Step 8:

Conduct Business Process Reengineering

Version 1.0, February 2005

1   Step Description/Objectives:

Step 8, *Business Process Reengineering* or BPR is the discipline of first analyzing and then redesigning current business processes and their components in terms of their effectiveness, efficiency and added value contribution to the objectives of the business. The Conduct Business Process Reengineering Step is intended to gather and refine business requirements in support of a modernization effort for a defined business focus area (BFA). The BPR Step begins with planning activities that include the formation of the BPR team, the creation of a BPR scope document, and an examination of existing blueprint artifacts that relate to a given BFA. During a facilitated BPR workshop, the BPR team examines the current and future business process models and refines the models as needed. Using information gathered during the BPR workshop, the team updates the BFA BRM Hierarchy Diagram with any additional function/activities identified; updates the Target Conceptual Data Model with any data subject areas or entities; updates the Conceptual Data Model to Business Function Matrix with any additional BRM to DRM mappings; updates the Target Conceptual Data Entity Stewardship Matrix; and updates the Integrated Target Services and Systems Model. Findings and recommendations resulting from the BPR workshop are formally presented to the IBAT/ARB. If deemed appropriate, the refined and documented business requirements will form the foundation for the development of a formal business case in the follow-on Step.

2   Step Purpose:

Step 8 is performed for one or more of the following purposes:

- To further refine and validate information and business requirements in support of BFA modernization objectives

- To select which functions and/or processes within the scope of the BFA effort need further analysis

- To identify and document the shortcomings and inefficiencies of current business processes

- To identify which functions and/or processes are performing well and are candidates for inclusion in the future state.

- To identify potential opportunities for functions and/or processes harmonization across departments, geographic locations, Bureaus, etc.

- To identify potential opportunities for enabling technologies / services to automate functions and/or processes in the future state.

- To provide the basis for sizing the effort required to understand and assess the current environment and/or redesign the future environment

Impact of Not Performing this Step

If Step 8 is not performed, then:

- The shortcomings and inefficiencies of current business processes will not be documented risking the automation of inefficient processes by any newly procured services/system.

- Opportunities for improvement (e.g. horizontal services, enabling technologies, reduction of cross-departmental inefficiencies, etc.) may be missed.

- The existence of services and/or systems automating similar existing processes across the enterprise will not be examined resulting in the development and/or procurement of redundant and possibly incompatible services/systems.

- Responsibility and accountability for the implementation of process changes may be difficult to establish and assign.

- Individual processes will not have a known baseline performance for future measurement of performance improvement, wherefore it will be virtually impossible to directly quantify any cost reduction, cycle time improvement, or performance improvement achieved by the newly procured services/system.

- It will not be possible to identify tactical "quick" wins and prioritize other improvement opportunities.

3   Tasks to Perform Step:

Step 8 starts with the following inputs:

Inputs:

- BFA (Business Focus Area) Vision Document

- BFA SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis

- BFA As-Is Value Chain

- BFA Target Value Chain

- BFA IDEF0 Activity Models (if any)

- BFA BRM (Business Reference Model) Hierarchy Diagram

- BFA Conceptual Data Model

- BFA Conceptual Data Model to Business Function Matrix (level 5 business functions to entity)

- BFA Conceptual Data Entity Stewardship Matrix

- BFA Integrated Services and Systems Model

- BFA Data Standards Document

Detail:

There are four major tasks with associated sub-activities involved in performing this Step:
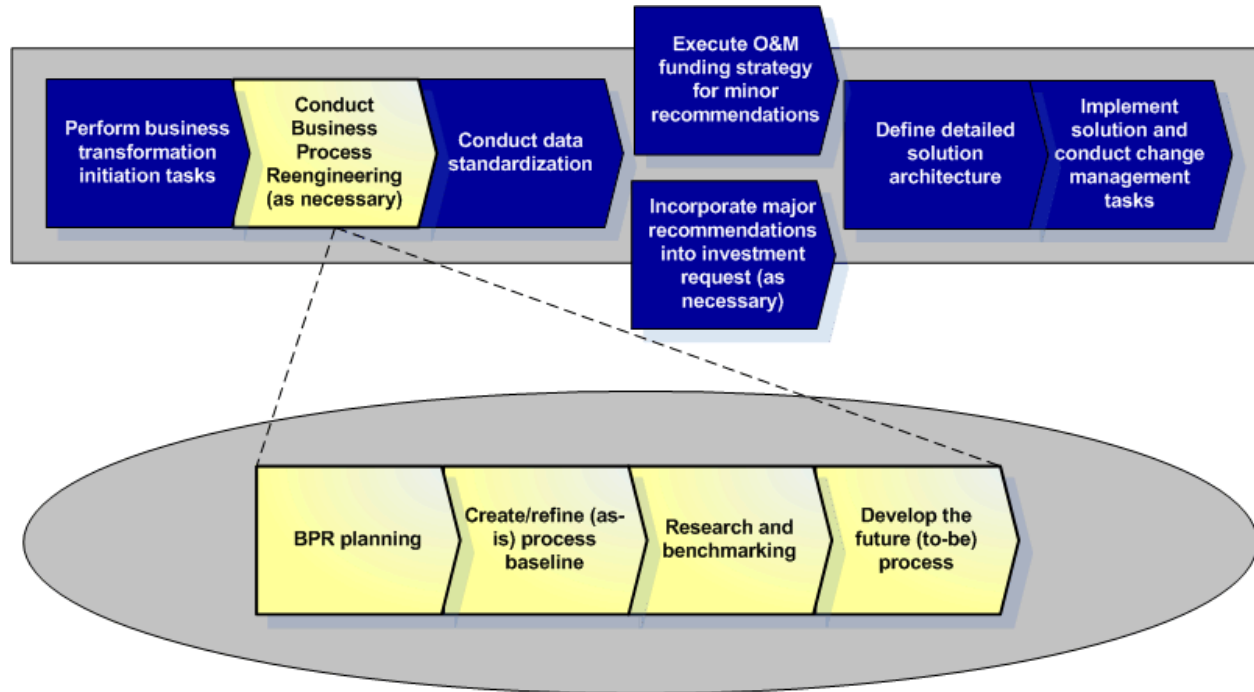
Task 1: *BPR Planning*. The BPR Step begins with planning activities that include the formation of the core modernization implementation team(s) with representatives from sponsor business areas, the creation of a BPR scope document, and an examination of existing blueprint artifacts that relate to a given BFA. This Task is largely an examination of existing artifacts and formal establishment of the BPR team.

Activities:

1) Establish the BPR team, conduct kickoff workshop, and document core team membership and contact information.

   a) Project Sponsor

   b) Project Proponent

   c) Team BPR Facilitator

   d) Core Subject Matter Experts

   e) Other Teams or groups the project will need to work with or interview during the project, including other BPR teams, oversight committees, etc.

2) During the kickoff workshop, determine and document how much time core team members are expected to devote to the project (how may hours per week).

   a) How often will the team hold meetings?

   b) Where will meetings be held?

   c) How will information be communicated between team members (changes to diagrams, comments, etc.)?

3) During the kickoff workshop, determine and document BPR Charter & Scope.

   a) Describe the business issue or problem that justifies the project from a "process" perspective and document this within the BPR Scope.

   b) Examine existing BFA process artifacts for the conceptual diagram of the current process and clearly delineate the process boundaries for that which is in scope for the BPR effort.

4) During the kickoff workshop, discuss and document BFA project budget considerations with the project sponsor.

   a) Is travel involved, how much, when and approximate expected costs?

   b) Are there software or hardware requirements to consider?

   c) Does the team plan to utilize the Business Process Transformation Lab? What are the estimated fees associated with consultants involved?

   d) What other resources will be required?

   e) Other anticipated expenses?

Task Outputs:

- BPR Team Roster Document
- BPR Scope / Charter Document

Task 2: *Create / Refine (As-is) Process Baseline.* Before the BPR team can proceed to redesigning the process, they should understand and formally document the existing process.

Activities:

1) Examine and update (if necessary) existing BFA process artifacts

   a) Examine existing BFA process artifacts to ensure they adequately identify resources associated with the process from start to finish. Ensure they include existing automated applications and the role they play in the process.

   b) Examine existing BFA process artifacts to identify who does what, when, why, how, and what the products, roles, responsibilities, etc. are.

   c) Examine existing BFA process artifacts to ensure existing application / systems included within the scope of the BFA effort are documented.

2) Create the business process map for the current normalized (As-Is) process. In some cases, IDEF0 Function / Activity models will exist for a BFA and this step will largely be an examination and validation of existing artifacts. More than likely, the team will need to normalize existing process models and validate mappings of activities to data subject areas (Inputs / Outputs), systems (Mechanism), and strategic goals / objectives (Controls).

   a) Gather what materials exist and review these to identify candidate business activities - ideally, using teams of two or more to produce initial lists. These lists should then be combined and reviewed to produce a consolidated list of candidates.

    b) Potential analysis questions:

        i) What are the major tasks performed in the department / major responsibilities of the people in the area? (Careful not to get bogged down in detail.)

        ii) What are the major inputs and outputs from the area (interfaces)?

        iii) What function deals with specific inputs and outputs?

        iv) What are the major events that the business responds to and what functions deal with these (including the temporal events)?

        v) What management, planning and control activities are there?

    b) The review of existing material will potentially uncover data as well as process requirements. A Business Activity name follows a Verb-Noun construct, e.g., Design Products, Create Leads, Negotiate & Settle Claims, Manage Vendors. Activities can be identified by picking key verbs out of the material; information entities (e.g. data subject areas and data entities) can be identified by picking key nouns out of the material.

    c) To derive activities from interview notes, take verbs and list them under the appropriate activity group (Note: Not all verbs will be at the same level of detail). Expand each verb to a full activity name. Repeat verbs if they appear with different nouns. Repeat until there are no more verbs in the interview notes. There are often inconsistencies across an organization in the terms/labels used for information entities. Consequently, there will be inconsistencies in the terms/labels used for activities. When lots of documents have been reviewed, some degree of consolidation will be required to eliminate duplicates and synonyms.

    d) To derive activities from High-level Events, take one event and give a general name for the activity used to handle the event. Look at the activities that handle the event and decompose them if appropriate.

    e) For a given information entity (e.g. data subject area or data entity), understand what triggers its creation, a change in its attributes, the creation of new relationships and its death / archive.

    f) Relate activities to Mission, Goals and Objectives - ensure the business strategy is supported by the business activity model.

    g) If previously developed process models exist, these may have been produced as outputs from individual development or business process reengineering projects. As such, they may be at a very detailed, implementation-dependent level and will not have taken a cross-enterprise view. They may also have been defined based on organization boundaries rather than logical activities. The currency of these models requires to be checked. However they can still be very useful.

    h) There may be more than one process map for the existing process, if so, the team will create and validate these with the business community and stakeholders and develop an accepted normalized version of the process. .

2) Group / classify similar activities. The consolidated list of candidate business activities is reviewed and similar activities are grouped. Activities are similar if they manage similar assets/data. This is the start of process normalization.

    a) Start with a single statement of the Enterprise or Business Area. Write a single statement describing the activities of the business area being studied. Begin with the name of the enterprise as the "root".

    b) Break this "root" into 4-8 more detailed statements/activity groups, ensuring all aspects of the parent root are covered by these sub-activities.

    c) Progressively break down each of the activities with more detail. Write sub-activities in their natural logical order (but not dependency).

    d) Break down each of these sub-activities into new child activities etc. If 'business scenarios' have been developed as part of previous Business Architecture deliverables, these will be valuable

inputs. Business scenarios describe ways that work processes are carried out in a business activity. They usually define the set of steps followed in an activity and actions taken by people with assigned roles in the activity.

e)   There will be a tendency to group activities by organizational boundaries or implementation characteristics. Those classifications must be challenged. It may be helpful to remove implementation characteristics from the activity and restate it more logically.

f)   The development of the activity model is an iterative process. Functional decomposition is 100% top-down in theory! - However it is usually easier for people to think bottom-up and then to merge the lower-level decompositions into larger model. In reality, the model will be developed using a combination of top down / bottom up / middle out analysis. Iterate and revise the higher-level names and structure if necessary

3)   Remove redundant activities. Each activity is reviewed to identify and remove redundancies. Redundancies can be resolved by changing the classification scheme, i.e., the activity groups, or by creating a new group. This task is critical to identify opportunities for sharing across an enterprise.

4)   Extend and refine the baseline model (as necessary). In this activity, the previously developed baseline model is extended and refined, based on input from representatives of all parts of the business, within the engagement scope. The cross-enterprise nature of the work product means that the objective is to produce a model that represents the requirements of all the business areas. As this requires a degree of cross-enterprise agreement, the best approach is to use facilitated, modeling workshops, attended by representatives from all parts of the business concerned. These representatives must have a strategic, and not just a tactical / operational, view.

a)   Use the baseline model, (if developed) as a starting point. Review each candidate business activity group (and decomposed activities) with the business participants. The areas of focus should be:

i)   Does each business area have the same view, or perspective, of this activity? (i.e. does it mean the same thing to different people?)

ii)   Are there any major activities that are missing?

iii) Is there any overlap between the activities?

b)   Check for completeness. Ensure all aspects of a parent activity are covered by the child sub-activities (i.e. the collective definitions of each child completely describe the parent activity). Also ensure that all the sub-activities belong under the parent activity. The Business Activity Model is one of the foundations of the Enterprise Architecture. As such, it is important that it is developed with a degree of rigor. The definitions should be complete and unambiguous. Even when the engagement is being carried out on a subset of the enterprise, it is important that where possible, definitions are created which could equally apply to other parts of the organization.

c)   Use the Conceptual Data Model (either built as part of this engagement, or pre-existing) to cross check business activities. Identify all entities created by an activity. Make sure that one activity exists to create each entity. Regroup/expand activities and information entities if necessary to create a 1:1 relationship between activities and information entities. You should also consider the activities performed for each role that has been defined.

d)   When doing the modeling, it is important that the team do not restrict themselves solely to the activities of the enterprise as they stand today, (although these will tend to dominate the modeling activity). A visionary approach should also be adopted; identifying the activities that are required to support future goals and objectives. For example; "If there is currently no need for market research, will this still be the case in 5 years?" These documented future requirements will form the foundation for To-Be model development.

e)   Theoretically, activity analysis should continue until every activity is decomposed into leaf-level activities. For Enterprise Architecture this is not practical and of questionable value - you should focus on why you are doing this. Low level decomposition is normally tackled as part of detailed analysis. The number of business activities defined will vary with the level of detail, scope of the

engagement and complexity of the business. Controlling the level of detail in the functional decomposition is important. Sufficient detail is required to perform activity/information clustering. A decomposition is too detailed if an activity

    i)   Describes document handling

    ii)   Describes conditional situations, e.g., Handle Claims Under $50

    iii) Describes how something is performed, e.g., Open and Scan Mail

    iv) Does not produce at least one clear result or output

5) Validate the As-Is models with business owners and Subject Matter Experts. It is essential that the completed model have support from the highest level sponsor possible so that it can be used across the business in follow-on efforts. Consider producing a short summary presentation covering the findings of the activity and use the issue/solution to gain support for the model's further use. The BFA process model should be reviewed by the major business representatives that have been involved in its development. A set of "quality criteria" for the business activity model should be used. Using the quality criteria, the business representatives (or whoever is responsible for agreeing the sign/off / acceptance of the work product), should review the activity model. Potential criteria are as follows:

    a)   The functional decomposition covers all the major areas that are important to the business.

    b)   The activities are distinct and do not overlap.

    c)   The names and descriptions of the activities are clearly understood and recognizable by the all areas of the enterprise.

    d)   The model represents the functional and process requirements of the enterprise.

Task Outputs:

- Normalized As-Is IDEF0 model(s)

- Updated BFA BRM Hierarchy Diagram (if applicable)

- Updated Conceptual Data Model (if applicable)

- Updated BFA Conceptual Data Model to Business Function Matrix (if applicable)

- Updated BFA Conceptual Data Entity Stewardship Matrix (if applicable)

- Updated BFA As-Is Integrated Services and Systems Model (if applicable)

Task 3: *Research and Benchmarking.* After the creation of normalized process models, the next step is benchmarking and analysis. "Benchmarking is the comparing of both the performance of the organization's processes and the way those processes are conducted with those relevant peer organizations to obtain ideas for improvement." The peer organizations need not be competitors or even from the same industry. Innovative practices can be adopted from anywhere, no matter what their source.

Activities:

1) Research & Benchmarking Activities

    a)   Evaluate internal activities against other organizations and companies and compare the results especially in the e-Gov initiatives.

    b)   What are the differences and similarities, and why do they exist?

c) If there are processes or portions of processes discovered during this phase that are eligible for consideration here, the Team needs to make those recommendations and illustrate them in the business case as possible opportunities for the BFA.

d) Present recommendations to BPR Team, Subject Matter Experts, Sponsor(s)

Task Outputs:

- Recommendations and Findings for Process Improvement Document

Task 4: *Develop the Future (To-Be) Process.* Having identified the potential improvements to the existing processes, the development of the To-Be models is done using the various modeling methods available, bearing in mind basic principles of process design. The goal of To-Be process design is to produce one or more alternatives to the current situation, which satisfy goals of the enterprise. To-Be process design is still more of an art than a true engineering discipline. In some respects, the development of the future (To-Be) process model roughly follows the documentation of the normalized As-Is processes. As with As-Is process development, it is necessary to elicit comments from domain experts and to group and normalize collected activities. When developing the To-Be processes, however, it may be an impediment to innovation to use domain experts knowledgeable with the As-is processes. Mayer[1] describes an object-state transition approach to process design that examines the end process first to fundamentally shift the perspective of domain experts into thinking "out-of-the-box". Mayer also provides eight basic principles of process design which have been observed to result in better process designs. The following seven principles draw from Mayer and include elements of Rummler & Brache's seven deadly sins of process improvement[2].

1) Examine best practices. Baseline process models and benchmarks provide measurement and comparison to industry/government best practices. Benchmarking may also involve the examination of similar processes outside the line of business.

2) Perform operations assessments. Operations assessment is a methodical process of analyzing how employee skill sets, business processes, and existing information systems function. The result is a comprehensive assessment of how effectively a company uses resources and how well its operating units perform.

3) Assess customer alignment. Customer alignment assesses the value of business activities as they pertain to customers to ensure that an organization is closely aligned with its customers' specific needs.

4) Analyze the solution from end-to-end. End-To-End Solutions Analysis examines an entire process to discover more effective and efficient ways of handling it. Examine business processes across all functional and organizational boundaries (including customers, suppliers, and business partners) to provide a holistic view and maximum flexibility in optimizing the process.

5) Eliminate Non-Value-Added Activities by identifying and eliminating any activities that do not provide value to either internal or external customers.

6) Perform Time Compression to reduce process time and overlap activities whenever possible. Speeding up business cycles can reduce costs and increase customer satisfaction that translates into increased revenue.

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[1] Mayer, Richard J., Dewitte, Paula S., "Delivering Results: Evolving BPR from art to engineering", 1998

[2] Rummler, G.A., Brache, A.P., "Improving Performance: How to Manage the White Space on the Organizational Chart", Wiley, 1995

7) Organize Around Outcomes. Organize and measure people and processes around goals and outcomes not as series of intermediate steps

Activities:

1) Develop the Future (To-Be) Process

   a) Building on the research from the benchmarking and best practices activities, the As-Is should be developed into a To-Be model and validated by the team and business community for further suggestions, recommendations or changes. (IDEF0 and optionally IDEF3 for To-Be process)

   b) Identify and document risks associated with implementation of the automated processes.

   c) Identify and document process improvement (from baseline to target) based on metrics identified and documented in the benchmarking activity.

   d) Identify and document the expected ROI for implementation.

   e) Identify and map the new process to Subject Function Area identified by subject function code (identify changes in roles and responsibilities that may be created by changing the process and so the Subject Function Areas can be updated to meet the business requirements).

   f) Validate the To-Be with business owners and Subject Matter Experts.

Task Outputs:

- Normalized To-Be IDEF0 and optionally IDEF3 model(s)

- Updated BFA To-Be Integrated Services and Systems Model (if applicable)

- Updated BFA Data Standards Document (if applicable)

- Recommendations and Findings Presentation (includes documented process improvements and expected ROI for implementation).

4   Step Participants: (Use Bullets)

- **Core Team Representative: Person,Org**
- **Interviewer: Person,Org**
- **Note Taker: Person,Org**
- **Subject Matter Expert: Person,Org**
- **Stakeholder: Person,Org**
- **Process Owners: Person,Org**

5   Dependencies:

The core blueprint team must be formed and must have already met to identify a list of stakeholder types, stakeholder instances, and to have assigned priority levels to each of the stakeholder types. The high priority stakeholder types will be the core focus of this Step.

6   Step Deliverables:

BPR Team Roster Document: The BPR Team Roster document will be created before the BPR kickoff workshop and updated as needed. It will document core team membership and contact information. It will contain Project Sponsor, Project Proponent, Team BPR Facilitator, Core Subject Matter Experts, and other Teams or groups the project will need to work with or interview during the project, including other BPR teams, oversight committees, etc. The document will contain key contact information such as email, phone, and geographic location to facilitate BPR

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BPR Scope / Charter Document: The BPR Scope / Charter Document will be finalized during the BPR kickoff workshop and describe the business issue or problem that justifies the project from a "process" perspective. The document will clearly delineate the process boundaries for that which is in scope for the BPR effort. The document will document BFA project budget considerations and anticipated expenses..

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Updated BFA BRM Hierarchy Diagram: The creation, refinement, and normalization of the As-Is Process Baseline may result in the discovery and/or consolidation of existing level 4 & 5 function/activities. These updates will be captured in DEAR.

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Updated BFA Conceptual Data Model to Business Function Matrix: The creation, refinement, and normalization of the As-Is Process Baseline may result in updates to the DRM to BRM mapping. These updates will be captured in DEAR.

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Updated BFA Conceptual Data Entity Stewardship Matrix: The creation, refinement, and normalization of the As-Is Process Baseline may result in updates to the DRM entity to Stewardship Matrix. These updates will be captured in DEAR.

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Updated BFA As-Is Integrated Services and Systems Model: The creation, refinement, and normalization of the As-Is Process Baseline may result in updates to the As-is Integrated Services and Systems Model. An As-Is Integrated Services and Systems Model diagram will have already been created by the core team. Following additional interviews, the diagram and its contents may need updating.

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Normalized As-is IDEF0 Model: The IDEF0 function/activity and IDEF3 process models will be captured within DEAR. The BPR effort has standardized on IDEF0 and IDEF3 notation of function/activity and process modeling respectively. FIPS 183[3] describes the IDEF0 modeling language (semantics and syntax), and associated rules and techniques, for developing structured graphical representations of a system or enterprise.

IDEF0 is a method designed to model the decisions, actions, and activities of an organization or system. IDEF0 models help organize the analysis of a system and promote good communication between the analyst and the customer. IDEF0 is useful in establishing the scope of an analysis, especially for a functional analysis. As a communication tool, IDEF0 enhances domain expert involvement and consensus decision-making through simplified graphical devices. As an analysis tool, IDEF0 assists the modeler in identifying what functions are performed, what is needed to perform those functions, what the current system does right, and what the current system does wrong. Thus, IDEF0 models are often created as one of the first tasks of a system development effort.

The primary strength of IDEF0 is that the method has proven effective in detailing the system activities for function modeling, the original structured analysis communication goal for IDEF0. Activities can be described by their inputs, outputs, controls, and mechanisms (ICOMs). Additionally, the description of the activities of a system can be easily refined into greater and greater detail until the model is as descriptive as necessary for the decision-making task at hand. In fact, one of the observed problems with IDEF0 models is that they often are so concise that they are understandable only if the reader is a domain expert or has participated in the model development. The hierarchical nature of IDEF0 facilitates the ability to construct (AS-IS) models that have a top-down representation and interpretation, but which are based on a bottom-up analysis process. Beginning with raw data (generally interview results with domain experts), the modeler starts grouping together activities that are closely related or functionally similar. Through this grouping process, the hierarchy emerges. If an enterprise's functional architecture is being designed (often referred to as TO-BE modeling), top-down construction is usually more appropriate. Beginning with the top-most activity, the TO-BE enterprise can be described via a logical decomposition. The process can be continued recursively to the desired level of detail. When an existing enterprise is being analyzed and modeled (often referred to as AS-IS modeling), observed activities can be described and then combined into a higher level activity. This process also continues until the highest level activity has been described.

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Recommendations and Findings for Process Improvement Document: Recommendations and findings for process improvement will be formally documented and used as a key communication device as well as forming the foundation for follow-on work in the creation of the normalized To-Be process model(s).

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Normalized To-Be IDEF0 Model: The IDEF0 function/activity and IDEF3 process models will be captured with DEAR.

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[3] Federal Information Processing Standards (FIPS) Publication 183, "Integration Definition for Function Modeling (IDEF0)", 1993

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Updated BFA To-Be Integrated Services and Systems Model: The creation of the To-Be process models may result in updates or changes to the To-Be Integrated Services and Systems Model. .

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Updated BFA Data Standards Document: Both the As-Is process modeling and To-Be process modeling may result in updates to the documentation of data standards. The Data Standards Document will be a simple report generated from DEAR. .

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Recommendations and Findings Presentation (includes documented process improvements and expected ROI for implementation): The final recommendations and documented process improvements and ROI will be documented and delivered as a formal presentation..

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7   Communications Considerations:

Stakeholder pre-read presentations will be distributed to internal and external stakeholders. Work in progress and interim work products will be placed in a collaborative environment (e.g. QuickPlace Teamroom) to facilitate communication among the BPR participants and stakeholders. Diagrams and reports related to the BPR effort will be periodically generated from DEAR and made accessible to BPR participants and stakeholders.

8   References:

1. Cook, Melissa A, "Building Enterprise Information Architectures: Reengineering Information Systems", Prentice Hall 1996

2. Crawford, Jeanne, "BLM BPR Activity Outline", BLM Enterprise Architecture (BEA), 2003

3. Federal Information Processing Standards (FIPS) Publication 183, "Integration Definition for Function Modeling (IDEF0)", 1993

4. Mayer, Richard J.,Dewitte, Paula S., and Painter, Michael K., "IDEF Family of Methods for Concurrent Engineering and Business Reengineering Applications", Knowledge Based Systems Inc., 1992

5. Mayer, Richard J., Dewitte, Paula S., "Delivering Results: Evolving BPR from art to engineering", 1998

6. Rummler, G.A., Brache, A.P., "Improving Performance: How to Manage the White Space on the Organizational Chart, Wiley, 1995

7. Sherr, A.L. "A New Approach to Business Processes", IBM Systems Journal 32:1, 1993

8. Subramanian Muthu, Larry Whitman, and S. Hossein Cheraghi, "Business Process Reengineering: A Consolidated Methodology", Proceedings of the 4th Annual International Conference on Industrial Engineering Theory, Applications, and Practice, 1999