

Process-based Business Transformation through Services Computing

Sinnakrishnan Perumal, and Nitish Pandey

Abstract—Business transformation initiatives are required by any organization to jump from its normal mode of operation to the one that is suitable for the change in the environment such as competitive pressures, regulatory requirements, changes in labor market, etc., or internal such as changes in strategy/vision, changes in the capability, change in the management, etc. Recent advances in information technology in automating the business processes have the potential to transform an organization to provide it with a sustained competitive advantage. Process constitutes the skeleton of a business. Thus, for a business to exist and compete well, it is essential for the skeleton to be robust and agile. This paper details “transformation” from a business perspective, methodologies to bring about an effective transformation, process-based transformation, and the role of services computing in this. Further, it details the benefits that could be achieved through services computing.

Keywords—Business Transformation, Services Oriented Architecture, Business Processes, Process-based Transformation.

I. INTRODUCTION

CHARLES Darwin propounded the theory of the survival of the fittest. According to this natural law, Organisms tend to prove their fitness by competing with each other and in this process evolution occurs, slowly transforming the whole species. This also holds true for business. Business entities also do and need to transform themselves, the faster the better, to meet the changing requirements of the business. It implies that transformation is the need of the hour for any organization, as almost every organization is facing fierce competition nowadays.

Some of the examples of business transformation are, Indian automobile entity Tata group’s Nano – small car program [1], British Telecom’s 21st Century Network program [2], Dell’s supply chain system for e-business [3], and Wal-Mart’s supply chain optimization by integrating their vendors’ systems and reducing bull-whip effect [4].

These initiatives have resulted in transforming the complete industry in which they are/were operating. Hence, a methodology and framework for transformation not only holds relevance but also becomes significant for almost every

organization irrespective of the sector and geography, and the size of the organization.

Business Transformation, as the name implies, deals with some renovation or make over brought in a business. Some of the definitions from literature are as follows. Prem and Mathew [5] define it as: “Business Transformation is a C-level leadership initiative towards corporate renewal, constituting a range of competitive strategies impacting the principal elements of a business, thus resulting in a sustainable competitive advantage.” According to Vigil [6], “Business transformation is a key executive management initiative that attempts to align the operational and technological initiatives of a company more closely with its business strategy and vision.” Enterprise Agility Inc. [7] says: “Business transformation is an integrated, business-wide programme applying change management to alter the way a company does business in pursuit of a desired future state.” As per the official website of University of Hertfordshire & University of Oxford the definition goes as: “An approach to strategy development designed to transform the business by envisioning the future of the industry, determining the future value propositions to target, and develop migration plans designed to beat the competition to the future.”

We define transformation as, “a drastic change in the way of running a business. This change may span across processes, people, technology, policies, vision or any other business component, and has a direction for meeting a specific business goal”. Business transformation presumes the involvement of top management, towards a purpose of attaining substantial process improvements, financial benefits, sustainability and market leadership through a process of renewal and revitalization. This involves developing competitive strategies which could include anything from reengineering, restructuring, or reinvention. Such a definition is also inclusive of an enterprise wide effort, favoring its stakeholders and which includes aspects of strategy, process, organizational design and technology. The aim is to redesign business activities and structures for performance gains, and then to drive organizational change to align with the new business model.

Any transformation initiative impacts one or more of the business components as follows:

- People become well trained, motivated and efficient. The workforce culture becomes well managed. Also, the culture becomes favorable to the transformation. Further, Organization structure also gets coherent accordingly.

Manuscript received June 25, 2008.

S. Perumal is with Tech Mahindra Ltd., Delta 1, Third Floor, Gigaspace, Viman Nagar, Pune - 411014, India (phone: +919923456018; email: Sinnakrishnan.Perumal@TechMahindra.com)

N. Pandey is with Tech Mahindra Ltd., Delta 1, Third Floor, Gigaspace, Viman Nagar, Pune - 411014, Pune, India (phone: +919921276567; email: Nitish.Pandey@TechMahindra.com).

- Processes become efficient in accordance with the desired objective and business vision.
- Automation of manual activities reduces the cycle time and improves the efficiency.
- Business rules are altered and made supportive to the transformation initiative and the strategy.
- Strategy becomes unambiguous and gains direction. A new outlook is established which brings clarity and objectivity.

In this paper, we would be dealing with process-based transformation, i.e., drastic changes brought through business processes for meeting a business goal.

II. TRANSFORMATION PROCESS

A. Stages of Transformation Process

As per Napoleon Hill, "First comes thought, then organization of that thought, into ideas and plans; then transformation of those plans into reality. The beginning, as you will observe, is in your imagination".

Every transformation initiative starts with an objective. Objectives may include market leadership, a venture into new markets, profit maximization, customer satisfaction, resource management, process improvement, organizational growth or handling any business crisis whether current or impending.

Next step involves generation of ideas to counter the problem. Ideas are then analyzed to check their feasibility. After passing the feasibility, a strategy is evolved, and subsequently a plan is charted out to execute the same. Execution is then carried out followed by appropriate monitoring of results and taking corrective action to ensure that the desired objective is met.



Fig. 1 Transformation Process

Sub-steps defined:

TABLE I
SUB-STEPS OF VARIOUS TRANSFORMATION PROCESS STAGES

Stages	Sub-steps
Objective	<ol style="list-style-type: none"> 1. Occurrence of a problem 2. Identification of the problem 3. Defining the problem. 4. Deriving business objective
Ideas	<ol style="list-style-type: none"> 1. Brainstorming for solution. 2. Occurrence of an idea. 3. Defining the idea.
Feasibility check	Checking feasibility with respect to: <ol style="list-style-type: none"> 1. Resources. 2. Capital 3. Technology
Defining Strategy	<ol style="list-style-type: none"> 1. Discussing alternative strategies. 2. Comparative analysis 3. Selecting the final strategy
Execution	<ol style="list-style-type: none"> 1. Regular monitoring 2. Corrective action
Monitoring	<ol style="list-style-type: none"> 1. Gathering result feedback information. 2. Analysis of the information. 3. Deviation cause identification
Corrective Action	<ol style="list-style-type: none"> 1. Proposing the correction 2. Taking action

B. Pre-Transformation Steps

After a transformation is planned, following steps become essential to make the environment conducive for the transformation to take place successfully:

- Workforce Training:** The workforce needs to be trained to inculcate skills necessary for the new expected roles. Also, the people must be completely aware, mentally prepared and motivated for the transformation and its impact over themselves.
- Cultural management:** With every major transformation, the organization's work culture undergoes change. Further, there may also be a mix of workforce belonging to different cultures. Both these changes need to be managed well in order to avoid mid-way disasters.
- Strategy formation:** Every business transformation initiative must be backed by a well defined strategy. Hence, a strategy needs to be in place before commencement of the process.
- KPI development:** The benefits reaped by undergoing a business transformation should be measurable so as to allow proper corrective action. This presumes development of Key performance Indicators for the performance to be monitored.
- Developing feedback mechanism for monitoring:** For a successful gathering of information related to transformation results, an efficient means or feedback mechanism is the pre requisite. Hence, it needs to be established.

C. Post-Transformation Steps

After achieving competitive advantage through a transformation initiative, following steps become essential to make the environment conducive for its sustenance:

- Monitoring of results: Results of transformation need to be monitored continuously for assessing its impact and hence deciding upon further course of action.
- Optimization of organizational components: Based on the results observed through monitoring, interaction between various organizational components needs to be optimized to sustain the benefits achieved through transformation in an ever-changing environment.
- Continuing the cycle: The transformation process needs to be cyclical in nature to maintain the competitive advantage. Hence, there is a need for continuous breakthrough initiatives.

D. Transformation Agents

Following agents become key to any transformation initiative:

- CIOs/CEOs- responsible for taking initiatives for transformation process.
- Process experts- provide technical guidance to process transformation initiatives.
- Stakeholders- they should be supportive and motivated towards the transformation and work for the same.

III. PROCESS-BASED TRANSFORMATION

We define transformation achieved through changes made in business processes as “Process-based Transformation”. Processes are critical to every business and constitute the soul of each business. Every change made to process brings an impact to the overall performance. In fact, every business can be represented completely through its processes. A transformation methodology can be visualized as a 3-dimensional model with the chain of processes constituting the X-Z plane, the human workforce responsible for it in the X-Y plane, and the technology itself being responsible for the Y-Z plane. Once we have achieved this conceptual clarity, it should be evident that any kind of transformation can be accomplished through changes made either in the human dimension, process dimension, or technology dimension.

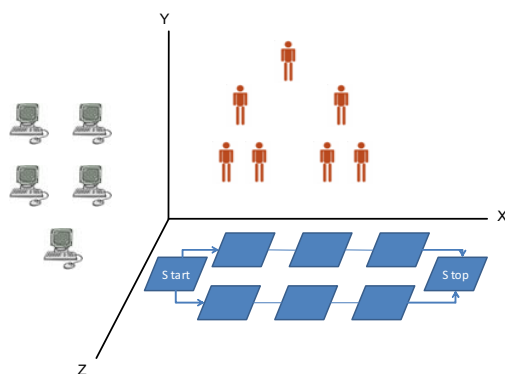


Fig. 2 Business components for Process-based Transformation

IV. PROCESS-BASED TRANSFORMATION THROUGH SERVICES COMPUTING

Service-oriented computing (SOC) provides constructs to build a massive processing power from simple, small, constructs spread across distributed applications [9]. SOC provides a platform to describe, discover and deliver business services to various potential users.

An example of a standard service can be a Credit Check service in an automobile sale process. The interaction of this service with such others would just need to be changed if the sale process undergoes any amendment.

Service-oriented computing provides an enabling platform for having dynamic processes that span across intra-organizational and inter-organizational boundaries. Also, it provides a platform to integrate applications of various types through a common XML-based communication mechanism between the applications. Web Services is the popular way of implementing service-oriented computing, and it comprises of a suite of technologies such as SOAP for transportation of messages between the service provider and the service user, WSDL for describing the services, UDDI registry for providing a directory of all the available services, and BPEL for process choreography and orchestration.

For a process-based transformation to swiftly take place, it is essential that the concerned organization develops a service layer which can directly interact and map on to the business processes. The service layer is expected to contain various basic services and composite services, the interactions among which can readily be changed in accordance with the process alterations.

For a massive process-based transformation exercise, involving multiple processes with complex interactions, a process framework without any service layer becomes very complex to implement and also to manage. Thus, a service layer is required to modularize various simple constructs and offer them as services. Once the interface definitions are standardized, processing within the organizational unit providing the service is isolated from the rest of the organization except for the interface(s) through which the service is accessed.

This can now be related to Fig. 3 where a composite, complex service that an organization needs to provide to a customer has been broken down into simple services that envelop small, isolated and distributed applications with ready-made functionalities. A composite service can be built from various simple services by creating various service layers and process layers as shown in Fig. 4. Here, it could be noted that process layers form a sandwich between various service layers, thus providing the necessary interactions to create dynamic business processes. In such a framework, an organization can adapt to the changes swiftly by:

- changing the interactions between its various service components by altering the process layer
- changing the interface definition of the service components

Further, it provides a sustained competitive advantage since it supports continuous innovation and improvement, and

```

graph TD
    FO([Final Objective]) --> L1_1([L1])
    FO --> L1_2([L1])
    FO --> L1_3([L1])
    L1_1 --> L2_1_1([L2])
    L1_1 --> L2_1_2([L2])
    L1_2 --> L2_2_1([L2])
    L1_2 --> L2_2_2([L2])
    L1_3 --> L2_3_1([L2])
    L1_3 --> L2_3_2([L2])
    L2_1_1 --> L3_1_1([L3])
    L2_1_1 --> L3_1_2([L3])
    L2_1_2 --> L3_1_3([L3])
    L2_1_2 --> L3_1_4([L3])
    L2_2_1 --> L3_2_1([L3])
    L2_2_1 --> L3_2_2([L3])
    L2_2_2 --> L3_2_3([L3])
    L2_2_2 --> L3_2_4([L3])
    L2_3_1 --> L3_3_1([L3])
    L2_3_1 --> L3_3_2([L3])
    L2_3_2 --> L3_3_3([L3])
    L2_3_2 --> L3_3_4([L3])
  
```

Organization A :

Organization B :

App: Application

Fig. 4 provides an illustration of service-oriented computing for an organization that is providing B2B services, and internally using service layers and process layers to build composite services from basic services.

Following summarizes the benefits achieved due to services computing in process-based transformation as given in section IV:

- Easy Implementation
- Process improvement
- Simpler management of services offered
- Systematic and organized processes and process automation
- Easy identification of critical points/tasks/sub-processes/services, and gaps with respect to industry standards and customer expectations

- Business and process driven
- Promote information as a service
- Foster reuse
- Leverage and modernize legacy applications
- Incorporate third party products
- Enhance B2B (business-to-business) transactions
- Simplify outsourcing
- Automate sense and respond
- Manage incremental deployments
- Enable a new integration platform

It could be noted that [10] is the only article that the authors have come across that provides the detailed impact of SOA on transformation, in addition to the methodology, governance, technology and business aspects involved in such a transformation.

Transformation with its innumerable benefits has become a necessity for an organization's survival today, the ultimate aim being competitive advantage. Each element of the business gets favorably transformed during the process. Every transformation requires a thorough preparation and implementation. A business transformation can be achieved by understanding and following a simple business model comprising of process, people and technology and utilizing the capabilities of services computing.

This paper presented the process for implementing transformation, a methodology to do process-based transformation, and finally the role of services computing in any major process-based transformation.

ACKNOWLEDGEMENT

We are thankful to Mr. Amit Saini for his support in the graphical work for various diagrams presented in this paper.

REFERENCES

- [1] Tata Motors website, "Nano". Available: <http://tatanano.inservices.tatamotors.com/>
- [2] BT Website, "BT's 21st century network". Available: <http://www.btplc.com/21CN/>
- [3] K. L. Kraemer, J. Dedrick, and S. Yamashiro, "Refining and Extending the Business Model with Information Technology: Dell Computer Corporation," *The Information Society*, 2000, vol. 16, no. pp. 5–21.
- [4] P. M. Chandran, "Wal-Mart's supply chain management practices", ICMR Case Collection. Available: <http://icmr.icfai.org/pdf/Operations%20Case%20Study%20-%20Wal-Marts%20Supply%20Chain%20Management%20Pr.pdf>
- [5] H. Prem and G. E. Mathew, "Defining Business Transformation", May 2006. Available: http://www.wibta.com/pdf_files/defining-business-transformation.pdf
- [6] M. Vigil, "ASIL BTM Methodology", Apr.2006. Available: http://www.asil-inc.com/Files/ASIL_BT_M_Webinar_04_26_06v5.ppt
- [7] Enterprise Agility Inc Website, "End to End business transformation". Available: <http://www.enterprise-agility.com/training/eebt.asp>
- [8] Booz-Allen-Hamilton Website. "Components of the Transformation Life Cycle". Available: <http://www.boozallen.com/capabilities/services/tlc/26233198>
- [9] M. P. Papazoglou, P. Traverso, S. Dustdar, and F. Leymann. "Service-Oriented Computing Research Roadmap", 2006. Available: <http://infolab.uvt.nl/pub/papazogloup-2006-96.pdf>
- [10] L. Walker, "IBM business transformation enabled by service-oriented architecture", *IBM Systems Journal*, vol. 46, no.4, 2007.