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Contents

Process Mapping

1. Introduction

Process map, also known as process flowchart, is used to describe a process. A process is defined as "a structured set of activities that transform inputs into outputs". Processes should be measurable with clear performance indicators, and assist in defining responsibilities, internal controls and work standards for compliance, consistency and performance. Processes are strategic assets of an organisation that if well managed, will deliver a competitive advantage.

2. What is Process Mapping?

A process map is a graphical representation and defines how an organisation performs work: the steps involved and their sequence; who is responsible for each step; and how work groups interact. Process mapping refers to "activities involved in defining exactly what a business entity does, who is responsible, to what standard a process should be completed and how the success of a business process can be determined". It visually describes the flow of activities of a process – the sequence and interactions of related process steps, activities or tasks that make up an individual process, from beginning to end. A process map is usually read from left to right or from top to bottom. Arrows that go from right to left or bottom to top, also known as backflow, are usually minimised as it can greatly confuse the reader.

Process mapping is an exercise to identify all the steps and decisions in a process in diagrammatic form which:

- Describes the flow of materials, information and documents;
- Displays the various tasks contained within the process;

- Shows that the tasks transform inputs into outputs;
- Indicates the decisions that need to be made along the chain;
- Demonstrates the essential inter-relationships and interdependence between the process steps; and reminds us that the strength of a chain depends upon its weakest link.

3. Why Process Map?

The main objective for process mapping is to assist organisations in becoming more efficient. It enables one to clearly define the current processes in chart form, identifying problem areas such as bottlenecks, capacity issues, delays or waste. Once identified, this knowledge provides a solid basis from which to develop solutions and introduce and plan new improved processes.

Process mapping enables an organisation to:

- Establish what is currently happening, how predictable and why;
- Make existing processes “visible” so that it can be understood more readily by those working and managing them
- Measure how efficiently the process is working;
- Gather information to understand where waste and inefficiency exist and their impact on the customer or partners;
- Develop new improved processes to reduce or eliminate inefficiency.

4. Limitations of Process Mapping

Process maps provide valuable information about a process, however, there a few limitations that should not be overlooked.

Accuracy of data

Data collected to create a process map needs to be accurate in order for the map to be helpful in outlining a process. Employees using current processes are usually asked to contribute to data collection. Collection methods include surveys, interviews, analysis of the process, statistical and past performance data. Sometimes the data collected may not be representative of the entire process or may become skewed by opinion or employee dissatisfaction.

Process Map Details

To create an accurate process map requires an attention to detail. If one does not have the patience or skill to create a process map, the task can become overwhelming. This can lead to errors in interpreting data or positioning data on the map.

Input Range

Process maps typically include data from small groups of employees. This data may not be representative of the entire process, however, if the process is large or spans multiple departments. To create a more accurate process map, one may have to first create a draft using data from a small group of employees. By sending this draft to a larger group for feedback and to verify accuracy, increases the time it takes to produce an accurate process map.

Facilitation

Participation from employees and management is necessary to compile accurate data to create a process map. Those creating the map must clearly outline their objectives to management. Management needs to encourage employees to provide useful information based on the objectives. Without clear communication between those creating the process map and management, the data collected may not be as accurate or useful as it could be.

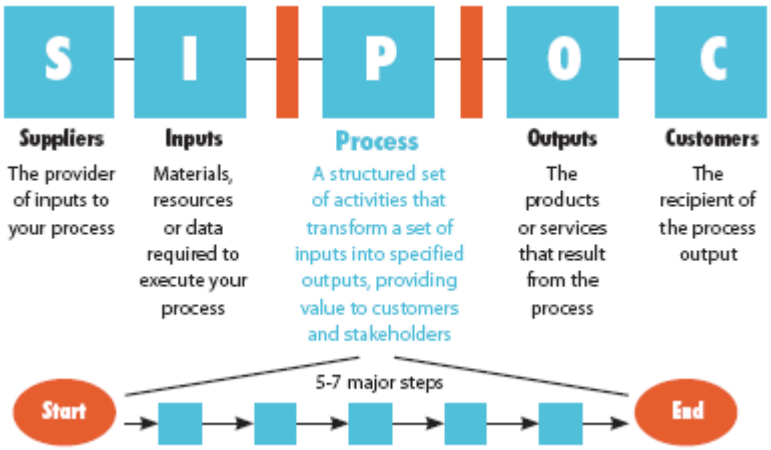
5. Types of Process Maps

5.1. Relationship Map

Relationship maps show the overall view – the departments of an organisation and how they interact with suppliers and customers. The SIPOC methodology can be adopted for relationship maps.

The acronym SIPOC stands for suppliers, inputs, process, outputs and customers. The SIPOC methodology views each process as a different organisation in itself. Each process therefore has its own suppliers, inputs and corresponding customers and outputs. The aggregation of all these processes is the system. This helps define each process with clarity. It also helps find what exactly is going wrong where.

SIPOC describes all the core processes within an organisation. It does not have details regarding who is supposed to be doing what. Rather it defines the working relationships between the various stakeholders.



Source: Surviving processes. (n.d.). Retrieved November 30, 2011, from http://www.thecqi.org/Knowledge-Hub/Resources/The-Quality-Survival-Guide/Surviving-processes/

Components of SIPOC:

- A process description is an explanation of a process that provides outputs to meet the needs of customers.
- The input and output boundaries define the start and stop boundaries of the process.
- The outputs are the "results" of the process. Special care should be taken to determine how these outputs relate to the customers' expectations.
- The customers are the people who receive and put requirements on the outputs. Customers can be either internal or external; the SIPOC chart should be specific in documenting this.
- Customer requirements and measures are the quantifiable expectations of the process outputs. The output must be measured and then compared to customer requirements to quantify customer satisfaction.
- The inputs are what the process needs to function. The input requirements and measures are the quantifiable expectations the process puts on the inputs. For a process to create outputs that meet the customer requirements, it must have inputs that meet specific requirements. The SIPOC should document what the process requires of the inputs that are received before the start of the process.
- The suppliers provide the necessary inputs to the process. The SIPOC should be as specific as possible in documenting supplier information. For example, if a supplier is internal, the SIPOC should list the function and point of contact for the particular process input.

Some steps that are required to effectively implement the SIPOC methodology are as follows:

- **Acquaint Suppliers**
  A large number of issues arise in the process because the suppliers are not well versed with the requirements. The suppliers could be internal or external to the organisation but that is not the point of contention. The idea is to orient the suppliers and make them aware of the rules, policies and procedures set for them. The Service Level Agreements must be explicitly stated to ensure that the suppliers know exactly what is expected of them.

- **Scheduling Inputs**
  Based on the negotiations and inputs from suppliers, one must carefully schedule inputs. Inputs can be in the form of men, money, material, machinery or information. The inputs must be provided to the process in the most optimum manner. There are many operations research techniques which can be used in this regard to lower the cost levels and increase the service levels.

- **Process**
  The SIPOC provides an effective methodology to get a detail look at the process. Some things that are usually defined as the part of SIPOC are as follows:

  - Boundaries
    The process boundaries must be explicitly stated. Blurred boundaries lead to ambiguity which further leads to non performance of tasks.

  - Sub Processes
    The intermediate processes and inputs and outputs must be clearly defined as a part of the process definition.

  - Process Owner
    One person must be made accountable to see end to end

execution of the process. This person will take care of any intermediate challenges that come in the way.

- **Outputs**
  Outputs must be expressed in terms of deliverables which can be verified. Therefore having outputs such as customer satisfaction is not correct. This can be the purpose of the process, however the output will be something like the best possible service (defined using SLA) provided in the least possible time (specify time in minutes). It is important to keep the outputs quantifiable because what cannot be measured cannot be managed.

- **Customers**
  The customer's job is to consume the outputs of the process as well as provide feedback. The feedback could be related to the current performance of the process. It could also be regarding the future changes expected in the outputs of the process. For instance, the sales department is the customer of operations. They should communicate to operations if they see a period of slow sales so that production can be adjusted accordingly.

5.2. Process Flowchart

Process flowchart or process flow diagram take a single step from a cross-functional map and expand it to show more detail. It shows unexpected complexity, problem areas, redundancy, unnecessary loops and where simplification and standardisation may be possible. The chart compares and contrasts the actual versus the ideal flow of a process to identify improvement opportunities. It also serves as a training aid to understand the complete process and allows the team to examine which activities may impact the process performance.

Steps in drawing a flowchart:

1. **Determine the frame or boundaries of the process.**

   - Clearly define where the process under study starts (input) and ends (final output).

   - Team members should agree to the level of detail they must show on the flowchart to clearly understand the process and identify problem areas.
   - The flowchart can be a simple macro-flowchart showing only sufficient information to understand the general process flow, or it might be detailed to show every finite action and decision point. The team might start out with a macro-flowchart and then add in detail later or only where it is needed.

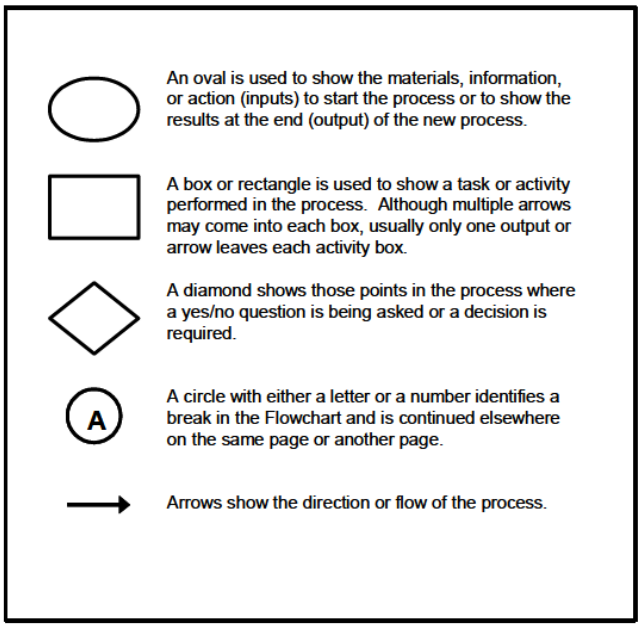
2. **Determine the steps in the process.**

   - Brainstorm a list of all major activities, inputs, outputs, and decisions on a flipchart sheet from the beginning of the process to the end.

3. **Sequence the steps.**

   - Arrange the steps in the order they are carried out. Use Post-It® Notes so you can move them around. Don't draw in the arrows yet.

4. **Draw the flowchart using the appropriate symbols.**



Source: Examples of types of process maps. (n.d.). Retrieved November 30, 2011, from http://www.premierinc.com/about/mission/social-responsibility/cares/process-maps.pdf

- Be consistent in the level of detail shown.
- A macro-level flowchart will show key action steps but not decision boxes.
- An intermediate-level flowchart will show action and decision points.
- A micro-level flowchart will show minute detail.
- Label each process step using words that are understandable to everyone.
- Add arrows to show the direction of the flow of steps in the process.
- Don't forget to identify your work. Include the title of your process, the date the diagram was made, and the names of the team members.

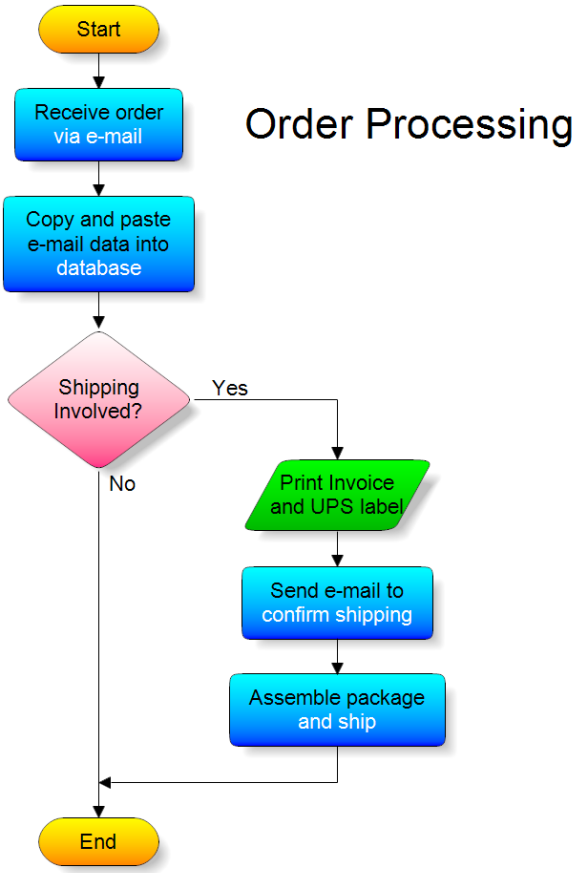
5. Test the flowchart for completeness.

- Are the symbols used correctly?
- Are the process steps (inputs, outputs, actions, decision, waits/delays) identified clearly?
- Make sure every feedback loop is closed, i.e., every path takes you either back to or ahead to another step.
- Check that every continuation point has a corresponding point elsewhere in the flowchart or on another page of the flowchart.
- There is usually only one output arrow out of an activity box. If there is more than one arrow, you may need a decision diamond.
- Validate the flowchart with people who are not on the team who carry out the process actions. Highlight additions or deletions they recommend. Bring these back to the team to discuss and incorporate into the final flowchart.

6. Finalise the flowchart.

- Is this process being run the way it should be?
- Are people following the process as charted?
- Are there obvious complexities or redundancies that can be reduced or eliminated?
- How different is the current process from an ideal one?

Example: Order Processing



Source: Order processing. (n.d.) Retrieved November 30, 2011, from http://www.rff.com/order_processing.htm

5.3. Cross-Functional Process Map

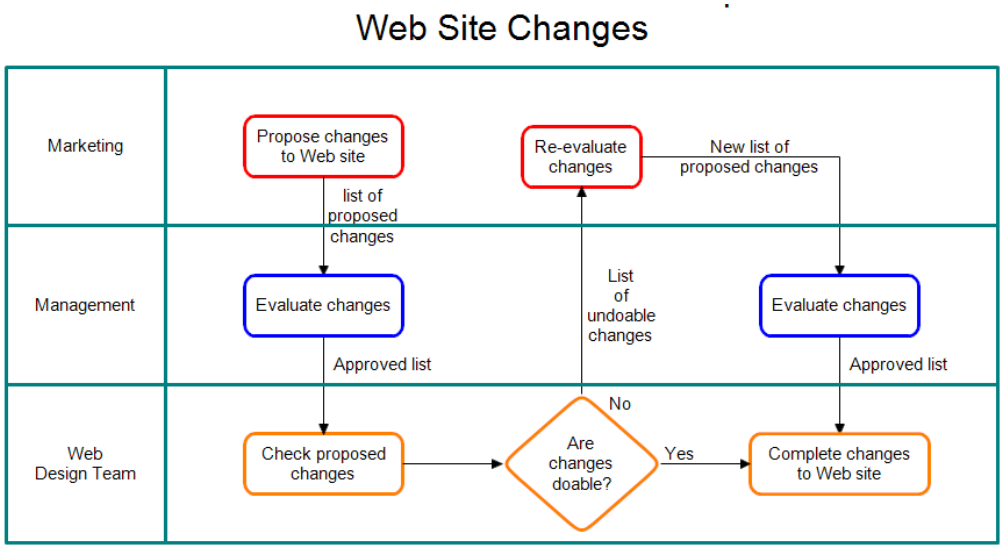
A cross-functional process map or flowchart shows the relationship between a business process and the functional units, such as departments, responsible for that process. The chart shows where the people or groups fit into the process sequence, and how they relate to one another throughout the process. It also identifies delays, repetitive steps, excessive control points, specialised tasks, and potential points of process failure.

Cross-functional process maps answer the questions:

- What steps are required to produce a particular output?
- What is the order in which the steps are performed?
- Who (which function) performs each step?
- What are the handoffs or interfaces between functions?
- In what parts of the process do the handoffs occur?
- What are the inputs required and the outputs produced at each step of the process?

Like relationship maps, cross-functional process maps often contain disconnects (missing or deficient inputs or outputs). Since cross-functional maps show what takes place inside one or more functions for a particular process, any disconnects that were present in the relationship map of those functions will also be present here.

Example: Making Changes to a Website



Source: Cross-functional process map: Web site changes. (n.d.). Retrieved November 30, 2011, from http://www.rff.com/cross-functional-map.htm

6. Key Steps in Process Mapping

Business process mapping enables managers to accurately analyze company business processes. This is an effective tool to standardize different business objectives, know in real time what tasks are being accomplished and most importantly, how the company processes affect customer relations and management.

There are four steps to business process mapping that every management professional can follow. Identifying these steps and applying it to the company's business processes could greatly enhance the efficiency and effectiveness of the work flow.

The four major steps of process mapping are:

(i) Process identification

(ii) Information gathering

(iii) Interviewing and mapping

(iv) Analysis

(i) Process identification

Managers should be able to identify different work processes that are being implemented. Knowing the process of each component of the company is crucial in understanding how work should be done and how it could serve the needs of customers.

(ii) Information gathering

Once the process is identified it is now necessary to gather data and information on the intricacies of the different business processes. Managers should be able to gather information regarding the key personnel involved in the work process. These individuals can make changes to the process so they should be involved in crafting the process map. Other pertinent information that should be gathered includes process objectives, risks, control mechanisms, and measures of milestones.

(iii) Interviewing and mapping

Verification should be done on the data gathered. Verification can take many forms like actual interview, line manager's conferences, and other techniques that a business manager can implement. Results should be mapped out in a spreadsheet or a business process mapping software. This step will validate if the identified processes are clear and if work set are being effectively carried out.

(iv) Analysis

The final step is analysis. The information gathered and the map that was created should be analysed. Any inefficiency in the process should be purged immediately and best practices should serve as a model for the whole business process. While analysis is considered the fourth step, it must really occur throughout the review. While defining the processes, the reviewer may determine that objectives are not in line with the processes in place. In gathering information, it may become apparent that measures of success do not correspond to department objectives. These are just some of the examples of ongoing analysis.

7. Process Mapping "DOs and Don'ts"

▪ DO map the process as it actually happens ▪ DO think about the process across the entire organisation ▪ DO talk to the other people who are involved in the process ▪ DO define the beginning and end of the process before you start ▪ DO the process map at a high level ▪ DO ask questions	▪ DON'T map the process as you think it happens or as you think it ought to happen ▪ DON'T restrict your process map to the activities in your own department ▪ DON'T work in a vacuum ▪ DON'T attempt to process map before you identify a beginning and an end ▪ DON'T get bogged down with too much detail ▪ DON'T struggle on your own

Case Study

Hughes Space and Communications Company

As the performance improvement manager for a large aerospace firm in 2005, Anne Marreli, was responsible for managing business process improvement projects. In each of these projects, she used process mapping as a key data collection method for both performance and cause analysis. One project focused on the incentive compensation process. In this process, each manager received an annual incentive budget and allocated the budget dollars among direct reports for merit salary increases, bonuses, and stock options based on their performance in the previous year. The process was a yearly ordeal dreaded by both the managers and human resources staff. The managers would work for weeks trying to allocate the dollars and most would miss the submission deadlines. Human resources (HR) staff would become frustrated trying to assist the managers and by the many errors the managers made. Employees complained frequently and loudly, because if their managers missed the submission deadlines, the employees did not receive their salary increases or bonuses on time. Clearly, there was a serious need for performance improvement.

The first step was to develop a project plan. She divided the work into four phases:

1. Define the critical business needs.
2. Understand how and why the current process works and did not work.
3. Design a new process.
4. Implement the new process.

The next step was to form a project team consisting of a sponsor (the HR director), the process owner (the compensation manager), the HR leader of each business unit, an information technology specialist, and an administrative assistant. Their work began with the first phase, defining the critical business needs. The team met to define the project by describing the problems with the current process, customer needs, project boundaries, project objectives, design requirements for a revised process, and constraints. In the second phase, understanding how and why the current process works and did not work, the HR leaders collected input about the process through informal interviews with the managers in their business units. The

project team met to map the incentive compensation process and reviewed the map with managers in the business units.

The final process map was then developed. The team used the map to identify multiple inefficiencies and obstacles in the process. For example, they learned that the managers were spending many hours calculating the outcomes of several different incentive award scenarios, and there was also redundant data entry.

In the third project phase, designing a new process, the team met several times to redesign the current process and then presented the proposed redesign to company leadership for approval. Once they obtained approval, they then met with business unit leaders and additional HR staff to collect their input. The suggestions they made were incorporated into the new process design and the team created a new process map.

In the last phase of the project, implementation, the revised process was presented to the compensation staff for careful, step-by-step scrutiny. They made suggestions for minor changes and the final process was mapped. After review and final approval by company leadership, the team then created a detailed implementation plan for the revised process, which included the development of a computer-based modelling tool for the managers' use in testing compensation allocation scenarios. The process map was extremely helpful in creating the implementation plan because it served as an outline of the steps that needed to be taken in implementing the new compensation process.

When the annual incentive compensation period arrived shortly thereafter, the new process was implemented and evaluated. The project team, managers, and HR staff were delighted with the results. For the first time, the incentive compensation process was completed on time. Every manager met the submission deadline, there was a 90% reduction in errors, and no complaints were received from employees.

Construction Project Integrations (CPI) Pte Ltd

Project : Reducing the cycle time for concreting work
Company : Construction Project Integrations Pte Ltd

Construction Project Integrations (CPI) Pte Ltd is a local Project and Construction Management company. The company takes on different roles in the life cycle of a project from project initiation to project and construction management to final project close out, as well as undertake turnkey construction or shutdown maintenance and turnaround for plant owner. Services they offer include:

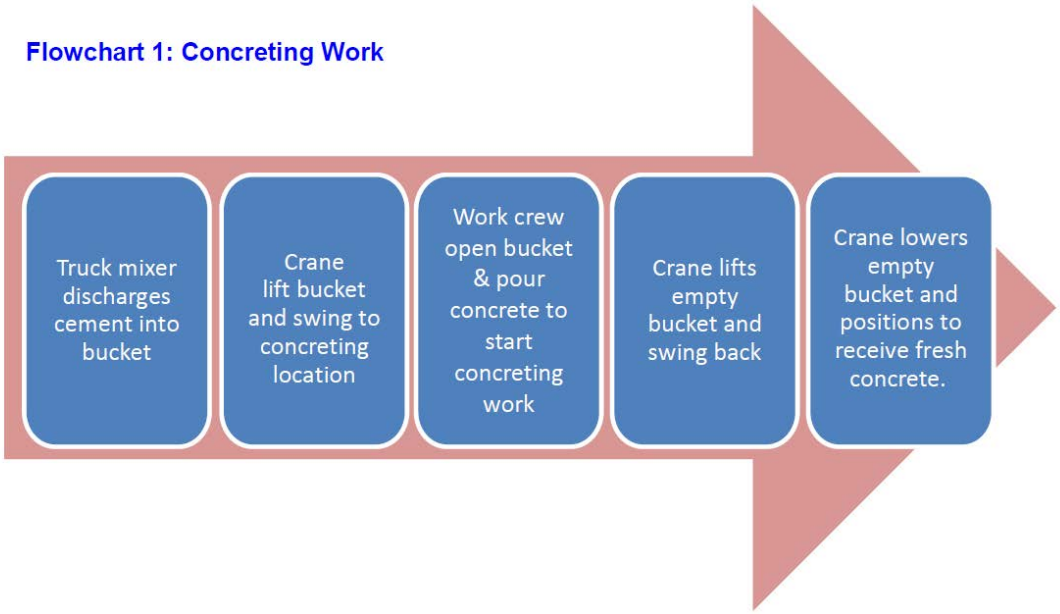
- Greenfield and expansion projects for refineries and chemical plants
- Modification and expansion projects in nutritional and pharmaceutical facilities
- Project management for commercial building complexes
- Modification and expansion projects for marine infrastructure facilities
- Greenfield and expansion projects for water treatment facilities

The objective of this project is to reduce the cycle time for concreting work at the work sites. This will result in higher output and better utilisation of the concreting vehicles, namely, the truck mixer and the lorry crane.

For the purpose of the project, the scope of study is confined to the concreting work executed by the contractor at the work site. A concreting job usually involves several repetitions of transferring the cement bucket operated by the truck mixer to the concrete discharging point. The number of repetitions depends on the cubic volume of the concreting job. Hence, by improving the cycle time of each repetition, the productivity of the entire concreting operation at the job site will be increased.

The pictures below show the process of concreting work:

Flowchart 1: Concreting Work



Currently, each truck mixer only operates one bucket. This means that workers have to wait for the mixer to finish filling the bucket, before discharging the concrete into the formwork. Conversely, the truck mixer has to wait for the workers to finish discharging the concrete before lifting the empty bucket for a second filling. This results in a lot of idling time and under-utilisation of the truck mixer and lorry crane. Hence, it is necessary to reduce the cycle time for one complete concreting operation.

After identifying the areas of improvement, the following activities were conducted:

a) Cause & Effect Analysis – To investigate the major causes that contribute to the waiting time experienced during the concreting work, various factors affecting the productivity of the concreting work was conducted. 4 major causes were identified:

   i. Man – Skills and the allocation of duties among workers
   ii. Concreting Vehicles – Utilisation during concreting work
   iii. Materials – Mixing of water and aggregate at the batching plant will determine the quality of the cement delivered to the work site
   iv. Methods – Method of filling the bucket

b) Based on the analysis, it was decided to focus on improving the method of filling the bucket, which in turn

would improve the utilisation of the truck mixer and the lorry crane.

After deciding the area of focus, a Multiple Activity Chart was drawn to show the periods of waiting time during one cycle of concreting process. The time study was done at one of the company's existing work site.

Table 1: Time study for concreting work at temporary road crossover, Jurong Island

No	Recording	Truck mixer discharges cement into bucket (min)	Crane lifts bucket and swing to placing location (min)	Crane lowers bucket and positions to discharge cement (min)	Crew open bucket and pour cement and commence concreting work	Crane lifts empty bucket and swing back (min)	Crane lowers empty bucket and positions to receive fresh cement (min)	Total Duration (min)
1	Recording 1	5	3	1	8	2	2	21
2	Recording 2	5	3	2	9	2	2	23
3	Recording 3	5	3	1	10	3	2	24
4	Recording 4	6	3	2	8	2	2	23
5	Recording 5	6	2	2	8	2	2	22
6	Recording 6	5	3	1	8	2	2	21
7	Recording 7	6	4	1	9	1	2	23
8	Recording 8	5	3	1	8	1	2	20

The table above shows that the cycle time varies from 20 to 24 minutes. Table 2 below shows the average time taken for each concreting activity:

Table 2: Average time for *each concreting activity*

Work Description	Duration (mins)	Cummulative Timing (mins)
Truck mixer discharges concrete mix into hopper bucket	5	5
Crane lifts bucket and swing to concreting location	3	8
Crane lowers bucket and position to discharge concrete	1	9
Work crew open bucket and pour concrete and commence concreting work (ie spread concrete, vibrating and levelling)	9	18
Crane lifts empty bucket and swing back to truck mixer	2	20
Crane lowers empty bucket and positions to receive fresh concrete.	2	22

From the table, we know that the average cycle time is about 22 minutes. During these 22 minutes, while one party is working, there are other parties who are waiting until it is their turn to work. Table 3 shows the utilisation and idling times for the present method of doing work:

Table 3: Multiple Activity Chart for Concreting Work (Present Method)

Timing (mins)	Truck Mixer	Lorry Crane & Bucket	Crew
1	X	O	O
2	X	O	O
3	X	O	O
4	X	O	O
5	X	O	O
6	O	X	O
7	O	X	O
8	O	X	O
9	O	X	O
10	O	O	X
11	O	O	X
12	O	O	X
13	O	O	X
14	O	O	X
15	O	O	X
16	O	O	X
17	O	O	X
18	O	O	X
19	O	X	X
20	O	X	X
21	O	X	X
22	O	X	X

Note: 0= idle, X= working

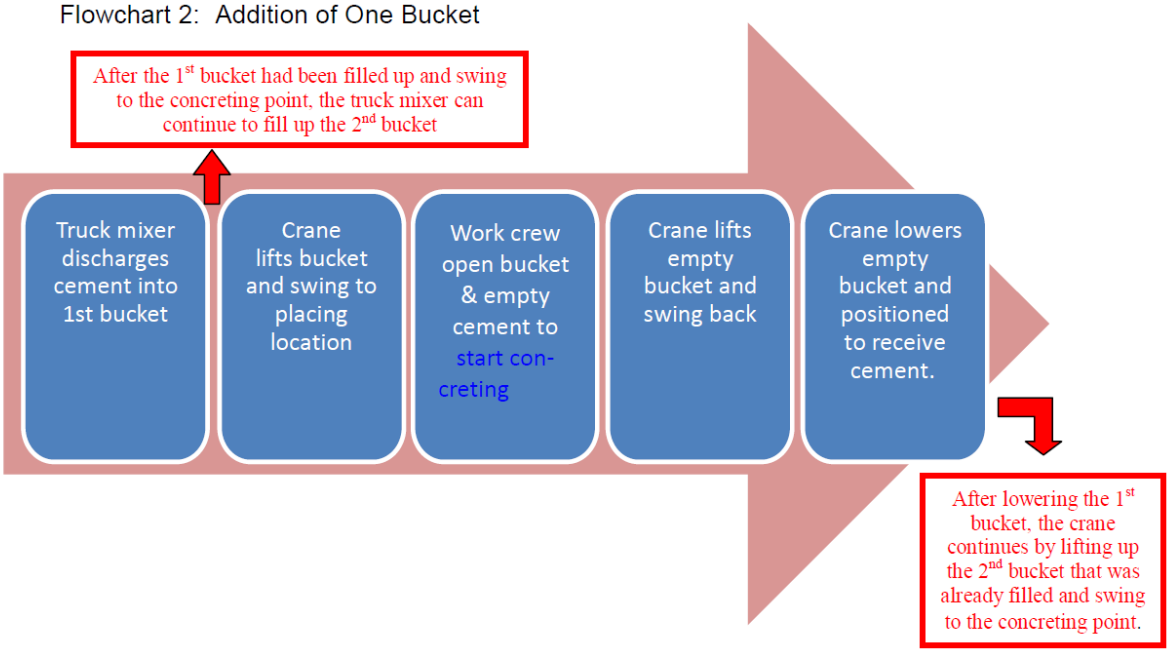
From the above analysis, it is deduced that the truck mixer is only utilised during the first 5 minutes of each concreting cycle or 23% of the entire cycle time. For about 77% of the cycle time, it is waiting for the cement bucket to return to the starting position for the commencement of the next refilling for the second cycle. Similarly, for the lorry crane, the utilisation time is only 8 minutes or 36% while waiting for the bucket to be filled and hen for it to be discharged of its load.

Similar time studies carried out at 3 more locations over 2 weeks confirmed the average cycle time of 22 minutes, as well as the under-utilisation of the truck mixer and lorry crane. Examining and improving the utilisation of the truck mixer and

the lorry crane will help to reduce the cycle time for the concreting work and raise its productivity.

After analysing all the factors affecting time wastage, it was realised that a simple step could help to reduce the cycle time – adding one more bucket to the truck mixer. By doing this, once the first bucket is filled, the truck mixer can proceed to fill the second bucket, unlike previously, where it has to wait for the empty first bucket to be returned. Upon completion of the first cycle, the lorry crane can immediately lift the filled second bucket to the concreting point and workers can proceed to discharge the second load. The flow-chart of the new process is depicted below:

Flowchart 2: Addition of One Bucket



This new arrangement will reduce the original cycle time of the 2nd cycle from 22 minutes to 17 minutes (reduction of 23%) since the lorry crane now need not have to wait for 4 minutes for the bucket to be filled. This can be further illustrated in the new Multiple Activity Chart for the proposed method:

d) Table 4: Multiple Activity Chart for Concreting Work (Proposed Method)

Timing	Concrete Truck	Lorry Crane & Bucket	Crew
1	X	O	O
2	X	O	O
3	X	O	O
4	X	O	O
5	X	O	O
6	X	X	O
7	X	X	O
8	X	X	O
9	X	X	O
10	X	O	X
11	O	O	X
12	O	O	X
13	O	O	X
14	O	O	X
15	O	O	X
16	O	O	X
17	O	O	X
18	O	O	X
19	O	X	X
20	O	X	X
21	O	X	X
22	O	X	X
23	X	X	X
24	X	X	X
25	X	X	X
26	X	X	X
27	X	O	X
28	O	O	X
29	O	O	X
30	O	O	X
31	O	O	X
32	O	O	X
33	O	O	X
34	O	O	X
35	O	X	X
36	O	X	X
37	O	X	X
38	O	X	X
39	O	X	X
40	O	O	X
41	O	O	X
42	O	O	X
43	O	O	X
44	O	O	X

Filling up of the 2nd bucket

maneuvering of the 2nd bucket

End of the cycle at 39 minutes

Saving of 5 minutes for the proposed system

The green-shaded portion represents the activity taking place for the proposed method, from the filling up of the bucket from the 6th to 10th minute, and the manoeuvring of the bucket from the 23rd to the 26th minute. Hence, when combining the 2 cycles, there is a saving of 5 minutes for the proposed method when the 2nd cycle ends at the 39th minute.

The new proposed method will reduce cycle time from the current 22 minutes to 17 minutes. On top of that, the hourly output increases from 1.36 cubic metres to 1.76 cubic metres, an increase of 29%. The new method also improves utilisation rate of the truck mixer by 15%. The utilisation of the lorry crane increases from 36% to 41%.

In conclusion, the project has helped to identify the areas of improvement in concreting work, as well as develop solutions to reduce the cycle time. Using appropriate productivity techniques, the project team was able to systematically analyse the problems and recommend measures to improve the operations, thus lowering the concreting costs and increasing productivity of the concreting resources.

Recommended Readings

Articles can be retrieved from NLB's e-Resources – http://eresources.nlb.gov.sg

Books are available at the Lee Kong Chian Reference Library.

Conger, S. A. (2011). *Process mapping and management*. New York: Business Expert Press.
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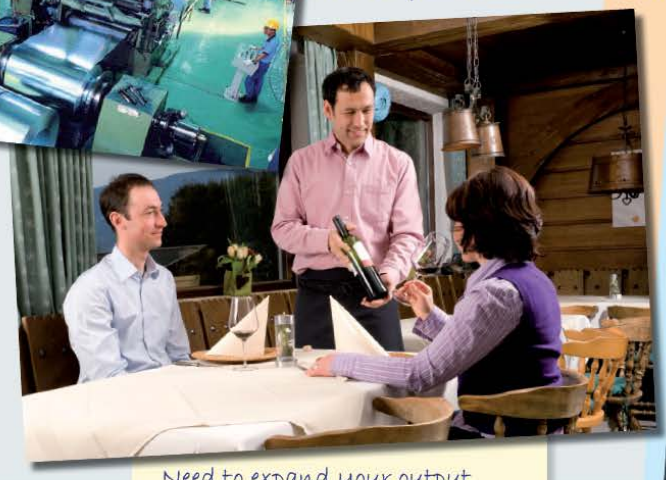
Losing your edge over competitors?

Rising costs affecting your profitability?



Need to expand your output while facing cost constraints?

Customer complaints increasing?

We can Help.

CERTIFIED PRODUCTIVITY PRACTITIONER COURSE

Learn • Innovate • Apply

Next Intake – (Broadbased/Retail) Commencing July 2011

WHY CPP?

- **Enterprise Focused** Targeted at the enterprise with focus on productivity issues and challenges at the enterprise level
- **Diagnostic Approach** Identify strengths and areas of improvement so that actions can be decided easily
- **Technique-based** Teach productivity techniques, tools and methodologies applicable to the enterprise that can be adjusted to suit specific sectors through contextualisation
- **Project Guidance** Participants to undertake productivity project for their own company on a previously identified productivity issue for which project guidance is provided. This ensures that supporting companies benefit from sending staff for the course.

1. Analyse productivity issue.
2. Develop solutions.
3. Implement improvements.

CALL US TODAY AT 6375 0938 / 6375 0940 TO EITHER:

- Register for next intake; or
- Attend our information session; or
- Arrange for us to visit you

WDA FUNDING AVAILABLE!*
SMEs: **70%** of Course Fees
All other entities: **50%** of Course Fees

Up to 400% of course fees can be claimed under Productivity Innovation Tax Credit!*

*Terms & conditions apply.

FOR FULL 2011 SCHEDULE OR MORE INFORMATION, PLEASE CALL 6375 0938 (LEANNE) OR 6375 0940 (ASHTON). ALTERNATIVELY, EMAIL TO: cpp@spa.org.sg

SINGAPORE PRODUCTIVITY ASSOCIATION

The Singapore Productivity Association (SPA) was set up in 1973 as an affiliated body of the then National Productivity Board, now SPRING Singapore. Its objective is to promote the active involvement of organisations and individuals in the Productivity Movement and to expedite the spread of productivity and its techniques.

SINGAPORE PRODUCTIVITY ASSOCIATION

<table>
<tr><th colspan="2">CPP Course Syllabus</th></tr>
<tr><th>CPP</th><th>CPP (Retail)</th></tr>
<tr><td colspan="2">Module 1: Understanding Productivity
(Duration: 1 day)
• Introduction to Productivity and Quality Concepts
• Factors Affecting Enterprise Productivity
• Productivity Movement in Singapore
• Productivity Promotion in Businesses
• Productivity Challenges</td></tr>
<tr><td>Module 2: Productivity Tools, Techniques & Management Systems
(Duration: 3 days)
• Business Excellence
• Productivity Measurement & Analysis
• Process management:
▪ Cost of Quality
▪ Lean Six Sigma
▪ Process Mapping & Analysis
• Integrated Management Systems</td><td>Module 2: Productivity Tools, Techniques & Management Systems
(Duration: 3 days)
• Delivering Service Excellence
• Productivity Measurement & Analysis
• Process management:
▪ Cost of Quality
▪ Lean Six Sigma
▪ Process Mapping & Analysis</td></tr>
<tr><td>Module 3: Innovation & Service Excellence
(Duration: 3 days)
• Knowledge Economy & Innovation
• Service Excellence
• Team Excellence</td><td>Module 3: Innovation & Service Excellence
(Duration: 3 days)
• Introduction to Service Excellence & Sales Productivity
• Store Management & the Roles of a Store Manager
• Minimising Operational Constraints & Focusing on Sales
• Setting Goals & Analysing Statistics
• Coaching & Motivating Sales Staff
• Service Behaviours that Encourage Business</td></tr>
<tr><td colspan="2">Module 4: Critical Success Factors
(Duration: 1 day)
• Management Commitment
• Managing & Sustaining Change
• Overcoming Resistance to Change
• Training and Education
• Planning for Implementation and Control of Productivity Improvement Programme
• Briefing on project assignment & Role of Productivity Practitioner</td></tr>
</table>

As part of the CPP curriculum, participants are required to start a productivity improvement project upon completion of the in-class component. Project guidance will be provided by a professional consultant assigned for this purpose and is for a total of 2 man-days.

Funding & Payment

The course is supported by the Singapore Workforce Development Agency (WDA). Funding is available at 70% and 50% of the course fees respectively for SMEs and MNCs/LLEs/Statutory Boards. Please find the prices payable in the net fee table below:

For SMEs:	Net Fee	Nett Fee with GST
SPA Member (S$3,700)	S$1,110	S$1,187.70
Non-Member (S$3,950)	S$1,185	S$1,267.95
For MNCs/LLEs/Statutory Boards	**Net Fee**	**Nett Fee with GST**
SPA Member (S$3,700)	S$1850	S$1979.50
Non-Member (S$3,950)	S$1975	S$2113.25

The schedule of our next runs is as follows:

CPP Schedule:

January - February 2012		
Date	**Module**	**Time**
Wednesday, 11 January 2012	Module 1	9-5 pm
Friday, 13 January 2012	Module 2	9-5 pm
Wednesday, 18 January 2012		9-5 pm
Friday, 20 January 2012		9-5 pm
Wednesday, 25 January 2012	Module 3	9-5 pm
Friday, 27 January 2012		9-5 pm
Wednesday, 1 February 2012		9-5 pm
Friday, 3 February 2012	Module 4	9-5 pm

February - March 2012		
Date	**Module**	**Time**
Wednesday, 22 February 2012	Module 1	9-5 pm
Friday, 24 February 2012	Module 2	9-5 pm
Wednesday, 29 February 2012		9-5 pm
Friday, 2 March 2012		9-5 pm
Wednesday, 7 March 2012	Module 3	9-5 pm
Friday, 9 March 2012		9-5 pm
Wednesday, 14 March 2012		9-5 pm
Friday, 16 March 2012	Module 4	9-5 pm

April - May 2012		
Date	**Module**	**Time**
Wednesday, 11 April 2012	Module 1	9-5 pm
Friday, 13 April 2012	Module 2	9-5 pm
Wednesday, 18 April 2012		9-5 pm
Friday, 20 April 2012		9-5 pm
Wednesday, 25 April 2012	Module 3	9-5 pm
Friday, 27 April 2012		9-5 pm
Wednesday, 2 May 2012		9-5 pm
Friday, 4 May 2012	Module 4	9-5 pm

May - June 2012		
Date	**Module**	**Time**
Wednesday, 30 May 2012	Module 1	9-5 pm
Friday, 1 June 2012	Module 2	9-5 pm
Wednesday, 6 June 2012		9-5 pm
Friday, 8 June 2012		9-5 pm
Wednesday, 13 June 2012	Module 3	9-5 pm
Friday, 15 June 2012		9-5 pm
Wednesday, 20 June 2012		9-5 pm
Friday, 22 June 2012	Module 4	9-5 pm

CPP (Retail) Schedule:

January - February 2012		
Date	**Module**	**Time**
Wednesday, 11 January 2012	Module 1	9-5 pm
Friday, 13 January 2012	Module 2	9-5 pm
Wednesday, 18 January 2012		9-5 pm
Friday, 20 January 2012		9-5 pm
Thursday, 26 January 2012	Module 3	9-5 pm
Tuesday, 31 January 2012		9-5 pm
Thursday, 2 February 2012		9-5 pm
Friday, 3 February 2012	Module 4	9-5 pm

February - March 2012		
Date	**Module**	**Time**
Wednesday, 22 February 2012	Module 1	9-5 pm
Friday, 24 February 2012	Module 2	9-5 pm
Wednesday, 29 February 2012		9-5 pm
Friday, 2 March 2012		9-5 pm
Tuesday, 6 March 2012	Module 3	9-5 pm
Thursday, 8 March 2012		9-5 pm
Tuesday, 13 March 2012		9-5 pm
Friday, 16 March 2012	Module 4	9-5 pm

April - May 2012		
Date	**Module**	**Time**
Wednesday, 11 April 2012	Module 1	9-5 pm
Friday, 13 April 2012	Module 2	9-5 pm
Wednesday, 18 April 2012		9-5 pm
Friday, 20 April 2012		9-5 pm
Tuesday, 24 April 2012	Module 3	9-5 pm
Thursday, 26 April 2012		9-5 pm
Thursday, 3 May 2012		9-5 pm
Friday, 4 May 2012	Module 4	9-5 pm

May - June 2012		
Date	**Module**	**Time**
Wednesday, 30 May 2012	Module 1	9-5 pm
Friday, 1 June 2012	Module 2	9-5 pm
Wednesday, 6 June 2012		9-5 pm
Friday, 8 June 2012		9-5 pm
Tuesday, 12 June 2012	Module 3	9-5 pm
Thursday, 14 June 2012		9-5 pm
Tuesday, 19 June 2012		9-5 pm
Friday, 22 June 2012	Module 4	9-5 pm

Core Faculty Members

MR. LAM CHUN SEE
B. ENG IN INDUSTRIAL & SYSTEMS ENGINEERING (UNIVERSITY OF SINGAPORE)

Chun see manages his own consultancy practice, Hoshin Consulting and is also an associate consultant/trainer to the PSB Corporation and Singapore Productivity Association. Prior to running his own practice, he has had years of experience as an industrial engineer with Philips, and trainer and consultant with the then National Productivity Board, APG Consulting and Teian Consulting, He was conferred the Triple-A Award in 1989 for helping to transfer Japanese know-how, particularly in the area of 5S, into local programmes and packages. Throughout his years of consultancy experience, Chun See has assisted many businesses in analyzing their productivity and quality objectives and performance; primarily through the application of the PDCA technique and basic QC tools.

MR. LEE KOK SEONG
M.SC. IN CHEMICAL ENGINEERING (IMPERIAL COLLEGE, LONDON UNIVERSITY), B.SC. IN CHEMICAL ENGINEERING (NATIONAL TAIWAN UNIVERSITY)

Kok Seong has accumulated vast experience in the areas of productivity training and management consultancy throughout his 30 years of experience

with the Standards, Productivity and Innovation Board (SPRING). He has provided consultancy assistance and training for numerous organisations both within and outside of Singapore in the areas of Productivity Management, Operation and Production Management, total Quality Management, Total Productive Maintenance, Shopfloor Management, Occupational Safety Management, Industrial Engineering Applications and Supervisory Management. He has also been greatly involved in the pinnacle Singapore Quality Award (SQA) initiative since its inception in 1993. his track records include the assessments and site visits of award recipients like Micron Semiconductor (formerly Texas Instruments), Motorola, Baxter Healthcare, Philips Tuner Factory and Teck Wah Industrial Corporation Ltd. Mr. Lee is currently a certified SQA Senior Assessor, as well as a resource person for Basic and Advanced Training Courses for Productivity Practitioners, a position he has taken on since 2007.

MR. LOW CHOO TUCK
M.SC. IN INDUSTRIAL ADMINSITRATION (UNIVERSITY OF ASTON, UK); B.SC. IN PHYSICS (NUS); DIP IN QUALITY CONTROL INSTRUCTORS (INTERNATIONAL QUALITY CENTRE, NETHERLANDS); CERTIFICATE IN PRODUCTIVITY DEVELOPMENT (JAPAN PRODUCTIVITY CENTRE); CERTIFICATE IN ADVANCED MANAGEMENT DEVELOPMENT (INSEASD)

Choo Tuck currently provides training and advisory services in productivity and quality management to businesses and government in the Asean region and Middle East. He was previously the Executive Director of the Restaurant Association of Singapore as well as the Singapore Productivity Association, and was also the Director for Strategic Planning in SPRING Singapore. During his many years of service with SPRING Singapore, he gained wide experience in productivity training, management consultancy and productivity promotion, and has helped more than a 100 businesses in improving productivity, quality control and business excellence, including organisations such as Cycle & Carriage, Motorola, PUB and DBS. On top of that, he has also served as an Asian Productivity Organisation (APO) expert on Productivity for several APO member countries, and was part of a team of experts engaged by the Singapore cooperation Enterprise to provide productivity expertise to the Government of Bahrain in 2007 and 2008.

MR. QUEK AIK TENG
B.ENG (HON.) IN MECHANICAL ENGINEERING (UNIVERSITY OF SHEFFIELD); DIP. IN BUSINESS EFFICIENCY (INDUSTRIAL ENGINEERING_ (PSB-ACADEMY); CERTIFIED MANAGEMENT CONSULTANT (CMC); PRACTISING MANAGEMENT CONSULTANT (PMC); MEMBER, INSTITUTE OF MANAGEMENT CONSULTANTS (IMC) SINGAPORE

Aik Teng currently manages his own consultancy, AT Consulting Services. Ne of his most recent projects includes being the LEAD Project Manager for the Singapore Logistics Association. Prior to running his own consultancy, he has been with SPRING Singapore for 20 years, and was the Head of the Organisation Excellence Department from 2004-05. He was also SQA Lead Assessor and Team Leader up till 2008 and has been involved in the SQA initiative since its inception in 1993. tasked to start up the consultancy unit within the then Productivity & Standards Board (PSB) to provide training and consultancy services to organisations, his consulting team assisted close to 30 organisations during that period. He was also involved in a project coordinated by the Singapore Cooperation Enterprise (SCE) to assist the Bahrain Labour Fund in their Labour Reform strategy, which included helping the Bahrain government to initiate a Productivity Movement as well as develop the productivity of the local enterprises. In addition, he was appointed as Project Manager to assist the Government of Botswana to implement a national Productivity Movement, from 1994 to 2003. Botswana is currently held as a model of Productivity in the Pan-Africa region.

MR. WONG KAI HONG
MBA IN STRATEGIC MARKETING (HULL), BSC (NUS)

Kai Hong is a business consultant, management trainer and company director. He has spent almost 2 decades in the consumer products industry, having worked with retailers like Isetan, Metro, Royal Sporting House, The Athlete's Foot and Sunglass Hut; brands like Reebok and Doc Martens; and technology group Wearnes Technology. He has been involved with various functions including operations, business development, project management, human resource, training, marketing, logistics, budgeting and general management. He has developed businesses in Singapore and many Asian cities such as Seoul and Beijing.

For registration or more information, write to us at CPP@spa.org.sg.
Alternatively, you could also contact our secretariat:
Ms. Leanne Hwee DID: 6375 0938
Mr. Ashton Chionh DID: 6375 0940