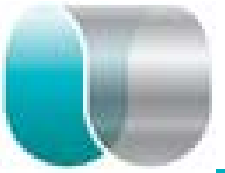


Reviewing organizational processes to reduce cycle time helps organizations to improve productivity, demand price premiums and many other benefits. This paper shows how it is done by taking actual example of a process. Reducing cycle time automatically challenges the non-value added steps and the business value add steps and indirectly effects cost of processes.



Review Processes to Reduce Cycle Time

A previous white paper by VK described the benefits of reviewing Processes in an organization to enhance the Value Addition and Cut Costs. It also described the three basic Client Demands (CD's) as Cost, Quality and Quickness—(every thing is required yesterday!). This paper deals with the “Quickness” aspect of CD's and how a review of processes to reduce cycle time helps organizations.

Cycle Time—what is it?

Cycle time, simply stated, is the actual time taken to transform inputs into outputs. For example, in a Travel Company, the actual time taken from the time client requests for an air ticket to the time it is issued and payment collected is the cycle time for issuing tickets. Similarly, in Educational institutes, the time it takes to select a student and collect the fees and register him for the course is the cycle time for student enrolment process. In a cinema theater, the time it takes for any one to walk into the cine-complex buy ticket and get seated on the allocated seat is the cycle time which directly effects the client satisfaction.

Stalk and Hout** —1990, four rules of responsiveness are interesting to look at in the context of cycle time reduction:

- **0.05 to 5 Rule:** Boston Consulting Group indicates that value is created in only 0.05 to 5% of the total time employed in a process!
- **3/3 Rule:** The time lost in processes is approximately equally attributed to three sources:
 - ⇒ Waiting for the completion of a unit of work, either for the product itself or for a required component that is yet not finished and is required for the product to be completed.

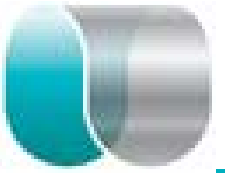
(Continued on page 3)



VK— Vinod K Mehandru

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** Stalk, G., Jr. and T.M.Haut. 1990. Competing Against Time: How time-based competition is reshaping global markets, New York, Free Press



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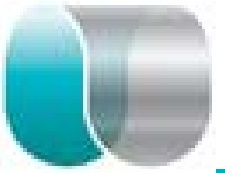
- ⇒ Waiting for physical or intellectual re-work to be completed.
- ⇒ Waiting for management decision to send work to the next step.
- **1/4-2-20 Rule:** If time is compressed in a process by one-quarter, labor productivity doubles and costs are reduced by 20%.
- **3x2 Rule:** When time is compressed in an organization's processes to be at least 50% faster than the competition, growth at three times the industry average is likely and profits of two times the industry average are possible.

It is surprising that though managements of many organizations have a gut-feel that reducing cycle time is of prime importance, it is very rare to find it as a goal in many goal sheets or balance score cards in many organizations.

Benefits of reducing Cycle Time

Apart from the reduction in cost other benefits of reducing cycle time can be summarized as follows:

1. **First to Market:** With reduced cycle times, you can be first to introduce new products into new or existing markets—as soon as a decision has been taken by the management. In fact, introducing new product process—if developed and analyzed for cycle time for its various activities can smooth line operations and improve their effectiveness.
2. **Increased Productivity:** Reduction in time for various process activities automatically increases productivity since the machines and manpower deployed on the job know in advance the time allocated and therefore use of resources is optimized resulting in higher productivity.
3. **Price Premiums:** Organizations with reduced cycle time of their processes can demand higher premium for their products and services. This is clear why FedEx is paid more by clients for their prompt deliveries of packages. Similarly, manufacturing organizations command higher price for reduced delivery time when a client's plant is shut for want of spares and vital equipment. In one case, when a chemical plant had explosion and had to be shut down—a vendor was called upon on a single party basis due to its track record of having supplied the failed equipment in minimum time as compared to other competitors.
4. **Reduced Risk:** With existing turbulent times when prices of products as well as raw material are changing by the day, it is obvious that a reduced cycle time results into lower risks due to price of products and foreign exchange variations.
5. **Increased Market Share:** Organizations with reduced cycle time use their resources per product or service for lesser duration and therefore are able to generate more production with same resources. It indi-



Review Processes to Reduce Cycle Time

rectly amounts to having reduced cost or production per unit of output.

Measurement of Cycle Time

As explained above, cycle time is the total time taken to process inputs into output. The Cycle time therefore is the elapsed time between the time when the input enters the process and the time when output of the process is ready for the end user or customer.

As explained in a previous White Paper by VK**, every process has various activities which work on inputs to convert them to output. These activities are categorized as AVA—Actual Value Add, BVA—Business Value Add and NVA—Non-Value Add. The time taken by each activity can be calculated and their addition is the Cycle time for the Process.

Cycle Time Efficiency

All organizations have host of processes. It is vital that there be a way of analyzing the processes and prioritize those processes which have greater scope for returns on efforts. One measurement for this often used is the Cycle Time Efficiency (CTE). The CTE for a process is the ratio of time taken for AVA activities to total time taken by the process. Once the CTE for various processes are established, processes with low CTE are

the obvious choice for further scrutiny.

Process Approach

We would explain the process approach to Cycle time reduction by way of a case study from Engineering Company. Engineering Company's normally order equipment from suppliers and normally require that the engineering drawings be sent by the supplier for approval by them before proceeding with manufacturing of the equipment. The intention is to make sure that the proposed supply would meet the project requirements. The drawings are supposed to be returned to the supplier within 21 days of receipt by the Engineering Company—else the vendor can seek extension in delivery of the equipment. Various steps to reduce the cycle time for this process are described below:

$$CTE = \frac{T_{AVA}}{T_{AVA} + T_{BVA} + T_{NVA}}$$

Where

T-AVA is the time taken by activities categorized as AVA (Actual Value Add)

T-BVA is the time taken by activities categorized as BVA (Business Value Add)

T-NVA is the time taken by activities categorized as NVA (Mon-Value Add)

** Mehandru, Vinod Kumar—Review Processes and Enhance Value Add—white paper available at NiMble web site:

www.nimble.in



Review Processes to Reduce Cycle Time

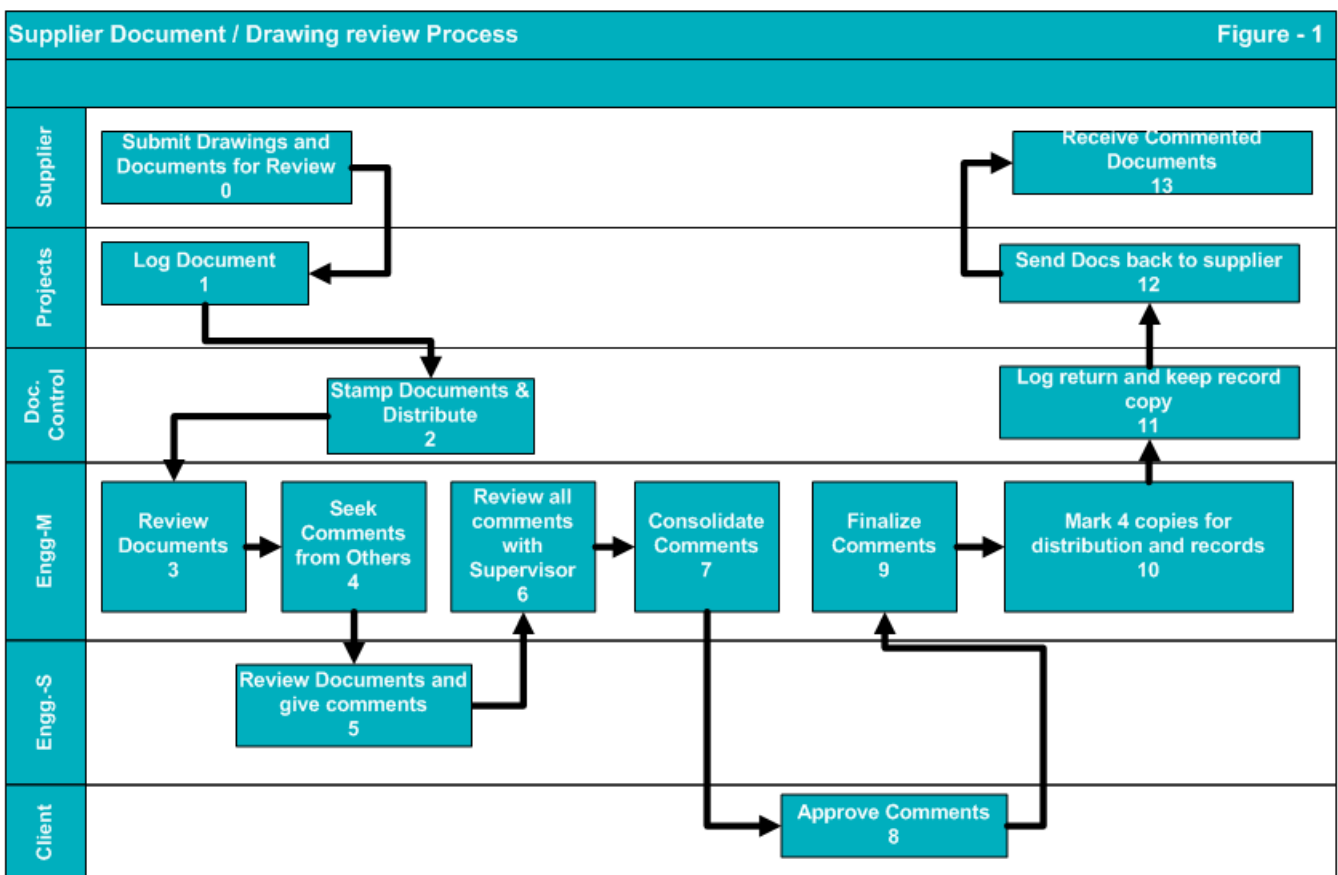
Step 1—Map the Process

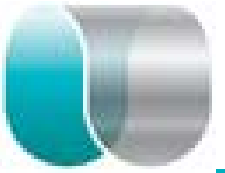
First step in reducing the cycle time for a process is to MAP the process. The process was mapped and is shown in Figure-1 below. The process consists of 14 steps (activities) as shown. This process was mapped after discussions with the players involved—i.e. Projects, Document Control Group, Engineering—M—the main engineering group responsible for the equipment, the Engi-

neering-S i.e. Engineering Support Groups like Civil, Instrumentation, Piping, Instrumentation, Process etc. and the client.

Step 2—Determine Activity Time

The next step is to carry out some actual measurements to determine the time each activity takes. Necessary data collection forms are prepared and distributed to





Review Processes to Reduce Cycle Time

various personnel to collect data needed for analysis. The data after collection for a few days is studied and is validated using standard statistical tools. This shall include Averaging, Range Analysis, Distribution etc. Based on this analysis the likely time taken by each activity say with 95% probability is determined. The 95% limit is arbitrary and can be changed for individual processes depending on criticality of the process. Table 1 shows the average time for each of the activities. It is clear the chances of finishing the process in 21 days is not feasible—unless some modifications to the process are made.

Step 3—Determine Activity and total Cycle Time Efficiency

Table 1 shows the Activity Efficiency derived by Actual working Time divided by Time in Hours for the activity. It

therefore reflects the waiting for resources to be put on the job and similar reasons. Efficiencies varies between 3% to 63% among the range of activities. The overall process CTE is just 28%! Such low efficiency provides opportunities for improvements in an organization and require deeper studies.

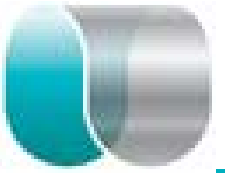
Figure 2 shows graphically the various activities and their efficiency. Over 80% of the activities fall below 50% Efficiency.

Step 4—Brainstorm to improve the process.

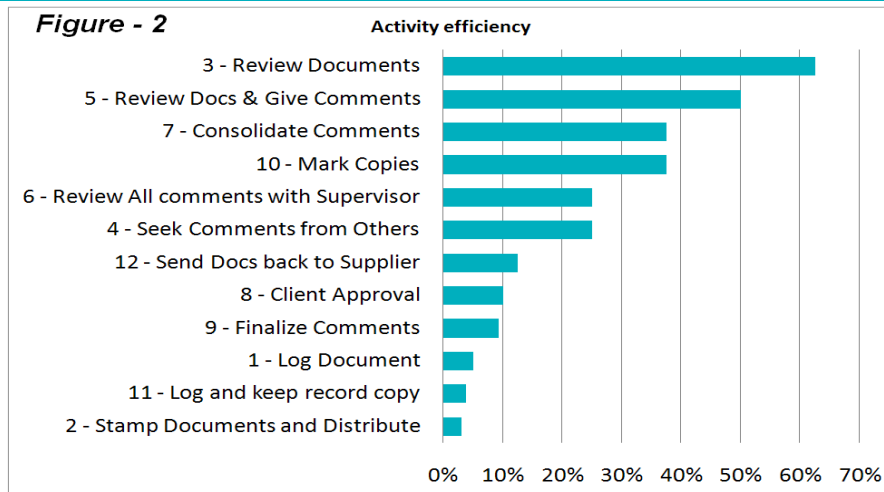
Having demonstrated the possibility for improvement, a suitable team is formed with members from all disciplines who play role in the process. Following is kept in

Table—1

S No	Activity	By	Category	Time in Days	Time in Hrs.	Actual working Time in Hrs	Activity efficiency	Remarks
0	Submit Drawings & Docs for Review	Supplier	-	0	0	0		
1	Log Document	Projects	BVA	0.5	4	0.20	5%	Assumed one lot of 10 documents
2	Stamp Documents and Distribute	Doc. Control	BVA	2	16	0.5	3%	
3	Review Documents	Engg.-M	AVA	4	32	20	63%	
4	Seek Comments from Others	Engg.-M	AVA	2	16	4	25%	
5	Review Docs & Give Comments	Engg.-M	AVA	5	40	20	50%	
6	Review All comments with Supervisor	Engg.-M	BVA	2	16	4	25%	
7	Consolidate Comments	Engg.-M	AVA	1	8	3	38%	
8	Client Approval	Client	AVA	5	40	4	10%	
9	Finalize Comments	Engg.-M	AVA	4	32	3	9%	
10	Mark Copies	Engg.-M	BVA	2	16	6	38%	
11	Log and keep record copy	Projects	BVA	1	8	0.3	4%	
12	Send Docs back to Supplier	Doc. Control	AVA	0.5	4	0.5	13%	
13	Receive Commented Documents	Supplier	-	0	0	0		
TOTAL				29	232	65.5	28%	



Review Processes to Reduce Cycle Time



mind while doing the brain storming exercise:

1. Can we remove NVA's—in this process there is none.
2. Can we reduce BVA's - in this process there are 5 Activities which are classified as BVA out of a total of 12 activities—i.e. 42% - it is considered high!
3. Can we improve on AVA's to reduce cycle time.

Step 5—Take suggestions and Act on them

Following suggestions came out of the brain-storming session:

1. Documents shall be sent by the supplier directly to the Document Control Center and not to projects. This would be logged and distributed by them.

Each document is received against a purchase order, the engineering department would make Distribution List for the documents so that no time is wasted in determining where the documents have to be sent after these are received.

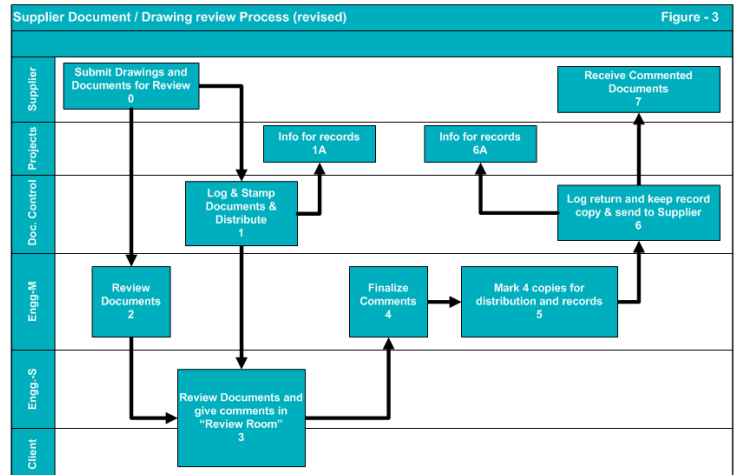
2. One set of Document shall be sent by Supplier directly to the main Engineering Group for initiating review at an early date.
3. Comments from other groups shall be obtained by keeping the copy of the documents in a designated "Review Room" where all concerned would assemble at a particular time along with the supervisor and comments finalized in one-go.
4. The engineer would mark one copy of the drawing and marking of other copies shall be done by Drafting personnel—thus educing the cost.



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5. Client was requested to place the engineer in the Engineering Company’s office and requested to be present during the review by other groups so that the review can be done jointly. It was also found that most of the time, client did not have additional comments—therefore an offer was also made to the client that should their engineer be not able to participate in joint review, it would be assumed that the comments shall be received by the concerned engineer within 2 days—else it would be assumed as “No Comments”

With these process improvements the process map was revised. Figure 3 shows the revised Process Map. Table 2 shows that with these modifications to the process, overall cycle efficiency improved to 52%.



Step 6 - Look into adoption of current technology

Organizations must continuously review the availability of current technology and it’s viable adoption if it gives good return and reduces cycle time for the process. In our example possible use of technology are:

1. Document submission in an electronic format the FTP gateways.
2. Concurrent electronic review of documents by all concerned on a Review Master kept on a server.
3. Use of Bar Coding for stamping documents for document management.

S No	Activity	By	Category	Time in Days	Time in Hrs.	Actual working Time in Hrs	Activity efficiency
0	Submit Drawings & Docs for Review	Supplier	-	0	0	0	
1	Log Document	Doc. Control	BVA	0.5	4	0.50	13%
3	Review Documents	Engg.-M	AVA	4	32	20	63%
5	Review Docs & Give Comments	Engg.-S / Client	AVA	5	40	20	50%
9	Finalize Comments	Engg.-M	AVA	1	8	3	38%
10	Mark Copies	Engg.-M	BVA	1	8	6	75%
11	Log & send to supplier	Doc. Control	BVA	0.5	4	0.3	8%
13	Receive Commented Documents	Supplier	-	0	0	0	
TOTAL				12	96	49.8	52%



Review Processes to Reduce Cycle Time

Summary

This paper clearly demonstrates the advantage of Process Mapping and its review to reduce cycle time for its processes. Such reviews indirectly helps organizations to create opportunities for innovation to its employees leading to higher motivation level and professional growth. These soft benefits have effects on employee retention and improved employee satisfaction.

How can NiMble Help?

NiMble has executed several projects involving Process Mapping, Process Documentation and Process Improvements. It can help your organization on these activities. Since our philosophy is to leave client empowered to continue in the path of growth and continuous improvement—we facilitate your employees to take up process studies and guide them how to use various tools for analysis and process improvement.