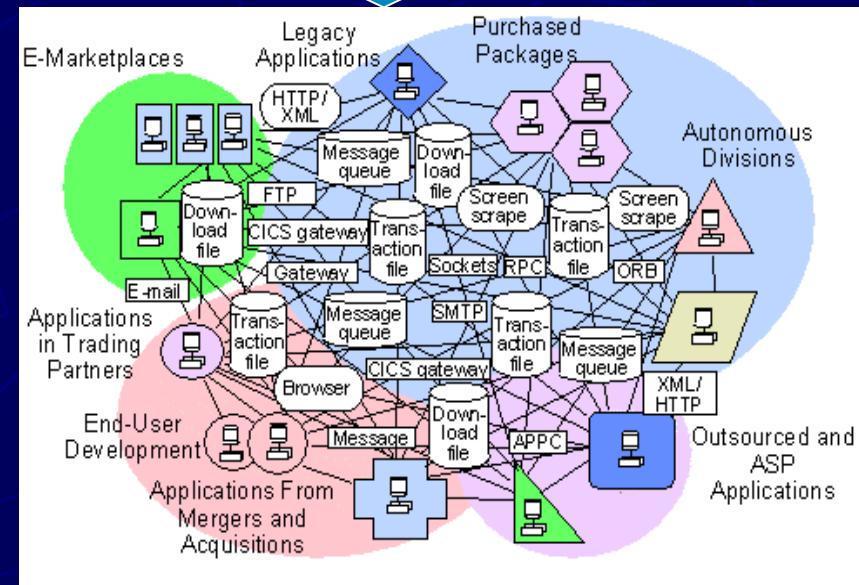
The Service-Delivery Challenge

Service-Oriented Government

- **Government is in the business of delivering services to citizens, federal agencies, state/local governments, business, etc.**

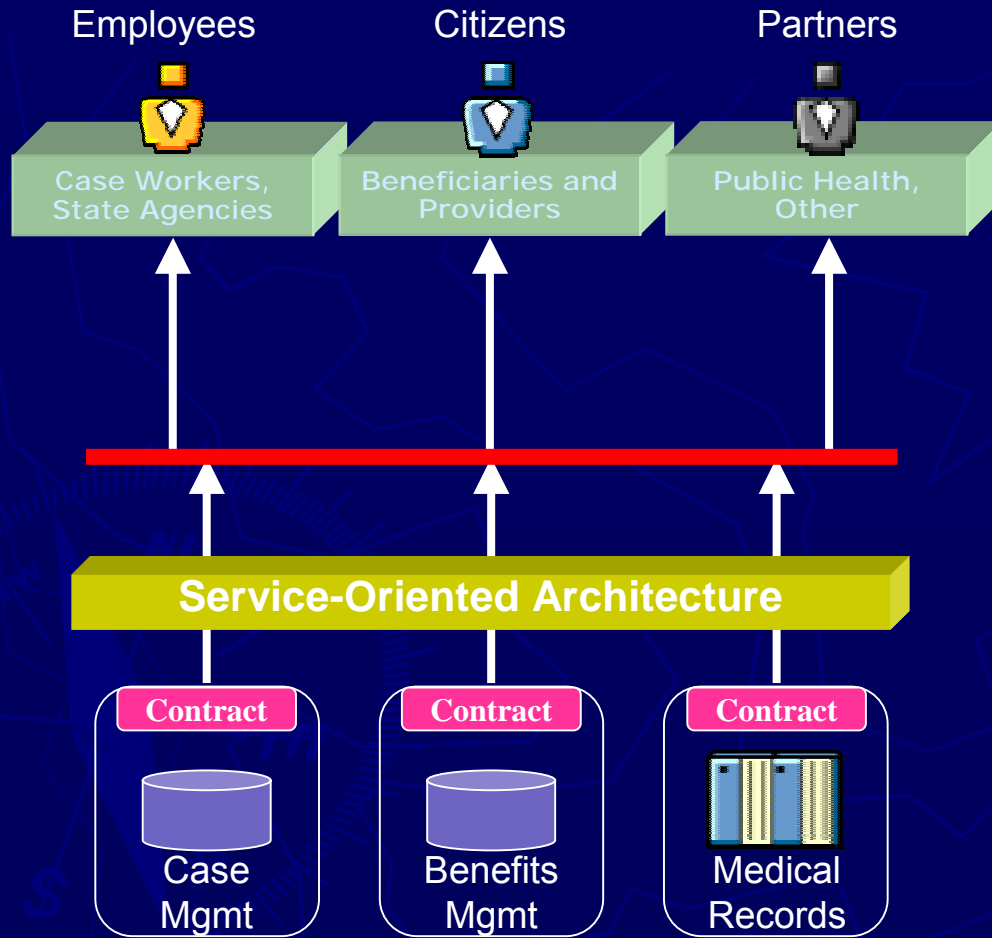Internal Users | External Users | Partners
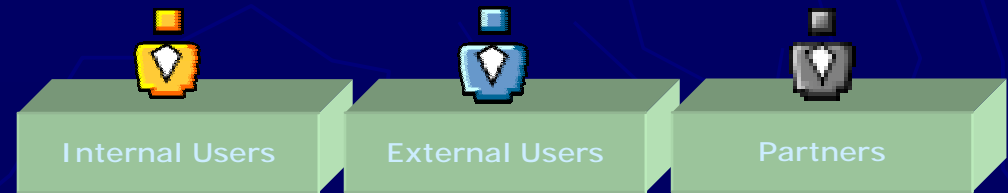
Challenges

1. Inconsistent Experience Across Delivery Channels
2. Too Many Portals
3. Difficulty Adding New Channels
4. Inadequate Security and Privacy Controls
5. Hostage to Obsolete and Expensive Applications and Technology
6. Inconsistent Data Models
7. Spaghetti Integration
8. Vendor Lock-in

Result: Hard To Roll-Out New Services

Business Impact – Enterprise SOA

Employees

Case Workers, State Agencies

Citizens

Beneficiaries and Providers

Partners

Public Health, Other

Service-Oriented Architecture

Contract	Contract	Contract
Case Mgmt	Benefits Mgmt	Medical Records

Government Benefits

- Incremental adoption & deployment of SOA
- Rapid creation & delivery of new services
- Cost reductions
- Government Agility
- Process transformation
- Maximize ROI from existing IT systems
- Federal Enterprise Architecture Compliance
- Replace expensive and obsolete applications

Citizen Benefits

- One government - Consistent service delivery across all access channels
- Integrated government – integrated access to federal, state, and local services
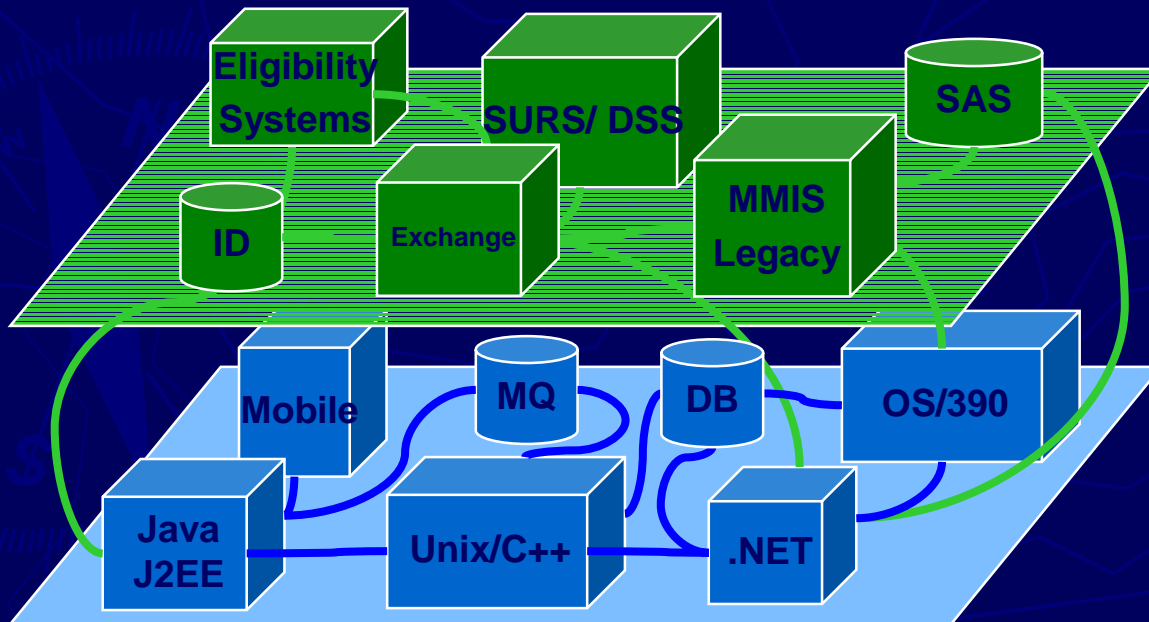
Partner Benefits

- Connected to government – timely and appropriate access to information - alerts, notifications

Line-of-Business Services

Adding a Service layer makes the platforms and system types irrelevant
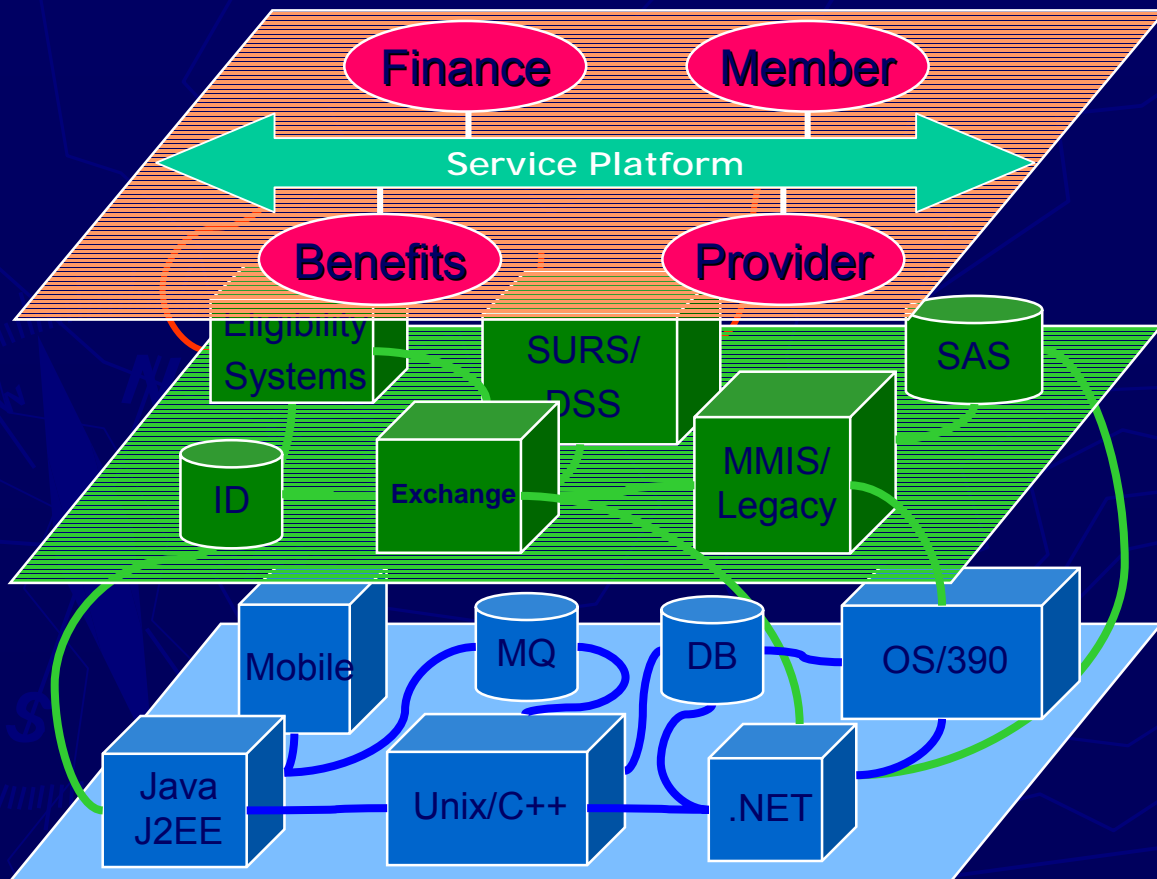
Line-of-Business Services
- Wrap and reuse underlying applications and technology
- Data access and distribution
- Incremental adoption of SOA

Service Platform
- Service-enable legacy systems
- Enforce security and privacy
- Data validation & transformation
- Data aggregation & distribution

Application Tier
- Custom/Legacy Applications
- User/Role/Access Information

Technology Layer
- Operating systems
- Application servers
- Databases and Middleware

Multi- Layer Application Architecture Model
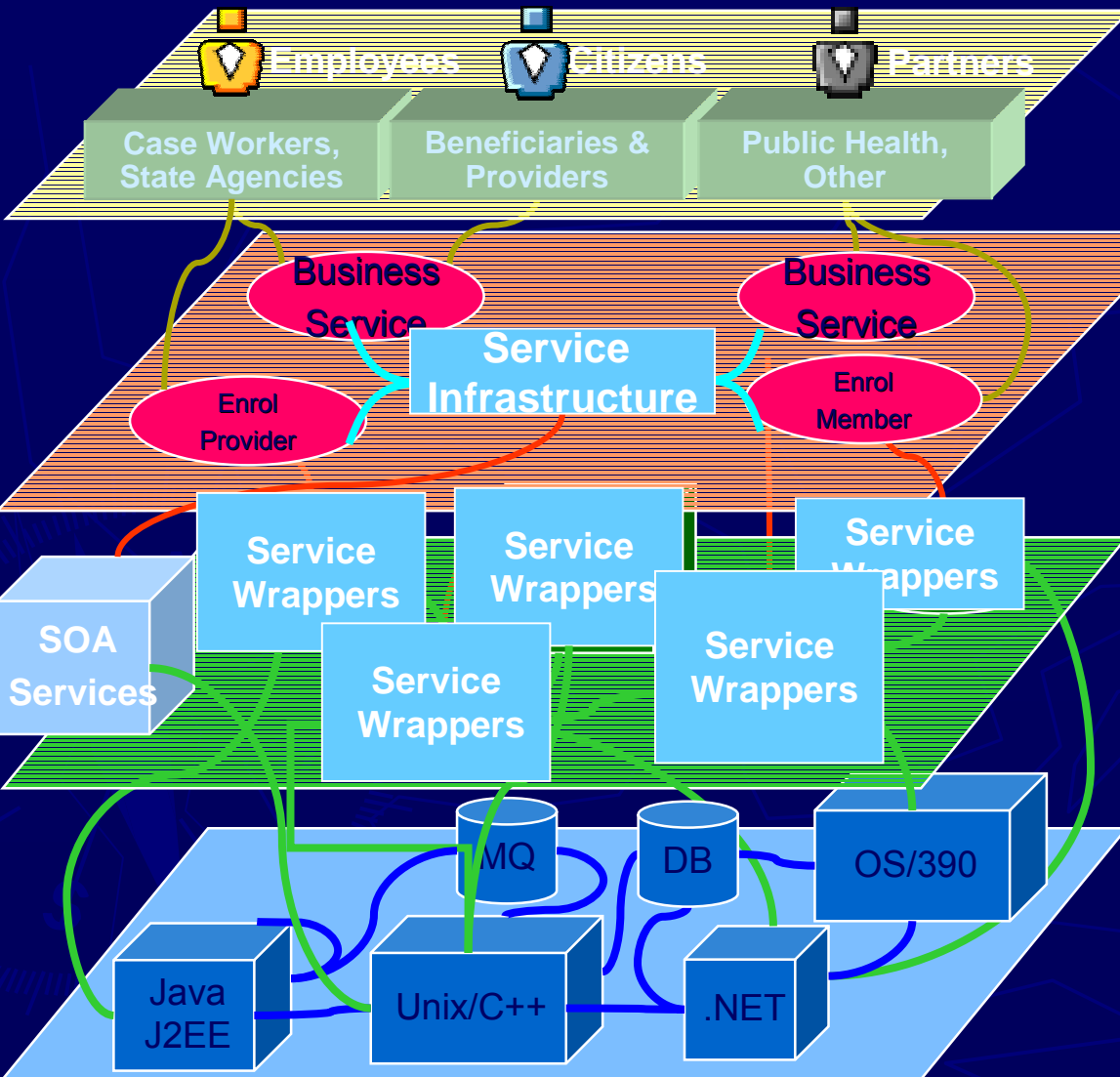
Access Layer: Interface & Access Channels

Service Management Layer :
- Service contexts & Contracts related to Business Services
- Service Infrastructure

Service- Application Layer- Service Implementations
- New services
- Existing Applications with Service Wrappers
- COTS with Service Wrappers
- new SOA Services
- MITA defined interface

Platform Layer: Existing Platforms With Service Enablement or New Service Computing and Networking (state)

Labels within diagram: Employees, Citizens, Partners; Case Workers, State Agencies; Beneficiaries & Providers; Public Health, Other; Business Service; Service Infrastructure; Enrol Provider; Enrol Member; SOA Services; Service Wrappers; MQ; DB; OS/390; Java J2EE; Unix/C++; .NET

Service Infrastructure

Collaborative Design Tools:
- Team Environment
- Business Innovation
- Performance Results Tracking

Security Management Service

External Data Access Hub Services

EDI Gateway

Service Orchestration

Access Channels

Enterprise Service Bus

Service Management Engine (s)

Other Agencies/ Partners

Operation Management:
- Monitoring
- Optimization
- Flexibility

Business Service 1

Business Service 2

Business Service X

LEGEND

	Business Service
	Service Infrastructure
	Technical Service

Service Infrastructure - Service Invocation

Step 1a: Invoke Service- Authenticate- Correlate

Employees

Citizens

Partners

Step 1b: Invoke from External Messages- Invoke Services-Correlate

Service Directory Discovery & Routing

Service Portal

Information Hub

EDI Gateway

Service Activity Management and Control

Enterprise Service Bus (ESB)

Service Gateways

Service Management Engine(s)

Step 2: Receive Message and Tokens- Route and Manage

Step 4: Route MSG & tokens to Business service

Step 5: Route Response MSG & tokens

Step 3: Track Performance Limits & Fault Handling

Business Service 1

Step1c: Execute Business Process based on Service Mode and Engine

MITA Solution Sets

▶ A solutions set is an implementation of a MITA business service.

▶ Solution set mapping is

MITA Business Process	Maps to	MITA Business Process Capability	Maps to	MITA Service	Maps to	Solution Set

▶ A MITA repository will be available to store solution set information.

▶ States can use MITA solution sets to determine if there is already an implementation of a MITA service that is applicable to there needs

MITA will likely use and contribute to appropriate services developed by standards organizations such as the OMG-HL7 Healthcare Services Specification Project

State Self Assessment

Business Area	Business Process	1	2	3	4	5
Member Management	Enroll Member	blue	red			
Provider Management	Enroll Provider			blue		
Contractor Management	Manage Contract Information		blue	red		
Operations Management	Edit/Claim Encounter		blue	red		
Program Management	Maintain Benefit / Reference Info	blue		red		
Care Management	Establish Case		blue		red	
Program Integrity	Identify Case		blue	red		
Relationship Management	Manage Business Relationship	blue	red			

State Adapted Services

▶ Change Message Structure - Schema change

▶ Change data being used – Change data set name (e.g., instead of mapping to "state-A-MVA" map to "state-B-MVA)

▶ Replace capability – Replace service with state unique service preserving input and output

▶ Re-Orchestrate business services – Add new services to flow

▶ Change business rules – Replace the set of business rules used by a service with a new set of business rules

What About Compliance?

► What is CMS' intention regarding the use of MITA:

- It is a *FRAMEWORK*
- It is a *TOOL KIT*
- It is a *ROADMAP*
- *Federal Funding Participation (FFP) will depend upon using MITA*

MITA is NOT a single model system that everyone must use.

Other Thoughts on MITA?

► CMS wants states to begin the transformation TODAY.
- The journey itself will never end.
- There is no final end point called compliance.

► APDs and RFPs will need to show the results of the self-assessment and the targets for improvement that a new MMIS or business process upgrades are meant to achieve.

► CMS will tie the procurement process itself to Certification through the MITA tool kit

Other MITA Points to Emphasize

► MITA framework contains models and tools to guide states in the transformation process -- it does NOT contain implementation solutions.

- Implementation solutions will be developed by states and vendors
- These solutions can be shared with others through a MITA repository.

► MITA team needs state support to refine business processes and develop business services.

► No vendor's product is currently "MITA-certified"