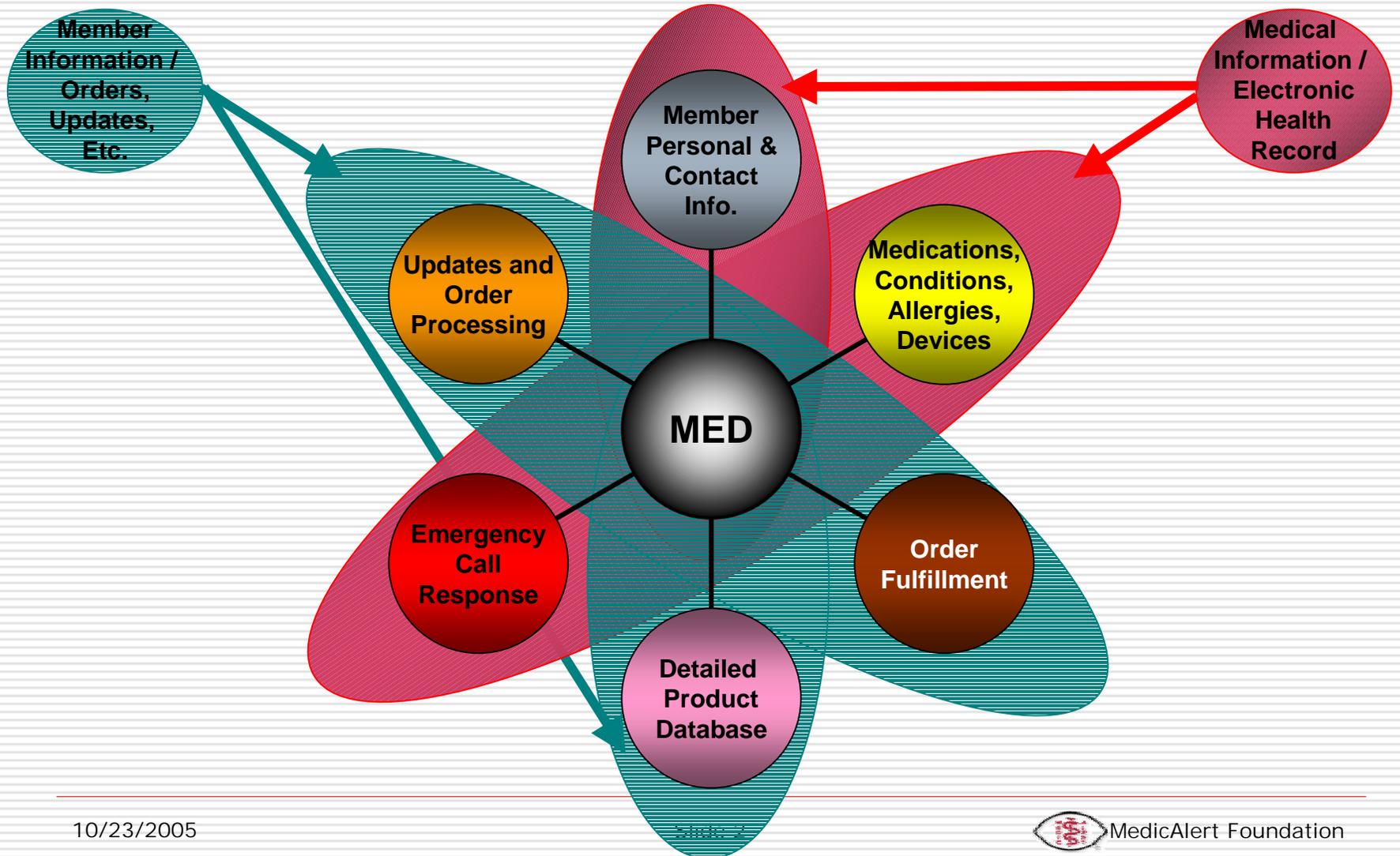# MedicAlert

Using Service Oriented Architecture
David Harrington, VP/CTO

27 October 2005

Legacy Software Architecture

Member Information / Orders, Updates, Etc.

Medical Information / Electronic Health Record

Member Personal & Contact Info.

Medications, Conditions, Allergies, Devices

Updates and Order Processing

MED

Emergency Call Response

Order Fulfillment

Detailed Product Database

MedicAlert Foundation

Legacy Network Architecture

DMZ

Reports & Other Processing

Firewall

Slide 3

MedicAlert Foundation
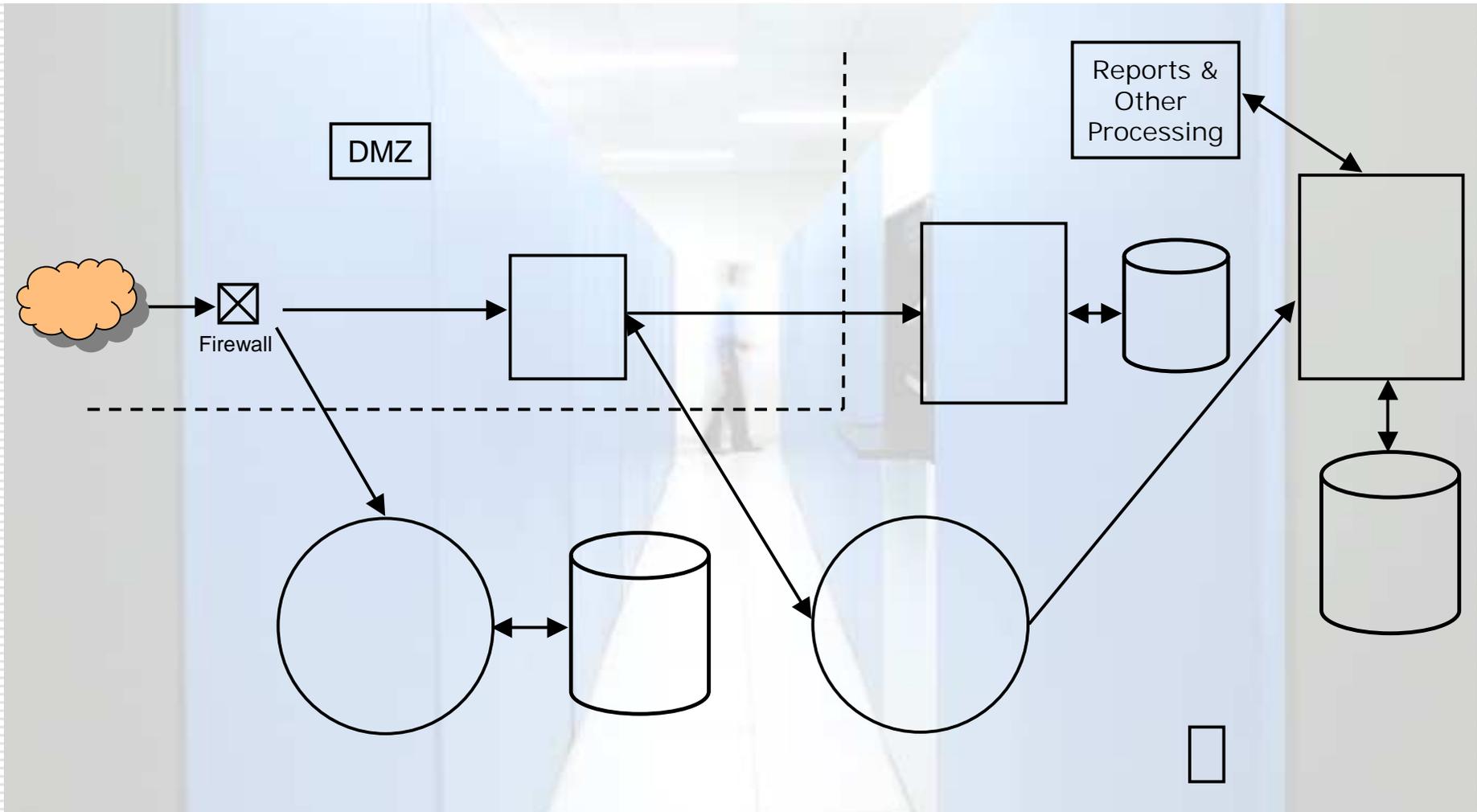
Service Oriented Architecture

- ☐ **What**
  - ■ A set of guiding principles and a logical framework providing web services planning, development, deployment, and management functionality.
- ☐ **Why**
  - ■ **Agility**
    - ☐ Change is the only constant
    - ☐ "Loosely coupled" nature allows IT to adapt to changes unlike the traditional tightly coupled technology architectures [MED] that are more brittle.
  - ■ **Business "Relevance"**
    - ☐ "SOA is IT finally expressed to a level where it is meaningful to business people."
    - ☐ Allows for close alignment between IT and MedicAlert business.

Security

- ☐ **Benefits**
  - ■ Original WC3 Web Services spec designed with interoperability in mind -- overlooked security.
  - ■ Shields against web service attacks.
    - ☐ Probing attacks – scan for open services
    - ☐ Coercive parsing – message tampering
    - ☐ Malicious content – hackers embed viruses, worms, or malware to payloads of messages
  - ■ Customized rules to protect against attacks based on MedicAlert policy.
  - ■ Fortifies MedicAlert Member's private information.
- ☐ **Can we live without it?**
  - ■ Extremely difficult to protect MedicAlert's IT infrastructure from malicious attacks.
  - ■ Extremely difficult to protect Medicalert Member's private information.

MedicAlert Foundation

Service Management

- ☐ **Benefits**
  - ■ Provides common management and monitoring capabilities for all web services.
  - ■ Monitors and logs web service transactions.
  - ■ Provides versioning capabilities for web services. (1.0, 1.1, 2.0, etc.)
  - ■ Prioritizes/routes requests based on MedicAlert policy.
- ☐ **Can we live without it?**
  - ■ Unmanaged web services pose potential security risks.
  - ■ Unmanaged web service errors are extremely complex to diagnose. No monitoring, no logs, no diagnosis.
  - ■ Unmanaged web services cannot be proactively maintained (load balancing, fault changeovers, preventable maintenance).

Business Process Integration

- ☐ **Benefits**
  - ■ Platform for building composite, orchestrated applications
  - ■ Improving time to market - hours instead of days or weeks
  - ■ Efficient visual environment
  - ■ Productive Infrastructure
    - ☐ enterprise-class scalability and reliability provide reduced cost, development time, and risk
   - ☐ flexibility enables IT to react quickly to change
- ☐ **Can we live without it?**
  - ■ Process Integration Servers are extremely complex to develop in-house.
  - ■ Without Integration Servers, MedicAlert IT Systems are disparate and lack effective means of communication.
  - ■ Without Integration Servers, MedicAlert's efforts to operate in a business-to-business scenario will take a considerably longer implementation time.
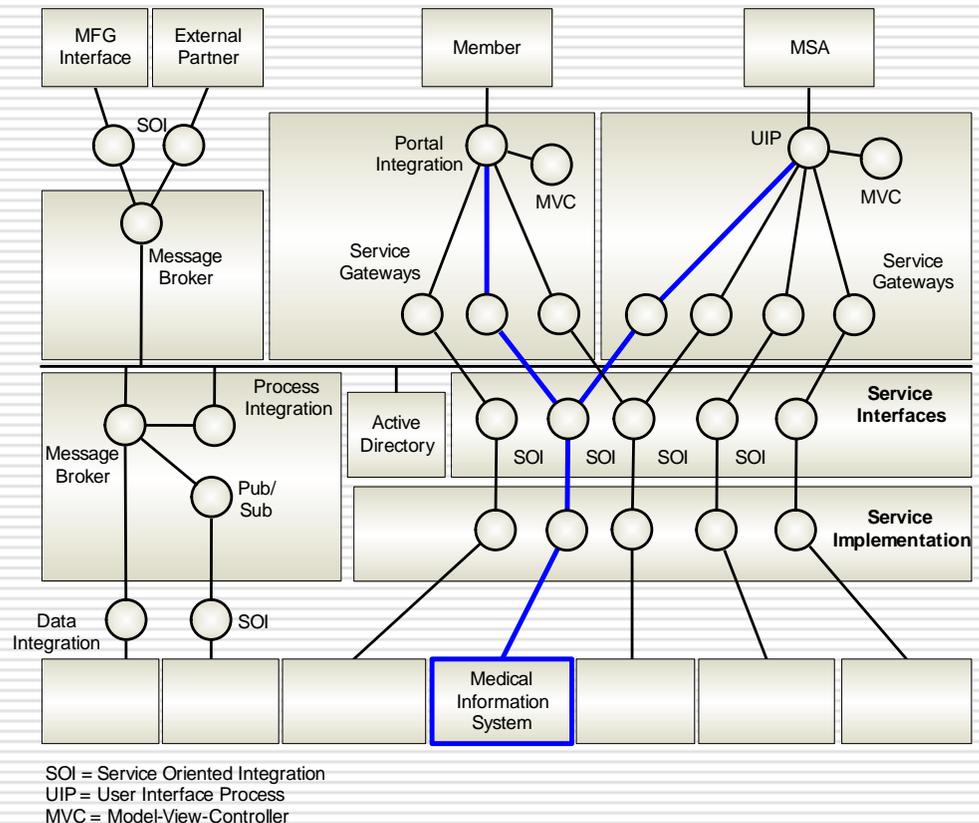
MedicAlert Before BPI

- Business process logic not properly re-used
- Code changes could impact entire environment
- Regression testing very difficult if not impossible
- Requires business rule changes duplicated
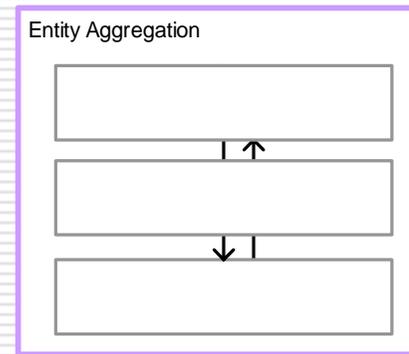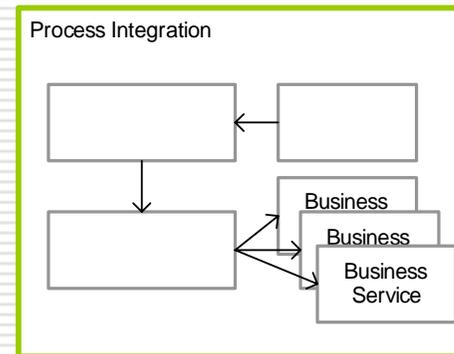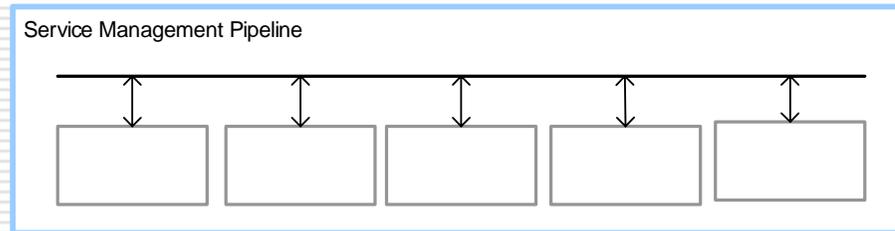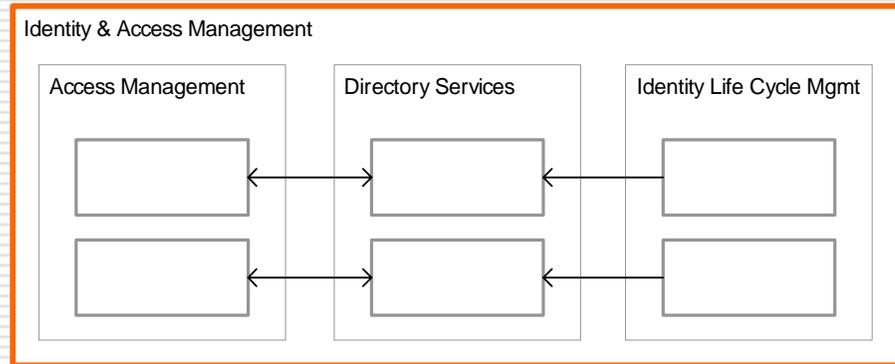- Overall system lacked in business agility

MedicAlert Foundation
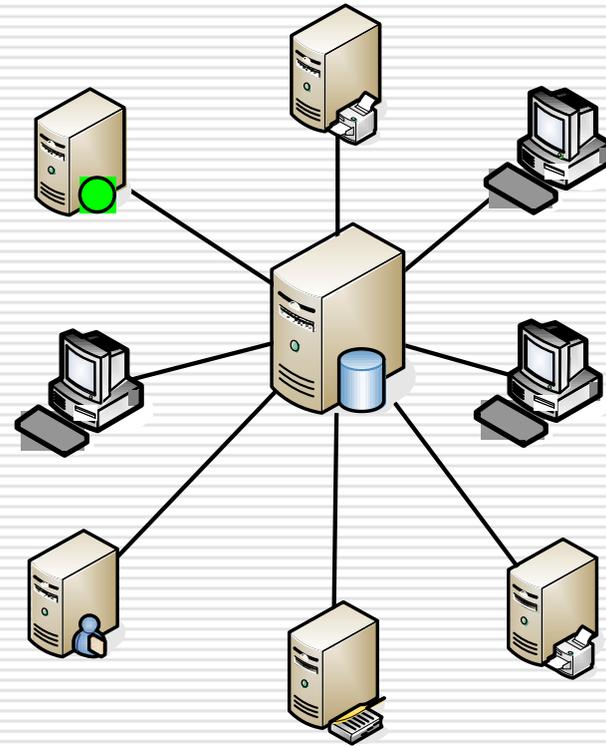
MedicAlert with BPI

- ☐ Business process logic is defined in a single location
- ☐ Business logic can be modified w/o interrupting current transactions
- ☐ Simpler test model
- ☐ Technology is separated from business logic via web services.

SOI = Service Oriented Integration
UIP = User Interface Process
MVC = Model-View-Controller

Process Model Overview

Identity & Access Management

Access Management	Directory Services	Identity Life Cycle Mgmt

Service Management Pipeline

Process Integration

Business
Business
Business Service

Entity Aggregation

MedicAlert Foundation

MedicAlert Enterprise Architecture

Application Architectures

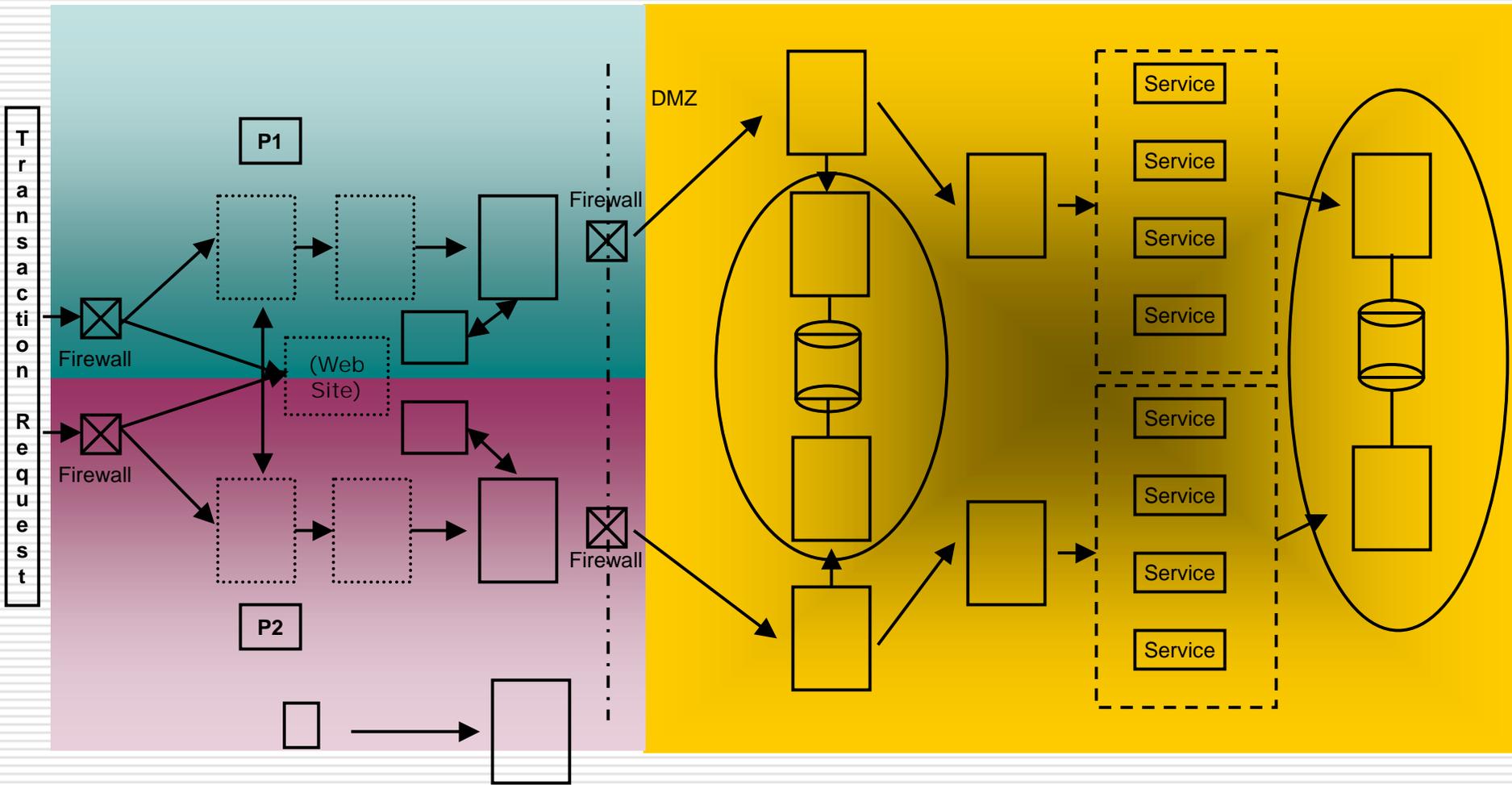**Business Process Management**

Business Services
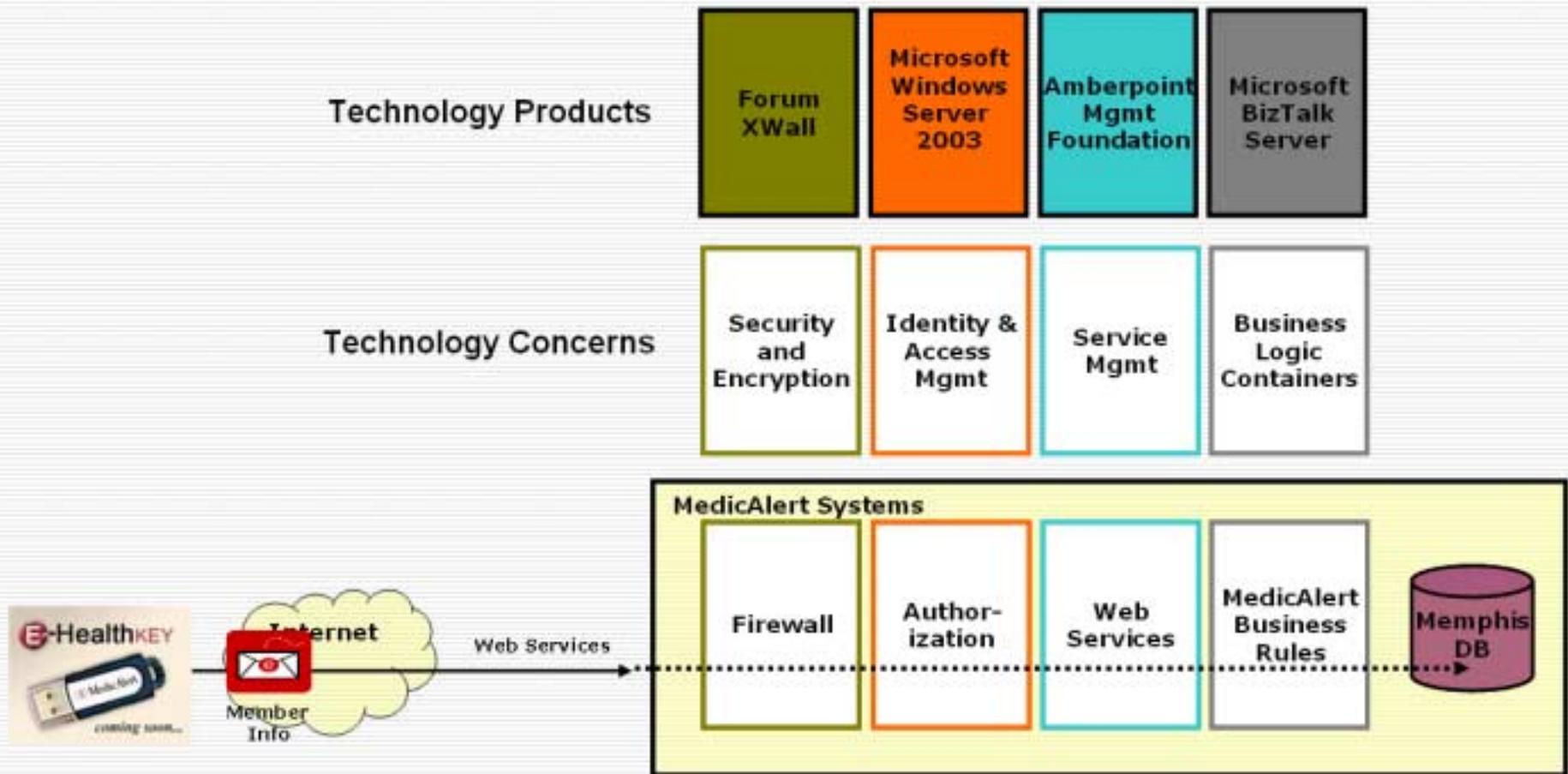
Service Orientation

Base Architectures
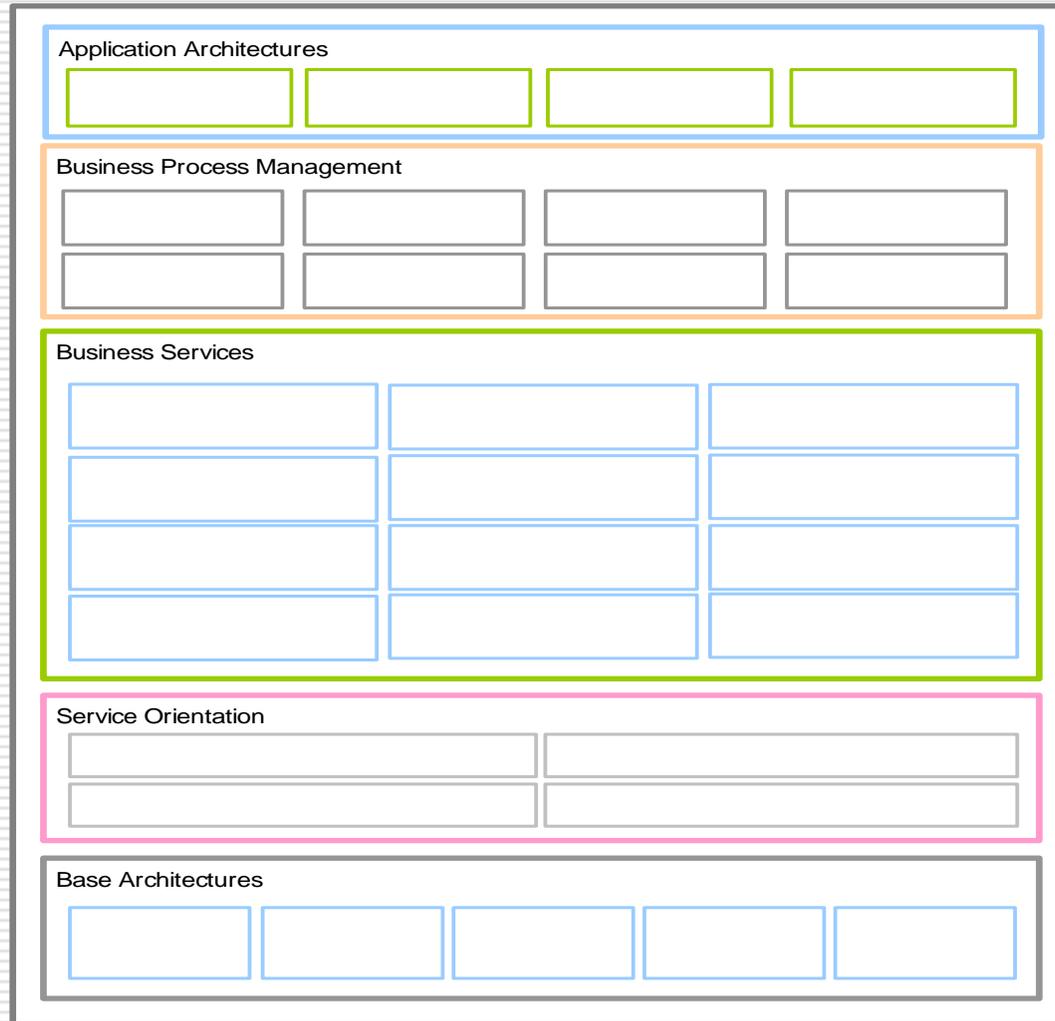
SOA Network Architecture

E-HealthKey Transaction Flow

MedicAlert Repository Services

E-Script Info — Pharmacies, Drug Stores & PBMs

Member Info — MedicAlert Worldwide DB

Vital Sign Info — Home Health Monitoring Systems

Patient Info — Doctors & Hospital Systems

Claims Info — Health Benefit Payers & Plans

Central Repository Stored at MedicAlert®
- Critical Health History
- Family Notifications
- Digital Images

Member Interaction