2006 B2B Customer Conference
B2B – Catch the Next Wave

B3: EDI Transactions and Business Process Modeling

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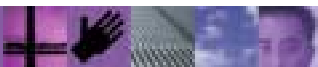
WebSphere. software

ON DEMAND BUSINESS™

Presentation Objectives

- Explain EDI transactions in a case study of a medical clearinghouse scenario

- Relate how Business Process Management practices and methodologies apply to this case study

- Describe modeling the EDI Transactions to business processes and challenges encountered

- Make recommendations when modeling and gathering design/documentation for EDI transactions
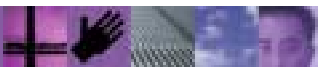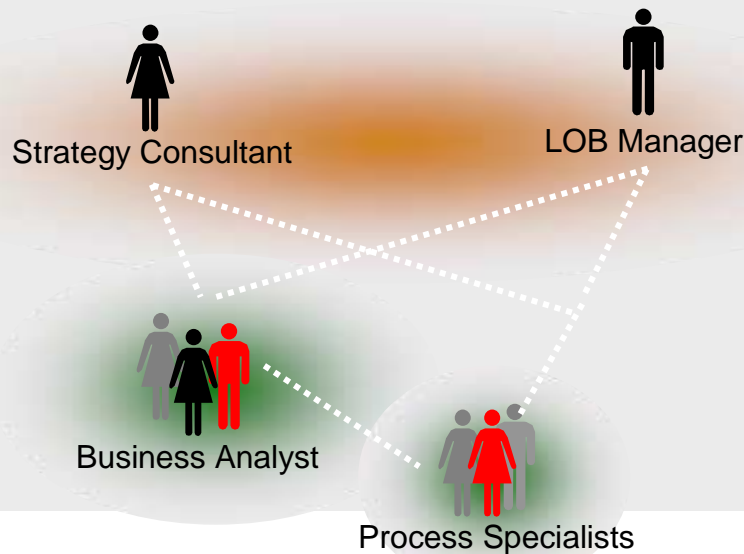
Agenda

- Why we model? How it applies to this case study
- Case Study: Medical Claims Clearinghouse
- Lessons Learned - Recommendations
- Summary

Why is There a Need for Business Modeling and Analysis?

Business Domain

Strategy Consultant

LOB Manager

Business Analyst

Process Specialists

Issues

- *Inconsistent in information collection*
- *Communication issues with subject matter experts*
- *Incomplete requirements documentation*
- *Lack of visibility into the enterprise*
- *No view of complex behaviors*
- *Limited documentation of processes and procedures*

Technical Domain

Issues

- *Incomplete requirements*
- *Difficult to understand the scope of the business issues and how to solve them*

IT Architect

Data Architect

Corporate Developer
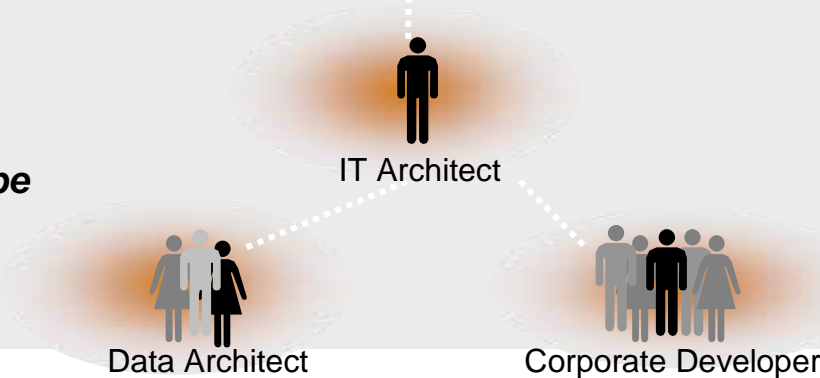
Drivers for Business Understanding

- **Modeling For Compliance/Documentation**

  ➢ Document processes for use by a business to understand the business process

  ➢ Customers use output for training, collaboration, documentation requirements for compliance regulations (Sarbanes-Oxley and Basel II)

  ➢ Linkage to real-time monitoring provides a feedback mechanism for reporting requirements needed for compliance

- **Modeling For Redesign**

  ➢ Document both the current state and future state business process and the comparison to determine Return on Investment (ROI) analysis

  ➢ Six Sigma and process improvement are common methodologies

- **Modeling For Execution**

  ➢ Future state business process has runtime characteristics associated to it, so the model is passed to application, workflow and business process development tools
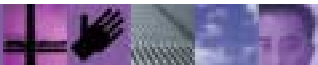
Business Innovation & Optimization is achieved with the SOA Lifecycle

Assemble
Assemble existing and new assets to execute and manage business processes

Deploy
Deployment of models, policies and assemblies to realize business intent

Model
Capture, simulate, analyze, and optimize business models to reduce risk and increase flexibility

Manage
Real-time visibility and analysis of business information for timely and coordinated action

Governance & Processes
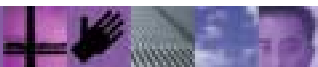**Alignment of strategy and operations across business and IT in support of business objectives**
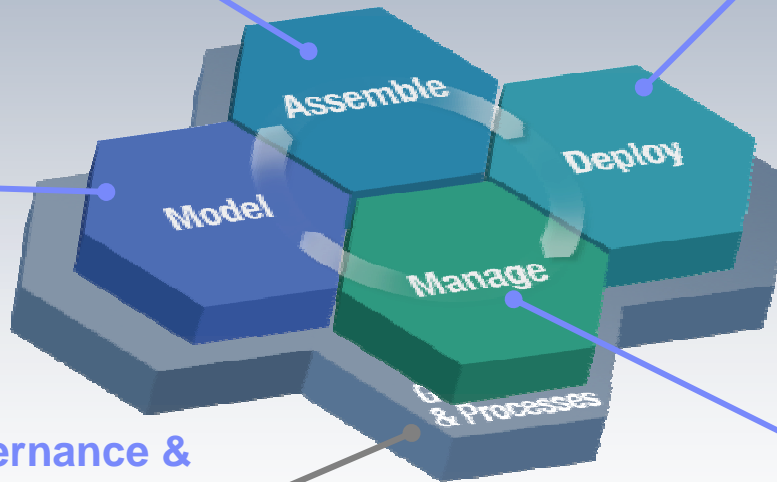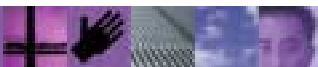
Essential Elements of an EDI transaction

- Translators – Mappers
  - ➤ Conversion of shared data from one format to another
  - ➤ Different formats over disparate systems
- Batch enveloper/de-enveloper
- Message router
- Trading partner agreements

ANSI X12 Transactions

- 820 Premium Payment
- 835 Claim Payment
- 270 Eligibility Enquiry
- 271 Eligibility Response
- 276 Claim Request
- 277 Claim Response
- 278 Service Review
- 834 Enrollment
- 837(I) Claim (Institutional)
- 837(D) Claim (Dental)
- 837(P) Claim (Professional)
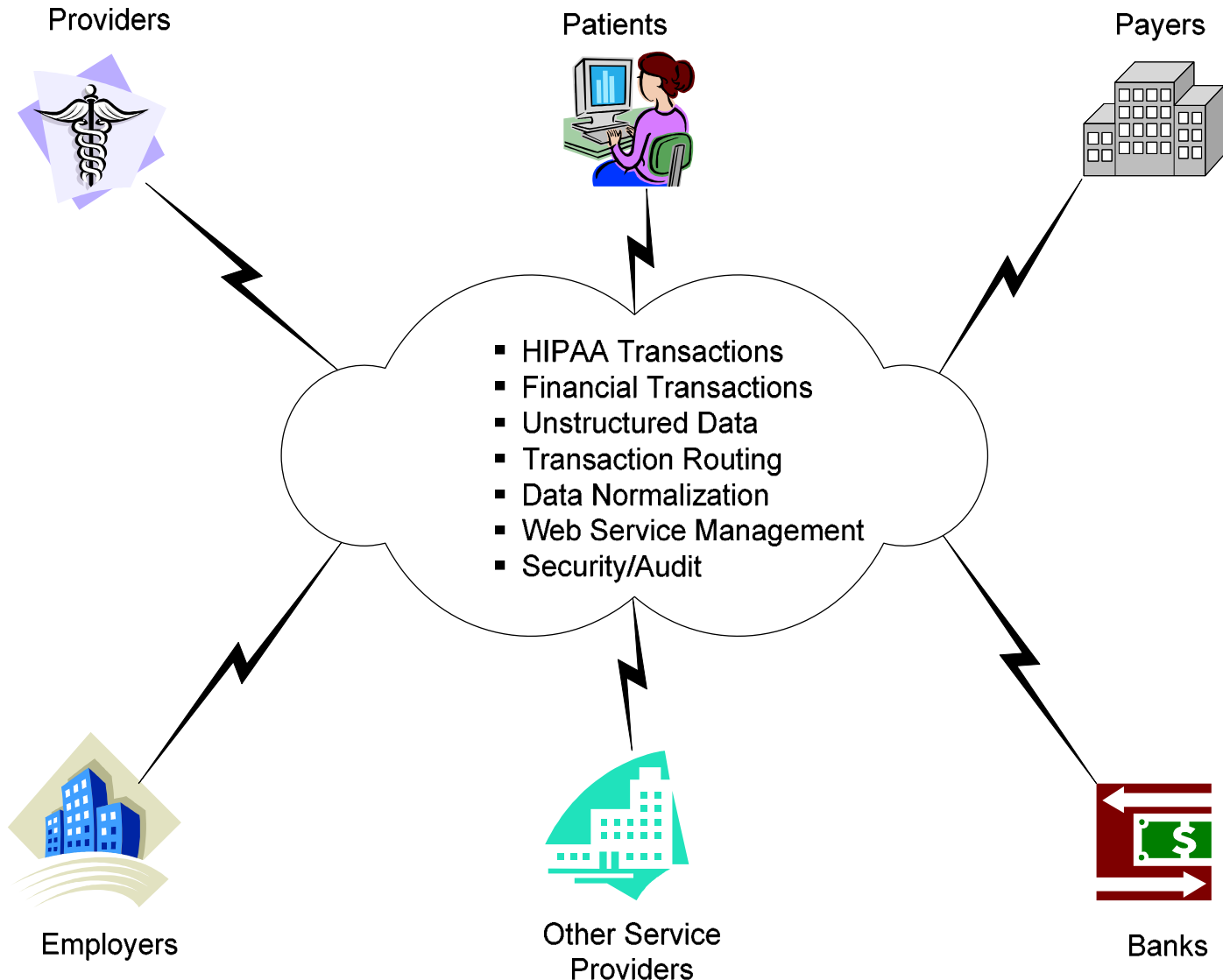- Embedded HL7 Documents (Claims attachments)

Objectives for Modeling EDI Transactions in a Medical Claims Clearinghouse Scenario

- Better understanding of complex processes
- Identify bottlenecks in the current process
- Identify areas that need improvement
- Provide a baseline of the current state business process model that can be visualized
- Document the future state process model for design and development activities

Case Study - Medical Claims Processing Clearing House
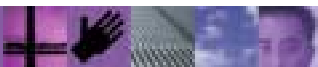
Providers

Patients

Payers

- HIPAA Transactions
- Financial Transactions
- Unstructured Data
- Transaction Routing
- Data Normalization
- Web Service Management
- Security/Audit

Employers

Other Service Providers

Banks

Issues with EDI Transactions in Healthcare Industry

- Complexity

  - Process dependencies between healthcare stakeholders have resulted in complexity

- Need for better communication between payers and providers

  - Real-time transaction model desired vs. batch model

- Efficiency and cost containment

  - Inefficient processing causes a decline in revenue

  - Clearinghouses that relied on rebates for "scrubbing" will not be able to survive due to better quality of claims from providers now

Customer Overview –
Business Reasons to Improve the Processes

- Manage and reconcile HIPAA transactions
  - ➤ Need to communicate with the Payer effectively throughout the entire revenue cycle
- Inefficient use of clearing house capabilities
  - ➤ File based interface for claims and claim status
  - ➤ Lack of integration between billing engines and stakeholder (payer) transaction services
  - ➤ Claim tracking and reconciliation inadequate
- Clearing house architectures not designed for seamless integration with billing engines

Architectural Dilemmas/Decisions

- **Extremely aggressive project timeline**
  - ➤ Prohibited re-design of underlying entity model forcing bottom-up approach
- **Development team's lack of experience with large scale enterprise J2EE applications**
  - ➤ Use Rational Tools to mitigate development team inexperience
- **Existing implementation artifacts were poorly written, little supporting design artifacts**
  - ➤ Strict adherence to interface level programming style to maximize future implementation options
- **No cost rules engine (Open Source)**
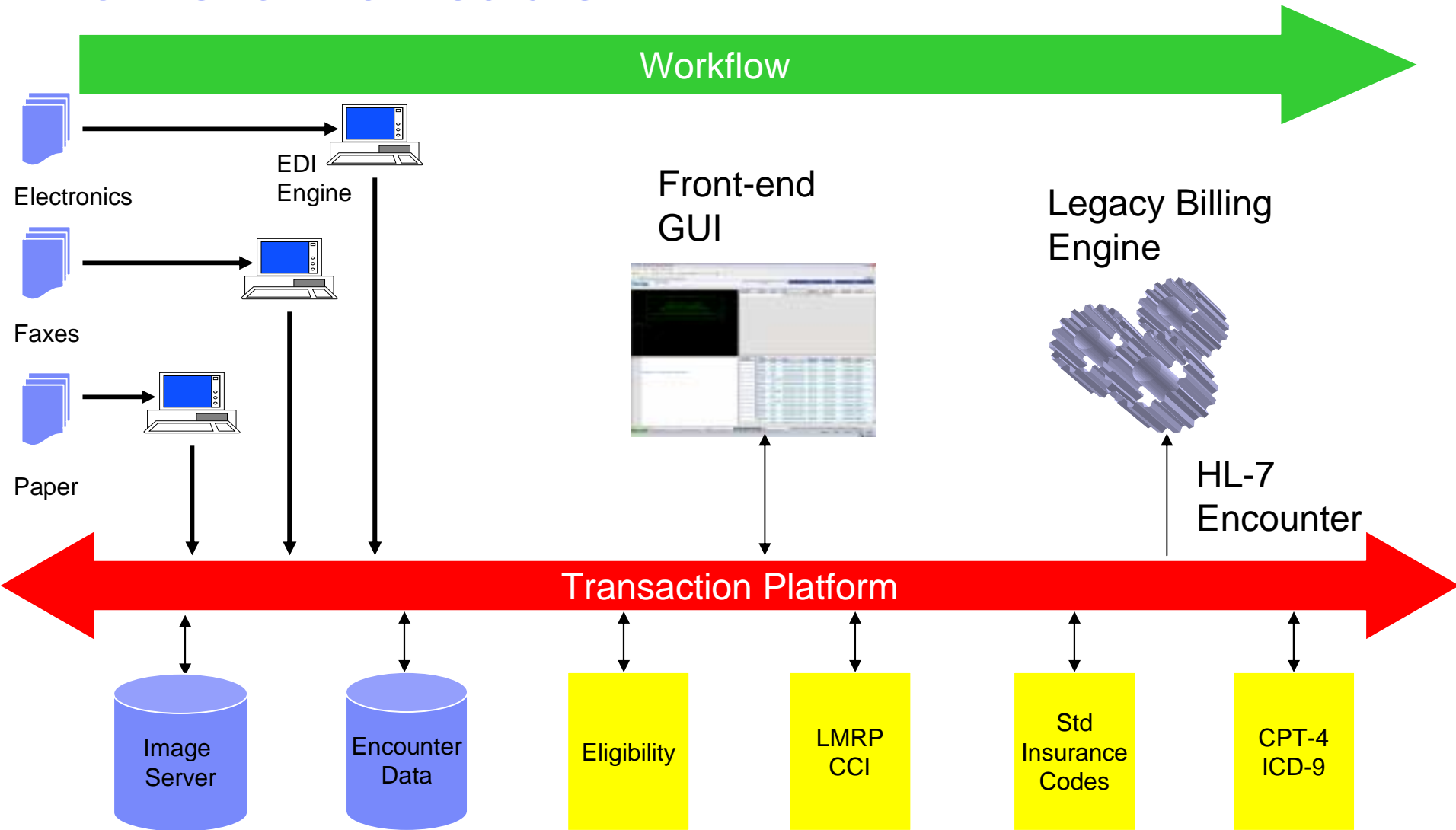 - ➤ Choose Open Source rules engine
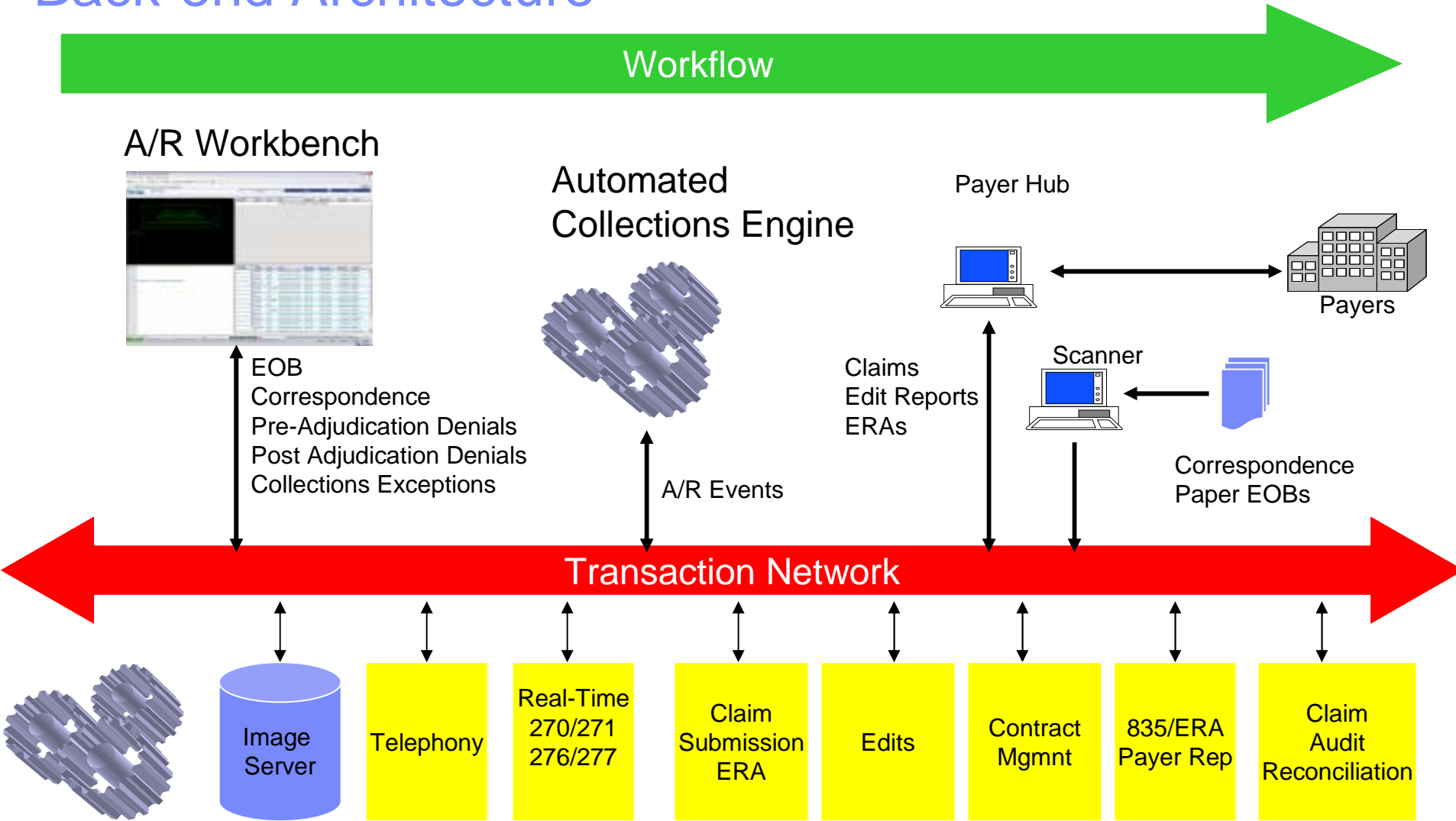
Development Process and BPM Approach

- Bottom-up approach

- Separation of concerns
  - ➢ Services Layer
  - ➢ Unit testing outside of J2EE application server
  - ➢ Business Process Layer

- BPM/Modeler Team engaged to assist in requirements gathering process

- WebSphere Business Modeler was used to document the processes and communicate to the customer and the development team

- Assist the design and development team so they can proceed with application development work
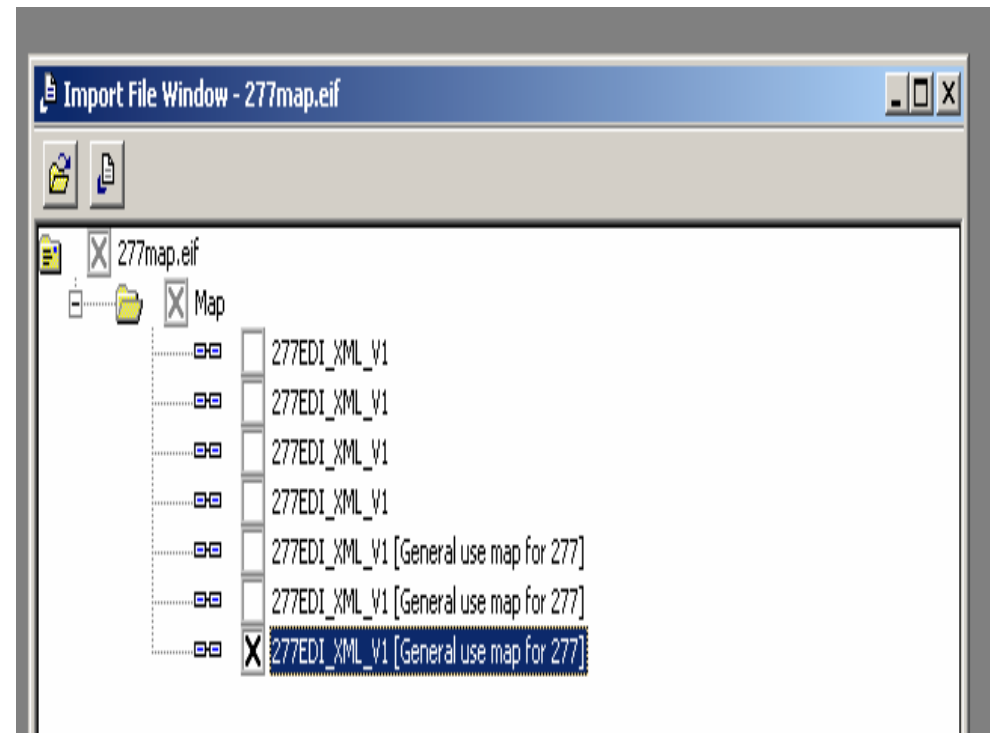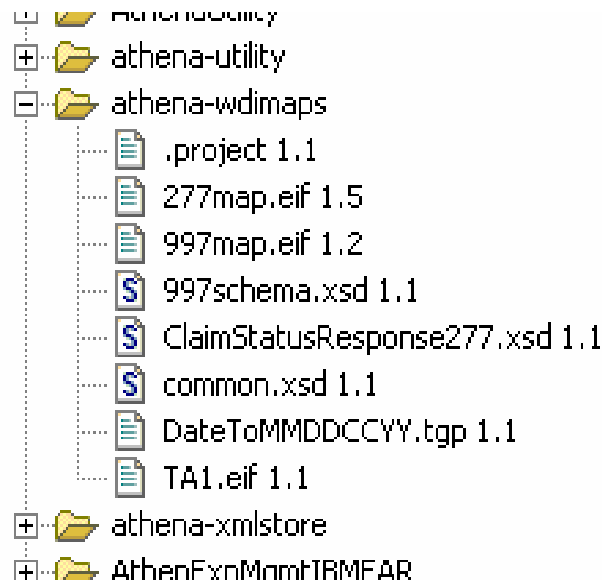
Front-end Architecture

Workflow

Electronics

EDI Engine

Faxes

Paper

Front-end GUI

Legacy Billing Engine

HL-7 Encounter

Transaction Platform

Image Server

Encounter Data

Eligibility

LMRP CCI

Std Insurance Codes

CPT-4 ICD-9

Back-end Architecture

Workflow

A/R Workbench

Automated Collections Engine

Payer Hub

Payers

EOB
Correspondence
Pre-Adjudication Denials
Post Adjudication Denials
Collections Exceptions

Claims
Edit Reports
ERAs

Scanner

Correspondence
Paper EOBs

A/R Events

Transaction Network

| Image Server | Telephony | Real-Time 270/271 276/277 | Claim Submission ERA | Edits | Contract Mgmnt | 835/ERA Payer Rep | Claim Audit Reconciliation |

Legacy Billing Engine

WDI Map Uploading for Transformation to XML – Example of 277 map

WDI Compiling Map – Example of Compile for 277

Robustness Diagram

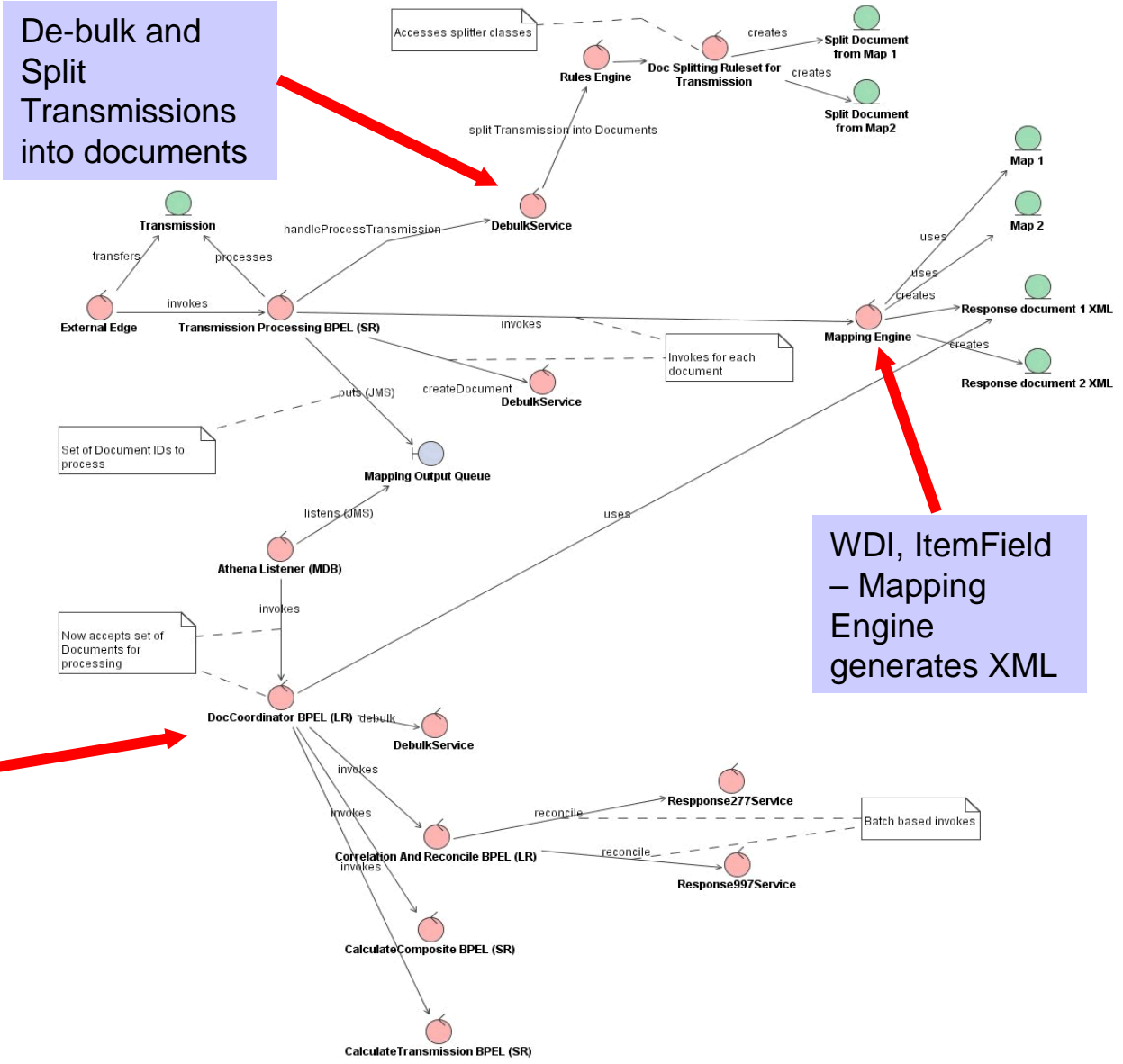De-bulk and Split Transmissions into documents

WDI, ItemField – Mapping Engine generates XML

Document Coordinator BPEL

Accesses splitter classes

Rules Engine

Doc Splitting Ruleset for Transmission

creates

Split Document from Map 1

creates

Split Document from Map2

split Transmission into Documents

Transmission

handleProcessTransmission

DebulkService

Map 1

Map 2

uses

uses

creates

transfers

processes

invokes

External Edge

Transmission Processing BPEL (SR)

invokes

Mapping Engine

Response document 1 XML

creates

Response document 2 XML

Invokes for each document

createDocument

DebulkService

puts (JMS)

Set of Document IDs to process

Mapping Output Queue

uses

listens (JMS)

Athena Listener (MDB)

invokes

Now accepts set of Documents for processing

DocCoordinator BPEL (LR)

debulk

DebulkService

invokes

invokes

Correlation And Reconcile BPEL (LR)

reconcile

Respponse277Service

Batch based invokes

reconcile

Response997Service

invokes

CalculateComposite BPEL (SR)

CalculateTransmission BPEL (SR)

Business Process Management Project Approach

Scope

- Modeling for documentation/design/execution of the CORE business processes
- Based on existing base services, process, and staff
- Leverage existing WebSphere BPM suite of technologies

Approach

- Existing methodology (Bottom-Up)
- Based on BPM lifecycle
- Execution plan based on overall customer/IBM project plan
- Past experiences
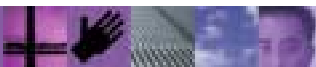
Case Study - BPM Dilemmas

- Customer had little or no interest in modeling current state process which made it difficult to understand their processes

- Developing the future state model moved slowly due to lack of subject matter experts (SME) availability

- Lack of common knowledge about current state processes among customer technical team

- No consensus from technical management stakeholders on details of how the processes should work

- Hostility by some members of customer team towards BPM approach and methodologies to produce future state model
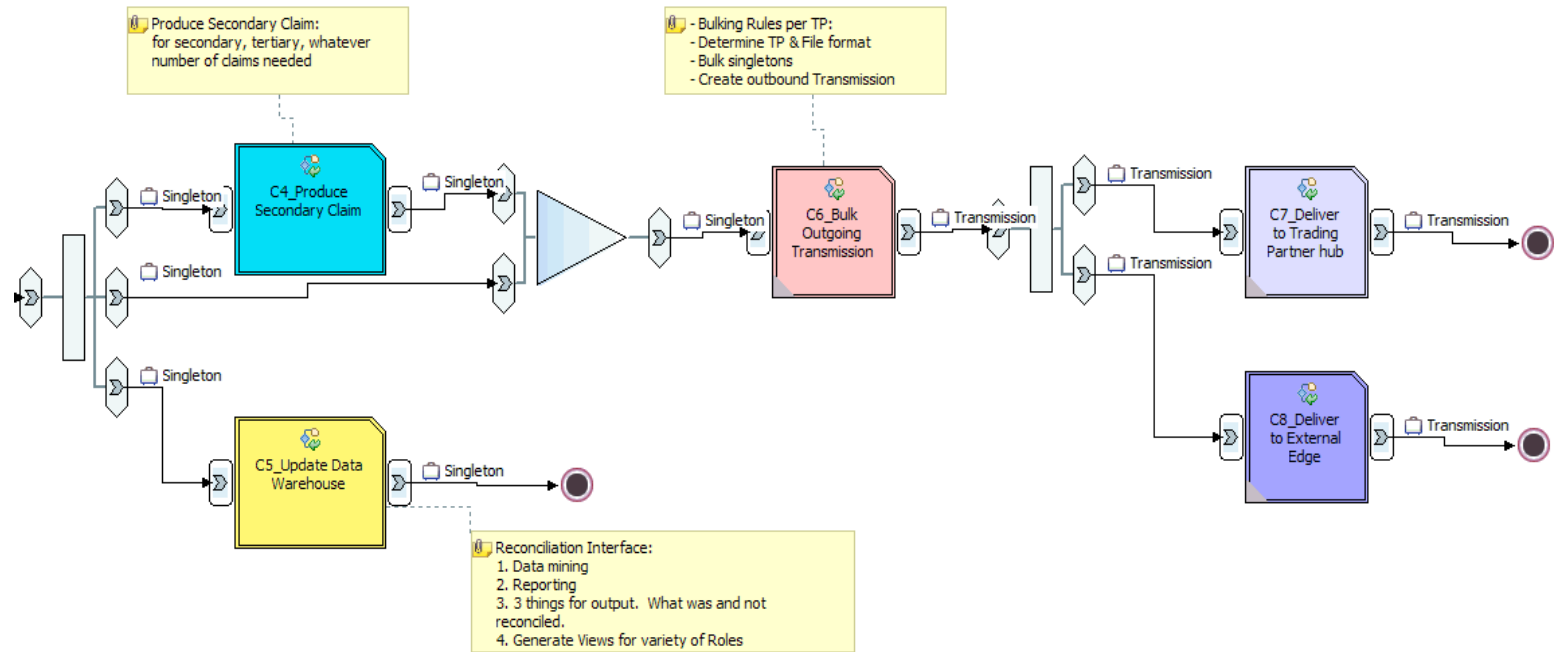
Models

- Created the As-Is model as a base of their current processes as best we could determine
  - ➤ This provided a foundation on which to build the To-Be model

- Created the To-Be model for their future state processes
  - ➤ This took the largest amount of time and effort given the circumstances
  - ➤ Several layers of detail in sub-processes

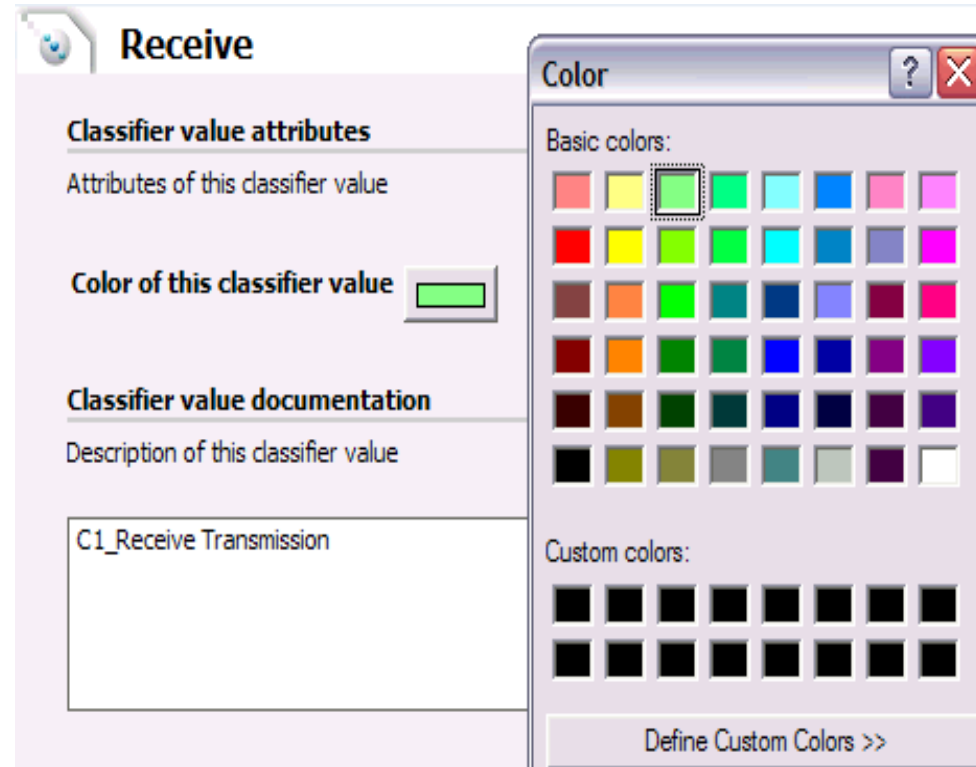# Batch Process Model – Current State
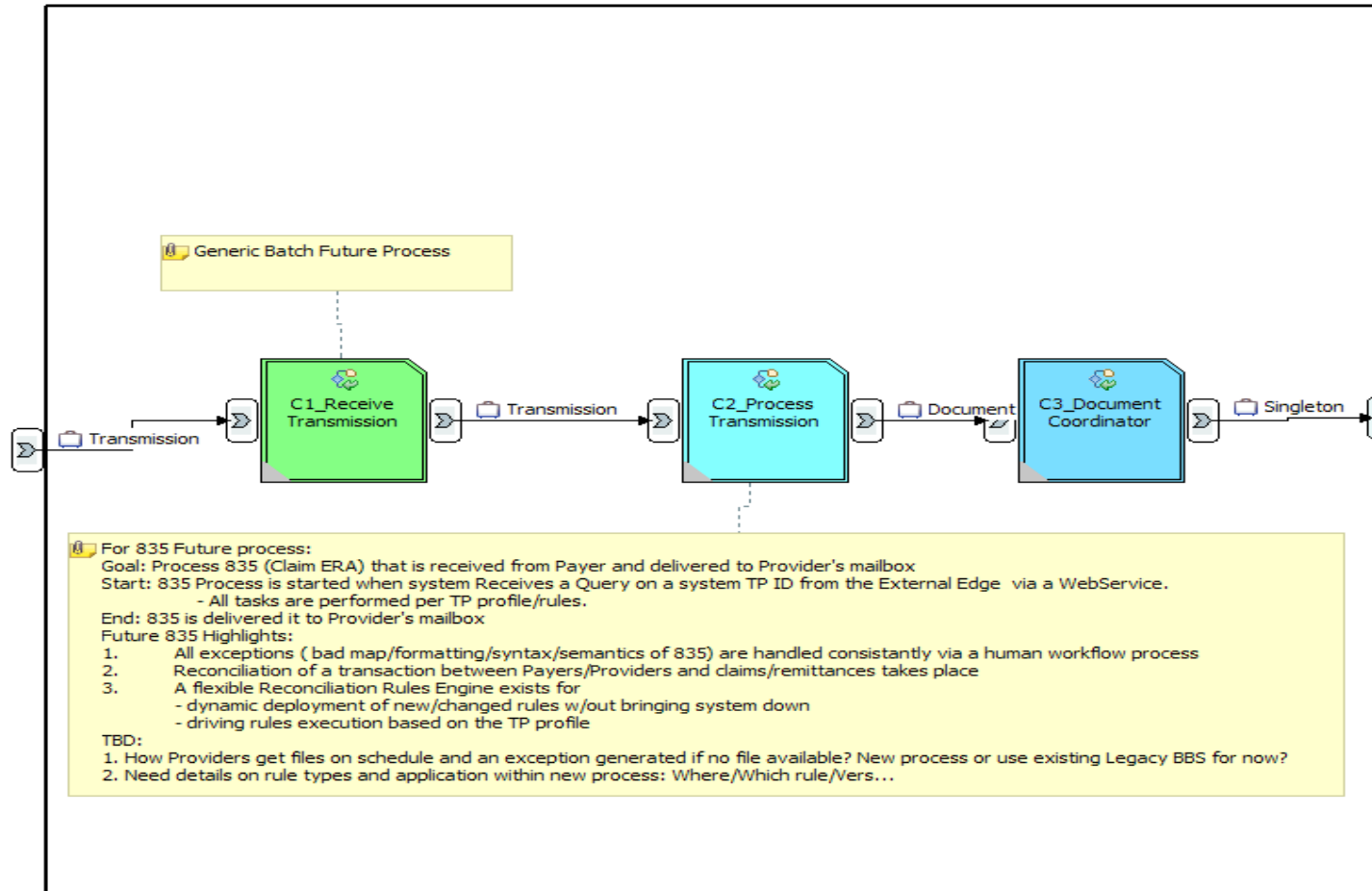
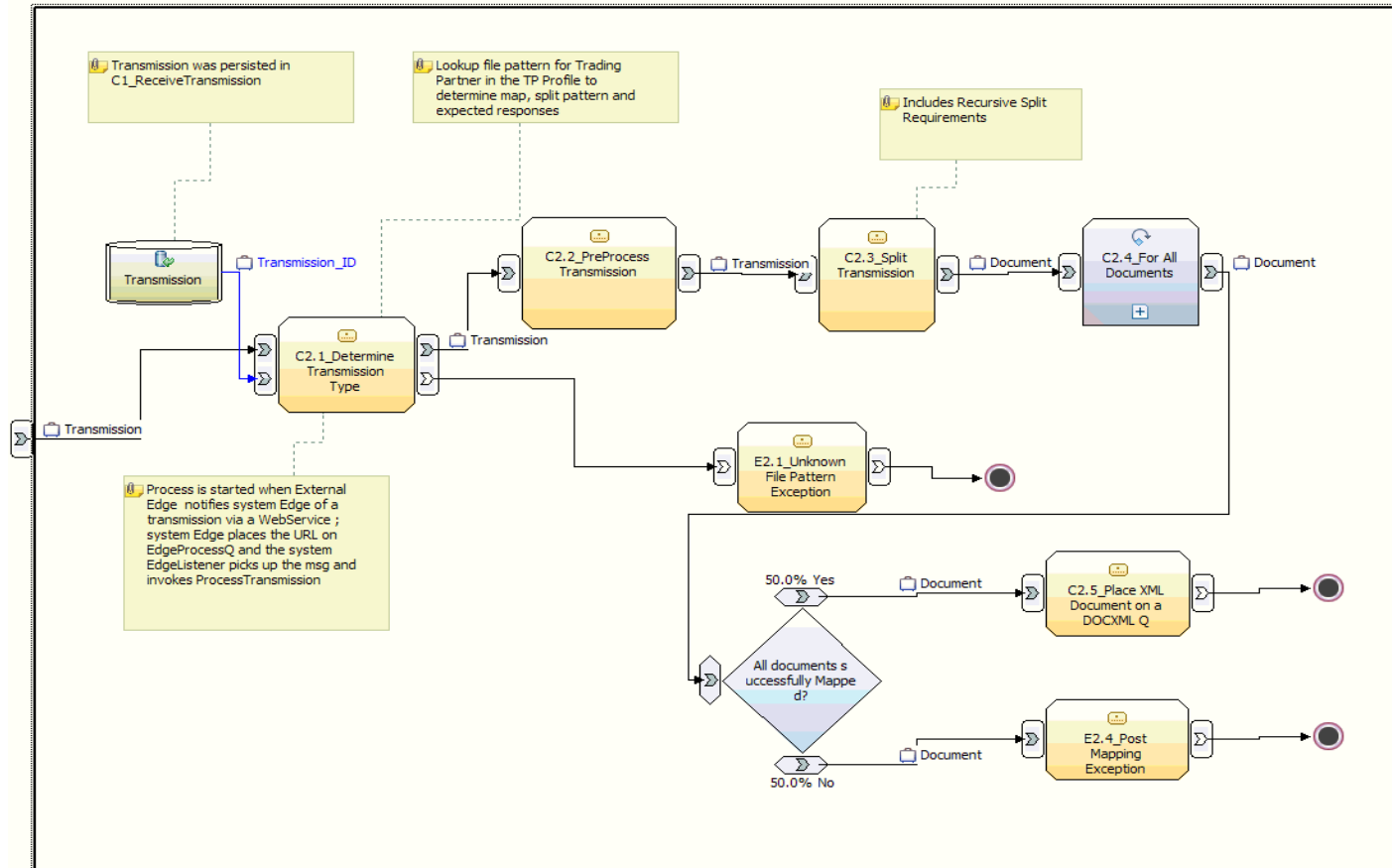# Batch Process Model – Current State (cont)
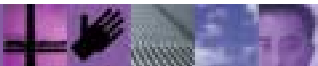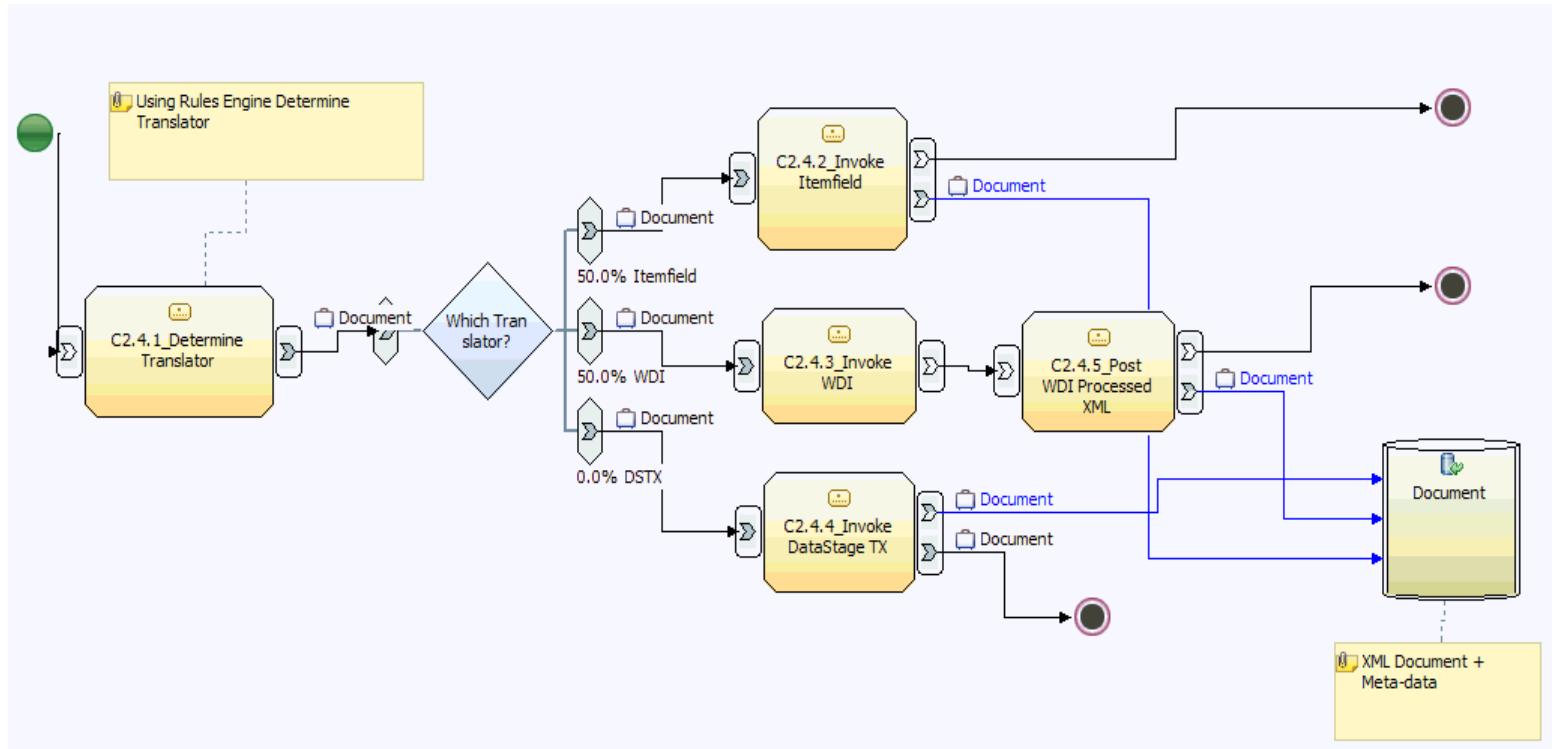
Classifiers

- Processes in Customer Model that correlate to classifiers

  - ➢ Receive Transmission

  - ➢ Process Transmission

  - ➢ Document Coordination

  - ➢ Produce Secondary Claim

  - ➢ Update Data Warehouse

  - ➢ Bulk Outgoing Transmission

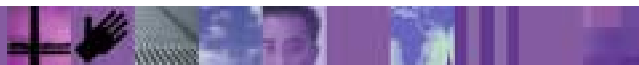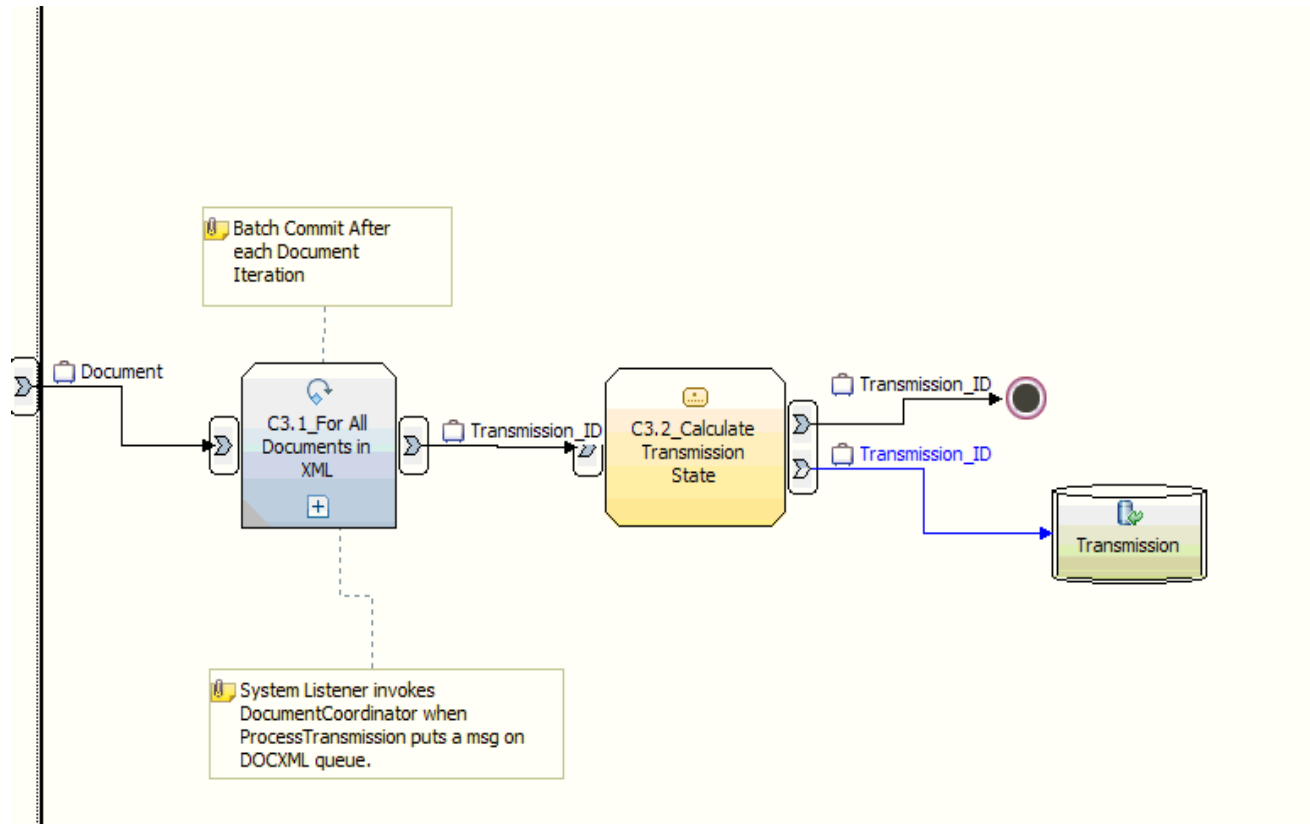 - ➢ Deliver to Trading Partner Hub

  - ➢ Deliver to External Edge
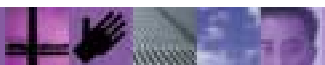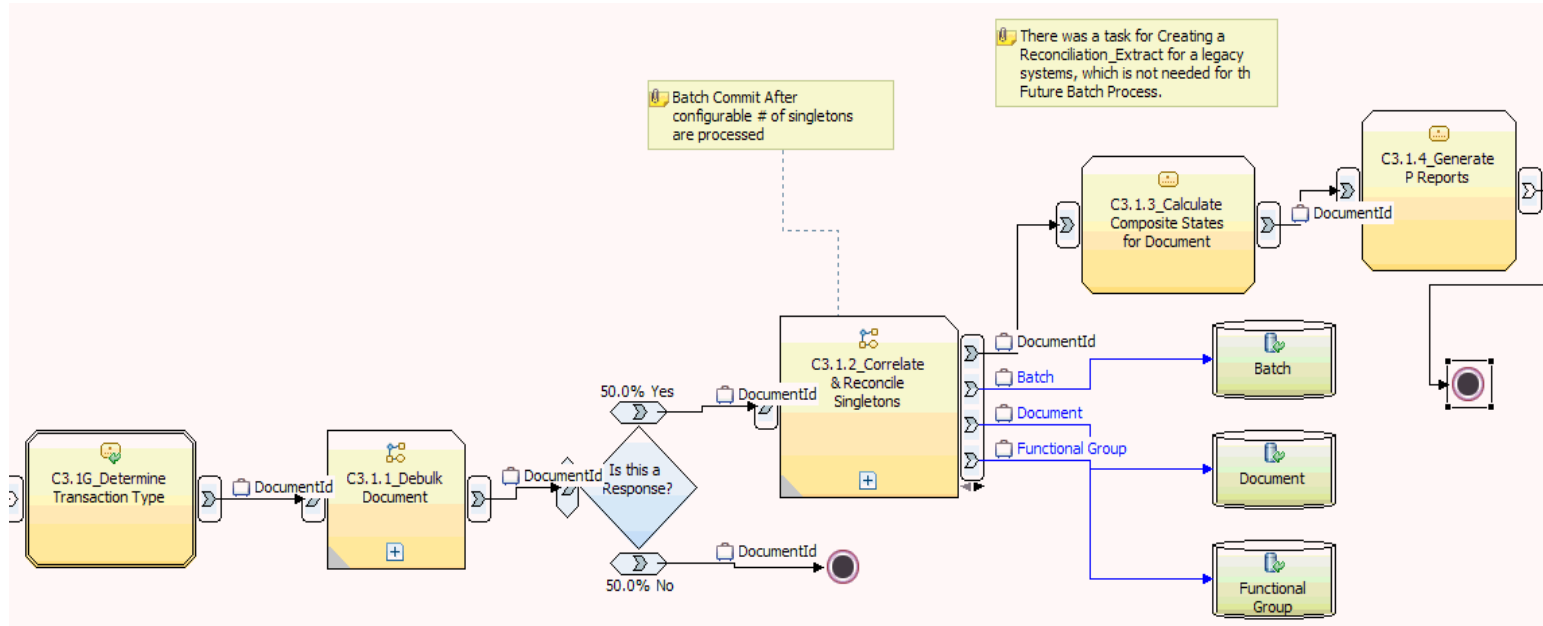
C2_Process Transmission – Sub Process

C2.4_For All Documents – Invoking WDI
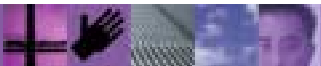
C3_Document Coordinator

C3.1_For All Documents in XML Sub Process

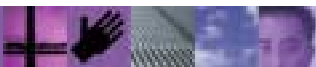# C3.1.1_Debulk Documents
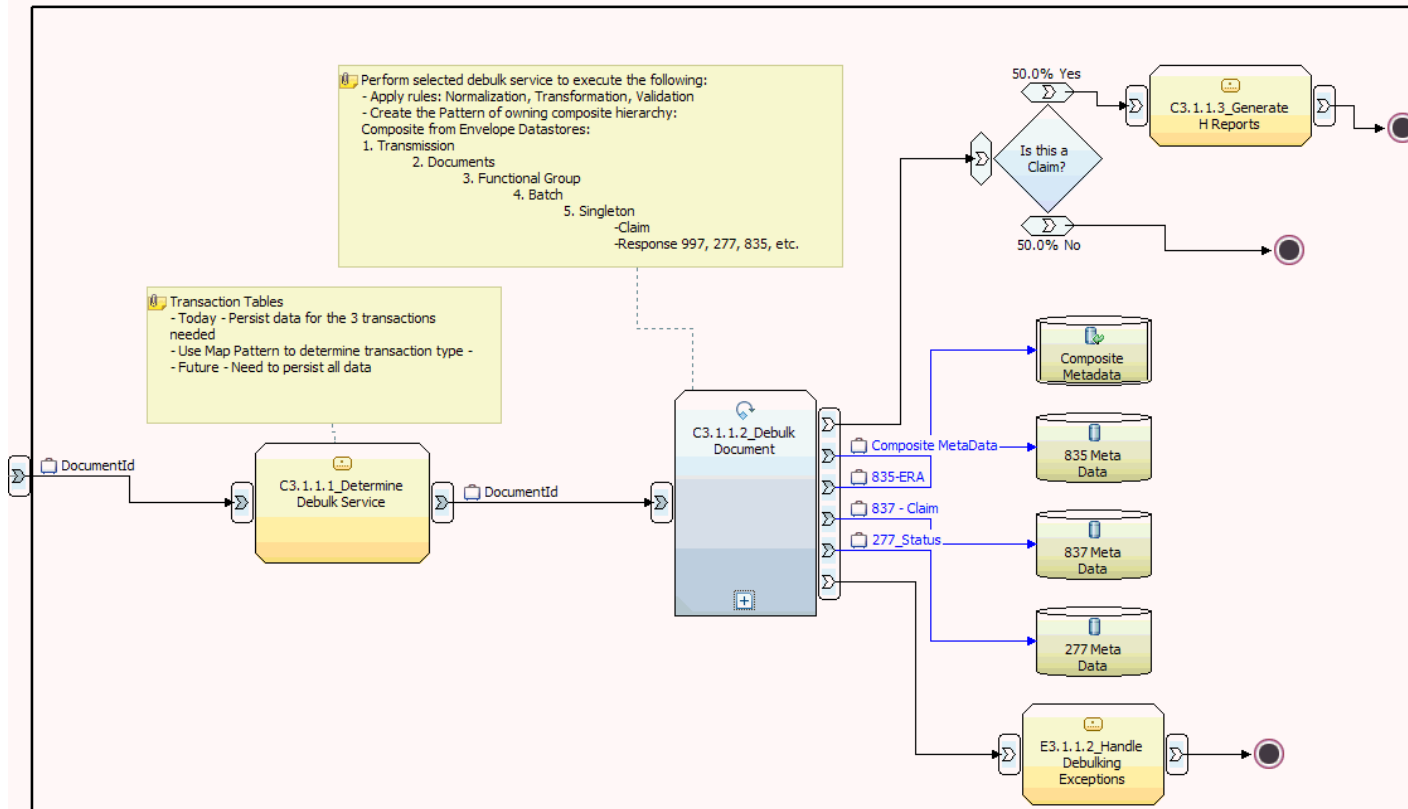
Use Case Development

- Templates were generated by the BPM team
- Use Case name:

  ➢ Based on the naming convention of the task in the model

  ➢ Use Case ID based on process ID in model

  ➢ Version number was added to track changes

Project ID: <Project ID>
Use-Case Specification:
C2.1_Determine_Transmission_Type
Use Case ID: C2.1

Version 0.2

Use Case's

- Use Cases included the following sections:
  - ➤ Brief description of the task
  - ➤ Actors
  - ➤ Goals
  - ➤ Frequency
  - ➤ Assumptions
  - ➤ Preconditions
  - ➤ Postconditions
  - ➤ Flow of events – process model diagram provided in use case
  - ➤ Exception flows
  - ➤ GUI requirements
  - ➤ Audit and Logging requirements
  - ➤ Special requirements
  - ➤ Extension points
  - ➤ References

GUI Requirements Detail From Use Case – Split Transmission Example

Use-Case Specification: C2.3_Split Transmission

10. GUI Requirements

All GUI screens should be designed for the non-technical users with the user-friendly interfaces and logical data entry flows and prompts.

A Split Transmission screen is designed for entering data that will dynamically generate the rule for splitting this transmission.

The following fields need to be defined.

    a. Actual string for the split pattern to use

       • List current available string patterns to choose from

    b. What output file format to produce

    c. The file names of the output files

    d. The maps associated with those output files

For this use case there is no wireframes or mock-ups of the UI requirement.
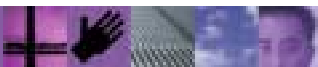
End to End Architecture Vision

Enterprise

DMZ

Inter-Enterprise Zone

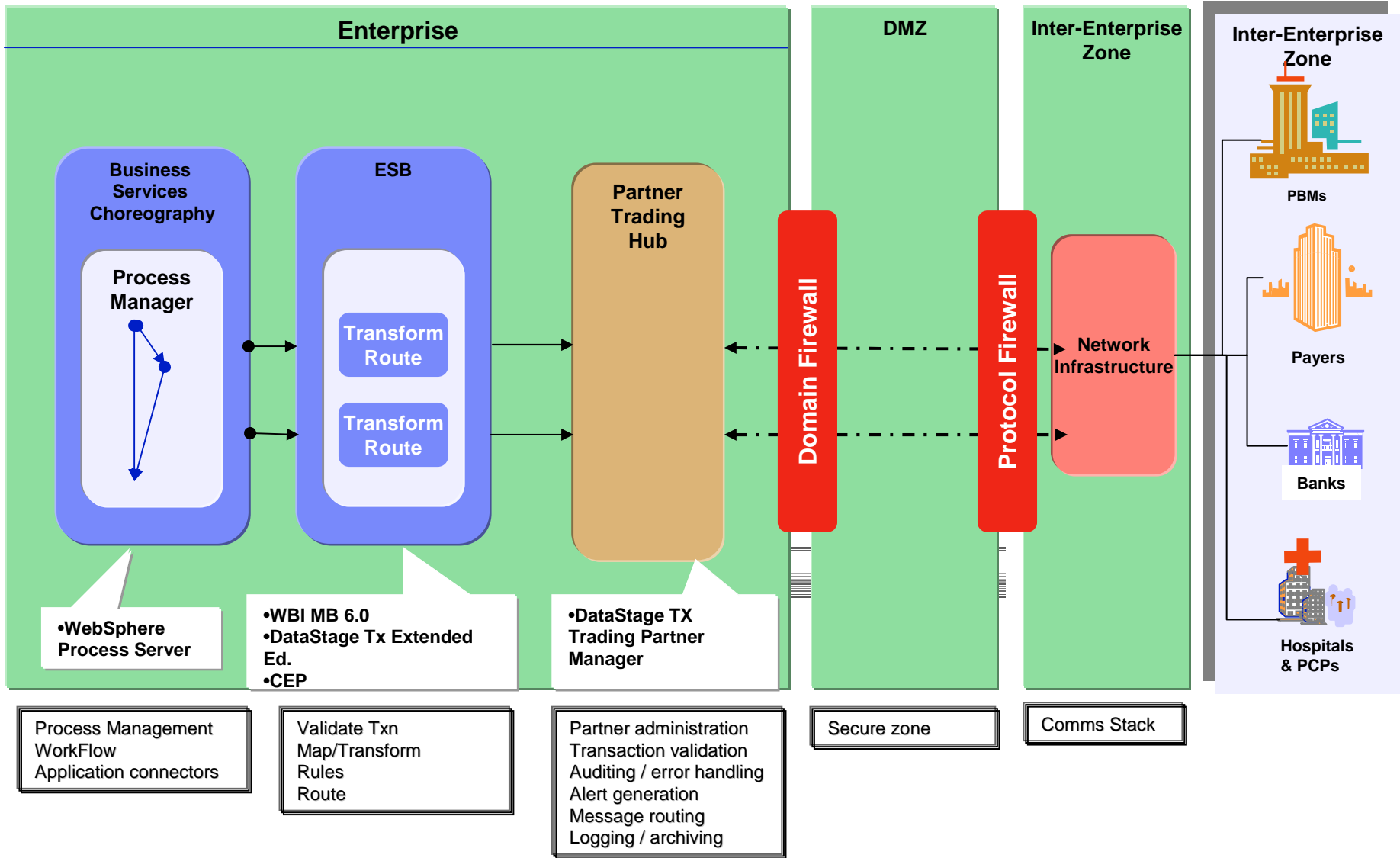**Inter-Enterprise Zone**

Business Services Choreography

Process Manager

ESB

Transform Route

Transform Route

Partner Trading Hub

Domain Firewall

Protocol Firewall

Network Infrastructure

PBMs

Payers

Banks

Hospitals & PCPs

•WebSphere Process Server

•WBI MB 6.0
•DataStage Tx Extended Ed.
•CEP

•DataStage TX Trading Partner Manager

| Process Management WorkFlow Application connectors | Validate Txn Map/Transform Rules Route | Partner administration Transaction validation Auditing / error handling Alert generation Message routing Logging / archiving | Secure zone | Comms Stack |

Lessons Learned

Modeling complex EDI transactions in the healthcare industry

- ➢ Can take lots of time and effort

- ➢ Can get conflicting views of how a process works and should be designed

- ➢ It can be difficult working with a customer who doesn't know about or value business process modeling and BPM methodologies up front

Recommendations to Mitigate Problems

- Plan Ahead before starting the interview process

  - ➢ If SME's don't have an overall picture of what the goals are bring them together and do a workshop to train them ahead of the modeling work if possible

  - ➢ Try to get the team thinking about BPM approach and methodology from a business perspective – not from an IT perspective – this can be difficult

  - ➢ Develop a method to get models and use cases approved early on

    - – Need to have an approver that has authority and will stand behind the decisions to approve so design and development work can begin

    - – Approver should be an part of the core team, and a key stakeholder and not someone outside the process

Summary

- Discussed Why we Model and Objectives for Modeling EDI Transactions
    - From a real life business process modeling engagement
- Reviewed Essential Elements of an EDI Transaction
- Case Study
    - Issues with EDI transactions
    - Customer reasons to improve process
    - Development Process and Business Process Management Approach and Modeling
    - Discussed challenges
    - Reviewed Models and Use cases
- Discussed Lessons Learned and Recommendations

Thank You
for your time